AEROTROPOLIS TRANSIT FEASIBILITY STUDY

Atlanta

January 2019

TRANSIT VISION, NEEDS AND POTENTIAL SOLUTIONS

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Aerotropolis ATLANTA COMMUNITY IMPROVEMENT DISTRICTS

PREPARED BY THE VHB TEAM

January 2019

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INTRODUCTION

The Aerotropolis Transit Feasibility Study identifies transit needs and recommended transit solutions to better serve the area near Hartsfield-Jackson Atlanta International Airport (HJAIA).

This study was initiated by the Aerotropolis Community Improvement Districts, working collaboratively with its members, key stakeholders, the surrounding community, and local, regional and state agencies. This project seeks to build on the current conditions and success of the district to further improve mobility and make it easier to live, work and play in the area.

This document builds on the Task 2 Technical Memorandum on Existing Conditions and presents the identified transit vision in the Aerotropolis area, describes the transit needs, and recommends transit solutions which match the needs and opportunities.

This analysis builds on prior studies, available data, stakeholder and public input, and unique analyses by the consultant team. Public and stakeholder input has been solicited through multiple methods, including an online survey, stakeholder interviews, and public meetings. These are documented in detail in public outreach summary documents.

This painting by Maceo Rogers conveys the future Aerotropolis as modern, connected and highly mobile.

TRANSIT VISION

Transit in Aerotropolis Atlanta should provide easy and efficient movement of people to live, work, play and travel without relying on the automobile. ***Where do you want to go? Transit will take you there.***

In a modern world where being connected is crucially important to both success and quality of life, the Aerotropolis provides a unique opportunity to be physically connected to the rest of the world. Dr. John Kasarda describes airports as part of a "physical internet", and indeed they are. The vision for connectivity in the Aerotropolis area is to build on that global connectiveness by better connecting the Hartsfield Jackson Atlanta International Airport (HJAIA) to all the people and destinations near the airport. And, transit is a key component of that connectedness.

HJAIA itself is already well served by MARTA rail connecting directly to downtown Atlanta. However, movement within the Aerotropolis district via transit is currently neither fast nor efficient. Transfers between different transit services are not well organized, and the range of transit services and options is not well communicated to the traveling public. Transit is also not a 24/7 service in this 24/7 district. Transit in the larger Aerotropolis area should extend the connectivity to more efficiently connect all the destinations in the district. Those transit connections should be convenient, reliable, clean, sustainable, efficient, smart, modern, seamlessly intermodal, connected to the region, and supportive of robust economic development.

The Aerotropolis vision for transit sets the expectation for the following analysis of transit needs, opportunities and potential solutions.

TRANSIT NEEDS

EXISTING NEEDS

The Atlanta Region has been motivated to improve transit in recent years as voters in Atlanta and Clayton County approved local tax measures to expand services. Cobb and Fulton Counties are contemplating increased taxation to fund improvements as well.

In early 2018 through adoption of HB 930, the Georgia Legislature created The Atlanta Transit Link Authority (The ATL), a regional transit governance structure with the goal of integrating and improving transit across traditional jurisdictional boundaries.

These happenings are evidence that the need to improve existing transit services is both local and regional. This section highlights the transit needs specific to the Aerotropolis area. And, the sections that follow describe the opportunities to meet these identified needs.

While the momentum is on the side of expanding regional transit solutions, transit riders and planners are also very aware of the significant amount of work that needs to be done at the local level. In particular, there is a recognized need for improved **first/last mile access** to transit within the study area and beyond. First/last mile connectivity refers to the very beginning and ending of a trip which uses transit. The walking, biking or shuttle connections are at either end of a transit trip are equally important to providing the necessary infrastructure and services which support the regional transit investments. In the *Task 2 Technical Memorandum–Existing Conditions*, the existing inadequacy of sidewalks and bus shelters in particular is highlighted in the study area.

While there are some walking and bicycling facilities within the downtowns of the study area, infrastructure to enable safe, equitable, and quality first/last mile access to transit is generally lacking elsewhere. Along some transit corridors, such as Riverdale Road, even basic facilities like sidewalks and shelters at bus stops are missing.

In order to fully leverage the benefits of improved transit service in the Aerotropolis, enhancement of active modal infrastructure such as adequate sidewalks, transit stops, and bicycle facilities are needed.

Bus stops are sometimes on major roads with no sidewalks, such as this example on Riverdale Road.

The Aerotropolis is a 24/7 district, with both travelers and workers needing to travel throughout the day, night and weekend.

However, the existing transit services do not operate 24/7. Currently, MARTA rail does not operate between 1:00 and 5:30 a.m., while most MARTA bus routes do not operate between 12:30 and 4:30 a.m. There is a need to provide 24/7 mobility options to match the characteristics of the Aerotropolis economy.

Most bus routes operate at headways of 20-30 minutes with only seven of 24 routes in the study area operating at peak period headways of 10-15 minutes. While local MARTA bus routes serve the study area, they intentionally do not (due to space constraints) serve the Domestic Terminal where most airport passengers arrive or depart. In line with local demand, the existing College Park MARTA Station operates more like a terminus and transfer node for transit than Airport Station, the actual end of the line. This presents unique challenges for improving access to the airport while improving service for the region as a whole.

An Aerotropolis relies on providing a high level of mobility. And, as compared to the Atlanta metro region as a whole, is more multimodal–providing the full range of travel options. However, those multiple modes are not as well interconnected as they should and could be. The existing travel modes and operating conditions were described in detail in the *Task 2 Technical Memorandum*. Connections between those various modes; however, could be much improved. Currently, some intermodal connections (transfer from one mode of travel to another) happen at the airport's domestic or international terminals. Other intermodal connections happen at the nearby College Park MARTA station. And, some intermodal trips require visiting two or even all three of those locations. The need here is to construct a true **Intermodal Transportation Center**. This facility should provide a traveler with one location to transfer between bus, rail, shuttles and taxis, transportation network companies (like Uber and Lyft), and walking and biking options. It needs to be well located and well connected to each of these travel modes.

Lastly, there currently exists the need to better **connect key destinations** in the Aerotropolis via direct, accessible, efficient transit. Some of those key destinations include the airport, College Park, Hapeville, the Mountain View area, the Camp Creek Marketplace area, and residential communities south of the airport. Transit investment should be focused on key corridors which connect these important destinations, and at the nodes where those key corridor intersect, such as the aforementioned Intermodal Transportation Center(s). The section that follows identifies some of the key opportunity corridors to accomplish these connections.

OPPORTUNITIES

TRANSIT MARKET

A transit market is the population of potential transit users. These are the users for whom we are designing efficient and effective transit services. So, it is very useful to assess the needs of these different user groups to capitalize on opportunities to best match the design of the transit system and services to those needs. The Aerotropolis serves a wide range of potential transit markets with varying needs, travel preferences, and origins/destinations. The project team explored the range of potential transit markets through data analyses as well as public and stakeholder input. Outreach efforts such as stakeholder interviews, a Community Conversation dinner, and meetings with community and business groups provided important input and understanding of these key transit markets. Key markets for Aerotropolis transit are summarized in **Figure 1**.

Figure 1–Potential Transit Markets

Aerotropolis Residents

Key Destinations
Town Centers and Shopping Centers

Needs/Values
Price, Convenience, Predictability

Aerotropolis Employees

Key Destinations
Corporate Crescent, Town Centers, Airport

Needs/Values
Speed, Convenience, Comfort, Predictability

Aerotropolis Visitors

Key Destinations
Georgia International Convention Center, Hotels, Airport, Restaurants, Retail

Needs/Values
Comfort, Wayfinding, Culture

Airport Employees *(Origin)*

Key Destinations
Entire Atlanta Region

Needs/Values
Price, Speed, Convenience, Comfort, Predictability, 24/7 Service

Airport Business Passengers *(Origin)*

Key Destinations
Entire Atlanta Region

Needs/Values
Speed, Comfort, Predictability

Airport Business Passengers *(Destination)*

Key Destinations
Downtown, Midtown, Buckhead, Perimeter, Cumberland, Gwinnett

Needs/Values
Speed, Convenience, Wayfinding

Airport Visiting Friend and Relatives (VFR) Passengers *(Origin)*

Key Destinations
Entire Atlanta Region

Needs/Values
Price, Convenience, Comfort, Parking, 24/7 Service

Airport VFR Passengers *(Destination)*

Key Destinations
Entire Atlanta Region

Needs/Values
Price, Convenience, Wayfinding, Culture

PARTNERS

The Aerotropolis study area and vicinity is host to several major corporate campuses and other large business enterprises which should be considered both as destinations for future transit investments and potential partners for support and for funding. Some of these key potential partners are shown in **Figure 2**. Adoption and implementation of the resulting transit vision should include engagement of these local entities in addition to our regional and state transportation entities.

Figure 2–Potential Partners

Partners	Corporate/Partners
City of Atlanta	Chick-fil-A HQ, EUE Screen Gems Studios, Fort McPherson (redevelopment)
City of College Park	Georgia International Convention Center, Hotels, Federal Aviation Administration
City of East Point	Atlanta Medical Center–South Campus, Camp Creek and South Meadow Business Parks
City of Fairburn	Georgia Military College
City of Forest Park	Fort Gillem (redevelopment)
City of Hapeville	Delta HQ, Porsche North America HQ, Wells Fargo Operations Center
Lake City	The National Archives at Atlanta and the Morrow/ Lake City Recreation Complex
City of South Fulton	Fulton Industrial Blvd. District
City of Morrow	Southlake Mall and Clayton State University
City of Union City	Foreign Trade Zone and Metro Studio

CULTURAL AMENITIES

The Aerotropolis and environs are not just about business. The wider area hosts a number of cultural amenities which are themselves destinations, generating significant travel demand and another source of ridership and support for improved transit services. An understanding of these amenities also provides opportunities for transit infrastructure design to enhance the local culture. Some of these key cultural amenities include those listed in **Figure 3**.

Figure 3–Aerotropolis Cultural Amenities

Location	Attractions
City of Atlanta	BeltLine, all downtown attractions (via MARTA rail)
City of College Park	Downtown/Main Street Historic District, Woodward Academy, Chick-fil-A experience (future[1])
City of South Fulton	Wolf Creek Amphitheater
City of East Point	Camp Creek Marketplace, Dick Lane Velodrome
City of Fairburn	Georgia Renaissance Festival
City of Forest Park	Georgia State Farmers Market
City of Hapeville	Historic District, Delta Flight Museum, Porsche Experience Center, Chick-fil-A Dwarf House, Arches Brewing
City of Morrow	Southlake Mall
City of Riverdale	New town center, a number of religious institutions including the Hindu Temple of Atlanta
City of Union City	Metro Studio

[1] *Chick-fil-A is considering developing a Coca-Cola Experience style attraction that would attract many visitors at the location of the current Coca-Cola bottling plant south of Naturally Fresh along Buffington Road.*

[1] *Aerotropolis Atlanta CID Master Plan from 2017.*

FUTURE DEVELOPMENT

The Airport is far and away the dominant economic force in the Aerotropolis study area. It plays a leading role in commercial decision making as its location contributes to 63,000 local jobs and $70 billion in economic value[2]. Regional developers are beginning to respond to the economic opportunities in the Aerotropolis. To fully maximize the Aerotropolis' potential, we must consider not only the proximity to the airport but also the ways in which the millions of people move through and to both Aerotropolis and the Airport. The developments below are planned and will have a significant impact on area.

The Aerotropolis location contributes to:

210,000 jobs

$70 billion in economic value both now and the future

Airport City

The City of College Park has entered into an agreement to master develop 320 acres of underutilized land directly north of Camp Creek Parkway and in the heart of the study area. Currently known as Airport City, the development will feature residential, office, and retail uses. The project is scheduled to break ground in 2019 and eventually add more than 5,000 jobs and possibly 10 million square feet of new development. The site would be partitioned into several districts connected by boulevards and multi-use paths. Preliminary access alternatives proposed by the City include a pedestrian bridge over Camp Creek Parkway to the Georgia International Convention Center (GICC). Ultimately, Airport City hopes to make create seamless connections to both MARTA and the SkyTrain, providing residents, employees, and visitors excellent transit connections increasing economic value without increasing traffic congestion to unacceptable levels.

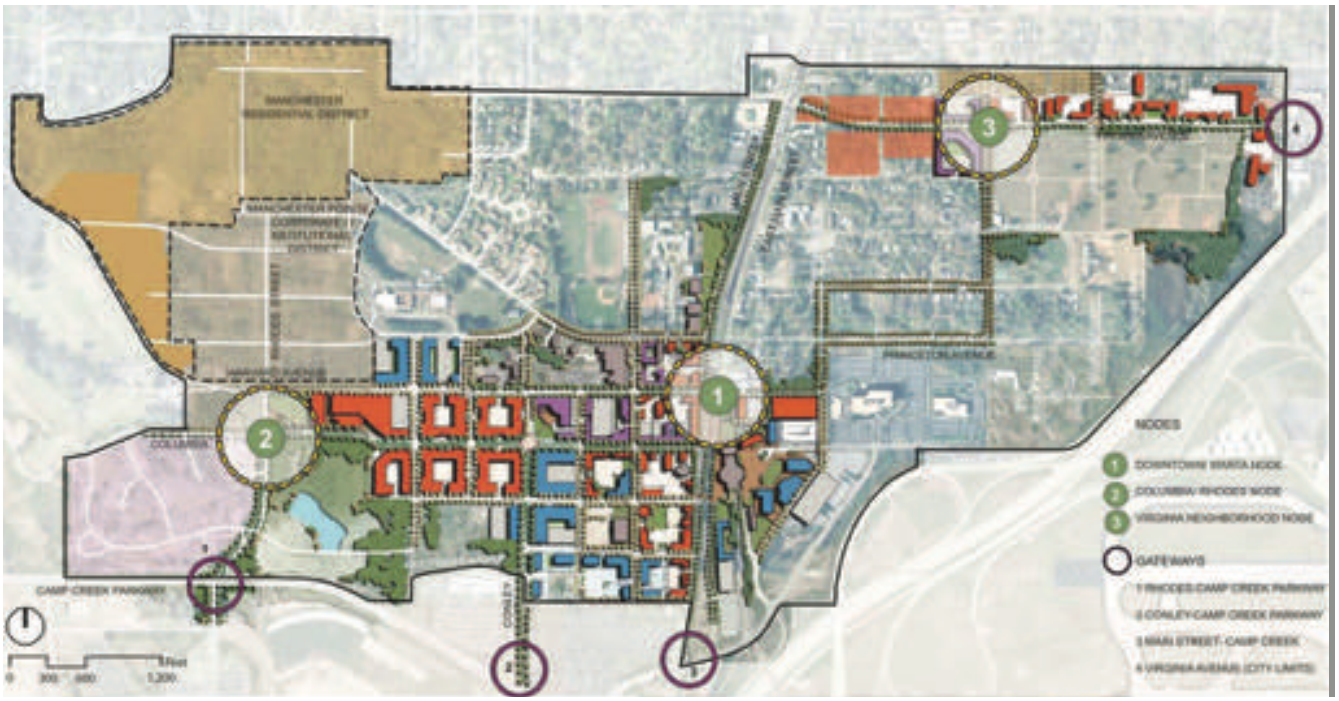


Image source: Livable City Centers Initiative 5 Year Update—College Park Activity Center (2008–2012)

320 acres
of underutilized land will be developed

More than
5,000 jobs
will eventually be added

Up to
10 million sq ft
of new development

Fort McPherson

Fort McPherson, located directly north of East Point and the Airport in the City of Atlanta, closed in 2005 as a military installation and is slated for redevelopment. Although the 2007 and 2010 Master Plans to redevelop the site were not realized due to the real estate downturn of the Great Recession, the recent economic uptick has brought new life to plans for the 145 acre site. The City of Atlanta is currently reviewing plans for mixed-use transit-oriented development including housing, office, retail, medical, and open space. An additional 330 acres are being redeveloped by Tyler Perry Studios for film and television production uses that will serve as a further catalyst for economic development in the greater Aerotropolis area.

