General Planning Consultant Services RFP P5413
Contract No. 200703566

Work Order No. 2009-01 / Task 2-3

FINAL

SOUTH FULTON PARKWAY TRANSIT FEASIBILITY STUDY

Technical Memorandum #2: Alternative Scenarios Performance Report

Prepared by:

DMJM Harris/JJG Joint Venture
Atlanta, GA

December 2009

Table of Contents

List of Tables

List of Figures

EXECUTIVE SUMMARY

Introduction and Purpose

The purpose of Work Order 2009-01, the South Fulton Parkway Transit Feasibility Study, is to advance the Transit Planning Board (TPB) recommendation concerning the parkway by providing a high-level assessment and evaluation of potential transit improvements in the South Fulton County.

This report is the second deliverable associated with Work Order 2009-01 and serves to document the factors that influenced the development of transit and land use alternatives and the means by which these alternatives were analyzed. The major findings of this report will provide the basis for the final recommendations for future transit and land use initiatives throughout South Fulton Parkway.

Testing Methodology and Results

In order to provide ridership estimates for the transit alternatives to be tested, the Atlanta Regional Commission (ARC) travel demand model was refined by using the following steps:

1. Review and refinement of traffic analysis zones (TAZs);
2. Allocation of socioeconomic (SE) data per the new TAZ structure;
3. Reassign the SE data totals from other portions of the region for each of the land use scenarios developed (in coordination with ARC travel demand modeling staff); and
4. Refine the model structure to reflect the transit alternatives.

A more detailed methodology on the travel demand modeling activities is provided in **Appendix A**.

Land Use Scenarios

Two land use scenarios were developed for alternatives testing, which are described in greater detail in Section 4.

- Trend Scenario – a land use pattern based on the current development trends with commercial development nodes at the following intersections:
    - Cascade-Palmetto Highway (SR 154)
    - Campbellton-Fairburn Road (SR 92)
    - Stonewall Tell Road
- Intensive Development Scenario – the Trend Scenario complemented with the Parkway South Economic Development Plan and intensified development at Old National Highway.

Transit Alternatives

As noted in Section 5, the transit alternatives initially tested are shown in **Table ES-1**.

Table ES-1: Alternatives Subject to Initial Testing

Mode	Limits	Stations	Service Characteristics
Express Bus 1	SR 154 to College Park MARTA Station	• SR 154 • SR 92	Peak hour – 30 minute headways
Express Bus 2	SR 154 to Downtown via I-85	• SR 154 • SR 92 • Stonewall Tell Road	Peak hour – 30 minute headways
Bus Rapid Transit (BRT)	SR 154 to College Park MARTA Station	• SR 154 • SR 92 • Stonewall Tell Road • Old National Highway	Peak hour – 15 minutes Off Peak – 30 minutes
Enhanced Bus	College Park MARTA Station to Stonewall Tell Road	• Stonewall Tell • Old National	Peak hour – 15 minutes Off Peak – 30 minutes

Following the initial testing of the alternatives noted above and review of results, two additional transit alternatives were tested; these, are provided in **Table ES-2** below.

Table ES-2: Alternatives Subject to Refined Testing

Mode	Limits	Stations	Service Characteristics
Bus Rapid Transit w/ Circulator Routes	SR 154 to College Park MARTA Station	• SR 154 • SR 92 • Stonewall Tell Road • Old National Highway	Peak hour – 15 minutes Off Peak – 30 minutes
Enhanced Bus w/ Circulator Routes	SR 154 to College Park MARTA Station	• SR 154 • SR 92 • Stonewall Tell Road • Old National Highway	Peak hour – 15 minutes Off Peak – 30 minutes

The ridership results of the testing described above is provided in **Table ES-3**.

Table ES-3: Daily Line Volumes from Tested Alternatives

Transit Alternative	Current ARC Model	Trend Scenario	Intensive Development Scenario
Initial Testing			
Express Bus 1	20	50	60
Express Bus 2	60	80	100
Enhanced Bus	440	660	670
BRT	1,520	2,290	2,180
Refined Testing			
Enhanced Bus with Circulator Routes	-	1,940	2,250
BRT with Circulator Routes	-	5,020	6,590

Major Findings

Major findings of this report include:

- Because South Fulton Parkway is a relatively new roadway, development along the roadway has not had much time to materialize. However, given its proximity to H-JAIA and the interstate system, the corridor has potential for live-work-play development. Notwithstanding the uncertainty of time required for this development to occur, the best approach for implementing transit service along South Fulton Parkway is phasing service along the corridor. Because of the sparse development patterns currently within the area, short term recommendations resulting from this study will need to be oriented toward furthering land use initiatives to foster transit markets along the corridor. This would include recommendations for specific zoning regulations and the development of overlay districts consistent with the Transit Oriented Development (TOD) guidelines currently being developed by MARTA. A specific example could include coordination by Union City officials with the Parkway South developers to refine their current development plans to include provisions for TOD.
- Projections from the regional travel demand model display low ridership for express bus service. Therefore, corridor-focused ridership forecasting techniques, such as travel preference surveys, should be employed to better gauge the feasibility of express bus service.
- A phased fixed route concept with limited stops to serve commuter purposes should be analyzed further. Initially, a commuter-based service with park-and-ride stop configurations to allow implementation of TOD is recommended. The concept will initially consist of park-and-ride lots located near or adjacent to South Fulton Parkway at major nodes, so that station areas will not conflict with corridor preservation efforts undertaken by GDOT and can transition into more vibrant TOD areas. The alternatives tested provide a footprint for potential transition to more premium services such as LRT dependent on development trends.

Next Steps

Based on the major findings, next steps in the study process are to finalize both concept planning and the strategy to implement transit along South Fulton Parkway. These actions include:

- Development of a service plan for initial commuter services and transition to BRT service as corridor conditions warrant. This will also include the identification of development and mobility trends that would indicate the potential for implementing the initial service and subsequent actions within the phasing plan. Service planning recommendations will include:
    - Employment of mechanisms that can improve the ridership forecasts to supplement the travel demand model results and more accurately gauge the needed characteristics for express bus services. It is suggested that a travel preference survey and continued public education on the benefits of transit are follow-up activities in the corridor;
    - Definition of infrastructure needs (e.g., queue jump lanes, signalization, right-of-way, etc.) necessary for a phased approach to transit improvements in the corridor; and

  - Coordination with GDOT, Fulton County, and the local municipalities regarding traffic control, land use, and right-of-way preservation.

- Identification of actions for local governments to promote development patterns that would support transit along the corridor. This may initially include steps to develop park-and-ride stops and amenities for commuter-related travel. Strategies to transition these park-and-ride stops for land uses that support enhanced service options (such as BRT) as the corridor matures will also be developed that are consistent with the TOD guidelines being developed by MARTA. This will include an assessment of needed changes to their respective development codes and their future land use plans and the identification of specific thresholds needed to support each alternative.

1.0 INTRODUCTION

1.1 Study Overview

The purpose of Work Order 2009-01, the South Fulton Parkway Transit Feasibility Study, is to advance the Transit Planning Board (TPB) recommendation concerning the parkway by providing a high-level assessment and evaluation of potential transit improvements in the South Fulton County. The corridor extends from SR 166 in Douglas County to the College Park MARTA Station, as shown in **Figure 1-1**. The study will result in the identification of issues impacting the feasibility of transit investment in the corridor and provide scenarios that focus on viable transit solutions. The study will also describe the precedents for transit feasibility and present results that can be anticipated in terms of traffic congestion, multimodal capacity, and related land use patterns for the South Fulton area.

1.2 Purpose of Report

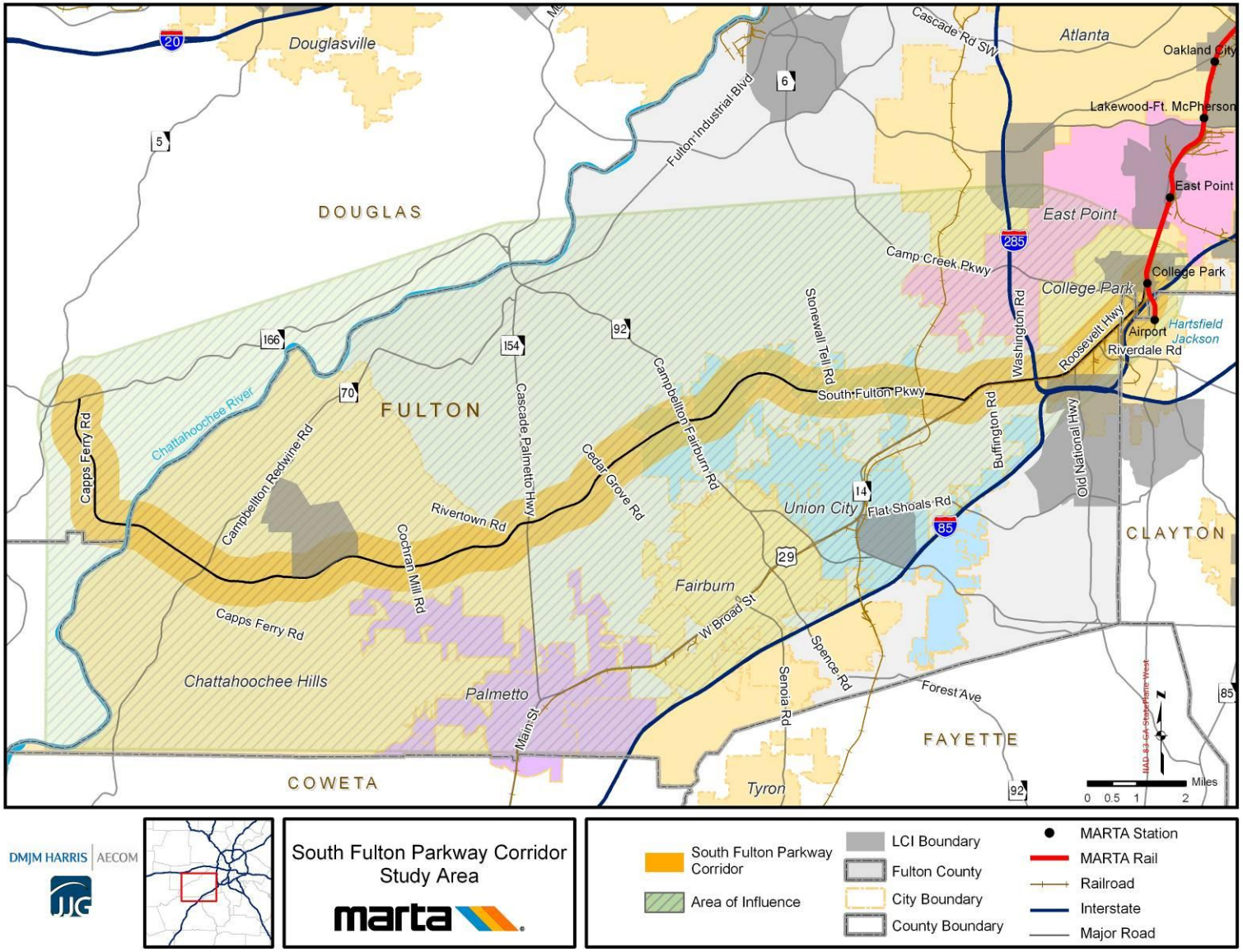
This report is the second deliverable associated with Work Order 2009-01 and serves to document the factors that influenced the development of transit and land use alternatives and the means by which these alternatives were tested. This deliverable builds on the *Baseline Conditions Report,* which provided a context for the development of these alternatives. This report also discusses the methodology used to define these alternatives and the means by which they are to be evaluated. In addition, the report documents how input from regional planning partners such as the Georgia Department of Transportation (GDOT), the Atlanta Regional Commission (ARC), and the Georgia Regional Transportation Authority (GRTA), as well as area residents and business interests, was taken into account. The major findings of this report provide the basis for the final recommendations for future transit and land use initiatives throughout South Fulton Parkway.

