



Park-and-Ride Lot Study



Final Report

September 2014

Submitted by

In association with



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Executive Summary

This Park-and-Ride Study of the Coastal Region Metropolitan Planning Organization (CORE MPO) has evaluated the feasibility of implementing a regional park-and-ride lot program for the Coastal Savannah region.

Analyses of the commuter travel market in the greater Savannah region clearly show that demand for expanded park-and-ride facilities is present today. While completing fieldwork for this project, it was quite evident that there is a significant amount of informal park-and-ride (carpool) activity at commercial businesses around the Savannah region (e.g., parking at the fringe of grocery and hardware store parking lots). The provision of safe and convenient formal park-and-ride lots will further encourage rideshare activities in the short term, with possible provision of commuter transit services in the longer-term.

A regional park-and-ride program, with the promotion of ridesharing activities and potential commuter transit services will benefit local governments, area employers and the region's commuters. Local governments and employers will benefit from the reduced need for parking at destination locations. The proposed transit service plan presented in this study can result in a reduced need of more than 400 parking spaces for Downtown Savannah and the Airport/Gulfstream/Crossroads area. The encouragement of carpooling would further reduce parking demand at all major employment destinations. Rideshare activities also benefit local governments by reducing traffic volumes on the region's congested roadways.

There is also a financial benefit for park-and-ride users. Carpoolers and transit riders to Downtown Savannah could save an average of \$6.00 in fuel charge per day (based on average commute distances) and save in parking costs (monthly parking at the City's parking garages ranges from \$30 to \$80). Further savings would be realized by park-and-ride users from the reduction of automobile maintenance costs. Environmental benefits would be realized in the form of reduced air pollution.

An extensive evaluation of regional commute patterns has determined that the three primary long-distance commute corridors in the region are:

- The Northwest (SR 21) Corridor,
- The West (I-16 and US 80) Corridor, and
- The South (I-95 and US 17) Corridor.

There are Georgia Department of Transportation (GDOT) park-and-ride facilities in each of these corridors. However, they tend to be small in size and in need of improvements such as signing and lighting. New and expanded park-and-ride lots are proposed in each corridor. **Figure ES-1** shows the general proposed locations for these park-and-ride lots. An initial supply of approximately 150 spaces is proposed for each corridor, to be expanded to approximately 200 spaces in each corridor as demand increases over time.

Some of the proposed locations are existing park-and-ride lots (e.g., I-95 and SR 21), where improvement or expansion is warranted. Other proposed locations would require either construction of a new lot or a shared use lease with an existing property owner (e.g., a shopping center or a church). For purposes of preparing a cost estimate, a development scenario was assumed that includes a mix of park-and-ride lot expansion, new lot construction and shared use lease arrangements. Estimated capital costs (in 2014 dollars) are as follows:

- Initial Supply (about 150 spaces in each corridor) = \$3 million
- Horizon Year Supply (about 200 spaces in each corridor = Additional \$1.3 million)
- **Total Capital Cost Estimate = \$4.3 million**

Estimated annual parking lot maintenance and lease costs are \$70,000 a year for the initial proposed supply, increasing to just over \$90,000 a year for the proposed horizon year supply. Note that this cost estimate assumes specific assumptions with regards to existing lot expansion, new lot construction and shared use lease arrangements. These cost estimates could change, depending on the actual lot development process.

Additional analysis was completed to determine the feasibility of regional transit services to the proposed regional park-and-ride lots. The two employment destinations that were determined to have the greatest feasibility for regional transit service were Downtown Savannah and the Gulfstream/Crossroads/Airport area. Hunter Army Airfield may also be viable at some point – particularly from the south I-95/US 17 corridor. However, the current demand for Hunter Army Airfield commuters was not as strong as the other two locations, thus was not included as a potential “first tier” of regional commuter transit service.