Figure 5–Fort McPherson Redevelopment Design

Image source: Fort Mac LRA

145 acres

planned for transit, office, retail, medical and open space

Cargo City

With the relocation of the Airport's north cargo area and expansion of the southern cargo area, Cargo City (the area south of the airport along Forest Parkway) presents a catalytic opportunity for true Aerotropolis-style development which takes advantage of the Airport's access to international freight. Future development opportunities include uses that facilitate the "value-add" and "just-in-time" functions of the global logistics economy including cold-chain facilities, E-commerce fulfillment, and bio-medical industries.

International Gateway

The International Gateway is directly east of the International Terminal and bound by I-75 and I-285. It contains underdeveloped airport-owned land in addition to active shipping and distribution centers. The site holds great potential for land use intensification including office space, destination outlet retail, E-commerce fulfillment centers, bio-medical industries, and hotels that would benefit from proximity to the airport.

The International Gateway site is also located along MARTA's recently proposed commuter rail expansion into Clayton County.

Greenbriar Transit Center

The Greenbriar Transit Center is a planned transit hub directly northwest of the study area at the site of the existing Greenbriar Mall near the junction of Campbellton Road, Langford Parkway, and I-285. Already one of the highest transit ridership neighborhoods in the City of Atlanta (Route 83 currently has the second highest daily ridership in the MARTA bus system[2]). Substantial transit improvements are planned. In addition to upgrading local bus service, Route 83 has already been upgraded to Arterial Rapid Transit (ART) with signal prioritization and improved service levels, which were completed in February 2017. Phase 2, using funds from the More MARTA sales tax, will convert the ART service into five miles of light rail along Campbellton Road from Greenbriar to Oakland City MARTA Station.[3]

Figure 6 –Reimagine Greenbriar Transportation Concepts

Source: Atlanta Regional Commission

Streets for People

Enhancements to the street, especially for streetscape improvements and multimodal facilities to accommodate all users. Projects that can repurpose an existing street's travel lanes to accomplish this are shown with a yellow line (left). Cambellton Road is depicted uniquely, (green line) as this project would involve a more extensive street design to accommodate expected transit service.

New Street Network Projects

Framework of projects to begin adding public streets to areas and sites of potential redevelopment.

Pedestrian Enhancements

Projects to enhance pedestrian crossings specifically, either at intersections or mid-block locations.

Transit Hub Projects

Potential location for transit facility expected to be an end-of-line station or stop for a Campbellton Road transit corridor.

Freeway Transformation

Framework of projects to begin adding public streets to areas and sites of potential redevelopment. Project T-03 includes a project recommended as publicly-led (in solid line) as well as a framework to guide streets to be added with private development (dashed lines).

Multi-Use Trail Projects

Off-street trails for bicycles and pedestrians (no vehicles) that allow additional connections to parts of the district, to parks and open spaces, or within development nodes to increase walking routes.

[2] MARTA Jurisdictional Briefing, City of Atlanta, April 2018.

[3] **More MARTA Final Recommendation Project List:**
https://itsmarta.com/uploadedFiles/MARTA_101/Why_MARTA/Recommended%20Projects%20List%20with%20Stations.pdf

TRANSIT SOLUTIONS

TRANSIT CORRIDORS AND SERVICES

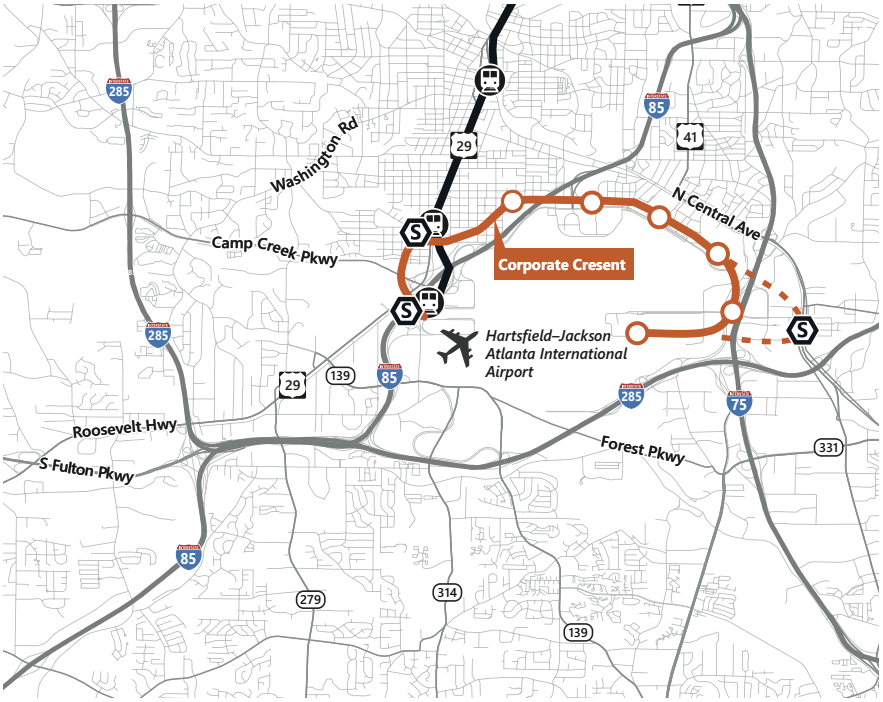
Discussed on the following pages are specific corridors for enhanced transit service within and to/from the Aerotropolis which draw upon existing needs and future growth. Also discussed are the types of service that would be deployed in these corridors. The strategies provided are at a conceptual level and are not presented in order of priority.

CORRIDOR DETAILS

CORPORATE CRESCENT

A broad arc that runs across the north side of the Airport from MARTA's Airport or College Park station to the International Terminal. It is named for the three large corporate employers–Delta, Porsche, and Wells Fargo as well as the clear opportunity for future offices and headquarters. From west to east the service would operate along N. Inner Loop Road, Perry J. Hudson Parkway, Atlanta Avenue, S. Central Avenue/Porsche Avenue, and Charles W. Grant Parkway/Maynard H. Jackson, Jr. Blvd. The proposed alignment would provide connectivity to existing MARTA Bus Routes 172, 192, and 193. Transit along this arc would accommodate airport users, Corporate Crescent employees, and Aerotropolis visitors and residents.

Figure 7–Corporate Crescent Corridor



Key Potential Stops

- Airport/College Park MARTA Station
- Delta World HQ (N. Inner Loop Rd./Delta Blvd.)
- Airport Logistics/Aerotropolis Housing (Perry J. Hudson Pkwy./ Atlanta Ave.)
- Wells Fargo Operations Center (Atlanta Ave./College St.)
- Hapeville Depot/Historic Center (S. Central Ave./Fulton Ave.)
- Dwarf House (Porsche Ave./South St.)
- Porsche (Porsche Ave./Porsche Dr.)
- International Gateway (future development)
- International Terminal

Service Hours

As the Airport and its supporting services operate 24 hours per day, transit should operate at near 24-hour levels of service with minimum frequencies of 10 to 12 minutes.

Near-Term

In order to prove the concept and to build market share, the service could be initiated with standard buses on existing rights-of-way with "BRT light" treatments including traffic signal preemption/priority and vehicular queue bypass at congested intersections, high quality shelters and wayfinding as well as recognizable/integrated branding.

Longer Term

Once the concept has been proven and market share warrants the investment, upgrades should be considered. Full BRT, whether staffed or autonomous, offers more flexibility at lower cost than rail options.

CAMP CREEK CONNECTOR

The Camp Creek Corridor is crucial link between the western suburbs and the Airport's domestic terminal. It is home to several large off-Airport parking operators and will one day be the southern border of the massive Airport City development. The Camp Creek Connector would be transit service from MARTA's Airport Station or College Park Station to Camp Creek Marketplace via Camp Creek Parkway.

Figure 8–Camp Creek Connector Corridor

Key Stops

- MARTA Airport or College Park Station
- Airport City (TBD)
- Camp Creek Pkwy/Herschel Rd. (Park 'N Fly Plus, Wally Park)
- Camp Creek Pkwy/Potomac Dr. (Parking Spot, Residential)
- Camp Creek Pkwy/Washington Rd. (Avistar Parking, Residential)
- Camp Creek Pkwy/Desert Dr. (Parking Spot, Elite Airport Parking, Residential)
- Camp Creek Marketplace

Assuming the continued reliance on human operated automobiles, the primary market for the Camp Creek Connector would be the customers of the privately owned parking facilities who park their cars and take a bus to the Airport. To shift to one publicly operated service from multiple privately operated services, agreements with each parking facility operator would need to be reached. This would benefit the parking companies by reducing their operating costs and benefit the Airport by both reducing vehicle trips and by freeing up valuable terminal curbside space.

Service Hours

As the Airport and its supporting services operate 24 hours per day, transit should operate at near 24-hour levels of service with minimum frequencies of 10 to 12 minutes.

Near-Term

The service could initially be implemented as "BRT light" with priority treatments. The Camp Creek right-of-way has two travel lanes in each direction and a wide central median. In order to provide a premium level of service, designated cut-ins for pick up and drops-offs separated from travel lanes with high quality shelters should be considered. If stops are located on one side of the roadway where parking facilities exist, passenger crossing treatments should be implemented. Treatments to consider include lead pedestrian interval signal timing, high visibility crosswalks, improved medians, and curb extensions to reduce vehicle turning speeds and lessen crossing distances.

Longer Term

Camp Creek connects the Airport to the western suburbs and is close to the proposed Greenbriar Transit Center and Campbellton Road light rail. Development around the Airport, particularly at Airport City will increase the demand for the Camp Creek Connector transit service. The wide central medians provide an excellent opportunity for full BRT with either staffed or autonomous vehicles. Other options include an extension of SkyTrain or other emerging transportation technologies.

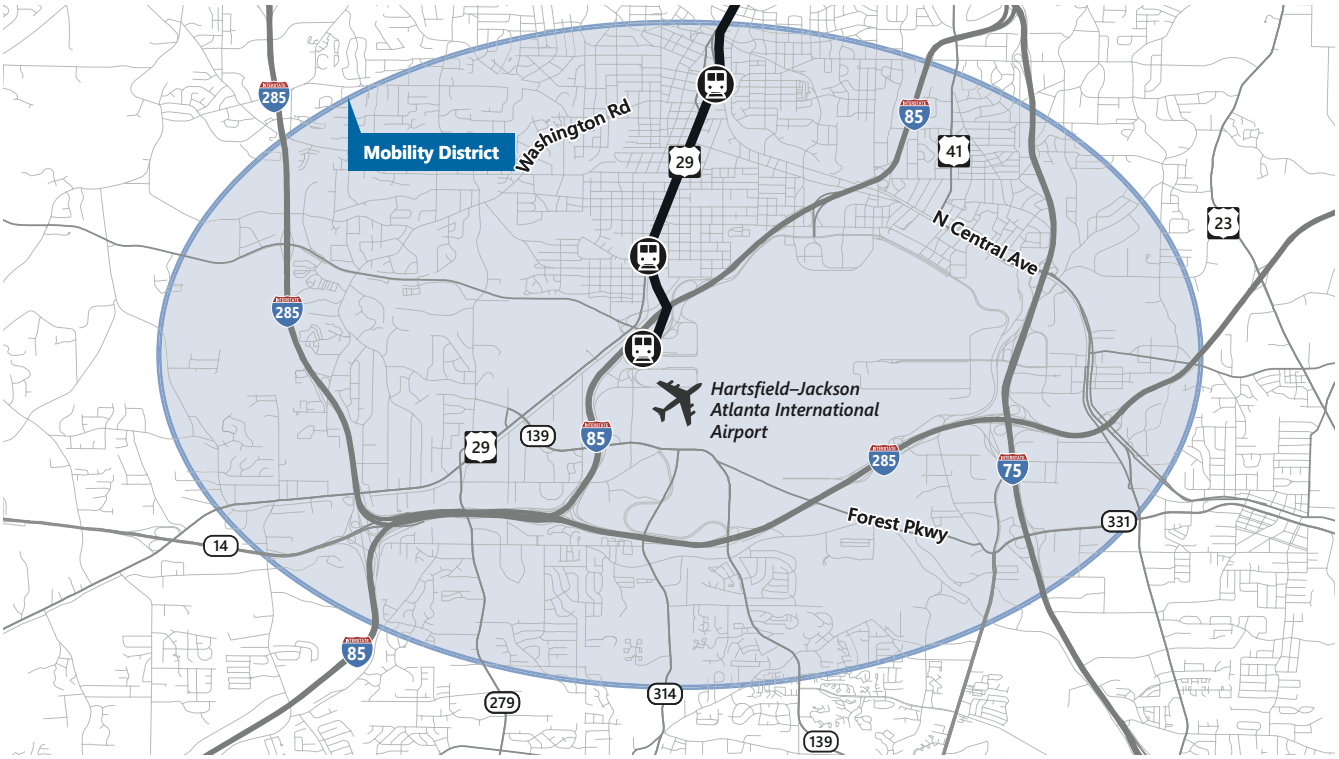
MOBILITY DISTRICT

As discussed earlier, the Aerotropolis district is a 24/7 district and needs 24/7 mobility solutions. Yet, transit options currently do not operate around the clock. A Mobility District should be established wherein mobility options are available 24/7. There are several alternatives for providing this mobility, including extending MARTA's hours of operation and/or providing on-demand transit service. A Mobility District can be defined around the Aerotropolis wherein travelers can call for transit rides during those hours when MARTA and GRTA services are not operating.

Several transit technology providers now offer these on-demand transit solutions by leveraging the smart phone and automated routing technology. This service can supplement existing transit services by providing a convenient transit option during those hours when traditional transit services are unavailable. The definition of the Mobility District can be specified based on the key desired destinations as well as the funding partners who wish to be involved in the service. And, this type of service can be provided with almost any type of transit vehicle–existing available vehicles, leased vehicle, etc.

Key partners in creating the Mobility District include MARTA, the Airport, and the Airport's Transportation Management Association (TMA). The Atlanta Regional Commission is also a key partner in this initiative, especially as this service may qualify for Congestion Mitigation and Air Quality Improvement funding (a special category of Federal transportation funds) to establish and begin the service. Public education and marketing of the new service will be critical to a successful launch, and both the CID and the TMA are uniquely equipped to spread the word.

Figure 9–Mobility District



Service Hours

As the airport and its supporting services operate 24 hours per day, so should the mobility options. The Mobility District should operate during those hours when MARTA and GRTA services are not operating.

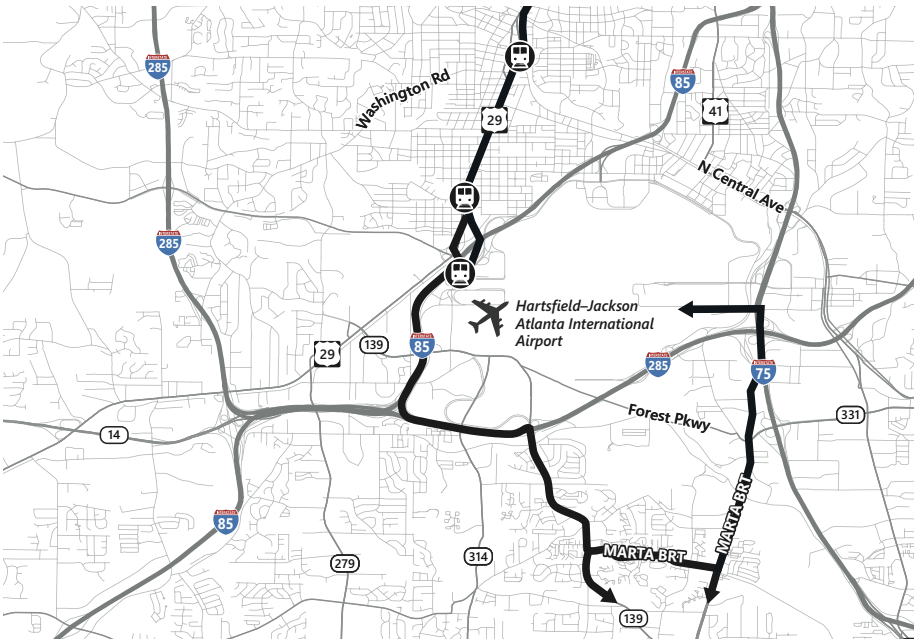
Near-Term

The establishment of a Mobility District and on-demand transit service can be implemented entirely in a relatively short time period.