1.3 Report Organization

Given the purpose of this report, the organization of the remainder of the document is as follows:

- Section 2 provides highlights from the baseline conditions assessment that provides the context for the development of transit alternatives and land use scenarios;
- Section 3 details the methodology in which the transit alternatives were evaluated;
- Section 4 provides an overview of the methodology that led to land use scenarios and initial transit alternatives;
- Section 5 summarizes the results of the initial testing of alternatives given the different land use scenarios and implications for refined alternatives testing;
- Section 6 presents the major findings that will influence the land use and transit alternative scenarios to be carried forward as part of this effort; and
- Section 7 details the major findings and next steps to develop an implementation strategy for transit along South Fulton Parkway.

Figure 1-1: Study Area Map



2.0 BASELINE CONDITIONS MAJOR FINDINGS

This section provides an overview of baseline conditions for the corridor including previous studies by the various planning partners within the study area. In conjunction, this information provides a sound policy basis for developing the transit and land use scenarios appropriate for the South Fulton Parkway corridor. As such, the information is summarized with a strong emphasis on the transportation and land use elements related to transit feasibility.

2.1 Definition of Transit Propensity

For the purposes of this feasibility study, a broad analysis was conducted regarding the following factors which are traditionally inventoried to determine the potential for transit services:

- Demographics and Forecasts – Investigating the concentration of populations within the study area that are more likely to ride transit as well as population and employment estimates (2005) and projections (2030) developed by ARC;
- Land Use and Development Trends - Assessing the existing and future land uses planned throughout the corridor in addition to recent development trends to identify areas with existing and planned transit-supportive initiatives;
- Transportation Conditions – Analyzing the current and projected roadway levels of service, travel trends with respect to origin and destination and mode choice, and the planned and programmed improvements in the area to provide a context of the potential travel characteristics needed for the area;
- Stakeholder Input – Along with the policy documents reviewed in Section 2, accounting of the input received from the stakeholders regarding their overall vision of the corridor and their assessment of the factors listed above.

A detailed assessment for each of these factors is provided in this report. Collectively, they provide the basis to gauge the overall potential for transit services, the transit market that would be served, and the service characteristics needed within the study area.

2.1.1 Demographic Analysis

Traditionally transit dependent populations - low-income persons, minorities and zero-vehicle households - are found primarily in the eastern portion of the corridor. Conversely, the distribution of elderly populations throughout the study area is fairly widespread. While elderly populations make up a larger percentage of the Census block groups in the western portion of the corridor, it is important to note that these areas are also the least populated and, therefore, these higher concentrations are not reflective of large populations of elderly persons. However, they would indicate a potential need for paratransit services to complement any line haul service provided within the study area.

It should be noted that the population projections developed by the ARC may be understated given the recent development trends and, more specifically, the number of residential Developments of Regional Impact (DRIs) approved in the study area since 2000. As a result, coordination will be necessary with the ARC as transit and land use scenarios are developed to ensure consistency with the population control totals for the Atlanta region as a whole.

2.1.2 Land Use and Development Trends

The South Fulton Parkway Corridor is characterized by a low-density development pattern. Future land uses planned along the corridor primarily consist of high levels of suburban residential development complemented by nodal commercial development at major intersections. The exceptions to this planned development pattern are within the cities of College Park and Union City. These cities foresee their respective portions of the study corridor with more intense patterns of development, which would serve to transition into a more urban environment from the suburban development planned for the western portions of the corridor.

While at low-densities, a significant amount of large-scale development activity has occurred within the study area in the past five years, with thirteen applications for DRI approved in the study area since 2005. Therefore, while at low densities, the study area is developing rapidly.

2.1.3 Transportation Conditions

Based on the findings from the baseline transportation characteristics, the following major findings have been derived:

- The study area is anticipated to be a major trip generator by 2030 with an increase of 130 percent in the overall number of commuter trips over the present day. However, the share of external trips to other employment centers will still remain significantly higher than those coming into the study area for work.
- An overwhelming majority (greater than 90 percent) of all work trips in the study area are made by automobile, with commute times to the major employment centers reaching 45 minutes during peak hours. These travel conditions are projected to significantly worsen in the future without alternative commute options.
- The findings from the level of service (LOS) analysis indicate that most of the major multi-lane facilities in the study area will operate under acceptable LOS. Therefore, alleviating congestion is not as high a priority as providing commute choices and better connections within the study area as well as to and from other activity centers in the region.
- Given the auto-oriented development patterns within the study area, maintaining traffic flow will continue to be a top priority for South Fulton Parkway. At the same time, a lack of commuter options will perpetuate a greater auto-dependency, which is contrary to the smart growth strategies developed for South Fulton Parkway.
- South Fulton Parkway is designed to carry high volumes of traffic at high speeds. There is an inherent conflict between facilitating an efficient movement of vehicles versus providing a safe environment for pedestrians and bicyclists.
- Truck traffic in the study area is expected to grow by more than 50 percent, resulting in increased potential for conflicts between vehicular and truck traffic.
- Currently planned transit options do not meet the future needs of the residents in the study area. In fact, in addition to having no transit improvements currently programmed in the ARC Envision6 Regional Transportation Plan (RTP), service cuts are being considered for the existing bus routes. It is clear that given the expected growth coupled with limited alternatives to single occupant vehicle travel, increased demand for transit is anticipated.

- An improvement proposed in TPB Concept 3 is a proposed commuter rail service from Atlanta to Senoia along the CSX rail corridor. The proposed alignment for this improvement would enter the study area in the vicinity of Union City and travel along the CSX corridor that runs parallel to Roosevelt Highway into the proposed multi-modal transportation center in Downtown Atlanta. In conjunction with the transit alternative along South Fulton, an opportunity to foster transit oriented development at the nexus of these alignments could be created.
- There is a general lack of bicycle and pedestrian facilities in the study area. However, a few of bicycle and pedestrian facilities are programmed along various roadways intersecting South Fulton Parkway.

2.2 Stakeholder Committee Input

In order to provide context on the conditions within the study area, a Project Stakeholder Committee was established comprised of staff representatives from local jurisdictions, state and regional agencies, and citizen and business organizations within the study area. The agencies and organizations participating on the project stakeholder committee are provided in **Table 2-1**.

Table 2-1: Stakeholder Agencies

Regional and State Agencies	**Local Jurisdictions**
• Atlanta Regional Commission • Georgia Department of Transportation • Georgia Regional Transportation Agency • Hartsfield-Jackson Atlanta International Airport (H-JAIA) **Business Groups / Contacts** • South Fulton Chamber of Commerce • South Fulton Parkway Alliance • Old National Merchants Association • South Fulton CID/Tri-County Alliance • Publix Supermarket (in Study Area)	• Fulton County • Board of Commissioners • Board of Education • Planning and Zoning • Public Works • City of Union City • City of College Park • City of Fairburn • City of Palmetto • City of Chattahoochee Hills **Citizens Groups** • Chattahoochee Hills Civic Association • Cliftondale Homeowners Association

The input from the stakeholder committee was received via individual interviews and two stakeholder meetings. The major themes of this input are provided in the bullet points provided below.

- The study should assist in identifying the best locations for transit oriented development.
- Transit needs to provide connectivity to shopping destinations.
- Preserving limited access should be a priority along South Fulton Parkway.
- The corridor is not conducive to local bus service; it is more conducive to commuter services.
- There is interest in how this study will tie into Concept 3.

- H-JAIA is receptive to transit alternatives that can alleviate demand on limited parking resources.
- Connectivity to employment centers is important.
- Preserving the rural character of the area should be a priority.
- Internal trips need to be increased.
- There are new schools approved in the area that will have an effect on congestion.
- Large suburban developments will be the primary land use for the area.

.

3.0 EVALUATION METHODOLOGY

The ARC regional travel demand model was used to evaluate the ridership potential for each of the alternatives tested. The rationale for the selection of potential station areas of the alternatives is provided in Section 4.

3.1 Travel Demand Modeling Methodology and Assumptions

In order to provide ridership estimates for the transit alternatives to be tested, the ARC travel demand model was refined by using the following steps:

1. Review and refinement of traffic analysis zones (TAZs);
2. Allocation of socioeconomic (SE) data per the new TAZ structure;
3. Reassigning the SE Data totals from other portions of the region for each of the land use scenarios developed; and
4. Refining the model structure to reflect the transit alternatives.

A more detailed methodology on the travel demand modeling activities is provided in **Appendix A**. In addition, the results of the modeling activities detailed in this section are provided in Sections 5 and 6 herein.

3.1.1 Review and Refinement of Traffic Analysis Zones

The first step in the process to evaluate the transit options in the South Fulton Parkway was to review the traffic analysis zones (TAZs) along the South Fulton Parkway in the study area. Many of the TAZs along the corridor were not compatible with the road network system and were also very large in size. As a result, the travel demand model would be less responsive to changes in the land use and transit alternatives for the testing. Thus, the TAZs were redesigned to be smaller and more reflective of the corridor.

3.1.2 Allocation of Socio-Economic Data

The next step was to prepare the procedures to allocate the socio-economic data to the new TAZs. The ARC Envision6 RTP 2030 socio-economic forecasts at the TAZ level were used as the base for this effort. The initial allocation of the socio-economic data was based on a proportional redistribution of data resize to resized TAZs. The allocation was reviewed and refined based on the location of the new TAZs in relation to the proposed development along the South Fulton Parkway. Some of the TAZs closer to the parkway were assigned more employment while other TAZs located further away from the facility were assigned more population. The original ARC distribution of households by size and income and employment by type were used initially for the existing and new TAZs. Based on a review of the revised forecasts, slight adjustments were made to the distribution of employment to reflect the proposed development scenarios.

This process was performed for the following three land use assumptions:

- 2030 ARC Envision6 RTP Forecasts
- Scenario 1 – Trend Scenario
- Scenario 2 – Intensive Development Scenario

As part of a separate task for this effort, population and employment forecasts were reviewed and revised for the study area. Two new growth scenarios were developed for the study area. Scenario 1 represents the review of the current growth trends in the study area and the development of a revised set of growth forecasts based on trend analysis. Scenario 2 included additional development based on current development plans for the Parkway South area. Documentation on the methodology to develop the revised population and employment forecasts for the study area is documented in Section 4. **Table 3-1** lists the 2005 and 2030 population and employment forecasts in the study area for the current ARC travel demand model.

Table 3-1: Socio-Economic Forecasts by Scenario for Study Area

Scenario	Population	Households	Employment
ARC 2005 Estimates	148,446	56,711	51,895
ARC Envision6 RTP (2030)	206,781	83,704	114,615
Net Change b/t 2005 and 2030	*58,335*	*26,993*	*62,720*
Percent Change b/t 2005 and 2030	*39.3%*	*47.6%*	*120.9%*
Scenario 1 - Trend Analysis (2030)	332,539	134,610	182,250
Net Change b/t Envision6 and Scenario 1	*125,758*	*50,906*	*67,635*
Percent Change b/t Envision6 and Scenario 1	*60.8%*	*60.8%*	*59.0%*
Scenario 2 – Intensive Development (2030)	*361,915*	146,503	237,758
Net Change b/t Envision6 and Scenario 2	*155,134*	*62,799*	*123,143*
Percent Change b/t Envision6 and Scenario 2	*75.0%*	*75.0%*	*107.4%*

3.1.3 Reassigning Data from Other Portions of the Atlanta Region

The project team met with ARC staff to discuss the future growth scenarios. ARC has a policy of maintaining regional control totals for population and employment forecasts. Since the Scenarios 1 and 2 add more development and growth to the study area, growth had to be subtracted from other areas in the Atlanta Region to maintain the regional control totals. It was determined that population and employment from counties on the south side of the region, which include Carroll, Clayton, Coweta, Douglas, Fayette, Henry, and Paulding Counties, would be impacted by the re-allocation of growth to the South Fulton study area. This methodology was approved by ARC staff.

3.1.4 Refine Model Structure

The highway and transit networks were revised to reflect the change in the zonal geography. Centroid connectors were revised for the existing TAZs that were modified and centroid connectors were added for the new TAZs. The model setup and scripts were then revised to reflect the change in the zonal geography and the addition of the TAZs. A variety of data files were renumbered to accommodate the additional TAZs.