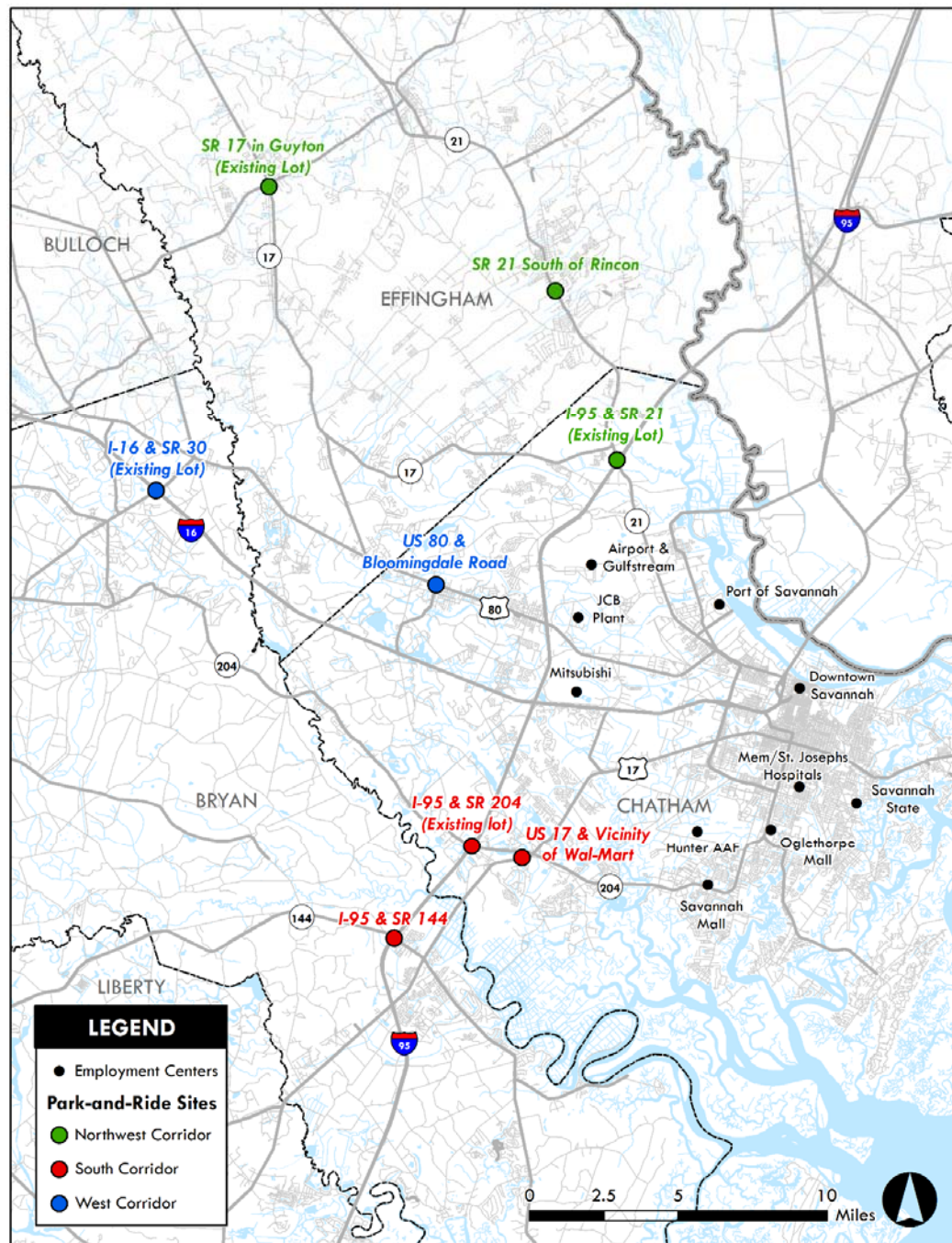
A transit service plan was prepared that assumes three morning and three afternoon transit trips from each corridor to both Downtown Savannah and the Gulfstream/Crossroads/Airport area, with guaranteed ride home midday service. Costs for this service depend on the delivery of service method. For purposes of this study, contracted service was assumed, with buses provided by the contracted operator. Annual costs for providing regional transit service to the proposed park-and-ride lots are estimated to be **\$1.4 million** for all three corridors. Daily ridership is estimated to be 810 trips per day by the horizon year (206,000 annual trips). Assuming a cash fare of \$2.50 per trip, the annual subsidy required to provide the transit service is **\$940,000**. Service to/from Downtown Savannah is anticipated to have a lower annual subsidy requirement than service to/from the Gulfstream/Crossroads/Airport area.

It is recommended that expansion of park-and-ride lot spaces and ridesharing activities be realized through a three-pronged effort that is concentrated on the following activities:

- Park-and-Ride Lot Development and Expansion,
- Carpool & Vanpool Program Promotion, and
- Regional Commuter Transit Service Implementation.

Activities to develop and expand park-and-ride lots can begin immediately, independent of the other two activities. The other two activities, however, will not be fully successful until there is a regional park-and-ride lot program. This program can be phased, with initial park-and-ride lot expansion provided through shared use lease arrangements, and eventual construction of new lots. The provision of regional commuter transit service can also be phased, and does not need to be implemented concurrent with regional park-and-ride lot development.

Figure ES-1: Recommended Park-and-Ride Lot Locations



Introduction and Study Objectives

The Coastal Region Metropolitan Planning Organization (CORE MPO) completed a *Transit Mobility Vision Plan* (TMVP) in 2011. The intent of this plan was to present a regional vision for transit in the Savannah region. One of the recommendations of this plan was the development of park-and-ride lots and supporting transit services in the greater Savannah region. This Park and Ride Study has been conducted to advance the TMVP's park-and-ride lot development recommendations.

The study area of this Park and Ride Study includes Chatham County, Bryan County, Effingham County, Bulloch County, and Liberty County in Georgia as well as Jasper County and Beaufort County in South Carolina, and is shown in **Figure 1**. The primary objectives for this study are to:

- Identify major travel shed corridors and trip volumes based on current and anticipated future commuting patterns;
- Identify and evaluate potential park-and-ride lot locations within those corridors;
- Develop regional bus service plans that serve the commute corridors and park-and-ride lot locations, with service plans tailored to meet anticipated demand;
- Determine likely costs, revenues and potential funding sources;
- Identify an implementation strategy for advancing study recommendations; and
- Engage stakeholders through all phases of the project.