RIVERDALE ROAD ART

MARTA Route 196 "Upper Riverdale" currently operates north/south from College Park Station to Southlake Mall via Riverdale Road. Weekday service operates from 4:43 a.m. to 12:35 a.m. northbound and from 5:45 a.m. to 1:37 a.m. southbound. The service operates at 30 minute headways off-peak and 15 minute headways on-peak (5:45 a.m. to 8:30 a.m. northbound, 3:00 p.m. to 7:15 a.m. southbound). The northbound AM peak and the southbound PM peak nature of the service indicates that the 196 is relied upon to access jobs within Aerotropolis.

Figure 10–Riverdale Road ART Corridor



Key Stops

- MARTA College Park Station
- Garden Walk Blvd/Riverdale Rd.
- SRTA Riverdale Park & Ride
- Southern Regional Medical Center
- Southlake Mall

Service Hours

As the Airport and its supporting services operate 24 hours per day, transit should operate at near 24-hour levels of service with minimum frequencies of 10 to 12 minutes.

Near-Term

Although the 196 has had recent upgrades, more should be done to improve the service.

Peak headways should be reduced to predictive levels that do not require a timetable (i.e. 10 minutes) with peak service extended throughout the day (from beginning of the AM peak to the end of the PM peak).

Quality bus shelters should be provided.

Completion of the sidewalk network along Riverdale Road so that all stops are safely accessible to users of all ages and abilities. There is a higher potential to attract ridership if the walking environment is safe and comfortable. At intersections, treatments such as lead pedestrian interval signal timing, high visibility crosswalks, improved medians with refuge islands, and curb extensions/bulb outs should be used to improve the visibility of pedestrians/transit riders and reduce crash likelihood and intensity.

Holistic branding should be considered for vehicles, shelters, and wayfinding to emphasize that the service provides frequent high quality access to Aerotropolis.

Longer Term

Given the density of potential transit riders and the need for equitable access to employment, health care, education, and socializing, Riverdale Road is currently being considered for full BRT upgrade from College Park Station to Georgia Highway 138 on the south side of the city of Riverdale.

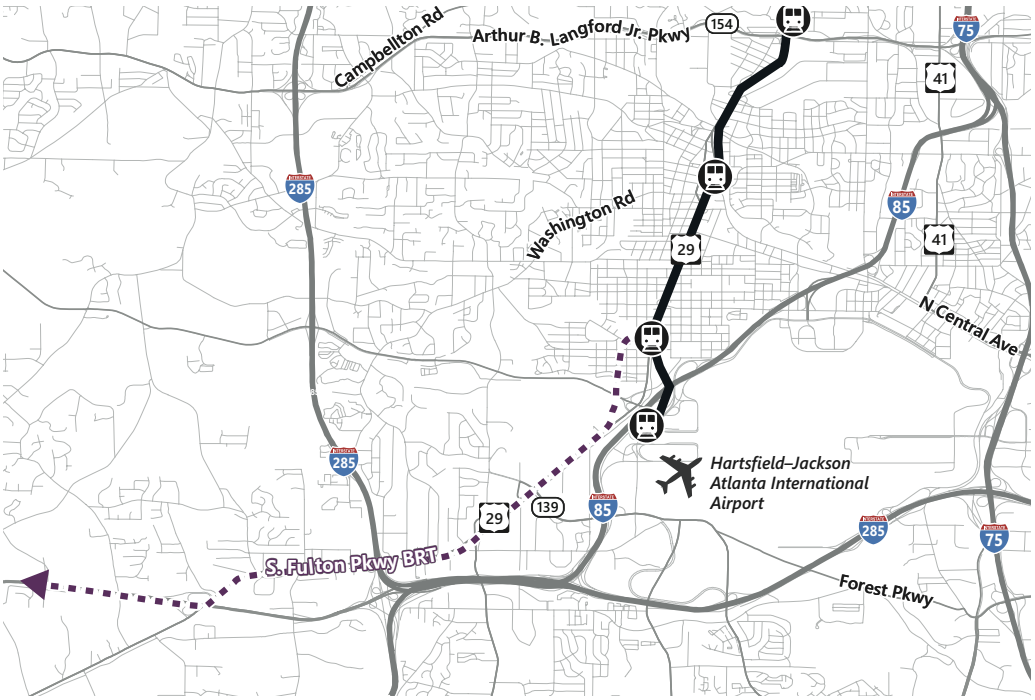
SOUTH FULTON BRT

The South Fulton BRT is a proposed alignment along South Fulton Parkway and the Roosevelt Highway (US29) from the College Park MARTA Stations to. The system would operate rubber tire articulated transit buses in dedicated lanes Preliminary capital cost estimates for the 12 mile alignment are $164 M[4].

The project is proposed in three phases:

1. Commuter Bus (partial alignment) with signal improvements
2. Enhanced Bus (full alignment) with queue jumpers and signal preemption
3. Fixed Guideway Transit with exclusive ROW on Parkway

Figure 11–South Fulton BRT Corridor



Key Stops

- College Park MARTA
- Old National Highway
- Stonewell Tell Road
- Derrick Road SW
- SR92/Campbellton Fairburn Road
- SR154/Cascade-Palmetto Highway

Given the suburban/rural nature of the alignment, consideration should be given so that transit station locations allow for easy and safe access to key destinations that are currently separated from the corridor through land use design and landscape, for example at Parkway Village where the destination is a shopping center separated by a large unshaded parking lot and a complete lack of pedestrian amenities.

Service Hours

As the Airport and its supporting services operate 24 hours per day, transit should operate at near 24-hour levels of service with minimum frequencies of 10 to 12 minutes.

Near-Term

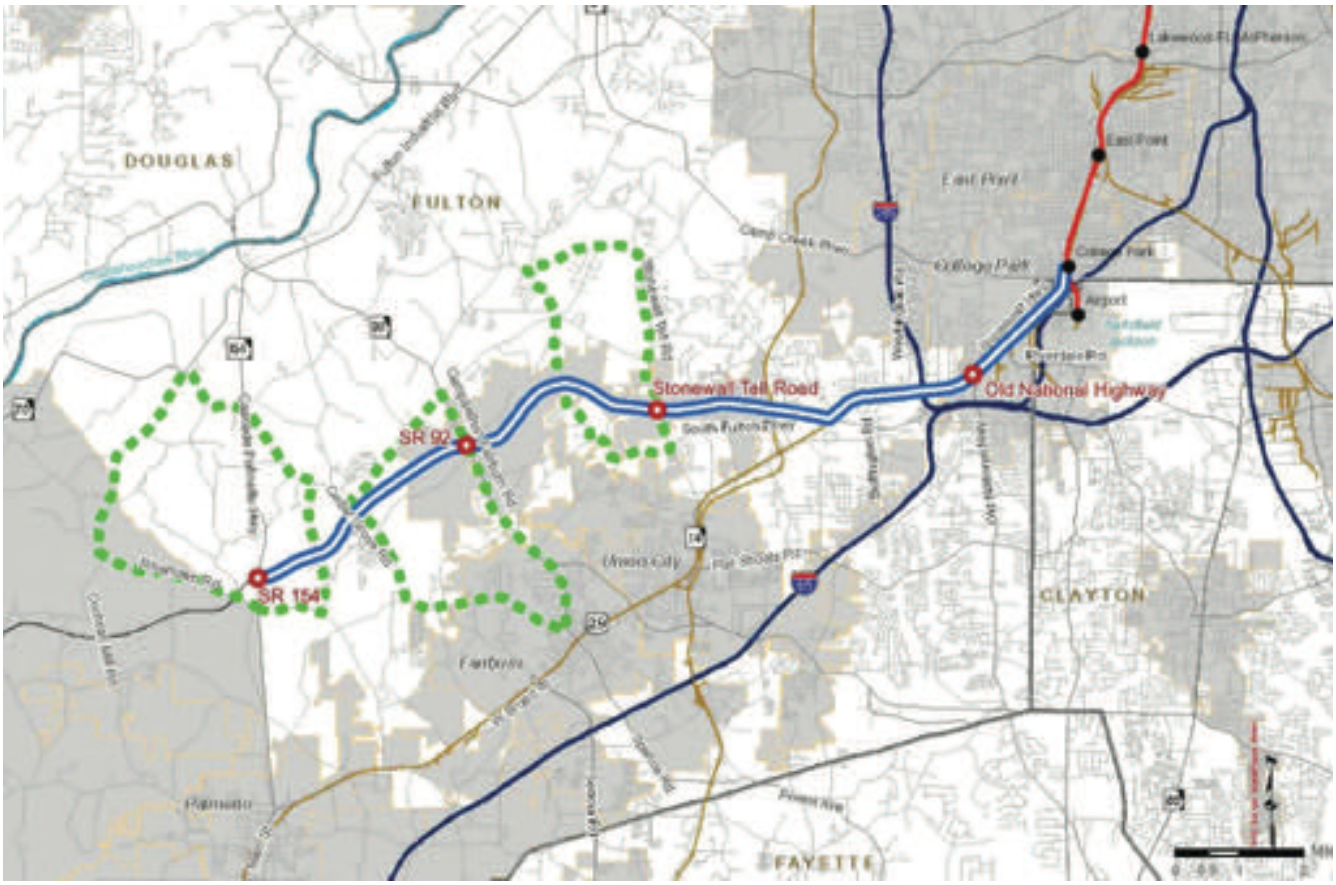
Initiate Phase I with commuter bus vehicles with stops at Old National Hwy and Stonewall Tell utilizing signalization improvements. Follow up with Phase II implementation providing new stops at SR 92 and SR 154 utilizing queue jumpers and signal preemption.

Longer Term

Implement Phase III fixed guideway with exclusive ROW. Long-term strategies should adhere to Tranist Oriented Development (TOD) principles such as compact and complimentary developments, mixed land use, and first/last mile connectivity. The location map from the previous feasibility study is shown on the following page.

[4] Fulton County Transit Master Plan, Georgia 400 BRT Fact Sheet, 2018.

Figure 12–South Fulton BRT Phase III Proposed Alignment



South Fulton Parkway Transit Feasibility Study

Potential Phase II Alignment–Long-Term Fixed Guideway Service

Source: MARTA

Potential Transit Station

MARTA Station

Potential Alignment

MARTA Rail

Circumlator Routes

Railroad

City Boundary

Interstate

County Boundary

Major Road

CLAYTON COUNTY REGIONAL COMMUTER RAIL

In 2014, Clayton County voters overwhelmingly approved a one-cent sales tax increase for the expansion of MARTA service to the county. Half of the funds are to be spent on bus service and half on high-capacity transit. Study has been conducted to assess corridors and technology options for high capacity transit between East Point/College Park in the north and Jonesboro and Lovejoy in the south. All six potential corridors traverse the Aerotropolis study area, with the preferred alternative being a 22-mile alignment running parallel to existing Norfolk Southern right-of-way that passes through downtown Hapeville and the International Gateway (see **Figure 13**). Diesel multiple unit (DMU) trainsets will likely be selected as the preferred technology and differ from the electrified trainsets currently utilized by MARTA requiring passengers commuting into Atlanta's employment corridor to change trains at East Point. Pending agreements with Norfolk Southern and environmental review, construction could begin as early as 2023 with an opening date as early as 2027. Planning for the Corporate Crescent service contemplated above as well as any secondary intermodal transportation center directly serving the international terminal would need to incorporate the station locations and station access points when considering final route and stop layouts.

Key Stops:

- East Point MARTA
- City of Hapeville
- International Terminal Gateway
- Jonesboro
- Lovejoy

Service Hours

Peak to peak with mid-day service.

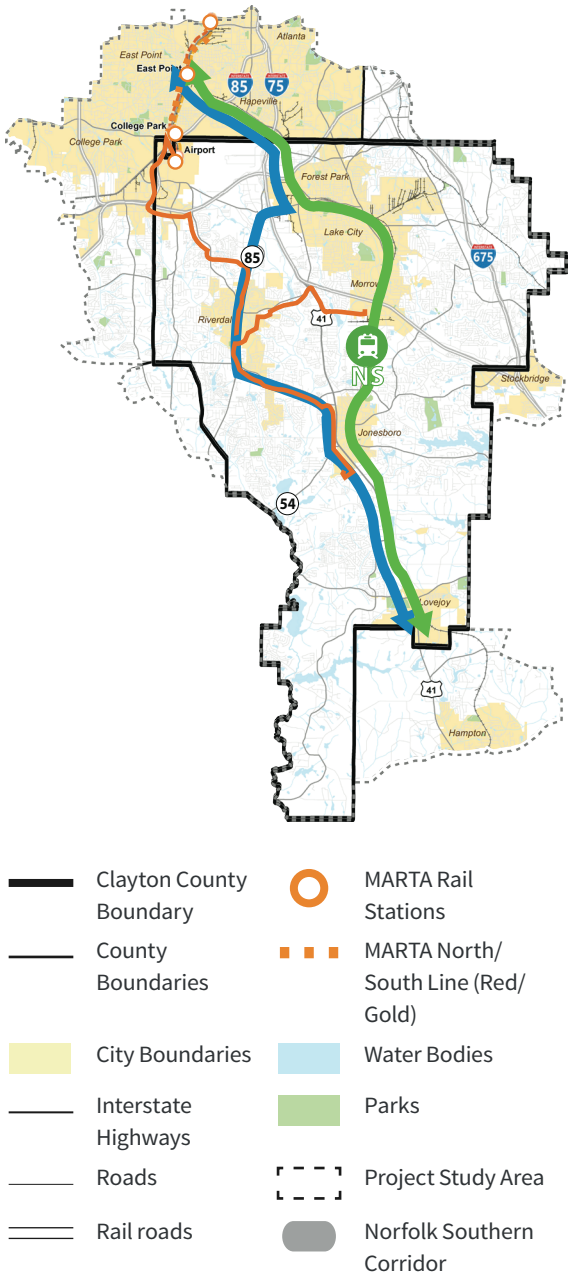
Near-Term

Near-term phases of implementation include environmental review (2019), engineering (2021) and anticipated construction in 2023.

Longer Term

Anticipated operation in 2027, with potential for future extension south to Macon.

Figure 13–Preferred Clayton County HCT Corridor (Existing Features)

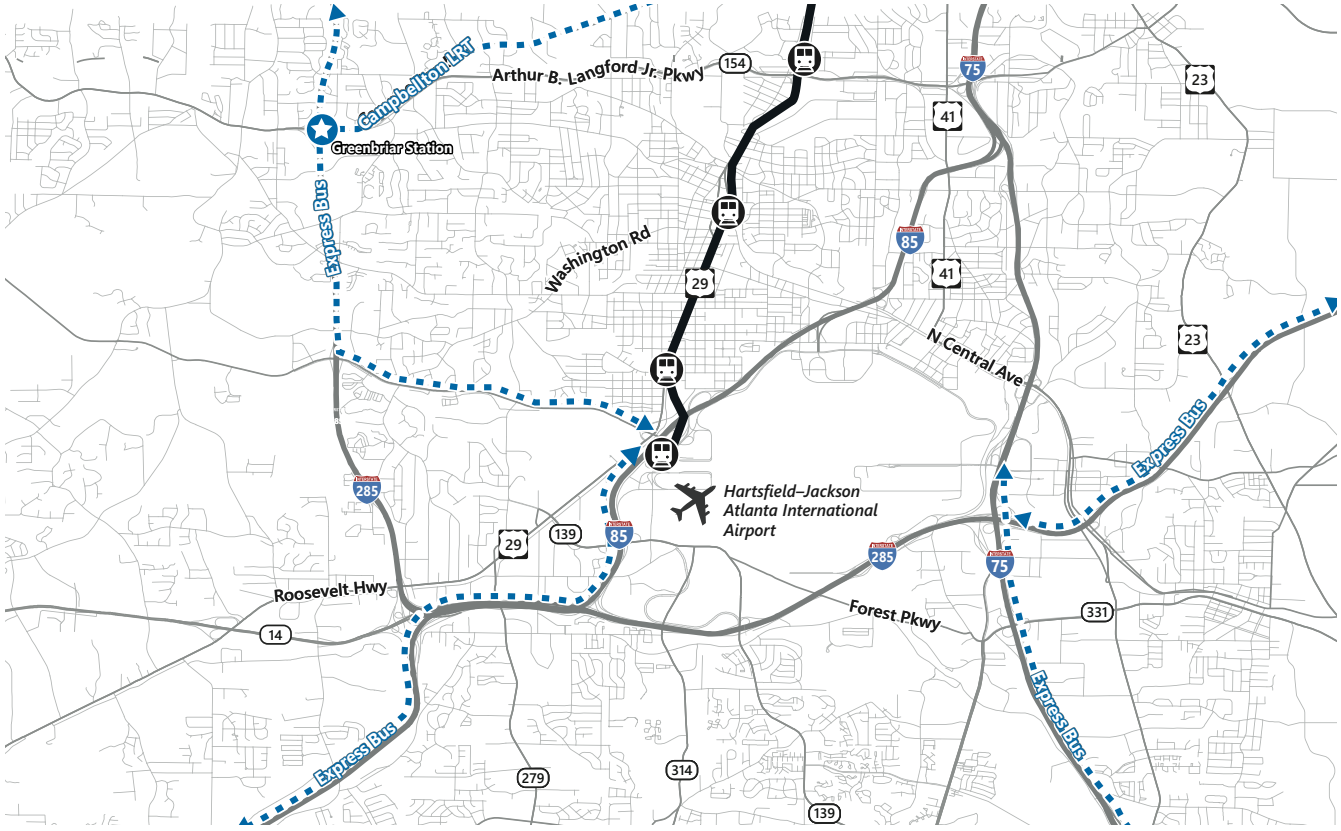


Source: Atlanta Regional Commission, VHB

GRTA XPRESS

Although existing Xpress Bus routes go through the study area they do not currently make pick-ups or drop-offs within the Aerotropolis or at either the domestic or international Airport terminals. Lack of sufficient curbside space at the Airport to serve as a station has prevented Xpress buses from making stops there. The State Road and Tollway Authority (SRTA) which oversees the Georgia Regional Transportation Authority (GRTA) is currently undertaking a study to explore the value and operational impacts of expanding Xpress regional commuter bus service to the College Park MARTA station from the northwest (Cobb County) and from the northeast (Gwinnett County). Xpress Bus is an important commuter service, especially for corporate and government employees and would provide an opportunity for car-free travel to the Aerotropolis from areas currently not served by MARTA like Henry County to the southeast and Coweta County to the southwest.