4.0 DEFINITION OF ALTERNATIVES

4.1 Development of Land Use Scenarios

To assess the feasibility of various transit technologies along the corridor, three land use scenarios were tested. They include ARC's Travel Demand Model scenario, a current Trend scenario, and an Intensive Development scenario.

In the baseline conditions report it was determined that population and employment projections from the ARC model may be low, given recent trends and expected development. Given the largely undeveloped (59 percent) nature of the study area, transit feasibility will vary considerably depending on the intensity of future development. To test for differing levels of development two scenarios were modeled in addition to the ARC Travel Demand Model scenario. One was based upon current development trends and the other on future plans for the corridor.

The ARC model is based largely upon historic patterns. Since the area will likely break from these patterns, testing just this scenario would prove inadequate. The study area remains one of the few undeveloped areas in the region in close proximity to the Downtown/Midtown Central Business District and H-JAIA. Historically, it has been an area characterized by extensive suburban growth and not experienced the same degree of development interest as the northern portions of the Atlanta region.

With the construction of the South Fulton Parkway, mobility and travel times have been markedly improved, making the area more attractive to development. This is evident in the pace of large-scale Developments of Regional Impact (DRIs) in recent years. There is a firm commitment to control access points to the parkway promoting faster speeds through limited access. Given the area's location advantages, improved/continued access and mobility, and available developable land, it is development will occur here at greater than historic levels. It is also likely that development in the study area will attract development that would have occurred in surrounding areas.

4.1.1 Baseline for Land Use Scenario Development

As a basis for the development of the land use scenarios, the population and employment projections from the ARC travel demand model for traffic analysis zones (TAZs) in the study area were utilized to identify land use densities.

The scenario shows modest growth in the study area between 2005 and 2030. The following **Table 4-1** describes the overall population and employment growth within the study area. This is shown geographically in **Figure 4-1** and **Figure 4-2**.

Table 4-1: Population and Employment Growth in Current Travel Demand Model

Total Population Growth (2005-2030)	Percentage Growth of Population	Total Employment Change (2005-2030)	Percentage of Employment Growth
58,335	39%	62,720	121%

Source: ARC

Figure 4-1: Current ARC Model Population Densities

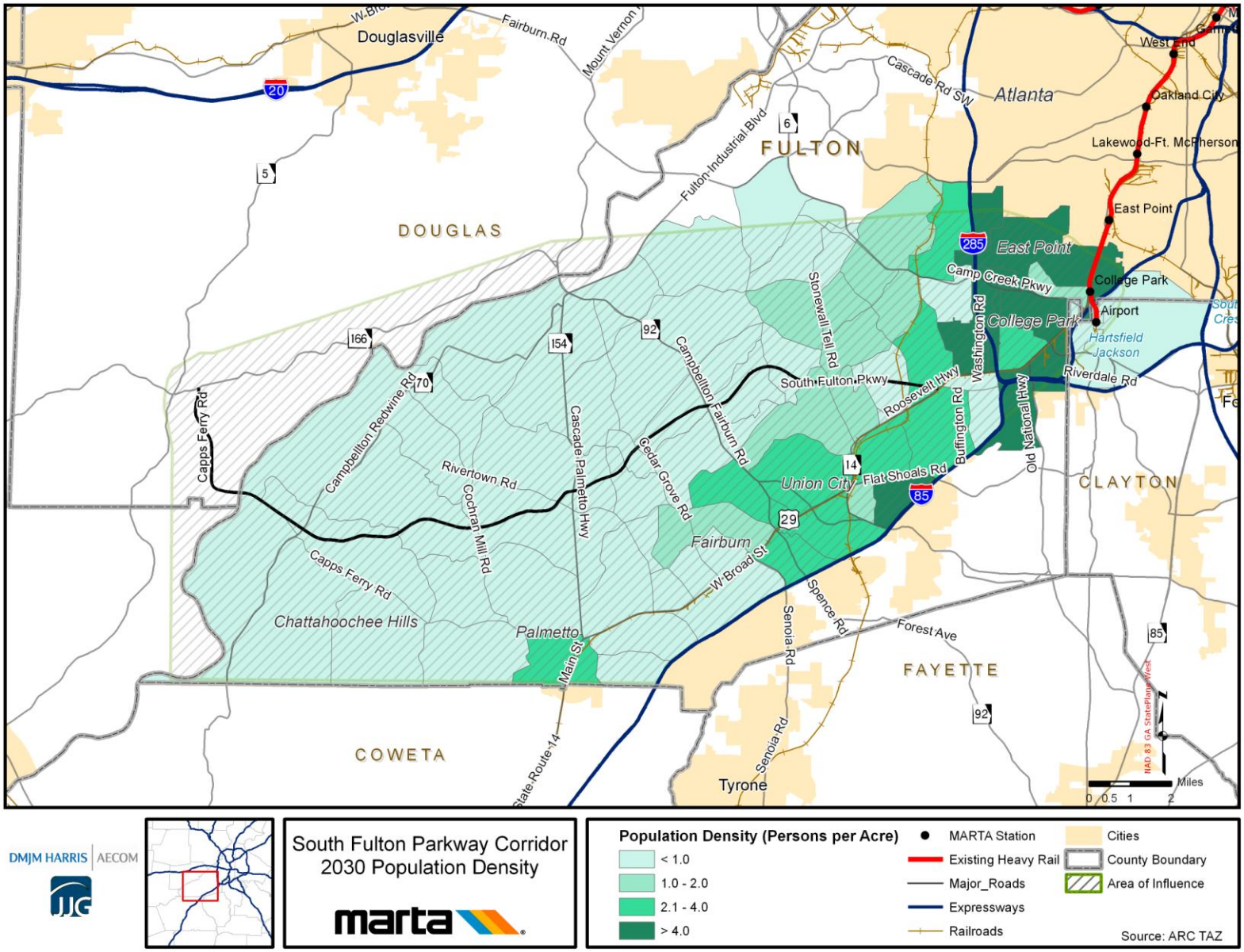
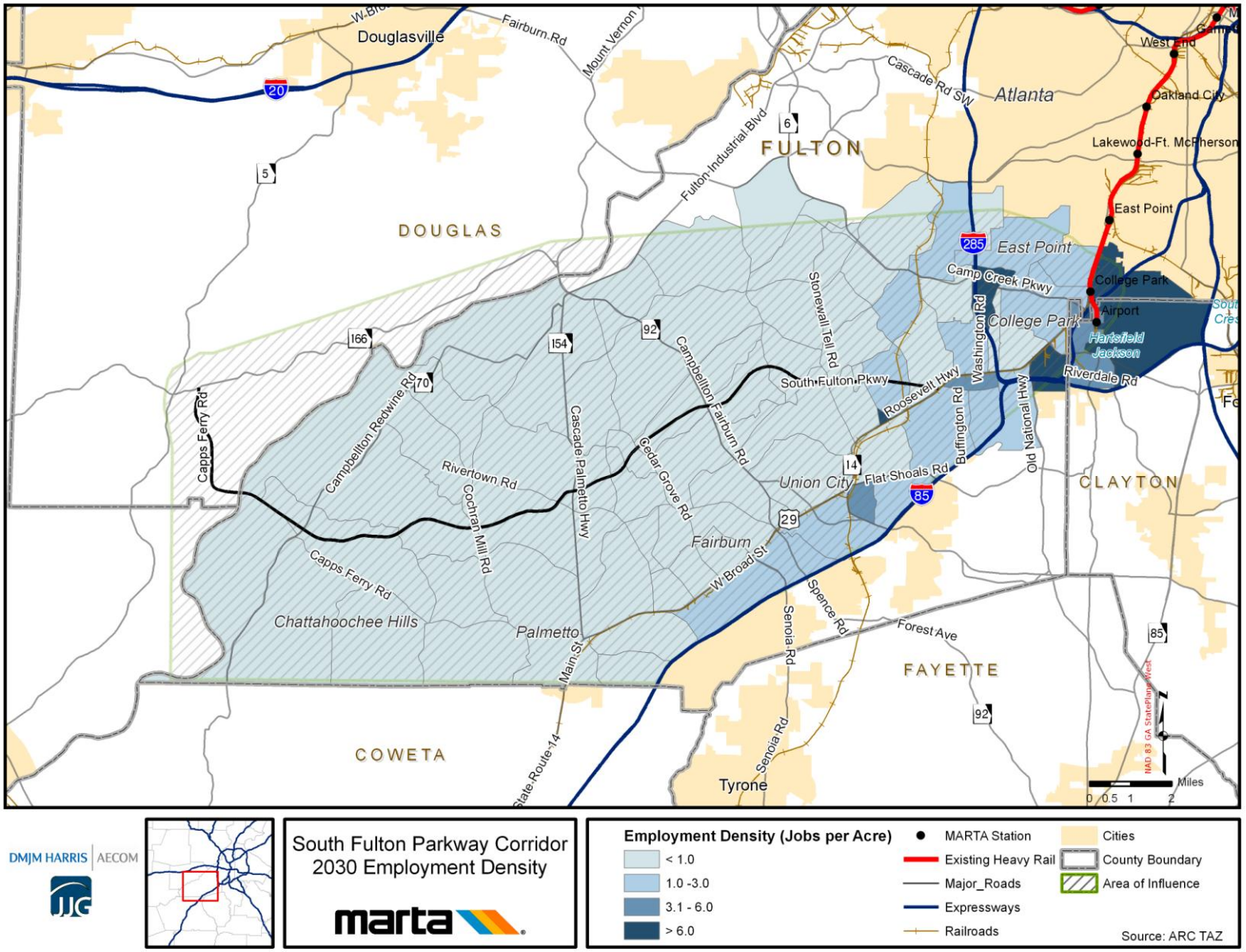


Figure 4-2: Current ARC Model Employment Densities



A significant amount of the population growth is shown in the eastern portion of the study area. Concentrations are found in the cities of College Park, East Point, Atlanta, Fairburn, Union City, and Palmetto. Employment growth is also heavily concentrated in the eastern portion of the study area. Concentrations are found in East Point and College Park. The significance of H-JAIA as a major employment center is also shown.

4.2 Profiles of Land Use Scenarios

In order to forecast ridership projections for transit alternatives along the South Fulton Parkway corridor, two land use scenarios were developed through the use of ARC population projections, market trends, and planned development along the corridor - the Trend and Intensive Development land use scenarios. The details of each of these scenarios are provided in the section that follows.

4.2.1 Trend Scenario

The population and employment forecasts for this scenario are based upon those of ARC's model, but further refined to reflect recent development. Population and employment increases were scaled and distributed based on several additional inputs. These inputs include:

- Revised area-wide population forecasts (the methodology for this is described in **Appendix B**.
- Existing development trends between 2000 and 2009, based on certificate of occupancy issuances, building permits, field observations, and stakeholder interviews. The revised population and employment growth was subjectively and objectively allocated to TAZs based upon these factors.
- Proposed development approved through the DRI process requirements, but not yet built.

The scenario shows significant growth in the study area between 2005 and 2030. **Table 4-2** details the overall population and employment growth within the study area. This is shown geographically in **Figure 4-3** and **Figure 4-4**. The general distribution of employment and population growth is similar to ARC's model, with a significant share found in the eastern portion of the study area.