Five stakeholder meetings were held during the course of this study to solicit input on study findings and recommendations. A series of stakeholder interviews were also held at the beginning of this project. This report presents a summary of the analysis conducted and recommendations developed during completion of this 12-month study. Additional study information and findings can be found in the series of Technical Memoranda that were produced during the course of this study.

A detailed map of the Savannah, Georgia metropolitan area and its surrounding regions. The map highlights major highways, including Interstate 95 (I-95), Interstate 16 (I-16), and various U.S. Routes (e.g., 17, 21, 80, 84, 278, 301, 321, 204, 280). Major cities and towns are labeled, such as Savannah, Pooler, Garden City, Blountsville, Port Wentworth, Guyton, Springfield, Olin, Statesboro, Milledgeville, and Beaufort. The map also shows the Savannah River and the Atlantic Ocean. Surrounding counties are labeled: Jenkins, Screven, Hampton, Colleton, Bulloch, Effingham, Jasper, Beaufort, Evans, Tattnall, Liberty, Long, Wayne, and McIntosh. A scale bar indicates distances in miles (0, 5, 10), and a north arrow is present in the bottom left corner.

Existing Park-and-Ride Lots in the Greater Savannah Area

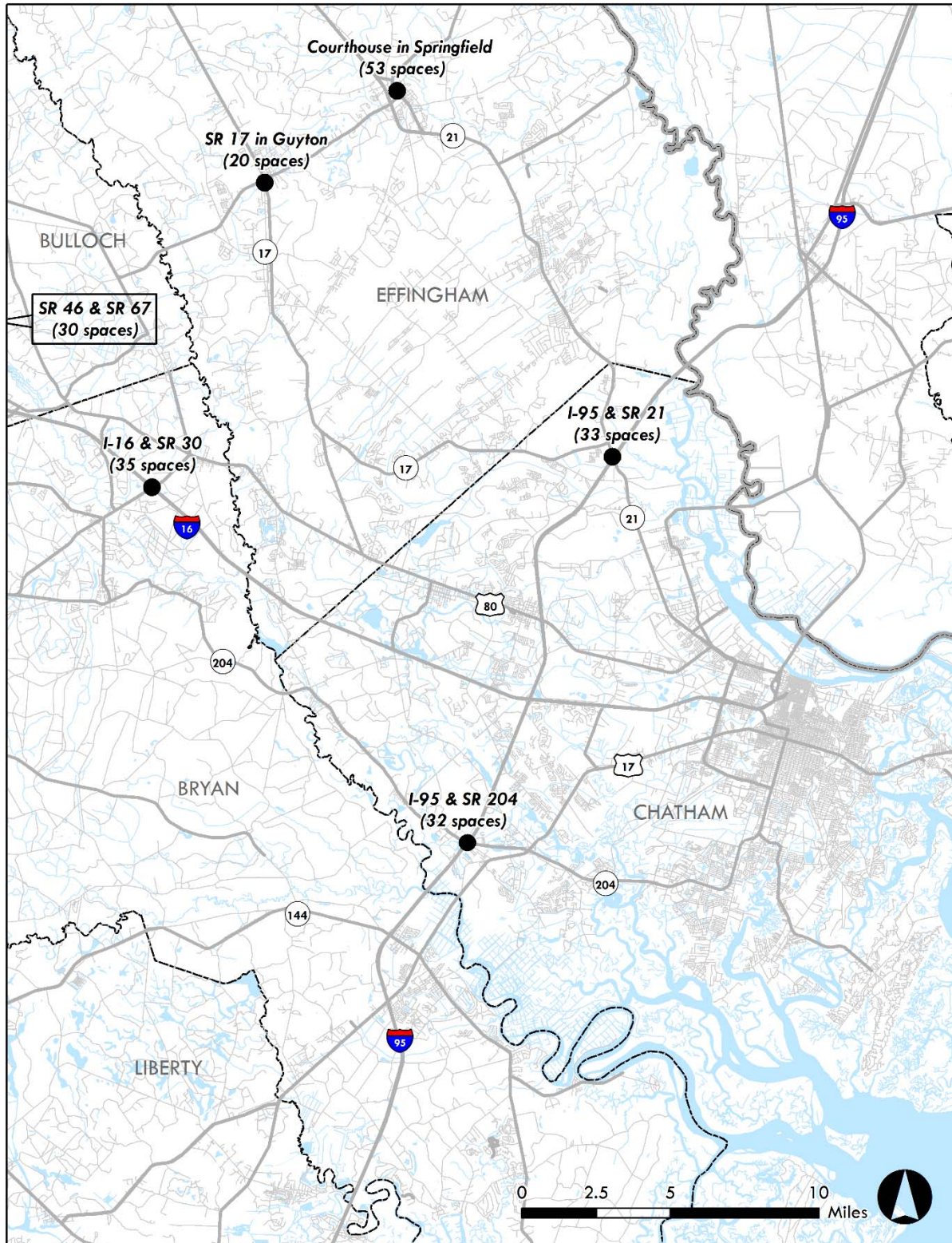
The Georgia Department of Transportation (GDOT) Intermodal Division offers Georgia residents a network of park-and-ride lots located throughout the state. Of these, six are located within the five Georgia counties in the study area. **Figure 2** provides location information and the number of parking spaces at each lot.