Figure 14–Xpress Bus Service




Southbound
Directory


NO SIGN POSTINGS
RAILS
FARES
SCHEDULE


marta
2821
Tap to Exit

TRANSIT FACILITIES

INTERMODAL TRANSPORTATION CENTER

An Intermodal Transportation Center (ITC) within the Aerotropolis will enhance multimodal connectivity and accessibility. An ITC is a centralized transit hub station that provides connectivity between several travel modes while providing a high level of passenger amenities that would be expected within the terminals of an international airport. ITC's are typically multi-level facilities centered on a direct high capacity rail connection, such as MARTA, with designated bays for regional and local bus routes and curb side access for TNC, taxi, shuttle, and private pick-up and drop-offs. Atlanta travelers of the future will likely encounter ITC's in the northeast in Doraville, the northwest in Cumberland, and in the south at or near the Airport. Other major cities including Paris, London, and Tokyo have evolved to depend on multiple ITCs along an inner ring of the region.

As an initial gateway for airline travelers to the Atlanta region as well as entrants from all points south of Atlanta, the Airport ITC should feature a transit information center with maps, timetables, and real-time trip planning functionality for all services. To the extent feasible, the facility should also be designed to enable non-motorized access within the Aerotropolis including docking for bike and scooter share, secure long-term bike parking, and shower/changing facilities for bikers, walkers, and joggers. Additional amenities to consider include Atlanta-inspired shopping and dining, and cultural programming that emphasize the Atlanta region such as rotating installations from local artists.

Figure 15–Potential Intermodal Transportation Center Locations

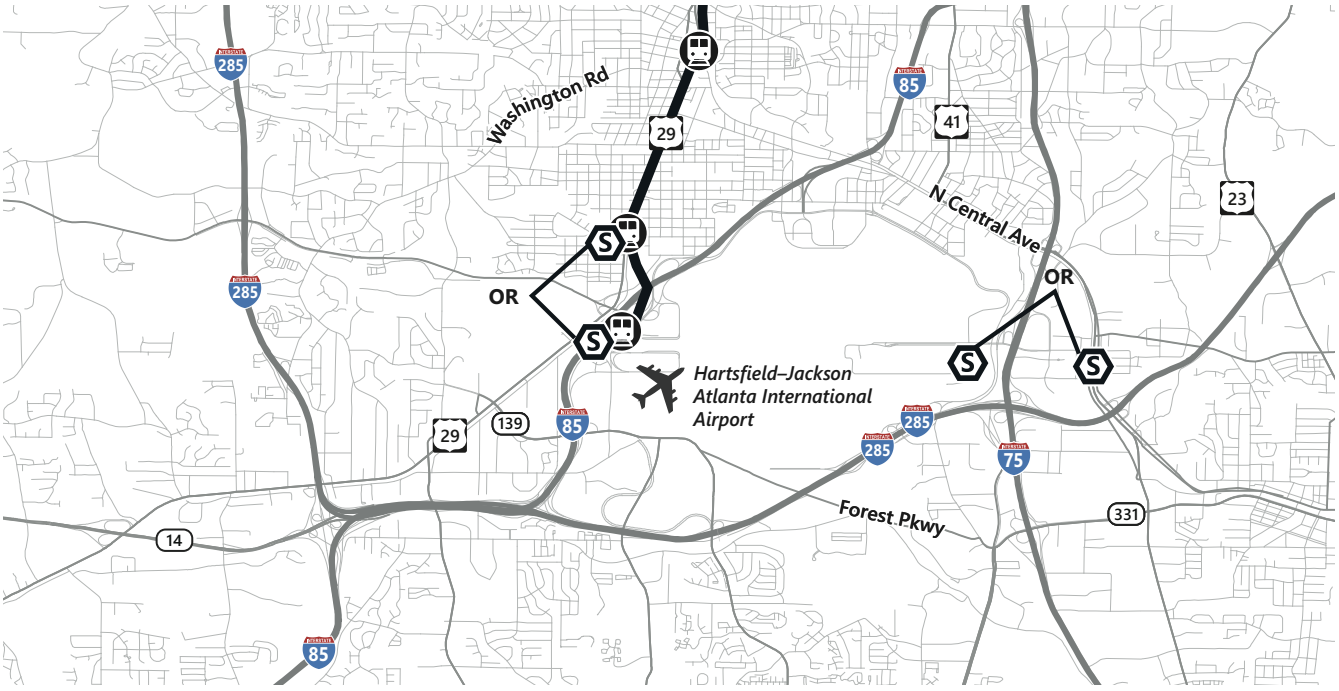


Figure 16–Recommended Design Elements of an Intermodal Transportation Center

Passenger Experience	Information	Services
• Enclosed Waiting Areas • Restrooms • Changing/Shower Facilities • Retail • Dining • Currency Exchange • Art and Cultural Installations • Airline Check-ins • Staffed Services • Security	• Holistic Branding • Information and Schedules • System Map • Real-Time Display • Information Kiosk • Naming Rights (Potential funding source)	• Enclosed Waiting Areas • Restrooms • Changing/Shower Facilities • Retail • Dining • Currency Exchange • Art and Cultural Installations • Airline Check-ins • Staffed Services • Security

BUS/SHUTTLE STOPS

The type of stop that should be installed in any given location is dependent on the type of service that will use the location, as well as the ridership (measured in typical daily boardings) at the location.

Design elements can vary considerably, but generally fall into the following categories:

Passenger Experience Elements
Intended to ensure comfort and security with the goal of creating an enjoyable experience using transit.

Informational Elements
Elements that allow passengers to quickly and easily understand the transportation options available to them, how they work, and when or how often vehicles will arrive at stops, including in real-time, when possible.

Operations Elements
Designed to emphasize efficiency and safety while minimizing bus delay.

The elements that should be present at any particular stop location are dependent upon the stop type. However, there are some crucial elements that should always exist at stops no matter the typology, including:

Route information and schedules

Pedestrian connectivity

Lighting

Branding

Figure 15–Updated MARTA Bus Shelter with Solar Powered LCD Display–Freedom Parkway

Source: Curbed Atlanta

Sheltered Stops with Seating

Sheltered stops with seating should be sought as the minimum level of quality for facilities within the Aerotropolis (see **Figure 15**). Within a typical municipal bus system, thresholds for implementing such a stop include any of the following:

Ridership between 25–100 passengers per day

Known vulnerable users

Regular inclement weather

Rapid service

Figure 17–Recommended Design Elements of a Sheltered Stop

Passenger Experience	Information	Operations
• Lighting	• Holistic Branding	• Paved Boarding Area
• Seating	• Information and Schedules	• Bus Bay or Curb Extension
• Shelter	• System Map	• Pedestrian/Bike Connections

High-Volume Stops

Designed to accommodate large loads of passengers (100+ passengers per day) and multiple buses at the same time. A high-volume bus stop serves heavy ridership, is often located on a very active corridor, and may feature transfers among different transit services and routes. A high-volume stop is appropriate for local and rapid bus routes in addition to light rail.

Figure 18–Recommended Design Elements of a Sheltered Stop

Passenger Experience	Information	Operations
• Lighting	• Holistic Branding	• Paved Boarding Area
• Seating	• Information and Schedules	• Bus Bay or Curb Extension
• Shelter	• System Map	• Raised Platform/Level Boarding
• Waste Containers	• Real-Time Display	• Off-Board Fare Collection
		• Pedestrian/Bike Connections
		• Bikeshare/Micro-mobility

SIGNAGE AND WAYFINDING

Signage and wayfinding allows informed travel decisions, increases traveler confidence, and helps to develop a sense of place. Wayfinding could be introduced at three levels– for auto drivers, for pedestrians and transit users, and for users of the planned trail system. Wayfinding is currently under study by the Aerotropolis CID. Proposed practices for wayfinding within the Aerotropolis are shown in **Figure 18**.

Figure 19–Recommended Signage and Wayfinding Practices

Mode	Goals	Design Considerations
Transit	• Holistic Branding • Information and Schedules • System Map • Real-Time Display	• Place at regular intervals, especially at confusing areas and at decision points, where potential riders choose a transit route and travel path to access transit. • Names of stops, stations, and destinations should reinforce brand, be recognizable, and be brief. At locations with multiple lines or stops, names of a specific geographic element can be used. • Distinctions among frequency are more useful to passengers than distinctions among modes. On maps, provide distinct thicker lines or bolder colors for frequent services. • Include tactile or audible cues, providing directional guidance at decision points and signs confirming the route taken, especially in confusing or difficult-to-navigate areas.
Bicycles	• Ensure riders arrive via the most comfortable and direct routes and by using improved crossings of major roadways. • Alert riders where to turn to continue on the designated facilities. • Provide cues to key destinations, and alert riders of conflicts.	• Place confirmation signs every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along bicycle facilities. • Place turn signs at near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through). • Place decision signs near-side of intersections in advance of a junction with another bicycle route or along a route to indicate a nearby destination
Pedestrians	• Direct users to points of interest. • Enhance placemaking. • Facilitate access to other modes.	• Indicate direction and travel times in easily understood units, such as blocks or approximate walking time. • Should not interfere with pedestrian paths of travel.

TRANSIT TECHNOLOGIES

Automated People Movers

The SkyTrain is an elevated, automated people mover connecting the airport's main passenger terminal with the rental car facility as well as the Georgia International Convention Center.

The existing SkyTrain is an automated people mover (APM) that operates from a platform adjacent to Airport MARTA Station and The ATL Car Rental Center via the Georgia International Convention Center (GICC) on a fixed overhead concrete guideway. An APM is essentially a self-driving train system, which operates without individual operators and is monitored from a central control station. The existing SkyTrain currently operates six two-car Mitsubishi Crystal Mover trains with an approximate capacity of 100 passengers with baggage. The service operates 24 hours a day with three-minute daytime peak headways and headways of no more than ten minutes at night. As an existing precedent technology, the SkyTrain should be considered as an alternative for the Camp Creek Connector or as an access option for the Airport City development using an existing wye-shaped configuration that feeds into the network at the GICC. It is useful to note that access between the Skytrain and the large and heavily used Delta employee parking facility at Convention Center Concourse and Airport Drive could be provided through the southern edge of the property.

Autonomous Vehicles (AVs)

Autonomous or "self-driving" vehicles are defined by the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) as "those in which operation of the vehicle occurs without direct driver input to control the steering, acceleration, and braking and are designed so that the driver is not expected to constantly monitor the roadway while operating in self-driving mode."[5] An autonomous vehicle (AV) is one that takes full control of all aspects of the dynamic driving task for at least some of the time.

This rapidly advancing technology offers important likely benefits, including safer and easier travel, and lower transportation costs.

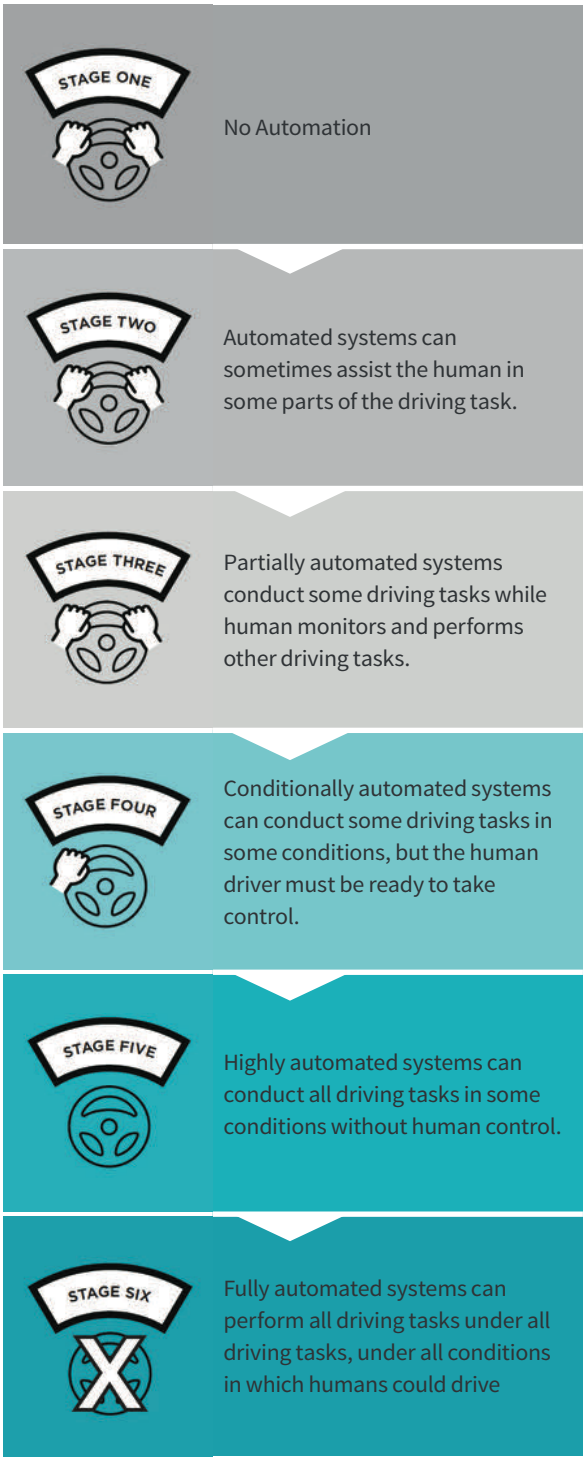
These benefits are important to future mobility within the Aerotropolis as we consider the likely application of AV to transit, shuttle and Transportation Network Companies (such as Uber and Lyft) operations.

The Society of Automotive Engineers International (SAE) has defined six levels of automation shown in **Figure 20**. The NHTSA adopted these definitions in 2016. As levels of automation increase, the role of the driver shifts from one of active control of the vehicle, to monitoring, to limited or no involvement in driving tasks. When discussing Level IV and Level V automation, which do not require human operations in most conditions, vehicles are generally considered "autonomous," while "automated" vehicles can possess any level of automated functions, from Levels I through V.