Table 4-2: Population and Employment Growth, Trend Scenario

Total Population Growth	Percentage of Population Growth	Total Employment Growth	Percentage of Employment Growth
184,093	124%	130,355	251%

Figure 4-3: Trend Scenario Population Densities

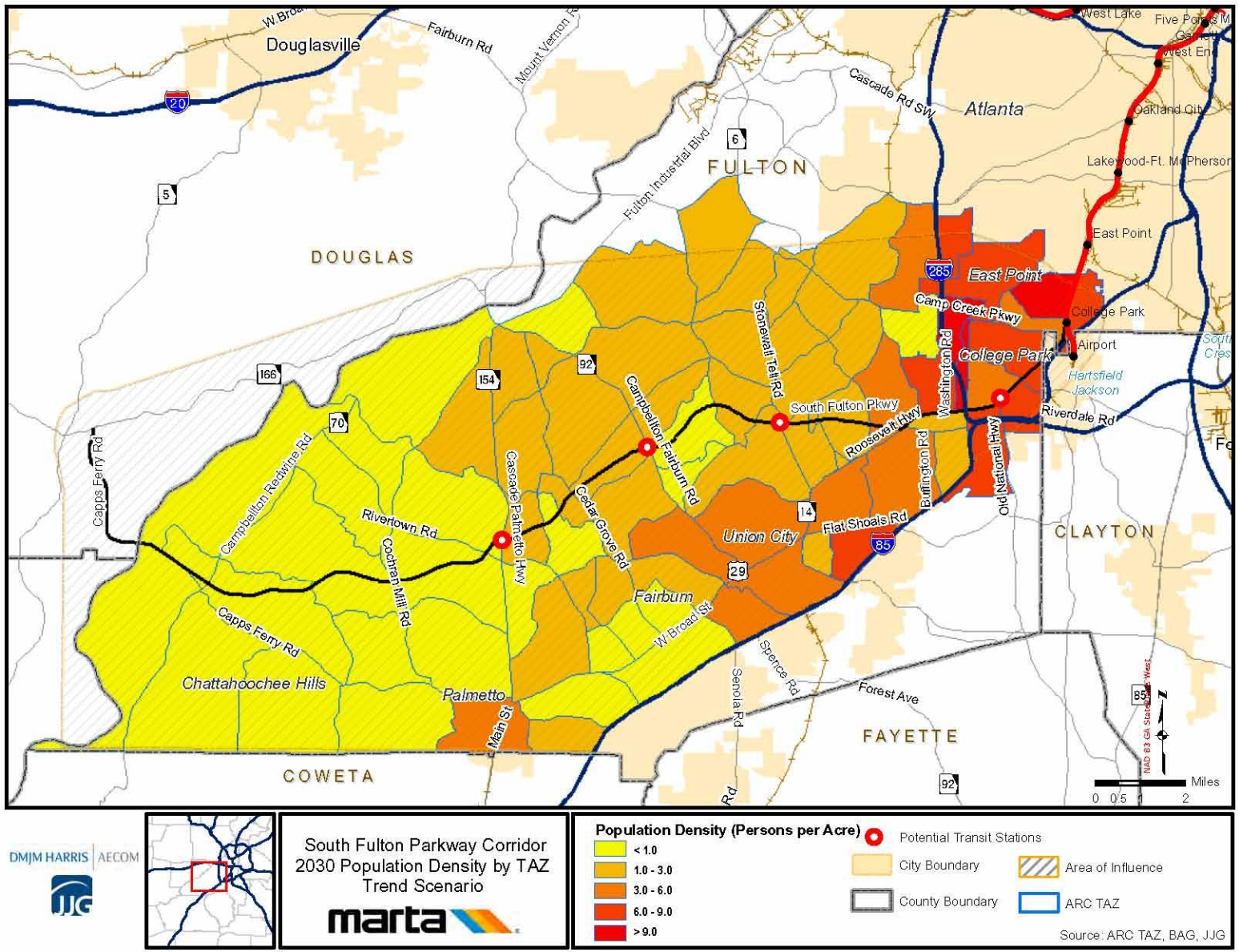
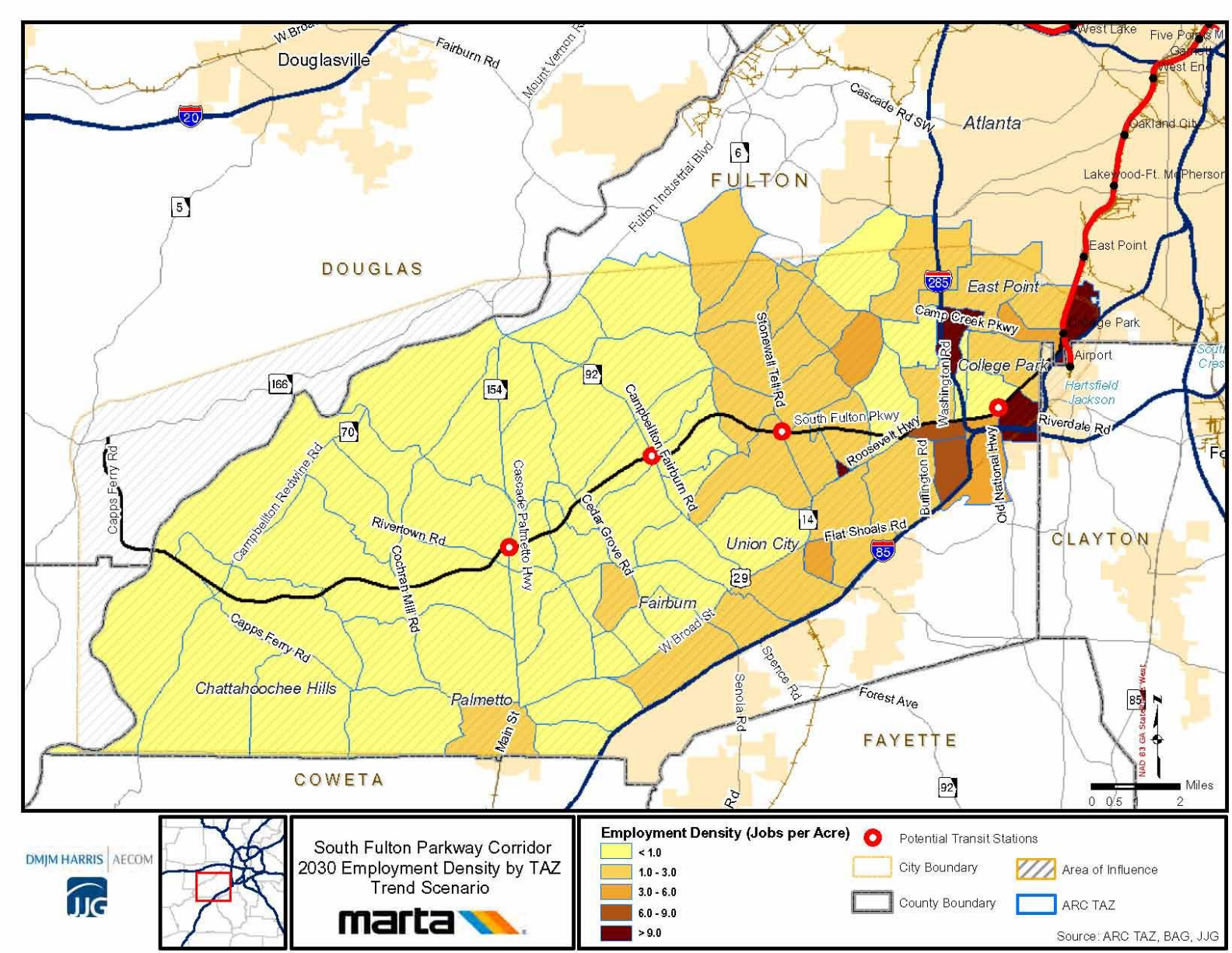


Figure 4-4: Trend Scenario Employment Densities



4.2.2 Intensive Development Scenario

The Intensive Development scenario was developed using the Trend Scenario as a base, with additional growth added from seven high-density mixed-use nodes along the parkway. This scenario embodies the corridor vision shared by some major stakeholders that a series of compact developments be located at major intersections.

Plans for six of these nodes were taken from the 2008 Parkway South Economic Development Master Plan and translated into population and employment projections. The plan was developed by private sector interests in cooperation with the South Fulton Parkway Alliance. It has the support of Union City officials who view it as a future land use plan for the city. It incorporates a large portion of the corridor from Stonewall Tell Road to Cascade-Palmetto Highway.

The plan is conceptual; therefore, some assumptions were made to determine corresponding population and employment figures. To determine 2030 projections, the plans were analyzed at full build-out. To translate the plan to projections, the following process and assumptions were made:

- A typical mix of development types for each land use category shown was estimated. For example the Mixed-Use Residential Focus category was estimated to be 5 percent office, 10 percent retail, 30 percent multi-family, 30 percent townhomes, and 25 percent single-family.

- For each development type an average coverage of square feet or dwelling units per acre was assumed. For example, 10,000 square feet of retail per acre or 12 units per acre for townhomes.

- For each land use, dwelling units per acre or square footages per acre for non-residential land uses was calculated.

- By using ARC model's 2030 estimate of 2.47 people per household and typical employee counts by square footage of non-residential land uses projections were then derived for population and employment increases that would result from the plan. For example, five acres of townhomes at 12 units per acre with an average household size of 2.47 would equal a population of 148.

- Once the land use plans were translated to projections, they were compared to TAZ boundaries and allocated geographically. Since many existing TAZs were large in size and incompatible with the road network they were split, with population and employment reallocated to them accordingly. In total 15 TAZs were split resulting in 19 TAZs being added to the zonal geography.

In addition to the six development nodes found in the plan, one other node was added at Old National Highway. This node was identified by area stakeholders as a prime site for a future TOD. The area is expected to develop as a mixed-use center with a residential focus. To maintain consistency in the analysis with the Parkway South plan, the same land use mix assumptions were used. It was assumed this site would represent the mix of the Mixed-Use Residential Focus land use category. To determine the corresponding area of the development of the typical station characteristics, the typical walking distance of a quarter-mile from a transit node associated with TOD was used. Lastly, the resulting employment and population projections were allocated geographically in the appropriate TAZ.

The Intensive Development scenario shows significant growth throughout the study area, particularly in areas adjacent to the parkway. **Table 4-3** details the overall population and employment growth in the study area. This is displayed geographically in **Figure 4-5** and **Figure 4-6**. The general distribution of employment and population, like the other scenarios, shows the majority of growth in the eastern portions of the study area.

Table 4-3: Population and Employment Growth, Intensive Development Scenario

Total Population Growth	Percentage of Population Growth	Total Employment Growth	Percentage of Employment Growth
213,469	144%	185,863	358%