A windshield survey of these lots revealed the following general characteristics regarding utilization, lighting, signage, accessibility, and expansion potential.

- Capacity typically ranges from 20 to 35 spaces at each lot.
- Utilization varies by location (40% - 110%).
- Limited way-finding signage.
- Most require restriping and lighting.
- Expansion opportunities appear to exist at many of the locations.

The park-and-ride lot located at I-95 and SR 21 has the highest utilization and is typically at capacity during the day. The next busiest park-and-ride lot is located at I-95 and SR 204. This lot is typically 60% or more full. The remaining park-and-ride lots tend to be less than 50% utilized.

Figure 2: Existing Park-and-Ride Lot Locations



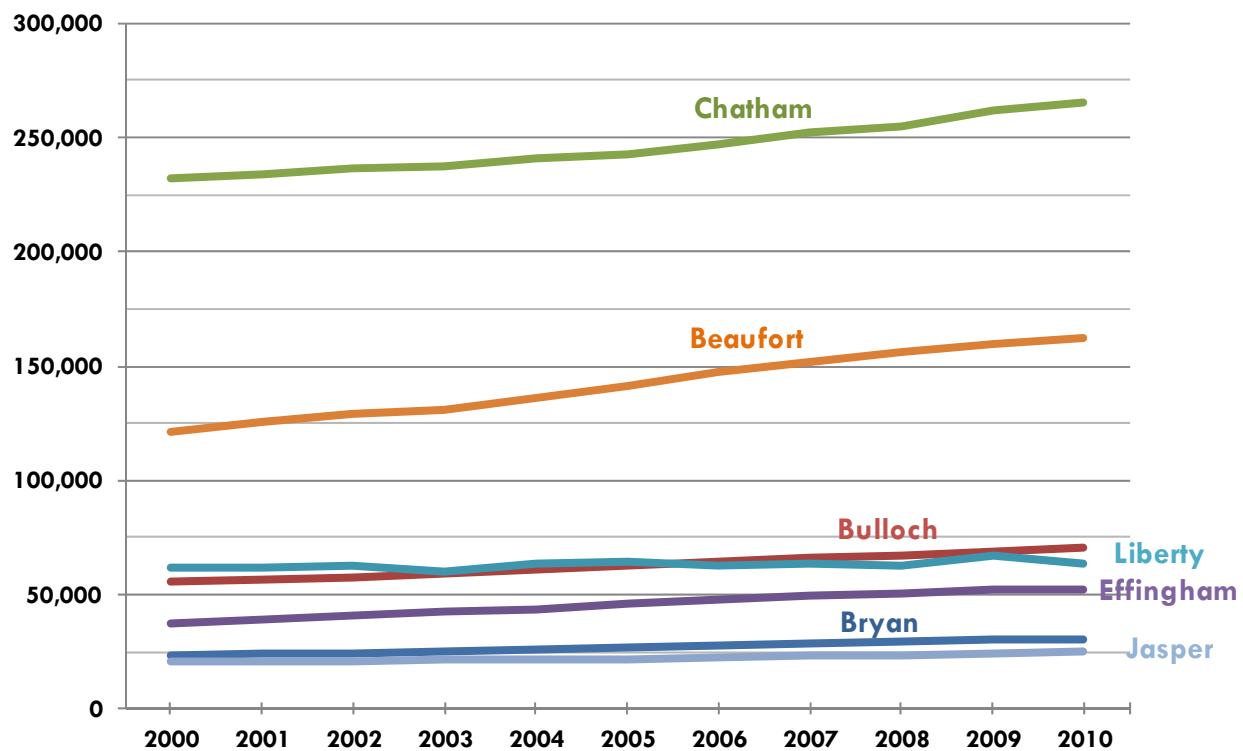
Greater Savannah Demographics

A comprehensive assessment of existing population and future trends is the first step in assessing park-and-ride lot and regional commuter transit service needs. For this project, regional demographics have been evaluated with U.S. Census data and demographic data that is available from the CORE MPO travel demand model. Demographic information has been collected for the following five Georgia and two South Carolina Counties:

- Chatham County
- Bryan County
- Effingham County
- Bulloch County
- Liberty County
- Jasper County (South Carolina)
- Beaufort County (South Carolina)

Population estimates for the 2000 to 2010 decade from the U.S. Census Bureau show a steady population increase for the seven-county region, as illustrated in **Figure 3**. Overall, the region grew by 21%, adding nearly 116,000 people. Beaufort and Chatham Counties support the largest share of population and led the region in terms of absolute population growth, growing by 41,300 and 32,800, respectively. In terms of percentage growth, all but one county (Liberty County) experienced double-digit growth. Effingham and Beaufort Counties led the region with 39% and 34% growth, respectively.