Many original equipment manufacturers (OEM), such as Ford and General Motors (GM), have made ambitious claims as to their timeframe for making Level 4 AV technology available in new models as early as 2021[6]. The timeframe for bringing Level 5/full automation technology to market is hard to forecast; however, several studies estimate that Level V cars will be available on public roads in the late 2020s, following earlier adoption by shared fleet users such as TNCs and large shuttle operators like airports and campuses.[7]

Low-Speed Electric Vehicles (LSEV)

Figure 20–Levels of Automation



Source: Nelson\Nygaard

[5] https://www.transportation.gov/briefing-room/us-department-transportation-releases-policy-automated-vehicle-development

[6] Belvedere, Matthew J. 2017. "Ford Aims for Self-Driving Car with No Gas Pedal, No Steering Wheel in 5 Years, CEO Says." January 9, 2017. https://www.cnbc.com/2017/01/09/ford-aims-for-self-driving-car-with-no-gas-pedal-no-steering-wheel-in-5-years-ceo-says.html

[7] NCHRP Research Report 845, Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies, 2018.

Level 4 AVs

Because LSEVs lack steering wheels and brake pads, they require waivers from the Federal Motor Vehicle Safety Standards to operate on public roads.

LSEVs are currently being manufactured by firms such as:

Typically deployed as shuttles within campuses and other controlled operating environments, they can carry 8 to 15 passengers at speeds of 15 to 25 mph.

France-based EasyMile's EZ10 driverless shuttle became the first such bus approved to run on public roads in the United States with its deployment in March 2018 at the Bishop Ranch Office Park in San Ramon, CA. LSEV speeds are compatible with complete streets and bicycle boulevards, where the speeds of vehicles are reduced to support a small differential between vehicle and bicycle speeds. On lower-speed streets and on appropriately wide multi-purpose paths, LSEV and bicycle networks may be compatible for parallel operations.

Personal Rapid Transit (PRT)

PRT is a system of on-demand point-to-point travel that combines the advantages of private automobiles (on-demand point-to-point service) with the advantages of public transit (higher carrying capacity with reduced vehicle miles traveled and parking demand generation). Prevailing PRT designs operate with pods carrying two to six passengers with varying levels of autonomy within fixed guideways.

PRT is best implemented as a form of internal circulation within a campus or facility setting (i.e. airport) or as first/last-mile connection to high-capacity transit.

PRT stations are typically located off line of the network meaning that they can accommodate non-stop point-to-point service without disrupting network wide flows. PRT can also be integrated at the platform level of other modes (like MARTA) which is less feasible with other modes. Stations are typically closely spaced, where comfort and negligible wait times make the service more attractive to alternative options (i.e. walking). Theoretically, PRT has a much higher passenger-per-hour-per-direction line capacity than traditional transit modes; however, there are no existing large scale PRT systems that have been implemented with which to compare with traditional high capacity options such as BRT or heavy rail.[8]

[8] Sarkar, Pradip Kumar, and Udit Jain. "Benchmarking of Personal Rapid Transit System (Dynamic Model)." Transportation Research Procedia, Vol. 25, July 2016

In early October 2018, members of the project team traveled to Europe to meet with two PRT firms described on the next page to discuss products and view proofs of concept. One of those systems was designed and build by Dutch-based 2getthere, who currently develops two vehicle systems: PRT (four to six passenger) and Group Rapid Transit (GRT) that accommodate 16 to 24 passengers.

GRT systems accommodating 24 passengers per vehicle can accommodate more than 5,000 passengers per hour per direction (pphpd) with speeds of more than 35 mph

Two projects are currently active–one in the Netherlands which has been operational since 2010; the second in Abu Dhabi. 2getthere was recently selected by the Brussels Airport to develop a self-driving GRT shuttle system that operates in mixed traffic and at-grade crossings within a controlled setting. The project is currently undergoing development and testing with full vehicle operational testing to commence in fall 2019 with full deployment at the airport by 2021.[9] Another project under contract links Blue Waters Island in Dubai with a mainland station approximately 1.6 miles away. This will be the largest project to date for the firm with initial capacities of 3,750 pphpd and maximum capacities of 5,000 pphpd.

UK-based **Ultra Global** develops fixed guideway PRT systems based on a fleet of rubber-tired battery powered vehicles capable of carrying four to six passengers with luggage at speeds of up to 25 miles per hour. Pods are recharged automatically at points within the system with zero vehicular emissions. Vehicles navigate with a combination of sensors and component systems that relay performance data to a central control center. Wireless communication systems allow for exchange between passengers and central control. Interior LCD screen and audio systems allow for dissemination of travel information and can be used for advertising. Ultra Global's primary proof of concept is at London's Heathrow Airport where a system of 21 pods serve approximately 800 passengers a day between Terminal 5 and a long-term parking facility.

The project study team visited London Heathrow and received a tour of the facilities and learned of the advantages and disadvantages of such a system.

Figure 21–UltraGlobal PRT at London Heathrow Airport

Image source: Ultra Global

[9] 2getthere B.V., 2018.

Maglev

Georgia-based American Maglev (AMT) is currently proving concepts at a full-scale test track in Powder Springs, GA with a full-sized passenger vehicle and approximately 2,000 feet of elevated guideway. The system is the only full-scale Maglev train in the United States and has demonstrated safe operation, levitation, propulsion, stability, loading, and speeds in excess of 35 mph. AMT's design present a revised concept based on lighter vehicles and simplified tracking compared to systems previously developed in Asia and Europe, offering lower construction and operation costs. In 2013, the Atlanta Braves evaluated concepts from the firm to connect Turner Field to the Georgia State MARTA Station by AMT Maglev technology.

AMT's technology is based on optimized magnetic levitation and electric powered linear induction propulsion. Computer-controlled electromagnets are attached to an arm beneath the vehicle providing lift, guidance, and vertical stability. When the vehicle is levitated each magnet attracts to a steel guiderail, creating a one centimeter air gap between the vehicle and the guiderail. Guideways are elevated an average of 33 ft. above ground and are supported by columns that require a five foot footprint. A potential alignment and system specifications for Maglev implementation within the study are shown in **Figure 22**.

Figure 22–Potential ATL Maglev Alignment and Specifications provided by AMT

Image source: American Maglev Technology

Capital Cost
$187 Million

O&M
$3.2 Million

Construction Period
18 Months

Miles of Guideway (double track)
5.2 Miles

Number of Passenger Stations
5 Stations

Number of Cars
4 Cars

Hours of Operation
20 Hours

Days of Operation (costs)
365 Days

Revenue Days
360 Days

Peak Hourly Capacity–
2,640 People

Maximum Headways
5 Minutes

Daily Capacity
26,400 People

Trip Time One-Way
10 Minutes

Top Speed
50 Mph

FIRST/LAST-MILE CONNECTIVITY

Completing the Trip

Bus and rail services frame the core of transit trips, but users must complete the first and last segment of the trip on their own. First/last-mile refers to this segment of a user's trip between their origin/destination and primary mode of travel. Additionally, the quality of infrastructure for active transportation (i.e. sidewalks and bike lanes) and availability of first/last-mile options provide a strong indication of potential transit use and rider experience.

Active Transportation

Provisions for walking and biking in the Aerotropolis area are available but are not continuous with large gaps preventing safe and comfortable active travel. Sidewalks generally exist in town centers such as Hapeville, East Point and College Park, but are lacking on many study area travel corridors such as Riverdale Road and Camp Creek Parkway. Aerotropolis Atlanta CIDs recently completed a greenway plan to identify priority areas for bike/ped access.

Residents prefer a multiuse trail over street-adjacent sidewalks for access to businesses, entertainment, exercise, and leisure.

The most requested connections are among the Tri-Cities (College Park, East Point, and Hapeville), between the Airport Loop and Forest Park, between Forest Park and College Park MARTA, to the Camp Creek Marketplace from various points, and to the airplane take-off and landing viewing areas.

Standards recommended by Nelson\Nygaard for active transportation facilities within the Aerotropolis are provided below:

Increase average speed of active transportation users
Decrease wait times at intersections and increase speed and capacity along key walking/biking routes to transit. Improvements near transit stations should include: pedestrian prioritized signal timing, reduced crossing distances through curb extensions, and sidewalk widths that cater to a growing range of mobility demands such as wheel chairs, scooters, as well as pedestrians. Sidewalks providing access to transit should have an absolute minimum through-width of 6' and of 8' if directly adjacent to moving traffic.

Provide a clear path of travel
Minimum pedestrian through-widths should be maintained separate from amenities that require additional width. For example, if the sidewalk is adjacent to a ticket vending machine or transit information kiosk, the minimum clear path of travel should be maintained outside of the area containing transit stop amenities to ensure station activity areas do not impede pedestrian travel.

Enhance pathway safety
Active transportation routes serving transit stops should be well-lit to accommodate riders traveling at all hours. Pedestrian-oriented lighting should be placed approximately every 30 feet focused on the center of the pathway.

Ensure pathway quality
Broken sidewalks or missing curb ramps present a significant barrier to pedestrians and users that require a wheeled mobility device. Pedestrian facilities serving transit should be kept in good maintenance and provide adequate provisions for users with mobility impairments, such as ADA ramps with truncated domes.

Provide clear and intuitive navigation
Pathways to transit should provide directional markers with walking and biking times to the station(s). Where applicable, signage to key stations can be enhanced with real-time transit arrivals information.

Provide cut-throughs and shortcuts
Where applicable, such as public parks or parking lots, provide cut-throughs that provide a shortcut over the standard street network with improved paving, lighting, shade, and directional signage.

Bike Share

Bike share systems provide the public access to a shared fleet of bicycles that can be ridden between a set of docking stations or parked at existing bike parking and designated drop zones with dockless locking technology. The flexibility of bike share–pick up a bike in one location and leave it at another, makes it one of the most powerful tools for improving first/last-mile access. Relay Bike Share operates a "smart hybrid" system throughout the City of Atlanta that has docking stations but allows for parking at any public bike rack. There are more than 70 Relay stations across the city, although the service does not currently operate within the Aerotropolis.

Figure 23–Relay Bike Share Station in Piedmont Park

Image source: Nelson\Nygaard

While the bicycle inventory of bike share systems is about evenly split between station-based and dockless bike share systems, station-based systems account for the overwhelming majority (96%) of bike share trips.[10]

Dockless smart bike share systems emerged in 2014 and now account for 44% of all bike share bikes in circulation.

The vast majority of new bike share systems deployed since 2016 rely on dockless technology. By eliminating dock installation and maintenance, the costs of bike share programs are significantly reduced. Dockless bike share can add convenience for users who need not worry about empty bike share stations at the start of the trip or full stations upon arrival.

In addition to dockless bikes, the bike share industry is moving to bikes with built-in electric motors to make pedaling easier. These "e-bikes" require less physical effort than unassisted bikes typical of today. Electric bikes generally top out at 20 mph, and are expected to attract customers because they do not have to worry about breaking a sweat, struggling to climb a hill or keeping up with traffic. In fact, e-bikes can deliver more competitive travel times in congested locations than automobile travel.

[10] NACTO. 2017. Bike Share in the U.S.: 2017. https://nacto.org/bike-share-statistics-2017/

Electric Scooter Share

Similar to dockless bike share is the more recent roll out of electric scooter-share services, with startup firms Bird, Lime , and Lyft currently operating in the Atlanta region. The scooters, which weigh between 30 and 40 pounds and reach speeds of about 16 mph, are picked up every night to charge, and repositioned each morning for users. Users find and unlock scooters with a smartphone app, and ride for low costs of, for example, one dollar to start and then 15 cents for each minute of riding.

Electric scooters provide a powerful tool for bridging first-last mile gaps, albeit they require new regulations for proper management.

When contemplating regulating the devices the Aerotropolis and its partners should work with operators to imbed geo-fencing within their mobile applications to encourage proper parking behavior which would require users to park and lock the devices in designated drop zones that do not interfere with pedestrian paths of travel or transit operations.

Image source: Nelson\Nygaard

Image source: Lyft.com

Image source: Uber.com

TNC Partnerships

Transit agencies across the country are increasingly partnering with Transit Network Companies (TNC) such as Lyft and Uber to provide subsidized first-last mile rides to transit stops within specific geographic areas. Contracted micro-transit program that provide an on-demand shuttle service to transit stations via a mobile application may be cheaper to operate than dedicated service on some routes. The Aerotropolis should evaluate appropriate partnerships, particularly to provide alternative options for user that would seek to park-and-ride in order to utilize MARTA rail due to distance or lack of reliable bus transit.

CASE EXAMPLES

LONDON HEATHROW, UNITED KINGDOM

STUDY RELEVANCE:
Technology–ULTra (Urban Light Transit) Personal Rapid Transit [11] [12] [13]

Image Source: ULTra Global PRT

PRT pods can travel
up to 25 mph

Each pod can seat
up to 4 passengers

Pods are estimated to
use up to 50% less energy than a standard bus

Journeys typically take
4–6 minutes from end to end

London's Heathrow Airport (LHR) unveiled its Personal Rapid Transit (PRT) service in May 2011. The service currently consists of 22 on-demand pods that operate on a mostly elevated 2.4 mile track that runs between Heathrow's Terminal 5 and the Terminal 5 long-term parking facility. Powered by batteries, the pods are estimated to use up to 50% less energy than a standard transit bus.

The service operates 22 hours per day from 3am–1am from Monday to Friday, from 3am–11pm on Saturdays, and from 4am–1am on Sundays, and is free to ride for customers who have paid for parking in Terminal 5. Customers use a simple touchscreen interface to call a pod and select their destination. Pods are air conditioned, have powered doors with emergency egress at the front. Upon boarding their pod, passengers need only press a button to activate the automatic doors, and then press a second button to initiate their journey. The PRT pods can travel up to 25 mph and can seat up to four passengers. Journeys typically take 4–6 minutes from end to end.

In its first year of operation, the Heathrow PRT system carried about 24,000 passengers with 99% reliability. On average, customers waited only 11 seconds for their vehicle to arrive once called, and 83% of passengers had zero wait time. Once the system was fully established, the bus service that had previously provided connections between the car park and Terminal 5 was discontinued.

[11] https://www.heathrow.com/transport-and-directions/heathrow-parking/heathrow-pod-parking-terminal-5
[12] https://www.thistle.com/en/hotels/london/heathrow-terminal-5/heathrow-pods.html
[13] http://www.irse.org/knowledge/publicdocuments/4%20Fraser%20Brown.pdf

SEOUL INCHEON (ICN), SOUTH KOREA

STUDY RELEVANCE:
Technology–Ecobee Maglev [14] [15] [16]

Incheon Island, an island west of Seoul that houses the region's major international airport and serves as a functioning Aerotropolis, features a 6.1 km magnet levitation (maglev) train route that connects Incheon International Airport to Yongyu Station near the island's southern tip. Unlike many airport transit services, this maglev service was designed specifically to serve planned large-scale Aerotropolis development projects in the area surrounding the airport, and not to carry travelers to the center of the nearest major city, though users can make connections to Seoul via the subway or the AREX train at Yongyu station. Currently, the maglev operates every day of the week from 9am–6pm with trains running every 15 minutes. The train serves six stations with an end-to-end travel time of 15 minutes. Passengers ride free of charge.

The existing stretch of the maglev system is the first of a three-phase plan that could eventually see the maglev encircle and provide coverage to the entire island. The existing 6.1 km section of the maglev is represented by the blue line in the image to the right. Three of the six stations along the route (Incheon Airport, Long-Term Parking, and Yongyu) are already developed, while the other three (Combined Government Office, International Business Complex, and Waterpark) remain in various levels of development and construction. The second and third phases of the maglev plan are represented with the orange line and the green lines, respectively. Planning considerations for the second and third phase of system expansions would begin when Aerotropolis development activity on the island reaches levels that would require the added service.

Phase 1 of the Incheon maglev line cost around one-third of the cost of a regular light rail line to construct, about $35 million USD per km. Further, the maglev costs between 60%–70% less to operate than a regular light rail line, despite the cost of supplying electricity to a maglev being about 30% higher than regular light rail.

Image Source: Minseong Kim

Existing (blue) and planned (orange and green) Incheon development and maglev service

Source: Global AirRail Alliance

Maglev operates
7 days a week

Average trip time
15 minutes

[14] http://english.chosun.com/site/data/html_dir/2016/02/03/2016020301374.html
[15] http://english.hani.co.kr/arti/english_edition/e_national/729163.html
[16] https://www.globalairrail.com/news/entry/incheon-international-airport-opens-new-maglev-train-connection

JFK AirTrain
Image source: Jim Henderson

NEW YORK JOHN F. KENNEDY, NEW YORK

STUDY RELEVANCE:
Effective People Mover with Fare System

The New York John F. Kennedy (JFK) AirTrain is a people mover system that has been in operation for 15 years, and is the primary transit connection to and from JFK airport providing a direct connection to the MTA's NYC subway system and the Long Island Railroad (LIRR) commuter rail system.