Figure 4-5: Intensive Development Scenario Population Densities

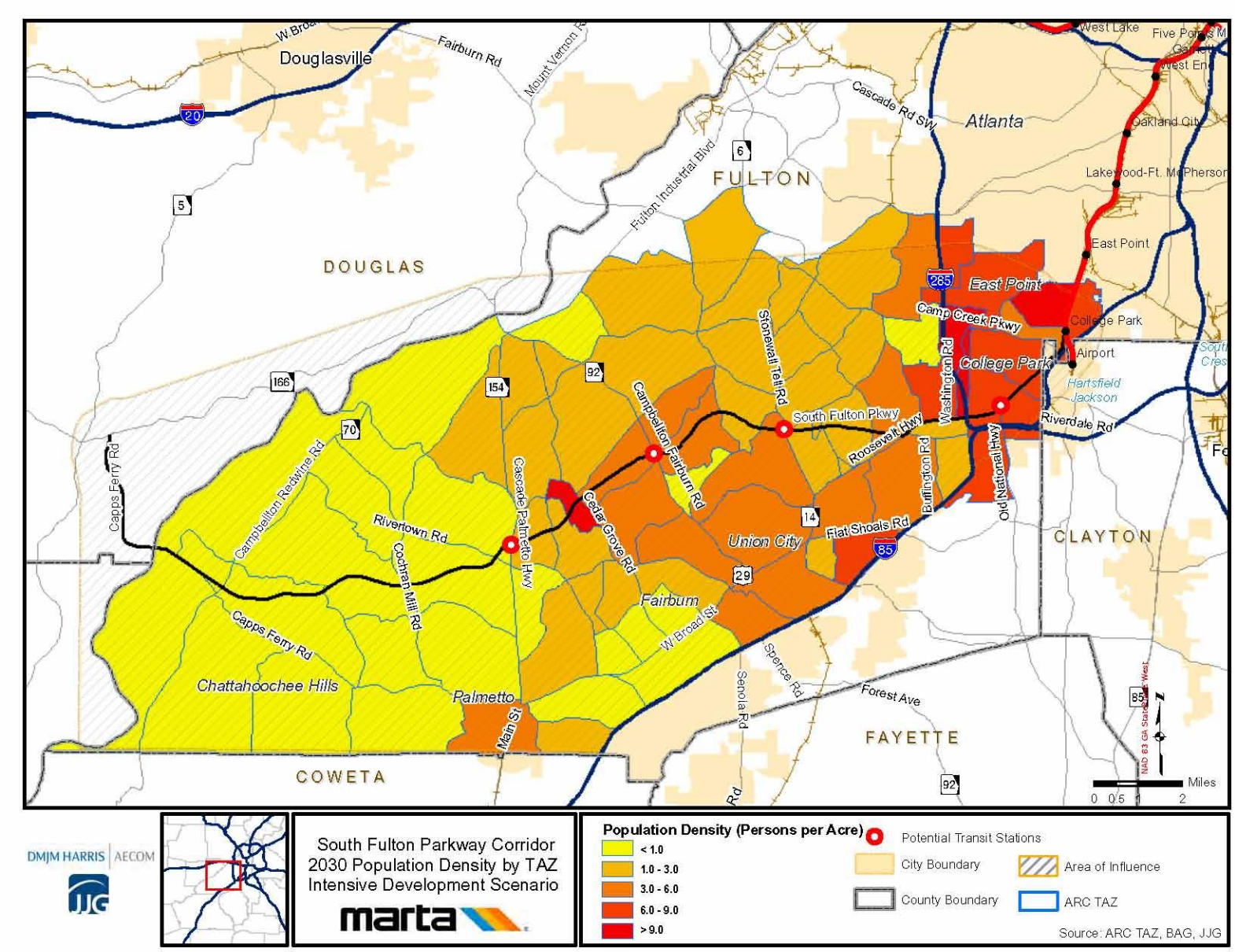
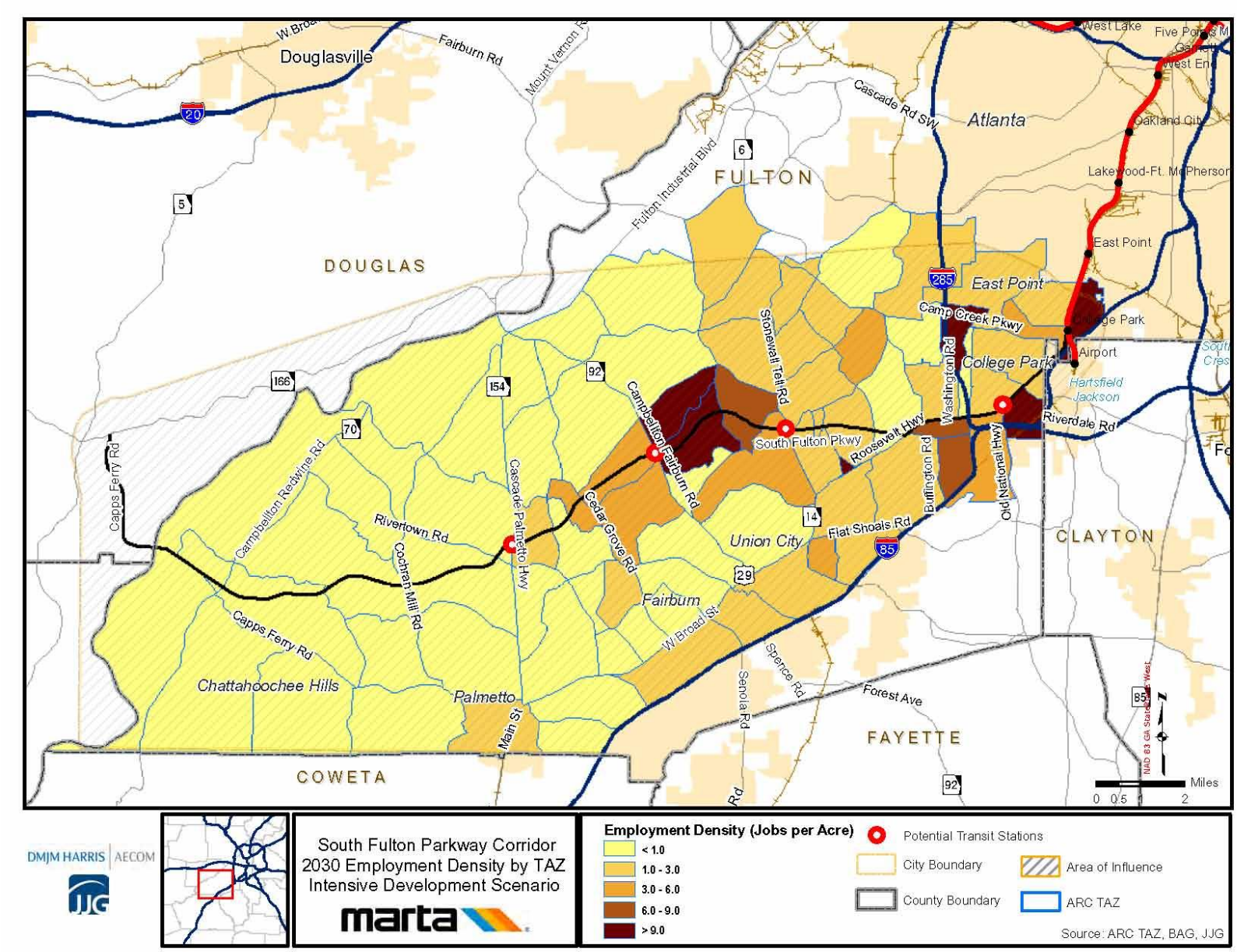


Figure 4-6: Intensive Development Scenario Employment Densities



4.3 Context for Alternatives Development

In order to properly gauge the needs of the study area, a full range of service types were initially considered for the South Fulton Parkway Corridor, which included:

Table 4-4: Definition of Service Types Initially Considered

Service Type	Description
Local Bus	A bus service that picks up and discharges passengers at frequent, designated places (stops) on city streets.
Express Bus	A bus service with a limited number of stops, either from a collector area directly to a specific destination or in a particular corridor with stops en route at major transfer points or activity centers. Express bus service usually uses freeways or busways where they are available.
Enhanced Bus	Express or local bus service with a system of traffic controls in which buses are given special treatment over general vehicular traffic (e.g., bus priority lanes, preemption of traffic signals, or adjustment of green times for buses.)
Bus Rapid Transit (BRT)	A bus operation providing service similar to rail transit, but at a lower cost. BRT systems are characterized by several of the following components: exclusive transitways, enhanced stations, easily identified vehicles, high-frequency all-day service, simple route structures, simplified fare collection, and ITS technologies. Integrating these components is intended to improve bus speed, reliability, and identity
Light Rail Transit (LRT)	As defined by the TRB Subcommittee on Light Rail Transit, "a metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive rights-of-way at ground level, on aerial structures, in subways, or occasionally, in streets, and to board and discharge passengers at track or car floor level."

Source: Transportation Research Board (TRB) Transit Cooperative Research Program (TCRP), Transit Capacity and Quality of Service Manual—2nd Edition, 2009

The following findings, based on existing and planned corridor conditions as well as stakeholder input, provide the context for developing the initial alternatives to be tested to gauge potential travel demand for difference service types.

- **Local, frequent stop bus service is not appropriate along South Fulton Parkway** – Given the sparse development patterns and high travel speeds, and lack of pedestrian facilities along the corridor, to implement local bus service in the near future would be highly problematic. In fact, development along the corridor throughout its length is hardly visible from the roadway. GDOT and Fulton County have collectively worked to preserve the right-of-way along South Fulton Parkway.
- **Routing flexibility is critical** – Much of the land along the corridor, including at major intersections, remains vacant. The desire to limit access and preserve right-of-way along the corridor was specifically expressed by GDOT, ARC, and Fulton County during stakeholder interviews. As such, routing flexibility to access stations off of the facility is a necessity because it provides local jurisdictions more development options to develop higher-density, transit supportive nodes while minimizing the potential for operational conflicts along the roadway.
- **Commuter service is preferred by stakeholders and initially appears most favorable** – The proliferation of low-density residential development in the area and, conversely, the lack of employment in the area has created a 90% share of external trips during the peak period – most to areas accessible by the MARTA rail system

(Downtown, Midtown, et al.). Furthermore, while local jurisdictions identified the major intersections along South Fulton for nodal development, planned development throughout the rider catchment areas along the corridor is more of the low-density suburban residential development that currently exists.

- **The typical transit patron will be a choice rider** – The TCRP identifies two primary types of transit users – captive riders and choice riders. Captive riders are those that do not have a private vehicle available or cannot drive (for any reason) and who must use transit to make the desired trip. Conversely, choice riders are those that have means of transportation other than transit readily available – such as a private automobile. Other than the areas in the eastern portion of the study area, demographic characteristics along the corridor indicated a need for an alternative that would be more competitive to the private automobile and, thus, attractive to the choice rider.
- **Rail technology is not preferred or supported by stakeholders** – In conjunction, overwhelming stakeholder opposition and future land uses within the area indicate that a rubber-wheeled technology was more favorable than rail technology to be carried forward.

Given these factors, the three transit service types identified as potential alternatives were express bus, enhanced bus, and BRT. A more detailed description of these service types is provided below primarily because they were rubber-wheeled technologies that allowed routing flexibility to station areas and represent a logical progression of service enhancement as the corridor matures.

It should be noted that while light rail LRT is not being tested as a technology alternative, it could still be a long-term alternative as transit ridership increases and development along the corridor intensifies. In summary, bus transit was considered for the following factors:

- **Flexibility.** Bus routes can change and be enhanced (with bus priority systems or when needed. For example,
  - Routes can change if a roadway is closed;
  - Destinations can change due to development activity;
  - Or demand changes so that enhancements are warranted.
- **Requires no special facilities.** Buses can use existing roadways and general traffic lanes could potentially be converted into HOV lanes and/or busways through coordination with GDOT and ARC.
- **More suitable for lower density land uses and dispersed nodal development.** Also, buses can circulate to provide convenient walk access within a specific area.
- **Several routes can converge onto one busway, reducing the need for transfers.** For example, buses that start at several suburban communities can all use a busway to a city center.
- **Typically lower capital costs than rail technology.** While further analysis is needed as a more detailed transit concept for the corridor materializes, TPB Concept 3 cost estimates developed in 2008 assumed the following costs for both technologies:
  - High capacity regional rail - $45-75 million per mile
  - Arterial rapid bus - $3-5 million per mile

5.0 INITIAL TESTING OF ALTERNATIVES

5.1 Profiles of Transit Alternatives

5.1.1 Station Areas

Initial station areas along the corridor were identified primarily based on the following two characteristics:

- Vehicular access to park-and-ride facilities at station areas under each transit alternatives; and
- Potential for transit oriented development (TOD) based on accessibility and land use initiatives from the local governments.

The following section describes the nodes identified as initial station areas along with the rationale for their selection.

Campbellton-Palmetto Highway (SR 154)

Rationale:

- Westernmost major intersection along the corridor and end of US 29 along South Fulton Parkway
- Development along remainder of South Fulton Parkway west of intersection primarily very low density and roadway reduces to two lanes
- Accessibility to Fairburn, Palmetto, Chattahoochee Hills and, to a lesser degree, Douglas County residents
- Identified by Fulton County Future Land Use Plan as a future Live-Work-Play node
- Vacant land at intersection, allows flexibility for TOD and/or location of park-and-ride facility

Campbellton-Fairburn Road (SR 92)

Rationale:

- Most heavily traveled roadway intersecting South Fulton Parkway and, therefore, presents access to residents of Douglas County, Fairburn, and residential subdivisions in close proximity to node
- Only intersection along corridor currently characterized by commercial development center, which provides opportunity for existing development to serve as a catalyst for BRT
- Located within area subject of Parkway South Development Plan
- Identified by Fulton County Future Land Use Plan as a future Live-Work-Play node
- Other than commercial center, vacant land at intersection allows flexibility for TOD and/or location of park-and-ride facility

Stonewall Tell Road

Rationale:

- Minor collector that provides access to residential subdivisions in close proximity to node.
- Located in center of Parkway South Development Plan and subject to annexation and development proposals by Union City
- Identified by Fulton County Future Land Use Plan as a future Live-Work-Play node
- Vacant land at intersection allows flexibility for TOD and/or location of park-and-ride facility

Old National Highway

Rationale:

- Planned extension of Old National Highway to Camp Creek Parkway increased connectivity to nearby activity centers along both roadways
- Opportunity presented to further initiatives from the Old National Livable Centers Initiative (LCI) Study

It should be noted that while these station areas provide auto accessibility (based on traffic volumes), the actual station areas carried forward will be dependent on local decisions as transit service develops.