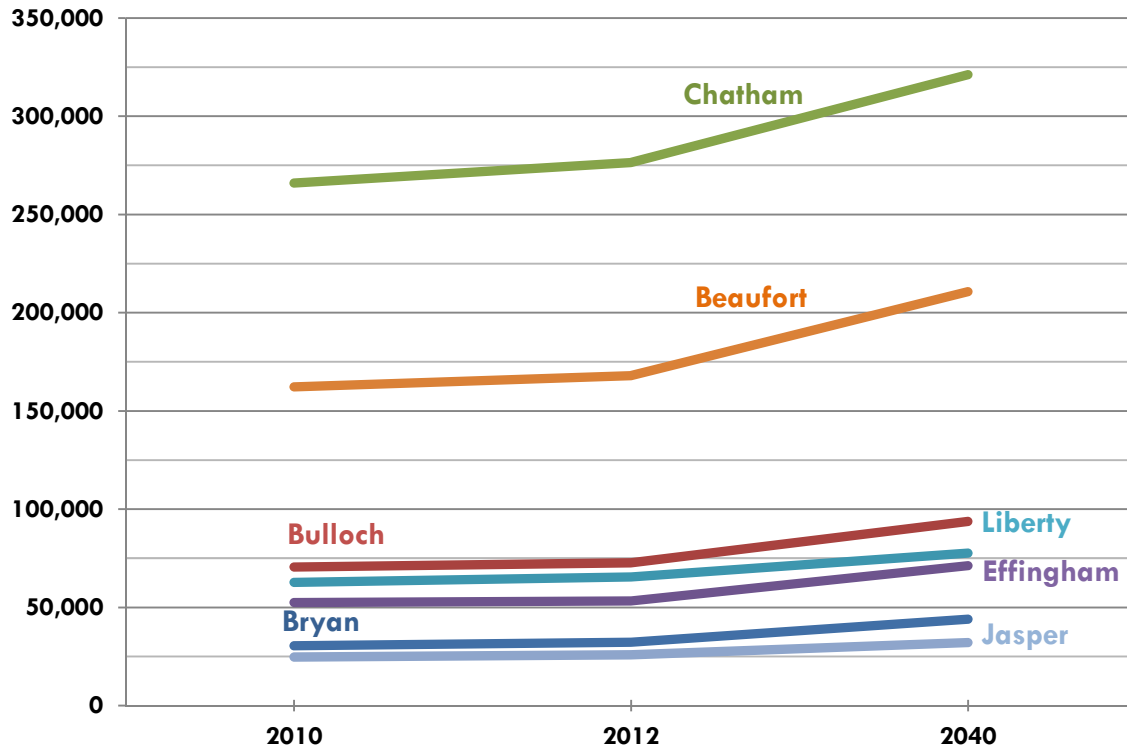
Figure 3: 2000 to 2010 Population Change for the Seven-County Region



Source: U.S. Census Bureau

Turning to more recent estimates and future projections, **Figure 4** presents state estimates for 2010 and 2012 and projections for 2040. In 2010, State population estimates for the seven-county region was approximately 669,000 and had climbed to around 694,000 two years later. Total population for the seven - county region is anticipated to grow by nearly 23%, with the highest growth rates occurring in Bryan and Effingham Counties (36.7% and 33.6% respectively).

Figure 4: County-Level Population Estimates and 2040 Projections



Sources: 2010 & 2012: Georgia Office of Planning and Budget, South Carolina Budget & Control Board; 2040: Georgia Statewide Model and CORE MPO Travel Demand Model demographic data

Greater Savannah Employment

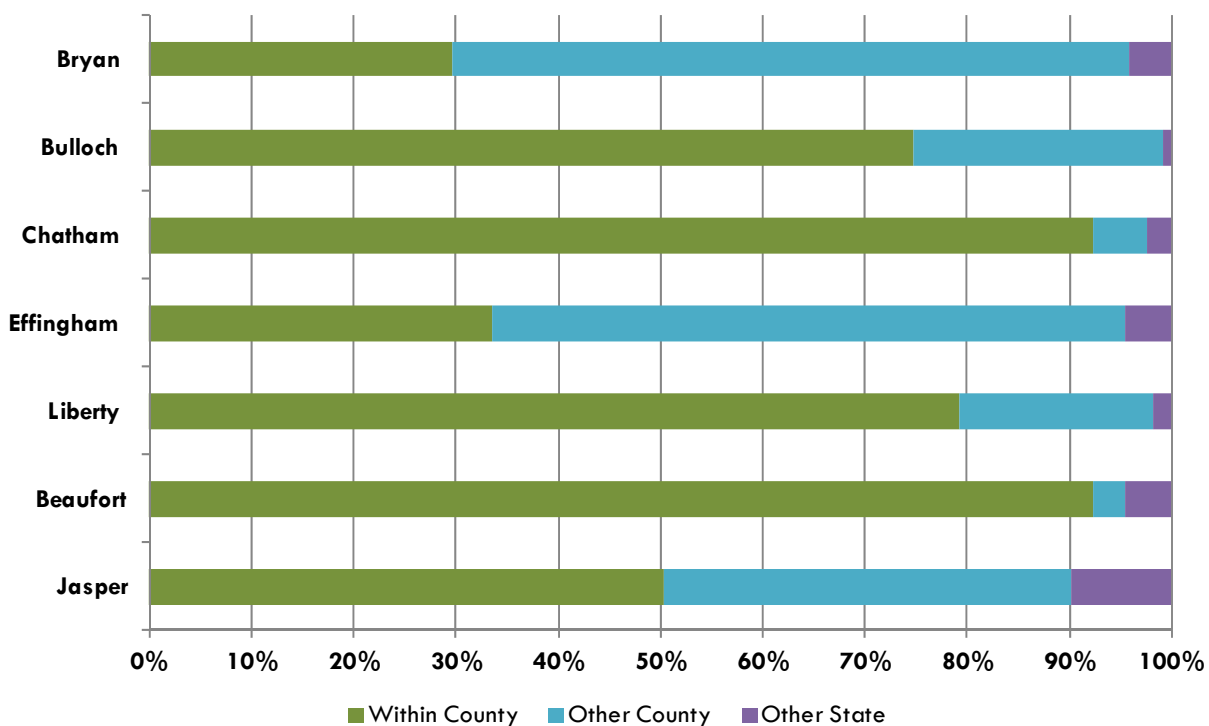
Where people work and how long it takes them to travel there are two important questions when attempting to address access needs in the greater Savannah region. Data from the 2009 through 2011 American Community Survey (ACS) was assessed in order to answer those questions. **Table 1** presents proportions of employment for the seven-county region by where people worked. The data shows whether workers stayed within the county they listed as their permanent residence, traveled to a county outside of their resident county, or traveled into a different state, which in this case was more than likely between South Carolina and Georgia. **Figure 5** graphically illustrates the same data.