The AirTrain system comprises two branches that access each of the two major external hubs at JFK, the Howard Beach branch and the Jamaica branch. Outside of the airport, each branch makes one stop at Federal Circle, which provides access to car rentals, shuttle buses, and some parking, before traveling on to their final respective stops at Howard Beach Station and Jamaica Station. The Howard Beach branch allows passengers to make connections to the A line of the subway or depart the system into the Howard Beach neighborhood. The Jamaica branch provides connections to the LIRR, the E and J subway lines, and numerous local and regional buses.

The JFK AirTrain runs 24 hours per day, seven days per week, and costs a flat $5 fare each way, charged only for off-airport trips. The fare system is integrated into the MTA's MetroCard system, so riders can use the same card to use the AirTrain and all of the MTA subway and bus systems in the city. LIRR monthly pass holders can also use their pass as a MetroCard and load money onto it that can be used for the AirTrain.

SL1 BRT stop at Boston's South Station
Image source: Nelson/Nygaard

BOSTON LOGAN AIRPORT, MASSACHUSETTS

STUDY RELEVANCE:
High Standard Bus Rapid Transit

Boston Logan Airport (BOS) is served by two lines (SL1 and SL3) of the Metropolitan Boston Transit Authority's (MBTA's) Silver Line Bus Rapid Transit (BRT) system. The SL1 route connects the airport to South Station (a major regional transit hub) and the South Boston Waterfront to the south. The SL3 route makes similar connections to the south, but also connects to the East Boston and Chelsea areas to the immediate west and north-west of the airport. The BRT service uses articulated buses that operate in a mixture of reserved lanes and mixed traffic at street level and in dedicated tunnels with electrification for dual-mode operation. The SL1 operates 19 hours every day from 5:30am–12:30am, with frequencies of ten minutes or less weekdays, and about 10–12 minutes on weekends. The SL3 also operates 20 hours every day from 5am-1am with frequencies of 10–15 minutes.

Massport, which operates the airport, provides free rides for passengers using the SL1 route boarding at the airport and provides free outbound Silver Line transfers to other Silver Line routes and Red Line heavy rail at South Station. Passengers can enter through all three doors which speeds up the boarding process. Airport specific signage is provided at SL1 stops, however the vehicles are not branded differently than the Silver Line Routes which do not serve the airport. SL3 users are required to pay the regular fare.

MIA Intermodal Center Design
Image source: MICDOT

MIAMI INTERNATIONAL AIRPORT, FLORIDA

STUDY RELEVANCE:
Good Connections to Local and Regional Transit Services

Unlike many major airports, Miami International Airport (MIA) does not sit outside of the region's more developed areas, and in fact is surrounded on all sides by development. As such, MIA and its surrounding area are well integrated into many of the greater metro area's local and regional bus and rail services at the Miami Airport's Intermodal Center. This includes connections to nine local bus routes operated by Miami-Dade Transit (which include four east-west routes, three north south routes, one limited route and one express route), the Orange line of Miami-Dade Transit's Metrorail (with transfers to the Green line), and the Tri-Rail commuter rail system. In combination, the transit service options available at MIA allow users to reach most areas within a 5-mile radius or the airport without needing to transfer.

Zagster Bikeshare
Image source: zagster.com

BALTIMORE/WASHINGTON INTERNATIONAL AIRPORT, BALTIMORE, MD

STUDY RELEVANCE:
Trail Access and Bikeshare

The Baltimore/Washington International Airport (BWI) Hiker-Biker Trail is a 12.5-mile trail providing direct bicycle and pedestrian connections to BWI Airport from surrounding neighborhoods and developed areas. BWI users and employees have access to bikeshare which can be used to travel to and from surrounding areas via the BWI trail. This is made possible through a partnership between BWI and Zagster Bikeshare. Currently, there are ten bikes available to rent outside the airport's international terminal, near the BWI Marshall Airport Light Rail stop. Zagster bikes can be rented for $2 per hour, and users can access them by downloading the Zagster mobile app.

Strategy Evaluation

Figure 24 on the next page details some of the specific opportunities, considerations and transit service characteristics of each of the key recommendations. These specifics should serve as guidance for design and implementation, to ensure that consistency with the overall Aerotropolis transit vision. Where new transit corridors are recommended (such as Corporate Crescent and Camp Creek Parkway), it is important to match the selected transit mode with the specific corridor characteristics (passenger demands, desires speeds and frequencies, etc.). While this information is widely known for traditional transit modes, **Figure 24** provides some technical guidance for non-traditional transit modes.

Figure 24–Strategy Evaluation–Projects

Recommended Project	Aerotropolis Users	Aerotropolis Connections	Considerations	Service Span	Candidate Transit Technologies*	Capital Cost	Operating Cost	Potential Partnerships	Potential Federal Funding
Corporate Crescent Phase 1	Employees going to Airport, Delta, Porsche, etc. Int'l to Domestic Terminal travelers Int'l Terminal Parking	Local access via stops along North Side of Airport Regional links at College Park ITC	• Major trip generators • Existing transit market • Improves access to jobs – ROW acquisition	~24h	Bus, BRT, LRT, Autonomous PRT	$$ to $$$$	$ to $$	Businesses, Cities of College Park, East Point and Hapeville, MARTA and/or The ATL	Yes
Corporate Crescent Phase 2	Future land uses south/east of Airport; residents of North Clayton	Local access via stops along Forest Pkwy and Riverdale Rd	• Future land use opportunity – ROW acquisition – Unproven demand	~24h	Bus, BRT, LRT, Autonomous PRT	$$ to $$$$	$ to $$	Future office or other land uses south of the Airport	Yes
Camp Creek Connector	Employees and travelers who could transfer at College Park; Off-Airport parking users	Airport City (west) Retail on Camp Creek Access to Greenbriar ITC (future)	• Consolidates parking shuttle demand – Unproven demand – ROW Acquisition	~24h	Bus, BRT, Skytrain, Autonomous PRT	$$ to $$$$$	$ to $$	Private parking operators, Airport City, Businesses	Yes
Riverdale Road ART	Employees and travelers from North Clayton	Connect to South Fulton BRT; access to College Park ITC	• Existing transit market • Improves access to jobs – Mixed traffic impacts travel time consistency	20h	Bus	$$ to $$$	$ to $$	MARTA	Yes
South Fulton BRT	Employees and travelers from South Fulton	Connect to Riverdale ART Access to College Park ITC	• Flexible implementation – Unproven demand	20h	Bus, BRT, LRT	$$$$ to $$$$		MARTA, Fulton County, GDOT	Yes

Recommended Project	Aerotropolis Users	Aerotropolis Connections	Considerations	Service Span	Candidate Transit Technologies*	Capital Cost	Operating Cost	Potential Partnerships	Potential Federal Funding
Metropolitan Pkwy ART (Dogwood Dr)	Employees and travelers from south and west Atlanta to Airport, Hapeville, Clayton	Connect to Clayton Commuter Rail and Corporate Crescent at Hapeville	• More MARTA planning underway – Challenging crossing at Hapeville Central Ave	20h	Bus	$$ to $$$		MARTA, City of Atlanta	Yes
Clayton Commuter Rail	Employees and travelers from Clayton going to Airport, Porsche, Delta, etc.	Connections to MARTA at Hapeville, East Point, Mt. View; connect to Int'l Terminal	• Connecting Clayton planning underway • Provides access to International Gateway – Complicated federal process – Traditional commuter-focused service model	Peak hours	DMU (1,000 pax at 35-45 mph average)	$$$$$	$$ to $$$	MARTA, Norfolk Southern, Clayton County	Yes
GRTA Xpress Expansion	Employees and travelers from Cobb and Gwinnett Counties; potentially reverse links for Clayton employees to those counties	Connections to MARTA at College Park or Airport Station and other ITC links	• Existing network • Existing ROW • Improves regional access – Commuter-focused service model	Peak hours	Coach	$	$$	GRTA	Yes

Recommended Project	Aerotropolis Users	Aerotropolis Connections	Considerations	Service Span	Candidate Transit Technologies*	Capital Cost	Operating Cost	Potential Partnerships	Potential Federal Funding
Airport/College Park Intermodal Transportation Center	All users of the Airport, and visitors, employees, and residents of the Aerotropolis	Provide seamless transfers between all Aerotropolis mobility services	• Enhances transit services • Facilitates last-mile connections • Monetizable – Significant interagency coordination required – Engineering challenges	24h	N/A	$$$$ to $$$$$	$$ to $$$$	MARTA, The ATL, GDOT, City of College Park, Atlanta Airport, FAA	Yes
Mountain View Intermodal Transportation Center	All users of the Airport, and visitors, employees, and residents of the Aerotropolis	Provide seamless transfers between Clayton Commuter Rail, Corporate Crescent, and local bus and shuttle services	• Enhances transit services • Facilitates last-mile connections • Monetizable - Significant interagency coordination required	24h	N/A	$$$$ to $$$$$	$$ to $$$$	MARTA, The ATL, Clayton County, Atlanta Airport, FAA	Yes

*- Candidate transit technologies

LRT = Light Rail Transit

BRT = Bus Rapid Transit

DMU = Diesel Multi Unit (a specific type of commuter train)

PRT = Personal Rapid Transit (covers a broad range of vehicles or pods which are summoned on demand by the user and routed to the users' desired destination)

Autonomous PRT–A PRT-like system which uses autonomous vehicles rather than a train or guideway.

Figure 25–Future Transit Technologies

Skytrain Connection (APM)

Considerations
Existing system, Automated (Can only be extended at a midpoint connection)

Capacity
52 per car

Speed:
40 mph

Capital Estimate:
$$$$ to $$$$$

O&M Cost
$$$ to $$$$

Example Vendors
Mitsubishi and Lea+Elliot

Federal Funding
Potential

Personal Rapid Transit (PRT)

Considerations
On-demand service (Automated, Limited proofs of concept)

Capacity
4–24 per vehicle

Speed
35 mph

Capital Estimate
$$$ to $$$$

O&M Cost
$$ to $$$

Example Vendors
2getthere, UltraGlobal

Federal Funding
Potential

Maglev

Considerations
Automated (Limited proofs of concept)

Capacity
2,640 per hour

Speed
50 mph

Capital Estimate
$$$$ to $$$$$

O&M Cost
$$$ to $$$$

Example Vendor
American Maglev

Federal Funding
Potential

IMPLEMENTATION

Certain recommendations can proceed immediately to implementation. Certain other initiatives will first require further design of the transit concept and development of partnerships. The partnerships and funding opportunities are a function of the transit concept designs, so those must be advanced in tandem. Specific recommended actions and opportunities for advancement are described in the following sections.

POTENTIAL IMMEDIATE ACTIONS

1 IMPLEMENT 24/7 MOBILITY DISTRICT

Develop and implement an immediate 24-hour hour mobility service for the Aerotropolis as a near-term transit solution.

The service should provide access to the following priority locations:

- Airport–Domestic Terminal
- Airport–International Terminal
- College Park MARTA
- Delta HQ
- Camp Creek Marketplace

In order to implement the service one or a combination of the following provider options will need to be selected:

MARTA–EXTEND SERVICE SPAN ON EXISTING ROUTES

ON-DEMAND TRANSIT

- The Aerotropolis CID and/or MARTA can collaborate on the institutional framework for implementing on-demand transit service (a.k.a. micro transit). There will need to be one entity who designs and contracts with a provider of this service.
- Explore private companies, such as Via, who provide on-demand transit. Several of these companies provide these services through a mobile-based application that allows passengers to request rides and be allocated to a shared transit vehicle that best matches their route. (Via also licenses its technologies to transit agencies looking to provide services that bridge first/last-mile gaps. Los Angeles Metro and Sound Transit in Seattle are currently piloting on-demand first/last-mile access services to transit stations with Via. Destination selection could be geo-fenced to pre-determined stop locations only.)

2 PROVIDE HIGH QUALITY BUS STOPS AND SHELTERS

Existing MARTA local bus routes already provide a transit service which is clean, safe and reliable. However, the passenger experience is diminished by the conditions of the sidewalks, stops and shelters. Recommended design guidelines are included in Appendix B to this report. The CIDs should collaborate with MARTA and the local jurisdictions to upgrade these features throughout the district. Consideration should also be given to how these can be tied in to the signage and wayfinding program. For instance, including system maps showing transit maps and schedules at each bus shelter would greatly benefit riders.

3 COLLABORATE WITH LOCAL AND REGIONAL AGENCIES TO ADVANCE SIDEWALK AND FIRST/LAST-MILE UPGRADES.

Provision of a complete sidewalk network and best practice enhancements to existing pedestrian infrastructure serving transit should be implemented with a focus on the following priority locations:

- North Loop Road
- Riverdale Road
- Camp Creek Pkwy
- College Park MARTA Station

These improvements are relatively low cost and can have a big impact on the ease of those first/last-mile trips. For reference, typical costs for first/last-mile enhancements are provided in **Figure 29** below.

Figure 29–First/last- Mile Infrastructure Upgrade Estimates

Infrastructure	Estimated Cost
Bicycle Locker	$1,200–$2,000
Bicycle Rack	$500–$700
Concrete Sidewalk	$25–$100/linear ft
Curb Extension	$5,000–$40,000
Curb Ramp	$700–$3,600
High Visibility Crosswallk	$2,000–$6,000
Median Refuge Island	$10–$26/square ft.
Raised Crosswalk	$7,000–$30,000
Rectangular Rapid Flashing Beacon (RRFB)	$10,000–$50,000
Streetlight	$3,000–$14,000/unit
Truncated Dome/Warning Strips	$30–$250/square ft

Source:
Costs for Pedestrian and Bicyclists Infrastructure Improvements, UNC Highway Safety Research Center, October 2013.

POTENTIAL SHORT-TERM ACTIONS

CLAYTON COUNTY REGIONAL COMMUTER RAIL

- Collaborate with MARTA to facilitate station placement and integration with Aerotropolis transportation network in Hapeville and Mountain View. In particular, collaborate with regard to integration with Intermodal Transportation Center and proposed Corporate Crescent Circulator.

CORPORATE CRESCENT CIRCULATOR

- Initiate route with standard bus equipment and low-cost BRT treatments such as unique branding of service, high-quality sheltered stops, rapid boarding, and priority treatments at signalized intersections.
- Reach out to MARTA about jointly exploring next steps for this corridor. Collaborate with MARTA and HJAIA about potential mutual benefits, performance objectives, and potential for coordinated design effort. Evaluate higher speed vehicle and infrastructure enhancement options such as automated guideway transit or PRT.

GRTA XPRESS

- Collaborate with GRTA to identify an interim stop location to expand service into the Aerotropolis.

CAMP CREEK CONNECTOR

- Conduct working group with Airport and private parking operators to evaluate cooperation and consolidation of private shuttles. Evaluate ridership potential based on their feedback.
- Collaborate with local governments regarding completing sidewalk network and making pedestrian safety improvements at intersections serving transit users.

RIVERDALE ROAD ARTERIAL RAPID TRANSIT (ART)

- Collaborate with MARTA about phased implementation of BRT characteristics such as high-quality sheltered stops, improved service frequency, signal priority and dedicated bus lanes.

POTENTIAL MID/ LONG-TERM ACTIONS

CAMP CREEK CONNECTOR

- Collaborate with MARTA, The ATL, local governments and ARC about potential grant funding opportunities through ARC, GDOT or other.

CORPORATE CRESCENT CIRCULATOR

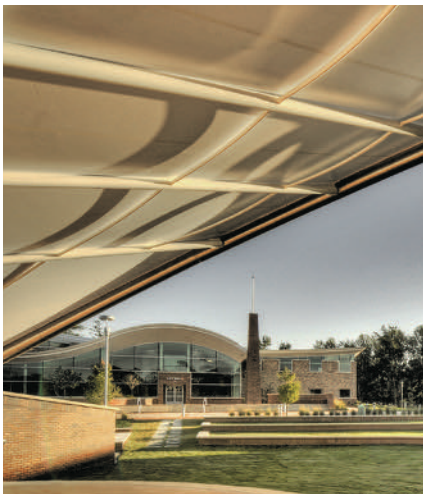
- Design and construct automated guideway transit or PRT-like system to service this corridor.