5.1.2 Service Types and Routes

Given the characteristics detailed herein, the following represent the alternatives identified for initial testing:

- **Express Bus 1 from SR 154 to College Park MARTA Station** - This alternative features an express bus route of 14.8 miles in length from SR 154 to the College Park MARTA Station, along South Fulton Parkway and Roosevelt Highway. Because the Stonewall Tell and Old National nodes are currently undeveloped and characterized by lower traffic volumes, the stops modeled for this alternative are limited to the nodes at Cascade-Palmetto Highway (SR 154) and Campbellton Fairburn Road (SR 92). Service is limited to peak hours. A map of this alternative is provided in **Figure 5-1**.
- **Express Bus 2 from SR 154 to Downtown** - This alternative has a route length of 24.4 miles from SR 154 to Downtown Atlanta via Interstate 85. This alternative was considered to compare the potential benefits of providing access directly to Downtown Atlanta as opposed to requiring a transfer at the College Park MARTA Station. However, because no transfer to MARTA is required, it was assumed that the travel time savings as a result would allow for a stop at Stonewall Tell Road in addition to the stations at Cascade-Palmetto Highway (SR 154) and Campbellton-Fairburn Road (SR 92). A map of this alternative is provided in **Figure 5-2**.
- **Bus Rapid Transit from SR 154 to College Park MARTA Station** - This alternative has a route length of 14.8 miles from SR 154 to the College Park MARTA Station, along South Fulton Parkway and Roosevelt Highway. As a major transit capital investment that would build upon the enhanced bus alternative, it was assumed it would operate throughout the day and serve all four station areas along the corridor

with the same initial headway as the enhanced bus alternative. A map of this alternative is provided in **Figure 5-3**.

- **Enhanced Bus from Stonewall Tell Road to College Park MARTA Station** - This alternative has a route length of 7.4 miles from Stonewall Tell Road to the College Park MARTA Station, along South Fulton Parkway and Roosevelt Highway. Unlike the express bus alternatives, this service would operate throughout the day to serve the more developed portions of the corridor. As such, the stops along this alternative would also include Old National Highway and Stonewall Tell Road. Also, because this alternative would require a greater capital investment for transit infrastructure (signal preemption, queue jumpers, etc.), it was assumed that it would operate at a higher frequency than the express bus alternatives. A map of this alternative is provided in **Figure 5-4**.

Table 5-1 summarizes the alternatives initially tested. It should be noted that the operational characteristics noted below are conceptual and developed solely for modeling purposes.

Table 5-1: Alternatives Subject to Initial Testing

Mode	Limits	Stations	Service Characteristics
Express Bus 1	SR 154 to College Park MARTA Station	• SR 154 • SR 92	Peak hour – 30 minute headways
Express Bus 2	SR 154 to Downtown via I-85	• SR 154 • SR 92 • Stonewall Tell Road	Peak hour – 30 minute headways
Enhanced Bus	College Park MARTA Station to Stonewall Tell Road	• Stonewall Tell • Old National Highway	Peak hour – 15 minutes Off Peak – 30 minutes
Bus Rapid Transit	SR 154 to College Park MARTA Station	• SR 154 • SR 92 • Stonewall Tell Road • Old National Highway	Peak hour – 15 minutes Off Peak – 30 minutes

5.2 Comparative Results

The ARC travel demand model outputs were utilized to summarize the transit patronage in the corridor. The daily line volumes for transit alternatives tested at alternative land use scenarios and are provided in **Table 5-2**. The express bus alternatives performed poorly under either scenario with 100 or fewer daily riders. While shorter headways and more stops could result in slightly ridership projections, it is reasonable to assume that these increases would be moderate. The enhanced bus attracted between 440 and 670 daily boardings. The BRT alternative generated the highest ridership with 1,500 and 2,300 daily boardings.

Table 5-2: Daily Line Volumes from Initial Testing

Transit Alternative	Current ARC Model	Trend Scenario	Intensive Development Scenario
Express Bus 1	20	50	60
Express Bus 2	60	80	100
Enhanced Bus	440	660	670
BRT	1,520	2,290	2,180