Table 1: Proportion of Employment by Location, 2009-2011 ACS

	2009-11 Employees	Within County	Other County	Other State
Bryan	14,078	29.70%	66.10%	4%
Bulloch	28,822	74.80%	24.40%	0.80%
Chatham	115,905	92.30%	5.30%	2.40%
Effingham	23,488	33.50%	61.90%	4.60%
Liberty	28,328	79.10%	18.90%	1.90%
Beaufort	70,703	92.50%	3.10%	4.50%
Jasper	10,455	50.30%	39.90%	9.80%

Source: U.S. Census Bureau, American Community Survey

Figure 5: Proportion of Employment by Location, 2009-2011 ACS



It is evident that workers living in Bulloch, Chatham, Liberty, and Beaufort Counties overwhelmingly stay within their own county to work, illustrating a strong local presence of employment. Workers in Bryan, Effingham, and Jasper Counties, however, overwhelmingly travel outside of their home counties in order to get to work. Jasper County has the largest percentage (9.8%) of workers crossing state lines in order to get to employment. In this case, the most likely crossing is from South Carolina into Georgia.

Employment data from the CORE MPO regional travel demand model was utilized to determine areas with concentrations of employment. **Table 2** lists the 10 major employment centers identified in the greater Savannah area, estimates of 2010 and 2040 employment for those areas, and resulting employment densities (employees per acre). It is important to keep in mind that the employment densities presented in this table do not take into consideration concentrations of employment within a particular area. Also, the employment density calculations presented in this table do not take into consideration areas within a defined area that do not include employment activity (e.g., Hunter Army Airfield's employee density is spread over the entire base).

Key findings from the activity center analysis that was conducted with Census LEHD (Longitudinal Employee Household Data) information and with employee home location data from major employers are as follows:

- The highest employment and employment density is in Downtown Savannah;
- Other areas with significant employment and densities include:
 - Gulfstream/Airport
 - Hospitals Area
 - Hunter Army Airfield
 - Oglethorpe Mall and Southside Areas
- Mitsubishi/Mega Site has a high forecast for employment and could be a future transit service market, should those employment forecasts materialize.

Table 2: CORE MPO Travel Demand Model Employment Data

Attraction Area	2010		2040	
	Employment	Empl./Acre	Employment	Empl./Acre
Downtown Savannah	22,799	6.09	24,193	6.47
Oglethorpe Mall Area	22,649	6.05	24,461	6.54
Hunter Army Airfield	14,711	3.93	15,461	4.13
Memorial/St. Joseph's Hospitals	13,340	3.57	13,678	3.66
Southside/Savannah Mall	11,306	3.02	12,764	3.41
Airport/Gulfstream/Crossroads	11,148	2.98	12,292	3.29
Port of Savannah	4,659	1.25	5,099	1.36
JCB Plant Area	2,886	0.77	3,298	0.88
Savannah State University	850	0.23	896	0.24
Mitsubishi Plant Area	209	0.06	7,013	1.87

Savannah's Major Commute Corridors

U.S. Census data (Longitudinal Employee Household Data – LEHD) was utilized to determine commuting travel patterns to each of the ten (10) employment areas. This information identifies typical commuting distances and the direction of travel of commuters. This information was supplemented with additional employee home location data that was provided by Gulfstream, Home Depot (the Crossroads distribution center), Hunter Army Airfield, and Georgia Southern University.

The spatial analysis of work travel patterns indicates that the primary long distance commuter corridors are:

- ✓ Northwest (SR 21)
- ✓ West (I-16 and US 80)
- ✓ South (I-95 and US 17)

These corridors appear to be major commuter shed corridors for multiple employment centers. For example, the Georgia Highway 21 corridor is a major commuter corridor for Downtown Savannah and Airport/Gulfstream employment trips. The southern I-95 and US Highway 17 corridor is a major commuter corridor for Downtown Savannah, Hunter Army Airfield, Southside employment zones and the Airport/Gulfstream area.