GRTA XPRESS

- Collaborate with GRTA to bring service to a future ITC.

SOUTH FULTON BRT

- Collaborate with MARTA and jurisdictional partners to develop route and ensure integration with wider Aerotropolis transit enhancements.



TRANSIT PROJECT DELIVERY CONSIDERATIONS

There are many important considerations which factor into the selection of the most suitable transit mode for new transit services. And, these elements are inter-related. The Aerotropolis Transit Feasibility Study has begun this investigation of transit modes at the systemwide planning level. As each recommendation is further advanced, it will be helpful to understand these inter-related considerations to fine-tune the Transit Vision recommendations and construct individual component projects. This section provides some context and direction specific to the corridors identified in the recommended Aerotropolis transit system.

1 TRANSIT MODE TECHNICAL CHARACTERISTICS AND CAPABILITIES.

Screening of transit modes and technologies first consists of creating design recommendations based on the identified transit needs, potential ridership demand (volume), transit system interoperability and desirable operational parameters. This report identifies five potential transit technologies in addition to application of conventional transit modes. For each of the corridors identified, the assumed technology (where already identified) compare favorably to the technical characteristics of that specific corridor.

The key issues in the consideration of the technical characteristics and capabilities are:

Is the capital/operating cost appropriate to the market size, peak loads and service provided?

Is the implementation horizon appropriate to the needs of Aerotropolis?

Is the speed and comfort level appropriate to the distance travelled?

Is the proximity (distance of access points from travel generators) appropriate to Aerotropolis context?

Is the technology proven in the intended context?

Is the performance delivered better, or more cost effective than conventional technologies?

Can enhanced conventional technologies be tested to provide a proof of market?

Are seamless connections provided by this technology?

2 OWNERSHIP AND OPERATIONS MODELS (I.E. WHO OWNS AND OPERATES).

Once a likely transit technology is established, the ownership model would be recommended based on the technology, funding and levels of interest. In considering the ownership models, we must also consider whether an entity has the institutional capability to own, operate and maintain a transit technology.

The primary ownership models are:

Existing or new public transit agency
Assets privately built/procured via Request For Proposals, assets owned by agency, operated by agency employees.

Existing or new public transit agency
Assets and service procured via RFP via design-build-operate-maintain.

Existing or new public transit agency
assets privately built/procured via RFP, assets owned by agency, operated by separate contractor.

Airport ownership
As an extension of airport grounds, assets and operations are procured by the airport authority, usually as design-build (airport operates), or privatized, design-build-operate-maintain.

District ownership
The Aerotropolis CID's would contract for capital and service, with a similar operating contract (with district or contractor owned assets) or a similar design-build-operate-maintain.

3 POTENTIAL PARTNERSHIPS (AIRPORT; LOCAL, REGIONAL AND STATE ENTITIES; FTA).

The ownership and operations models will imply the key partnership. The most likely partnerships are with transit agencies, who have experience and existing structures for procuring facilities and services and incentive to extend their catchment networks and capacity through the partnership. The Airport has incentive to partner based on their desire to better manage and price their facilities, improve their access to workforce, increase their logistics industry flights, and improve business for their tenants. The Airport also has access to Passenger Facility Charge revenue, however, there are strict limits to where these funds can be spent, and they may be fully committed. Local government jurisdictions have reason to partner based on their own economic development and tax base growth.

4 GOVERNANCE AND FUNDING.

The CIDs', the Airport and existing transit agencies provide existing governance structures that can provide a Board of Directors for the transit operation. They may also form a Board committee to provide policy guidance specific to Aerotropolis transit to their larger Board. The Board providing governance should be the point where funding is received (for example FTA funds move from the MPO to MARTA), and where contracting for facilities and operations would occur. If funding flows through multiple entities, a "Joint Powers Board" can be established through specific legislative action, transcending multiple authorities and having a Board representing these multiple funding sources.

5 TIMELINES.

Timelines for implementation are the cumulative result of funding approvals, design, outreach, contracting, construction and commissioning. Generally, the more dedicated right-of-way, the more land acquisition, the more complex the design, and the introduction of new vehicles, maintenance workforce and organization, all drive longer timelines. The use of existing vehicle fleets and technologies on existing rights-of-way will tend to reduce implementation timelines. A logical approach to addressing the longer timelines for emerging technologies is to establish the route with existing technologies in order to quickly prove the market and adjust to better serve the market, then to phase in a higher performance technology while the market is growing.

Note: The proposed approach to the Corporate Crescent Circulator provides an excellent example of managing timelines–where a rubber-tired circulator can be implemented relatively quickly, while a higher design system will likely take several years to design and several years to construct.

SUMMARY OF RECOMMENDATIONS

DEVELOPING THE PLAN

This document identifies potential transit corridors, viable technologies, and best practices for improving access to, from, and within the Aerotropolis study area that should be evaluated further for implementation.

OVERALL TRANSIT SYSTEM PLAN

This system plan complements other planned transit projects already being developed by MARTA and GRTA. The specific next steps for implementation in detail on the following pages.

KEY TRANSIT ELEMENTS

Camp Creek Connector

Create a transit corridor along Camp Creek Parkway from the proposed multi-modal transit center at the airport west to the Camp Creek Marketplace area to serve area residents, travelers, employees, visitors and users of private shuttles. Improved amenities for walking and biking should be constructed along the corridor to compliment the envisioned transit services, and development guidelines should be revised to encourage transit-supportive design.

MARTA Clayton County Regional Commuter Rail

MARTA is developing a Commuter Rail project planned from East Point, through Hapeville and Mountain View to Lovejoy. Collaborate with MARTA and local jurisdictions to encourage stations in Hapeville and Mountain View which are compatible with the overall Aerotropolis transit vision, including the proposed intermodal transportation center in Mountain View. Connect the Commuter Rail project to the airport and Aerotropolis district via the Corporate Crescent Circulator.

Corporate Crescent Circulator

Phase I–Create a circulator transit service from the airport's domestic terminal, to College Park, Hapeville, Mountain View and terminating at the airport's international terminal. Initiate this service with standard bus equipment and low-cost BRT treatments such as unique branding of service, high-quality sheltered stops, rapid boarding, and priority treatments at signalized intersections. This service should be frequent and 24/7, with adequate rider information to promote confidence in the reliability of the service.

Phase II–Expand the circulator system to extend around the southern side of the airport property, completing a full loop of the Aerotropolis area.

GRTA Xpress

Provide accommodations for GRTA Xpress bus services throughout the metro Atlanta area to serve the Aerotropolis. This service can initially operate to/from the airport terminal, but should be designed to operate to/from the proposed Intermodal Transportation Center when complete.

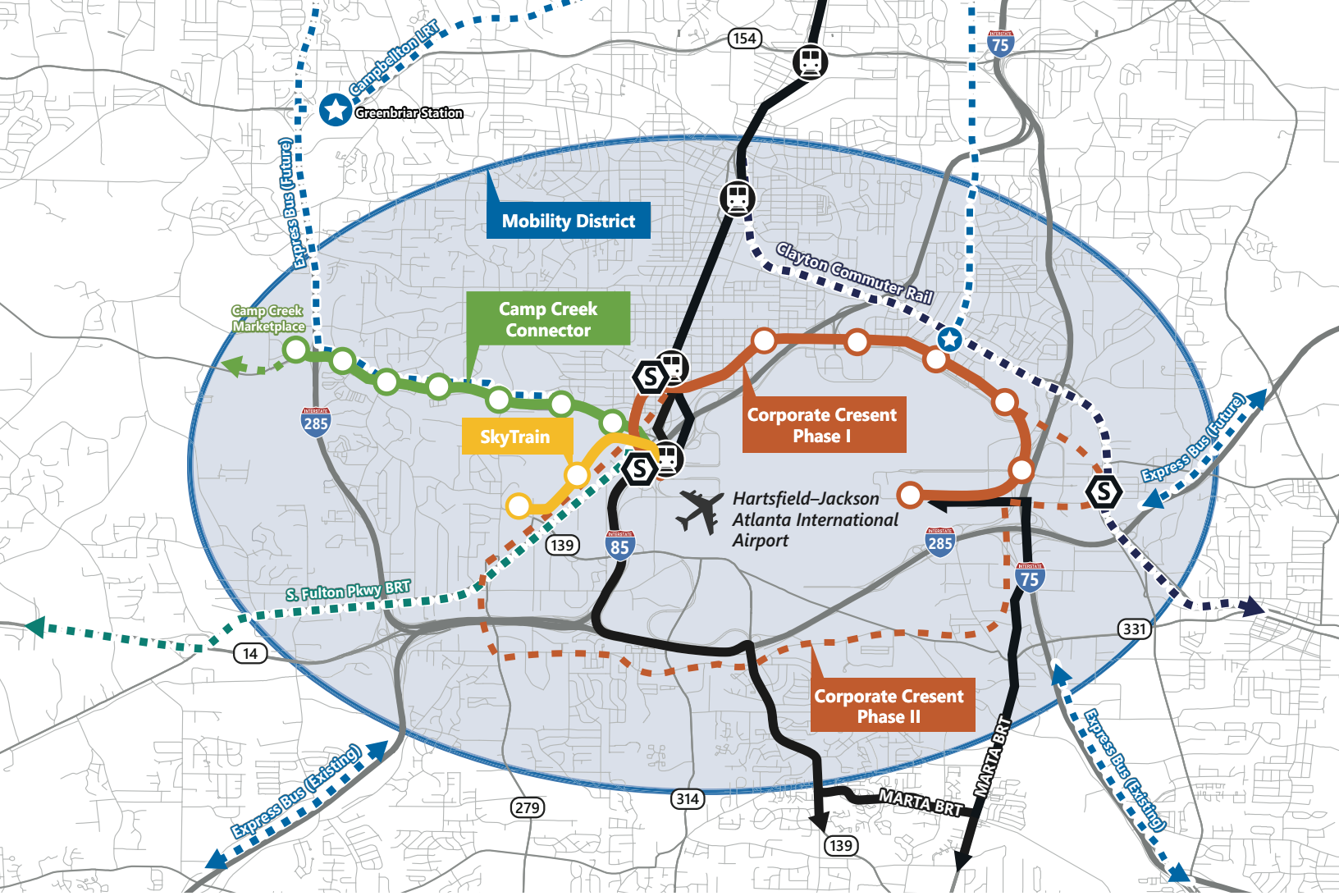


Figure 27–Recommendations

Intermodal Transportation Centers (ITC)

Construct two Intermodal Transit Centers–one west of the airport (either near the domestic terminal or adjacent to the College Park MARTA station) and one east of the airport in the Mountain View area. These intermodal centers will serve as the primary connection and transfer points between MARTA rail, local bus, BRT, Corporate Crescent, Commuter Rail, Xpress, bicycle, pedestrian and other travel modes.

Mobility District

Upgrade bus infrastructure and services from the College Park MARTA station to Clayton County along SR 139 and SR 85 to create a Bus Rapid Transit (BRT)corridor. Corridor design and operation should accommodate phased implementation of BRT characteristics such as high-quality sheltered stops, improved service frequency, signal priority and dedicated bus lanes.

MARTA Clayton BRT

Create a mobility-on-demand service which supplements existing and future MARTA service hours. The service will leverage smart phone and automated routing technology to provide on-demand transit service during the hours when MARTA is not operating service in the district.

MARTA South Fulton BRT

The Fulton County Transit Plan (completed in 2017) identified a planned BRT line from College Park MARTA south along Roosevelt Highway (US 29) and west along South Fulton Parkway. As US 29 will be a shared section for the South Fulton BRT, MARTA Clayton BRT and local bus routes, consider dedicated transit lanes along this common section–US 29 from College Park to Old National Highway.

SUPPORTING ELEMENTS

Install bus and shuttle shelters, prioritizing existing stops with high boardings.

Focus on providing first and last mile connectivity such as sidewalks to key bus stops with high boardings.

Provide wayfinding signage to key transit amenities

APPENDIX A

RIDERSHIP DEMAND FORECASTS

Study Area Inputs

Baseline	Inputs	Calculated Factor	Fixed Route Weight
Existing System Daily Passengers	205,215	N/A	100%
Existing System Daily Local Miles	897,626	0.23	35%
Existing Fare	$2.50	0.00	5%
Population within ½ Mile of Routes	1,967,468	0.10	15%
Employment within ½ Mile of Routes	1,388,412	0.15	20%
Service Employment within ½ Mile of Routes	571,813	0.36	25%

Data Sources: Existing passengers, miles, and fares based on MARTA 2016 data. Population and Employment data is based on the 2015 socio-economic data in the ARC's ABM travel model.

Study of Outputs

Proposed Transit Improvement	Population Within ½ Mile of Transit	Employment Within ½ Mile of Transit	Service Employment Within ½ Mile of Transit	Estimated Daily Base Ridership[1]
Camp Creek Connector[2]	18,864	67,521	9,081	2,800–3,500
Corporate Crescent[3]	11,365	88,367	12,861	3,700–4,500
Total	**30,229**	**155,888**	**21,942**	**6,500–7,900**

Notes:
1–Base Ridership includes just potential background transit trips based on existing population and employment.

2–Camp Creek Connector: Estimated daily base ridership does not include potential capture of park & ride patrons currently on private shuttles, estimated at an additional 2,000–5,000 per day.

3 –Corporate Crescent: Estimated daily base ridership does not include potential capture of airport shuttle trips (between the domestic terminal and the international terminal, estimated at 2,000 per day) and are based on existing employment only, excluding potential employment growth along corridor.

Ridership Worksheet

Route	Weekday							Population Within ½ Mile of Route	Service Employment Within ½ Mile of Route	Service Employment Within ½ Mile of Route
	Miles	Speed	Vehicles	Headway	Frequency (Minutes)	Service Hours	Daily Vehicle Miles			
Camp Creek Connector	5.2	25	1	12.48	15	24	499	18,864	67,521	9,081
Corporate Crescent	11.6	25	3	9.28	10	24	1,670	11,365	88,367	12,861
Total							**2,170**	**30,229**	**155,888**	**21,942**

	Vehicle Miles		Fare		Population		Total Employment		Service Employment	
	Factor	%	Factor	%	Factor	%	Factor	%	Factor	%
Camp Creek Connector	0.23	35%	0.000012	5%	0.10430411	15%	0.14780555	20%	0.35888481	25%
Corporate Crescent	0.23	35%	0.000012	5%	0.10430411	15%	0.14780555	20%		25%

	Ridership Estimates				
Proposed Transit Improvement	Weekday	Total Calculated Ridership	Low Estimate	High Estimate	Daily Ridership
Camp Creek Connector[2]	3,146	3,146	2,800	3,500	2,800–3,500
Corporate Crescent[3]	4,078	4,078	3,700	4,500	3,700–4,500
Total	**7,224**	**7,224**	**6,500**	**7,900**	**6,500–7,900**