Figure 5-1: Express Bus 1 Alternative – SR 154 to College Park MARTA Station

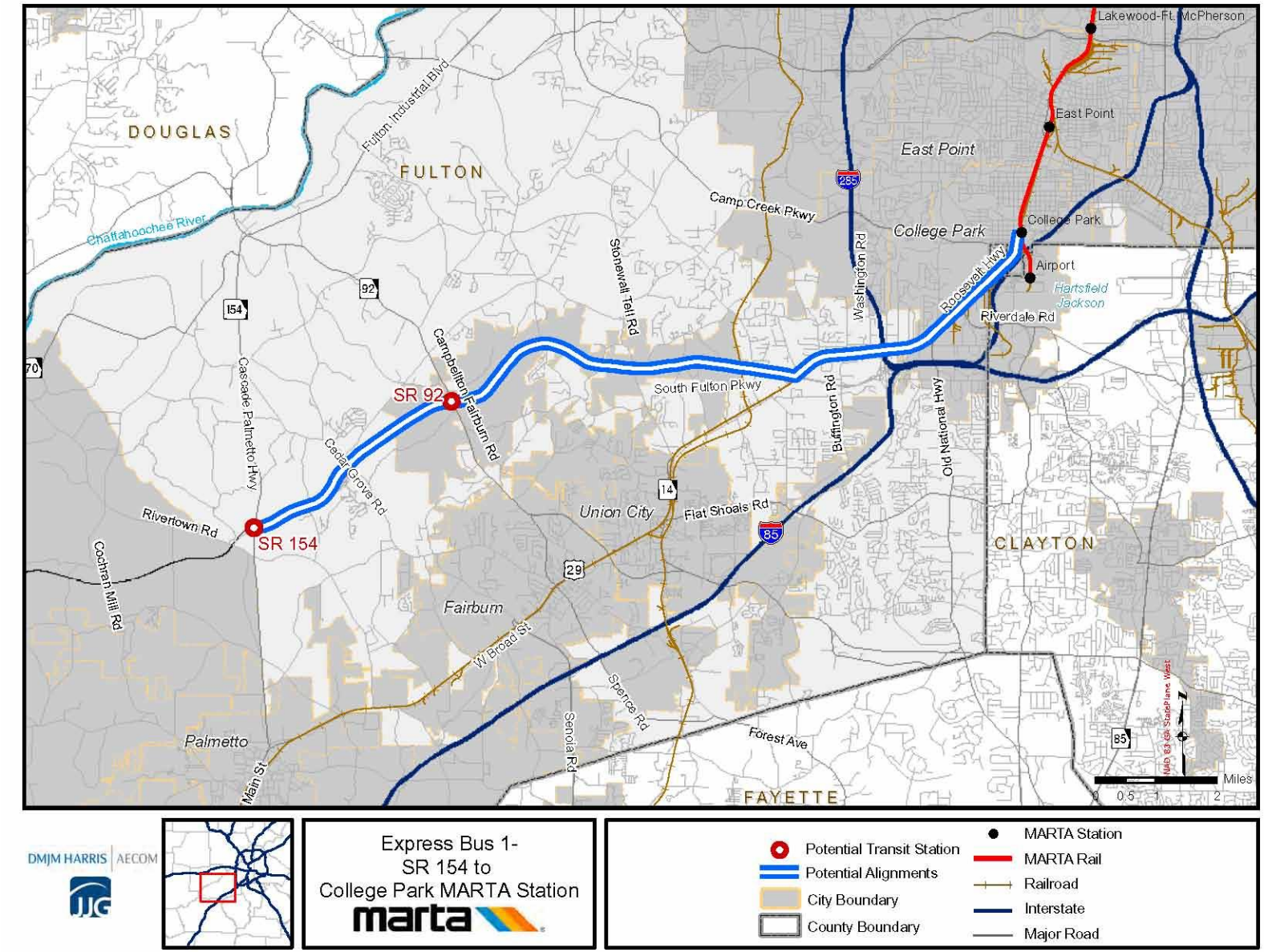


Figure 5-2: Express Bus 2 Alternative – SR 154 to Downtown

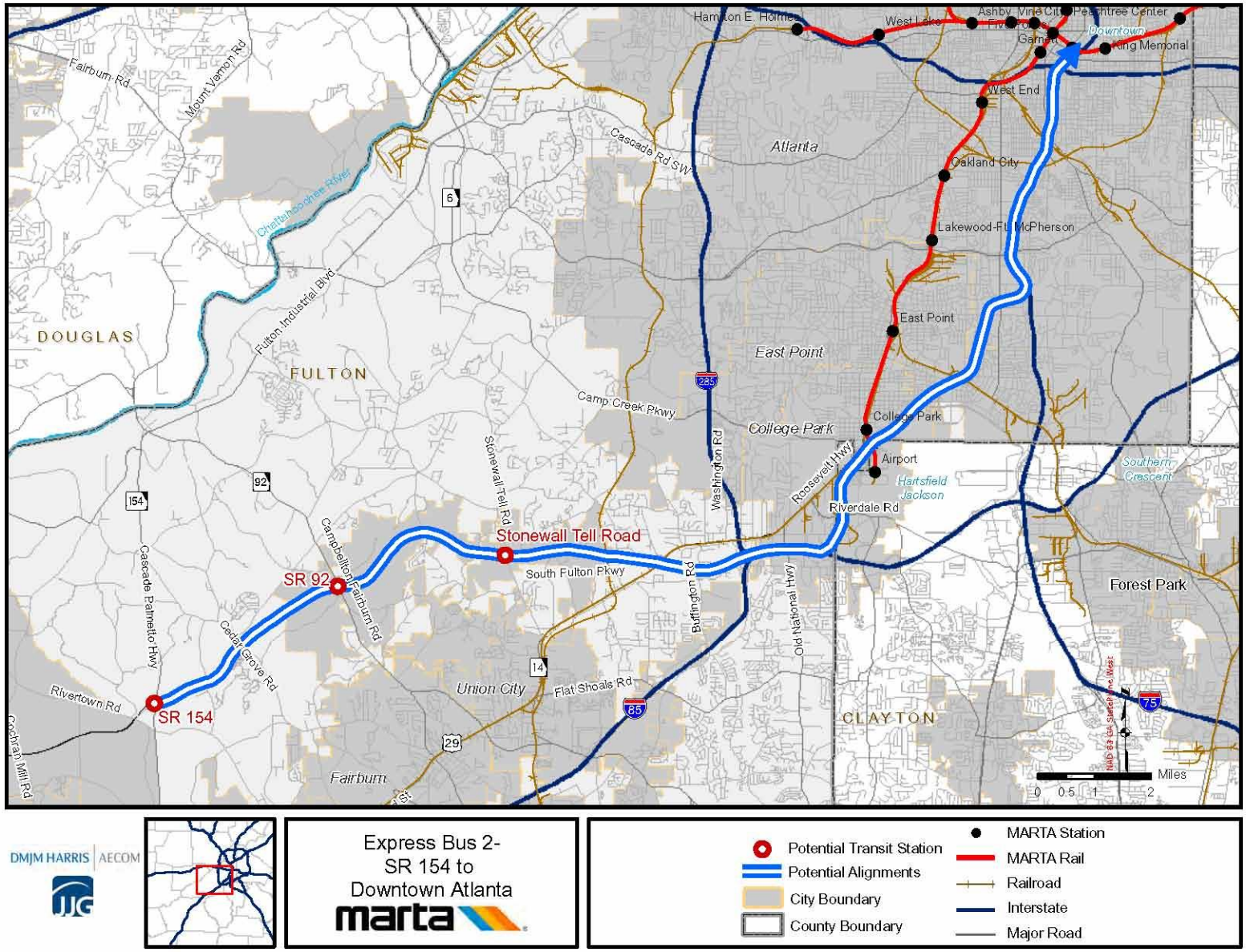


Figure 5-3: Bus Rapid Transit Alternative– SR 154 to College Park MARTA Station

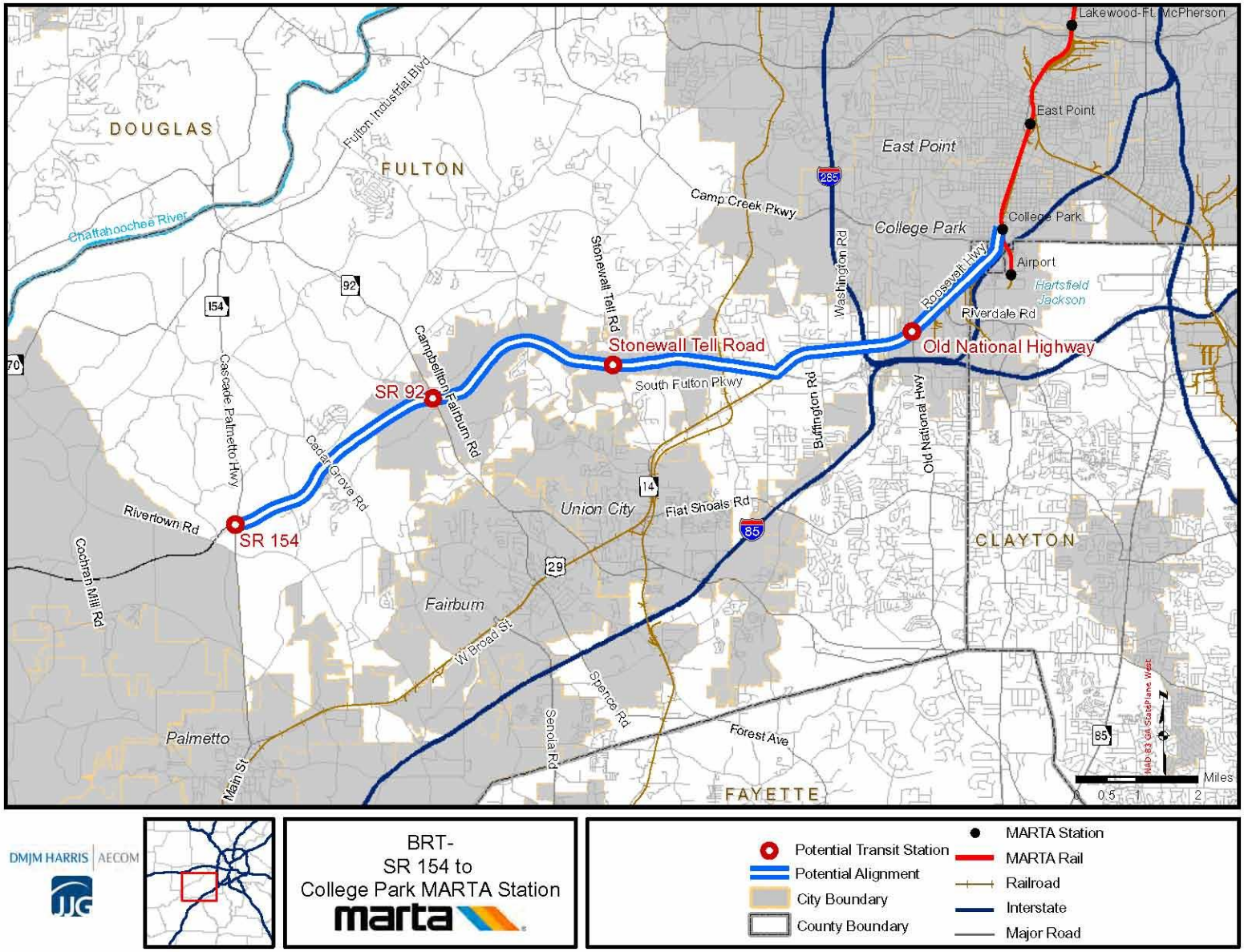
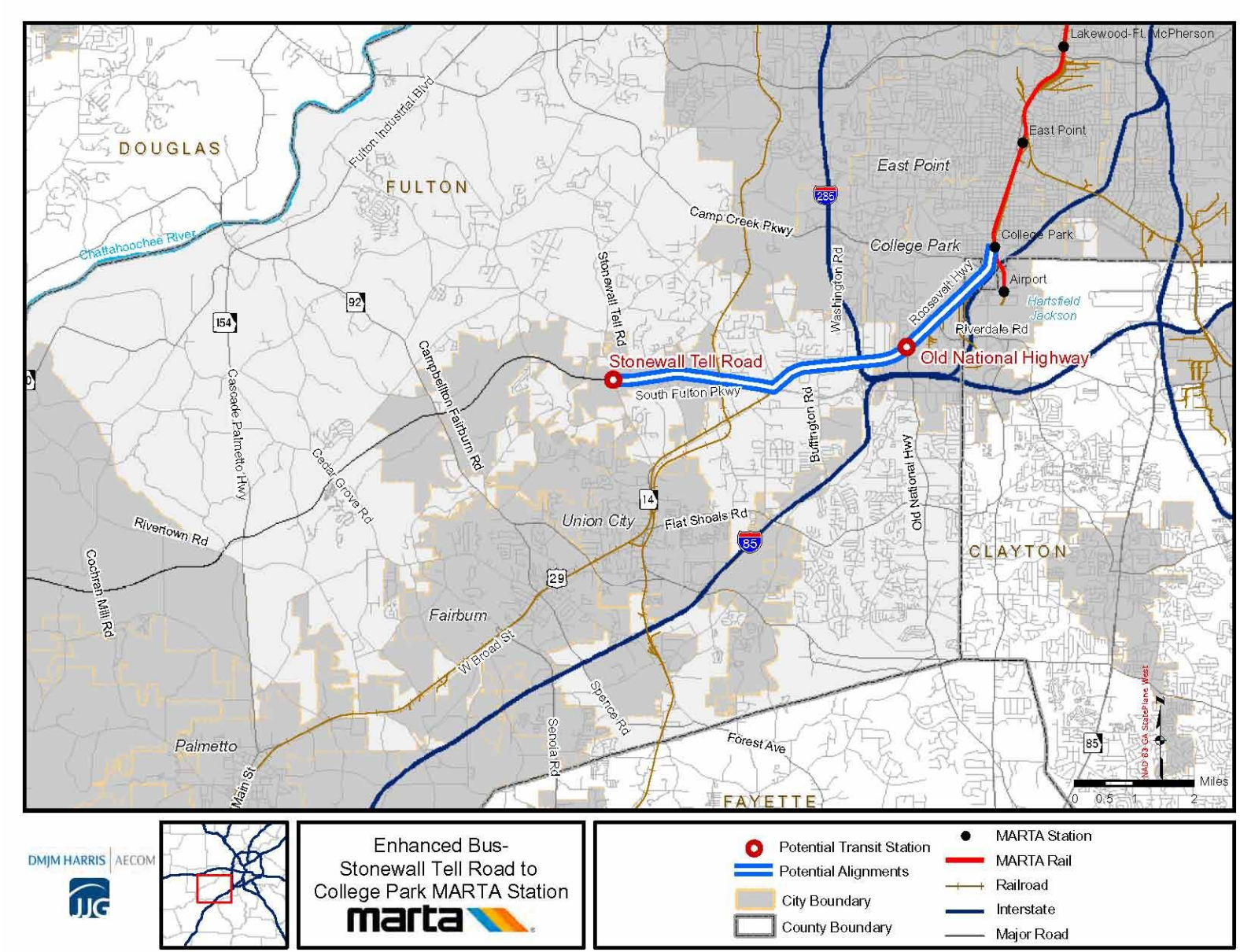


Figure 5-4: Enhanced Bus Alternative – Stonewall Tell Road to College Park MARTA Station



Tables 5-3 shows the daily boardings by station location for each land use scenario developed for alternatives analysis. Many current corridor riders utilize existing MARTA service to complete trips as evidenced by the high number of boardings at the College Park station. The best performing station in the study area was at Old National Highway where daily boardings ranged between 300 to 435 persons.

Table 5-3: Daily Station Boardings of Initial Alternatives

Station	Express Bus 1	Express Bus 2	Enhanced Bus	BRT
Current ARC Model				
SR 154	5	30	-	210
SR 92	5	0	-	185
Stonewall Tell Road	-	5	35	95
Old National Highway	-	-	205	320
College Park	10	-	200	720
Downtown	-	30	-	-
Trend Scenario				
SR 154	20	20	-	315
SR 92	5	10	-	300
Stonewall Tell Road	-	10	75	185
Old National Highway	-	-	300	425
College Park	20	-	290	1,065
Downtown	-	40	-	-
Intensive Development Scenario				
SR 154	25	20	-	285
SR 92	20	25	-	325
Stonewall Tell Road	-	30	95	220
Old National Highway	-	-	300	435
College Park	-	-	280	920
Downtown	20	30	-	-

6.0 REFINED TESTING OF ALTERNATIVES

6.1 Refined Alternatives to be Tested

Based on the comparative results of alternatives testing, implications for refined testing follow:

- While the Downtown express bus performs best of the two express bus alternatives tested, the level of express bus ridership projected within the corridor is very low. While increasing the number of stops and frequency may improve ridership, the ridership totals of express bus service in comparison to the other modes indicate that refined testing through use of the travel demand model is not warranted. However, it does reveal that the demand for express bus services may need to be measured through a mechanism other the travel demand model (such as preference surveys).
- While relatively low, projected ridership for the enhanced bus service was significantly higher than that of express bus. As indicated by the projected station boardings, this is primarily due to the fact that service was focused toward the more urbanized areas of the corridor and the ability to capture travel demand from Old National Highway. In order to provide an order of magnitude comparison to the BRT service along the corridor, testing enhanced bus service along the entire length of the corridor from SR 154 to the College Park MARTA Station is needed.
- There was little difference in ridership between the Trend and Intensive Development land use scenarios. This is because most of the development within the study area under either scenario is located beyond walking distance to the stations along each route. This indicates a need to test the enhanced bus and BRT alternatives – which had much higher initial ridership projections than express bus - with circulator routes that would improve access to the station areas. It is anticipated that this will improve ridership projections along the corridor.

Based on these observations, the alternatives described below and summarized in **Table 6-1** were subject to refined testing.

- **BRT with Circulator Routes** – Circulator routes were added to the BRT service initially tested to increase access to the station areas along the route. A map of this alternative is provided in **Figure 6-1** (on page 6-3).
- **Enhanced Bus with Circulator Routes** – The enhanced bus service initially tested was extended to serve the stations at Cascade-Palmetto Highway (SR 154) and Campbellton-Fairburn Road (SR 92) with circulator routes added to increase access to the station areas from the surrounding developments. A map of this alternative is provided in **Figure 6-2** (on page 6-4).