There are existing GDOT rideshare lots within these corridors, but these lots tend to be small in size, not well-marked and sometimes difficult to access. It is recommended that candidate park-and-ride lot sites be located in these three key long distance commuter corridors.

Proposed Park-and-Ride Lot Locations

Within each of the three long distance commuter corridors, several locations were identified as potential park-and-ride lot sites. Preferred locations within each of these corridors were determined through:

- A comprehensive site suitability evaluation process that scored each potential park-and-ride lot location;
- A travel market demand analysis that estimated potential home-to-work travel from park-and-ride catchment areas to various employment centers in the Savannah area; and
- Input from stakeholders that have been participating in this project.

Recommended locations advanced for further consideration are shown in **Figure 6** and are described below.

Northwest (SR 21) Corridor

SR 21 South of Rincon is located on the boundary of Chatham and Effingham Counties. This site scored well on the site suitability analysis and had a high number of work trips in its catchment area. This site was also identified as a preferred location by project stakeholders. This area along SR 21 contains numerous opportunities for joint park-and-ride usage (e.g., Lowe's and a vacant grocery store's parking lot). There are other vacant parcels and commercial strip areas which could also be used for a lot. The City of Rincon owns a parcel located off of SR 21 that is presently used for special events and is eventually planned to be developed as a park.

I-95 & SR 21 is an existing lot located in Chatham County that has a high site suitability score and a high number of work trips in its catchment area. It was also identified by the stakeholder committee as a preferred site. An advantage of this site is its close proximity to I-95, making it well suited for capturing trips from South Carolina. Expansion of the existing park-and-ride lot is recommended.

There are two other existing park-and-ride lots located in this corridor. It is recommended that the existing lot on **SR 17 in Guyton** continue to be a part of the regional park-and-ride lot system since the facility already exists. The existing lot at Effingham County Courthouse park-and-ride lot, however, is not recommended for continued park-and-ride usage. This is a shared use facility that does not have any parking spaces specifically designated for park-and-ride use. The courthouse parking lot is also fully utilized on court days. Therefore, it is recommended that this lot be removed from the regional park-and-ride lot system.

West (I-16 and US 80) Corridor

It is recommended that travel in this corridor be supported by the following two park-and-ride lot locations.

US 80 & Bloomingdale Road is a site located in Chatham County. This site scored reasonably high in the suitability analysis and had the second highest number of work trips in its catchment area of the five west corridor sites that were evaluated. The stakeholder committee also identified this location as a preferred site, noting that it has the potential to capture trips from Effingham County coming in from SR 17. There are undeveloped parcels in the area that could be investigated for park-and-ride development. There are few commercial uses in the area that could be used for shared park-and-ride usage; however, there are some churches located in the area that could possibly be utilized.

I-16 & US 280/SR 30 is an existing park-and-ride lot located in Bryan County. It did not score as well as the US 80 and Bloomingdale Road location in the suitability analysis. The stakeholder committee noted that this site seemed too far away from the corridor's commuter travel shed, which was verified in the travel market analysis. However, since the lot presently exists, and travel demand is expected to continue to grow in this corridor, it is recommended that it continue to be a part of the regional park-and-ride lot system.

South (I-95 and US 17) Corridor

It is recommended that travel in this corridor be supported by the following two park-and-ride lot locations.