APPENDIX B

TRANSIT STOP DESIGN RECOMMENDATIONS

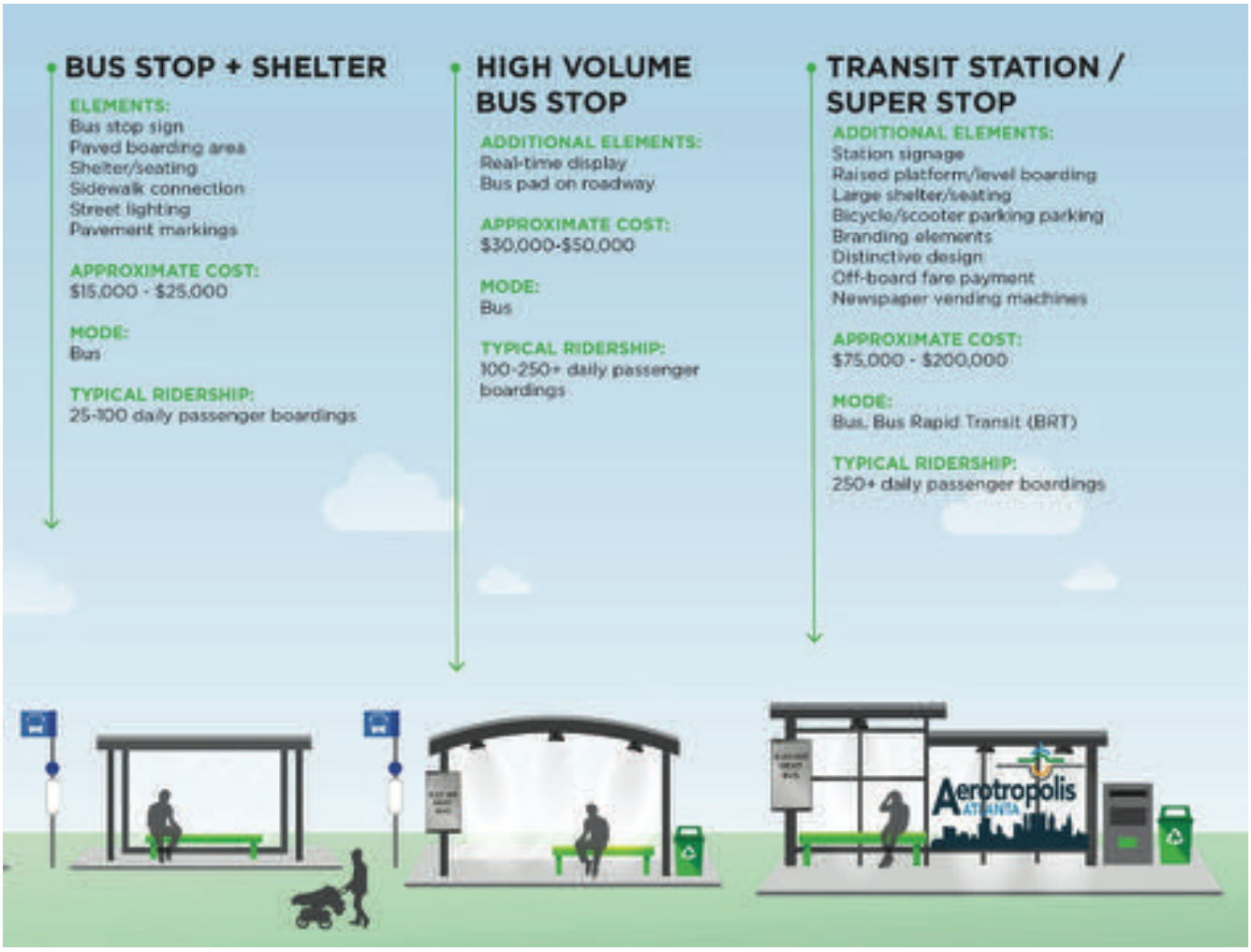
TRANSIT STOP DESIGN ELEMENTS

Best practice transit stop design should be implemented with a focus on the following priority locations:

- North Loop Road near Delta HQ–192
- Riverdale Road–196
- Camp Creek Parkway–82

Estimated costs for varying levels of bus stop implementation are shown in the figure below.

Bus Stop Provision Alternatives



Aerotropolis ATLANTA
COMMUNITY IMPROVEMENT DISTRICTS

TRANSIT FEASIBILITY STUDY

TRANSIT VISION, NEEDS AND POTENTIAL SOLUTIONS

APPENDIX A

RIDERSHIP DEMAND FORECASTS

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Ridership Worksheet

Route	Weekday							Population Within ½ Mile of Route	Service Employment Within ½ Mile of Route	Service Employment Within ½ Mile of Route
	Miles	Speed	Vehicles	Headway	Frequency (Minutes)	Service Hours	Daily Vehicle Miles			
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Total							**2,170**	**30,229**	**155,888**	**21,942**

	Vehicle Miles		Fare		Population		Total Employment		Service Employment	
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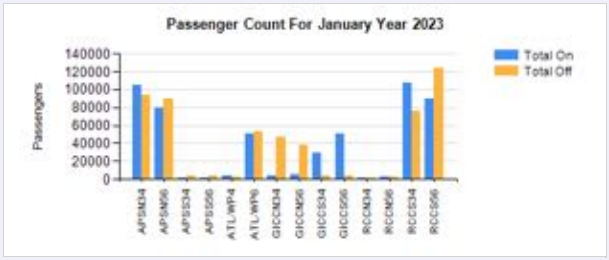
Proposed Transit Improvement	Weekday	Total Calculated Ridership	Low Estimate	High Estimate	Daily Ridership
Camp Creek Connector[2]	3,146	3,146	2,800	3,500	2,800–3,500
Corporate Crescent[3]	4,078	4,078	3,700	4,500	3,700–4,500
Total	**7,224**	**7,224**	**6,500**	**7,900**	**6,500–7,900**

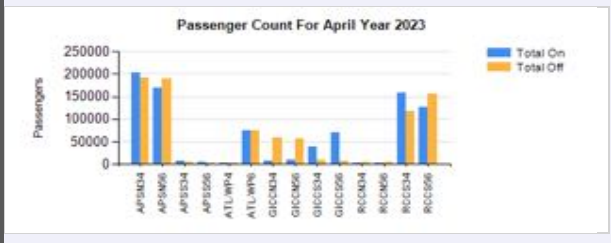
Additional Resource:
Monthly SkyTrain Ridership Data - January to April 2023
Source: Hartsfield-Jackson Atlanta International Airport



Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	46632	46816	63199	42260	93448	105459
APSN56	40078	49426	35682	44510	89504	80192
APSS34	2029	2129	972	1091	4158	2063
APSS56	1577	2143	604	1087	3720	1691
ATL-WP4	2811	0	4121	0	2811	4121
ATL-WP6	52882	0	49997	0	52882	49997
GICCN34	21838	24819	1956	1591	46657	3547
GICCN56	21196	17000	3178	2548	38196	5726
GICCS34	2536	2052	13900	15372	4588	29272
GICCS56	1989	1914	20431	30639	3903	51070
RCCN34	827	842	642	657	1669	1299
RCCN56	1140	1439	1034	1282	2579	2316
RCCS34	35685	40272	61807	46081	75957	107888
RCCS56	72481	51009	51021	38756	123490	89777
Total	**303701**	**239861**	**308544**	**225874**	**543562**	**534418**

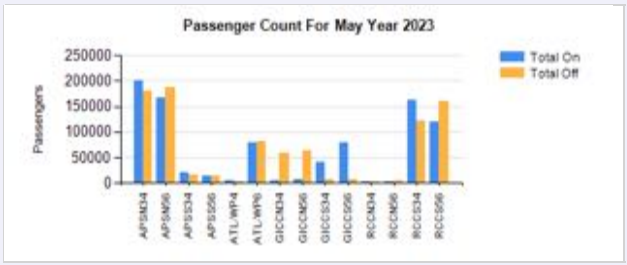
Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	74479	75041	99875	68376	149520	168251
APSN56	61606	75969	57798	70729	137575	128527
APSS34	2455	2612	913	1122	5067	2035
APSS56	1923	2611	407	883	4534	1290
ATL-WP4	3155	0	4825	0	3155	4825
ATL-WP6	57189	0	55170	0	57189	55170
GICCN34	23759	26965	1912	1631	50724	3543
GICCN56	21796	18461	3109	2612	40257	5721
GICCS34	2415	2118	15774	17739	4533	33513
GICCS56	1951	2203	23143	32796	4154	55939
RCCN34	1376	1218	983	1232	2594	2215
RCCN56	2270	2359	1436	1671	4629	3107
RCCS34	37653	42701	61709	46735	80354	108444
RCCS56	75816	54787	56431	41973	130603	98404
Total	**367843**	**307045**	**383485**	**287499**	**674888**	**670984**

Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	92444	92053	116918	82720	184497	199638
APSN56	75379	92283	70981	86330	167662	157311
APSS34	1165	1093	2561	3145	2258	5706
APSS56	886	1180	1705	2611	2066	4316
ATL-WP4	3560	0	6452	0	3560	6452
ATL-WP6	72718	0	72541	0	72718	72541
GICCN34	27219	29654	2990	2557	56873	5547
GICCN56	28881	24061	4625	4014	52942	8639
GICCS34	3740	3411	17445	20823	7151	38268
GICCS56	3467	3718	29192	41879	7185	71071
RCCN34	2663	2307	794	863	4970	1657
RCCN56	3480	3809	1265	1409	7289	2674
RCCS34	49226	54958	76282	56660	104184	132942
RCCS56	88470	65587	67464	49769	154057	117233
Total	**453298**	**374114**	**471215**	**352780**	**827412**	**823995**

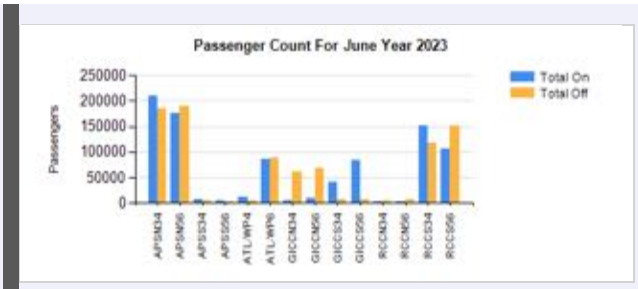


Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	95461	95379	116660	85448	190840	202108
APSN56	86301	103583	76144	92789	189884	168933
APSS34	1854	1912	3011	3966	3766	6977
APSS56	1554	1967	2397	3336	3521	5733
ATL-WP4	300	0	936	0	300	936
ATL-WP6	74879	0	74738	0	74879	74738
GICCN34	28670	30483	3813	3233	59153	7046
GICCN56	32557	25172	5201	4509	57729	9710
GICCS34	4643	4196	17152	21058	8839	38210
GICCS56	3823	3824	28808	41719	7647	70527
RCCN34	2083	1661	704	751	3744	1455
RCCN56	2556	2708	866	1171	5264	2037
RCCS34	55662	61544	89870	67575	117206	157445
RCCS56	87982	67930	68719	57371	155912	126090
Total	**478325**	**400359**	**489019**	**382926**	**878684**	**871945**

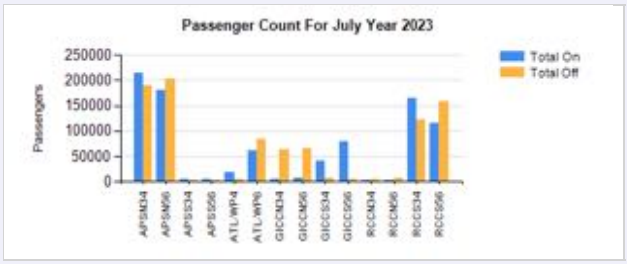
Additional Resource
Monthly SkyTrain Ridership Data - May to August 2023
Source: Hartsfield-Jackson Atlanta International Airport



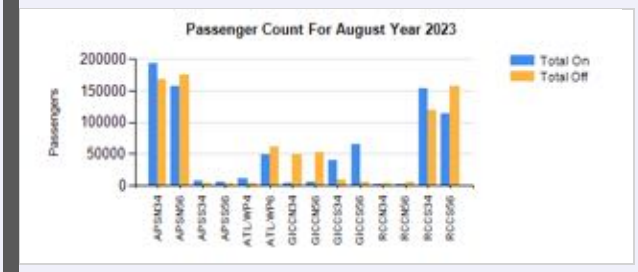
Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	91295	90216	116055	85581	181511	201636
APSN56	85601	101977	76103	90500	187578	166603
APSS34	7650	8084	8501	11027	15734	19528
APSS56	6400	6725	6320	7439	13125	13759
ATL-WP4	2608	0	4842	0	2608	4842
ATL-WP6	81530	0	79891	0	81530	79891
GICCN34	28947	29741	2761	2161	58688	4922
GICCN56	36570	27455	4281	3701	64025	7982
GICCS34	3877	3699	17615	22151	7576	39766
GICCS56	3284	3519	31509	47314	6803	78823
RCCN34	1661	1403	893	850	3064	1743
RCCN56	1956	2233	1104	1452	4189	2556
RCCS34	58804	63882	93640	69849	122686	163489
RCCS56	90591	70644	62943	56293	161235	119236
Total	**500774**	**409578**	**506458**	**398318**	**910352**	**904776**



Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	92430	92190	120767	88844	184620	209611
APSN56	86543	103300	79929	96360	189843	176289
APSS34	2135	2127	2949	3550	4262	6499
APSS56	1446	2185	2567	3362	3631	5929
ATL-WP4	4592	0	10507	0	4592	10507
ATL-WP6	88730	0	85119	0	88730	85119
GICCN34	30592	30767	2955	2320	61359	5275
GICCN56	38505	29545	4674	4312	68050	8986
GICCS34	3967	3699	18837	23053	7666	41890
GICCS56	3442	3533	33130	50444	6975	83574
RCCN34	3075	2773	1170	1319	5848	2489
RCCN56	3208	3675	1239	1703	6883	2942
RCCS34	56680	61581	87072	64569	118261	151641
RCCS56	85247	65712	54951	50088	150959	105039
Total	**500592**	**401087**	**505866**	**389924**	**901679**	**895790**



Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	94216	95075	122818	91400	189291	214218
APSN56	92866	109713	81269	98749	202579	180018
APSS34	1353	1400	2443	2832	2753	5275
APSS56	1144	1591	2242	2813	2735	5055
ATL-WP4	3998	0	18640	0	3998	18640
ATL-WP6	84688	0	61183	0	84688	61183
GICCN34	30318	32241	2600	2006	62559	4606
GICCN56	37534	28150	3891	3262	65684	7153
GICCS34	3809	3325	17519	22328	7134	39847
GICCS56	3002	2819	31529	46556	5821	78085
RCCN34	2891	2305	1036	1098	5196	2134
RCCN56	2863	3272	1121	1535	6135	2656
RCCS34	58002	63548	95364	70067	121550	165431
RCCS56	87900	69525	59325	56137	157425	115462
Total	**504584**	**412964**	**500980**	**398783**	**917548**	**899763**



Modem Name	Door1Off	Door2Off	Door1On	Door2On	Total Off	Total On
APSN34	83741	84114	112703	80839	167855	193542
APSN56	79319	95681	71361	86041	175000	157402
APSS34	1973	1820	3065	3661	3793	6726
APSS56	1501	2035	2186	3201	3536	5387
ATL-WP4	4236	0	11958	0	4236	11958
ATL-WP6	61994	0	49083	0	61994	49083
GICCN34	24123	24852	2160	1649	48975	3809
GICCN56	30072	22718	3354	2828	52790	6182
GICCS34	5099	3698	18797	20819	8797	39616
GICCS56	3158	3097	25671	38925	6255	64596
RCCN34	2249	1892	869	1005	4141	1874
RCCN56	2677	2905	1207	1475	5582	2682
RCCS34	57167	61693	87858	64671	118860	152529
RCCS56	88648	69098	59299	55155	157746	114454
Total	**445957**	**373603**	**449571**	**360269**	**819560**	**809840**

Additional Resource:
GICC / Gateway Arena Venue Information
Source: GICC

Events	Attendance
19 Graduations	3k-4k Each, up to 3 or 4 a day in May
Estimated Daily Arena Attendance on Graduation Weekend	12,250
Graduation Weekend Estimate	36,750
Spelman Graduation	10,000
Cheerleading Competitions	5,000
Professionals Convention	9,000

Arena Venue Information	
Parking Spots	2,000
Parking Spots (Sky Lot)	350
Arena Seating	3,800
Arena Standing Room	7,000
Total Capacity	10,800

The GICC / Gateway Arena has a busy season from January to July, with March and May being especially busy due to March Madness and graduations respectively. These two venues host a total of 19 high school and college graduations, including Spelman's graduation which typically draws close to 10,000 attendees to GICC. Smaller high school graduations routinely attract three-to-four thousand attendees, and multiple graduations are held daily during graduation weekend. Graduation weekend can attract upwards of 40,000 people to these facilities. Both the Atlanta Dream (WNBA) and Skyhawks (NBA G-League) play at Gateway Arena, and the Dream sold out a majority of their home games in the 2023 season. Other events staged at this venue include cheerleading competitions and various professional shows, both of which draw thousands of attendees. 2000 parking spots are available on site, and an additional 350 spots are available a short distance away in the Sky Lot. Based on assumptions derived from revenue, around 100,000 cars have paid to park at GICC since 2020.