Table 6-1: Alternatives Subject to Refined Testing

Mode	Limits	Stations	Service Characteristics
Bus Rapid Transit w/ Circulator Routes	SR 154 to College Park MARTA Station	• SR 154 • SR 92 • Stonewall Tell Road • Old National Highway	Peak hour – 15 minutes Off-Peak – 30 minutes
Enhanced Bus w/ Circulator Routes	SR 154 to College Park MARTA Station		Peak hour – 15 minutes Off-Peak – 30 minutes

Figure 6-1: Bus Rapid Transit Alternative w/ Circulator Routes

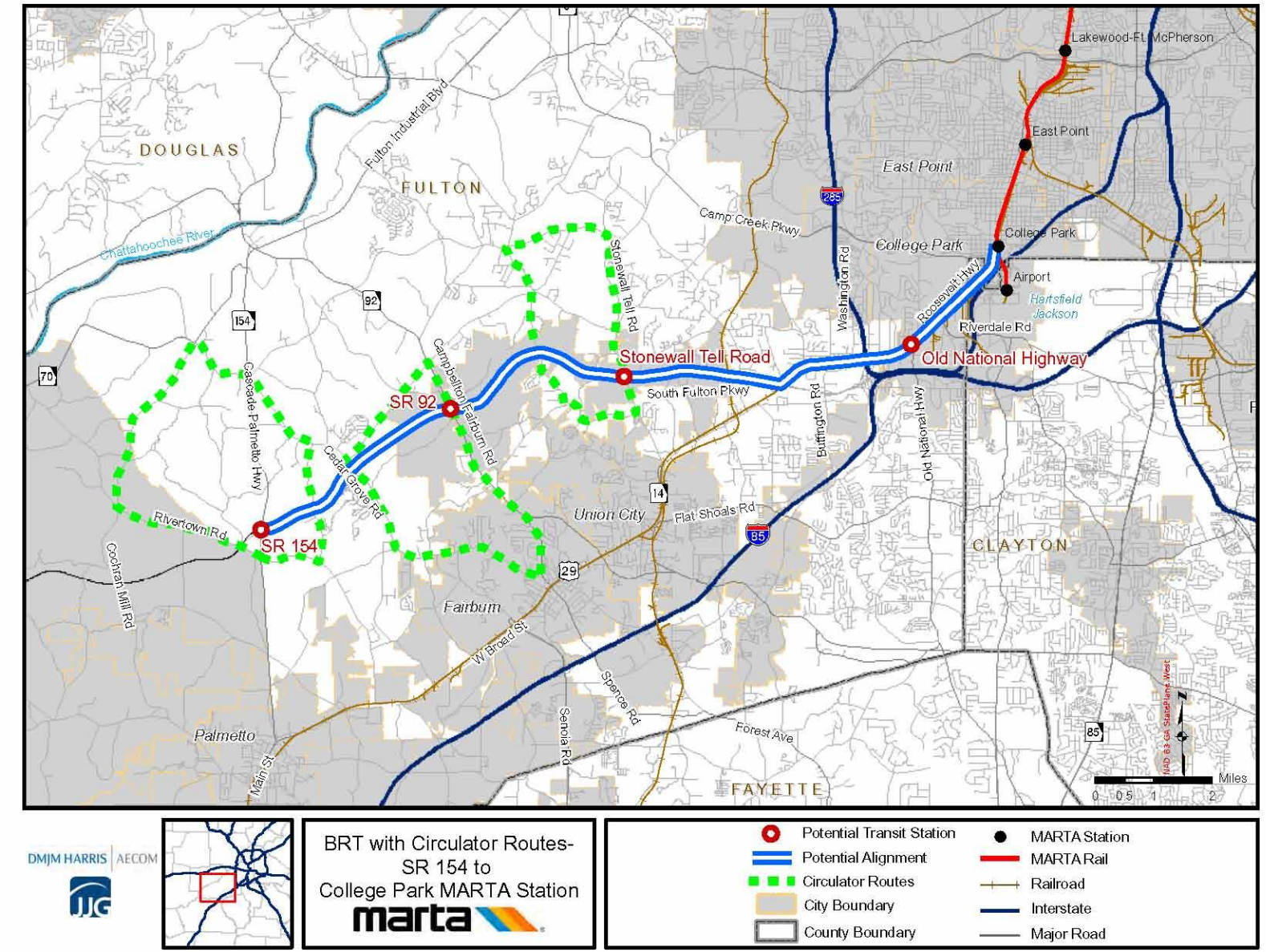
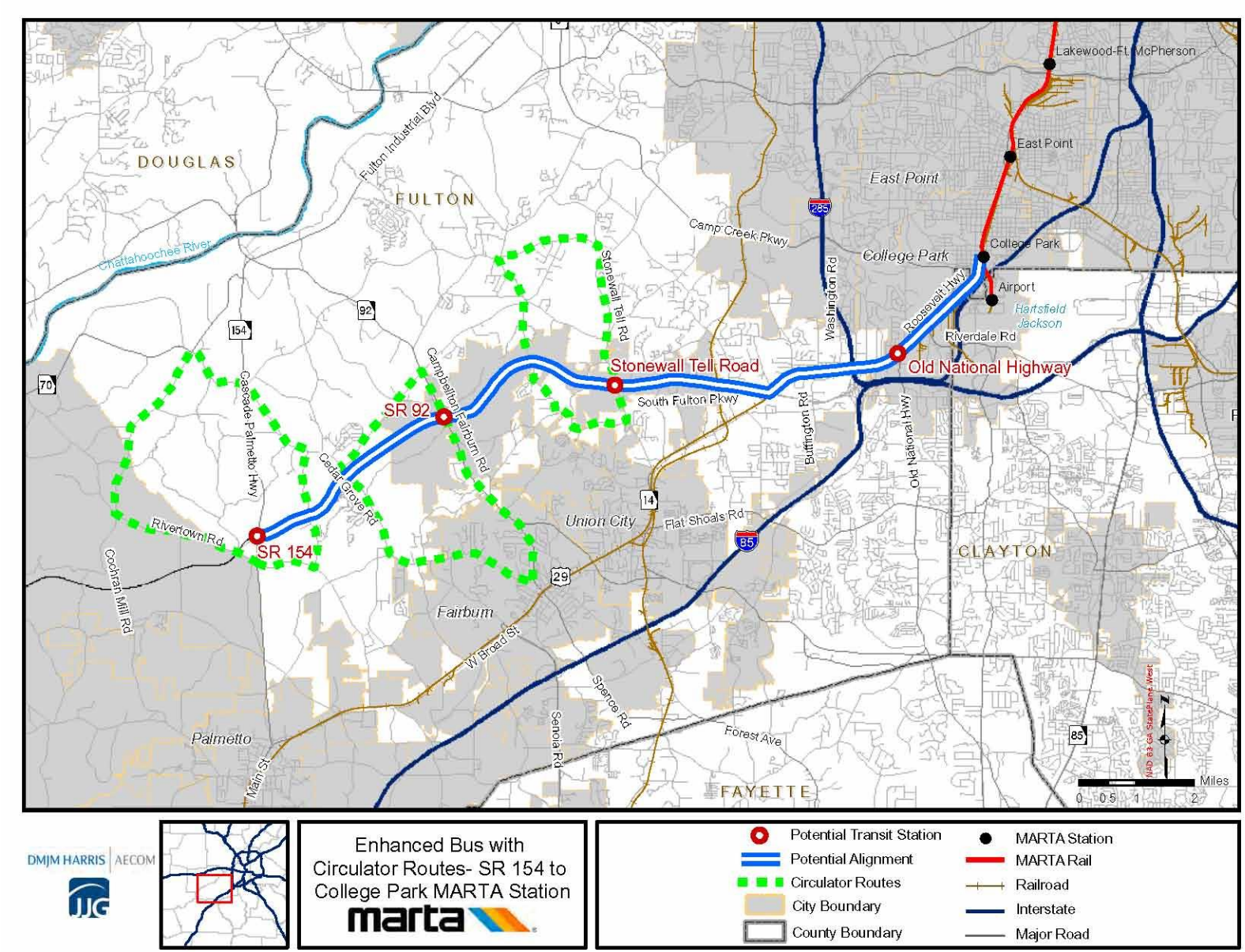


Figure 6-2: Enhanced Bus Alternative w/ Circulator Routes



6.2 Comparative Results

The daily line volumes results of the testing of the refined alternatives is provided in **Table 6-2** Providing these circulator routes significantly increased ridership for both of the refined alternatives. Daily ridership of the enhanced bus with circulator routes was estimated to be 1,940 under the Trend Scenario and 2,250 under the Intensive Development Scenario. The BRT alternative resulted in 5,020 boardings under the Trend Scenario and 6,590 under the Intensive Development Scenario.

Table 6-2: Daily Line Volumes and Station Boardings of Refined Alternatives

Transit Alternative	Current ARC Model	Trend Scenario	Intensive Development Scenario
Enhanced Bus with Circulator Routes	-	1,940	2,250
BRT with Circulator Routes	-	5,020	6,590

Table 6-3 details the daily station boardings projected under the refined alternatives testing that correspond with the daily line volumes presented above. As shown, the station that performs best is the Old National Highway for both of the alternatives. Boardings at the remaining stations are similar.

Table 6-3: Daily Station Boardings of Refined Alternatives

Trend Scenario		
Station	**Enhanced Bus with Circulators**	**BRT with Circulators**
SR 154	170	545
SR 92	180	600
Stonewall Tell Road	175	600
Old National Highway	540	980
College Park	885	2,300
Intensive Development Scenario		
SR 154	285	670
SR 92	325	985
Stonewall Tell Road	220	1,050
Old National Highway	435	1,180
College Park	920	2,710

7.0 MAJOR FINDINGS AND NEXT STEPS

7.1 Major Findings

Major findings of this report include:

- Because South Fulton Parkway is a relatively new roadway, development along the roadway has not had much time to materialize. However, given its proximity to H-JAIA and the interstate system, the corridor has potential for live-work-play development. Notwithstanding the uncertainty of time required for this development to occur, the best approach for implementing transit service along South Fulton Parkway is phasing service along the corridor. Because of the sparse development patterns currently within the area, short term recommendations resulting from this study will need to be oriented toward furthering land use initiatives to foster transit markets along the corridor. This would include recommendations for specific zoning regulations and the development of overlay districts consistent with the Transit Oriented Development (TOD) guidelines currently being developed by MARTA. A specific example could include coordination by Union City officials with the Parkway South developers to refine their current development plans to include provisions for TOD.
- Projections from the regional travel demand model display low ridership for express bus service. Therefore, corridor-focused ridership forecasting techniques, such as travel preference surveys, should be employed to better gauge the feasibility of express bus service.
- A phased fixed route concept with limited stops to serve commuter purposes should be analyzed further. Initially, a commuter-based service with park-and-ride stops configurations to allow implementation of TOD is recommended. The concept will initially consist of park-and-ride lots located near or adjacent to South Fulton Parkway at major nodes, so that station areas will not conflict with corridor preservation efforts undertaken by GDOT and can transition into more vibrant TOD areas. The alternatives tested provide a footprint for potential transition to more premium services such as LRT dependent on development trends.

7.2 Next Steps

Based on the major findings, next steps in the study process are to finalize both concept planning and the strategy to implement transit along South Fulton Parkway. These actions include:

- Development of a service plan for initial commuter services and transition to BRT service as corridor conditions warrant. This will also include the identification of development and mobility trends that would indicate the potential for implementing the initial service and subsequent actions within the phasing plan. Service planning recommendations will include:
  - Employment of mechanisms that can improve the ridership forecasts to supplement the travel demand model results and more accurately gauge the needed characteristics for express bus services. It is suggested that a travel preference survey and continued public education on the benefits of transit are follow-up activities in the corridor;
  - Definition of infrastructure needs (e.g., queue jump lanes, signalization, right-of-way, etc.) necessary for a phased approach to transit improvements in the corridor; and
  - Coordination with GDOT, Fulton County, and the local municipalities regarding traffic control, land use, and right-of-way preservation.
- Identification of actions for local governments to promote development patterns that would support transit along the corridor. This may initially include steps to develop park-and-ride stops and amenities for commuter-related travel. Strategies to transition these park-and-ride stops for land uses that support enhanced service options (such as BRT) as the corridor matures will also be developed that are consistent with the TOD guidelines being developed by MARTA. This will include an assessment of needed changes to their respective development codes and their future land use plans and the identification of specific thresholds needed to support each alternative.

APPENDIX A: DETAILED TRAVEL DEMAND MODELING METHODOLOGY

APPENDIX B: DETAILED METHODOLOGY IN DEVELOPING INTENSIVE DEVELOPMENT LAND USE SCENARIO