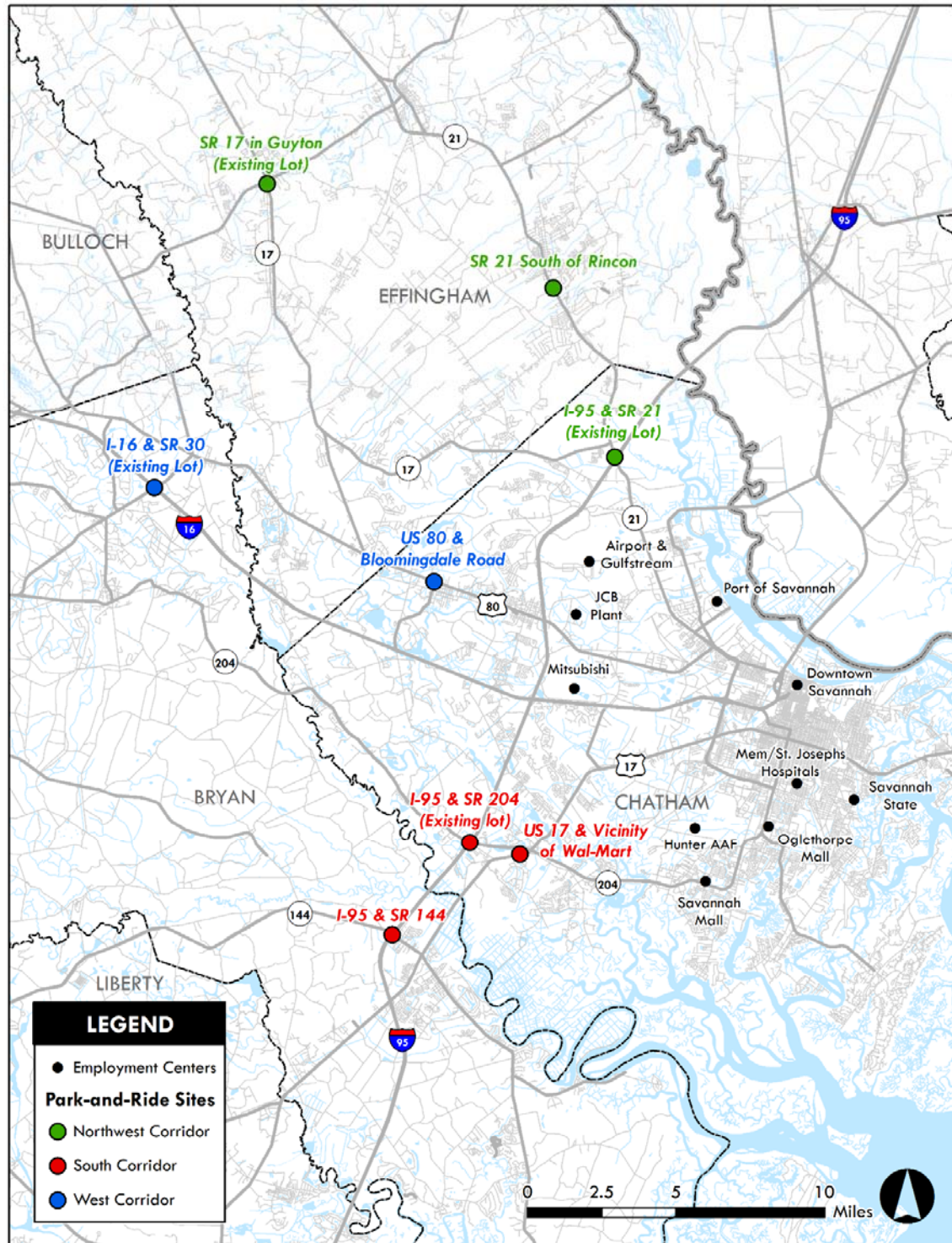
US 17 in the vicinity of Wal-Mart in Chatham County achieved a high suitability score. This location also had the highest number of work trips in its catchment area of the seven south corridor sites that were evaluated. It was the preferred location by stakeholders, noting it is in a location that captures demand from both the SR 204 and US 17 corridors, and is located before peak period traffic congestion on SR 204 occurs. This area is also presently served by Chatham Area Transit (CAT). A potential new lot could be constructed along this US 17 segment, or a joint-use location with an existing commercial use could be utilized. CAT is presently in the process of securing park-and-ride spaces at the Savannah Mall to address near-term park-and-ride needs. Longer-term, however, this study has identified the US 17 near Wal-Mart as the desired location for a park-and-ride lot for the South Corridor.

A second location is also recommended for this corridor, either at **US 17 & SR 144** or **I-95 & SR 144** in Bryan County. The US 17 & SR 144 site scored better from a suitability standpoint. The I-95 & SR 144 location, however, had a higher number of trips in its catchment area (second highest number of work trips in its catchment area of the seven sites that were evaluated for this corridor). There are potential shared use opportunities at the US 17 & SR 144 location. New park-and-ride lot construction would likely be required at the I-95 & SR 144 location.

There is an existing park-and-ride lot located in the South Corridor at I-95 and SR 204. This lot is relatively small in size and has limited expansion potential. Stakeholder committee members felt that usage of this lot would drop if an alternative park-and-ride facility were provided at US 17 in the vicinity of Wal-Mart. It is recommended that this park-and-ride lot remain a part of the regional park-and-ride

lot system, but eventually be removed should demand at this location diminish as other facilities open in this corridor.

Figure 6: Recommended Park-and-Ride Lot Locations



Park-and-Ride Lot Development Costs

For each park-and-ride lot, there are both one-time capital costs and recurring annual costs. One-time capital costs include land acquisition, engineering costs, and construction costs. Land acquisition costs can vary significantly from location to location depending on factors such as accessibility to major roadways, distance from downtown, adjacent development, and existing zoning. Engineering costs, whether for a new or an expanded park-and-ride lot, are an important cost component. Engineering costs typically include preliminary engineering, final design, construction plans, and preparation of specifications. These costs are generally derived as a percentage of construction costs. For new publicly owned dedicated lots, a conceptual Opinion of Probable Cost of \$820,000 was developed for a 100-space park-and-ride lot in the Savannah area.

Construction costs may also include improvements and fixtures at both existing and recommended shared use park-and-ride lots. The level of investment in each lot will vary depending on a number of factors, including lot configuration and current conditions. For cost estimation purposes, a conservative estimate of \$1,600 per parking space is assumed. This amounts to approximately 20% of construction costs for a new dedicated lot.

Recurring annual costs include routine maintenance and lease costs, where applicable. Routine maintenance would be a recurring annual cost for each park-and-ride lot. Proactive maintenance ensures safety for individuals using the lot and extends the life of the lot before expensive reconstruction, repair, or replacements are needed. Routine maintenance generally includes items such as maintenance of pavement, lighting, landscaping, signage, shelters, and other features, as well as trash removal and cleaning. A figure of \$100 per parking space per year was used for routine maintenance costs. For shared-use lots, formal agreements delineating lease terms for shared use park-and-ride lots are highly encouraged. A review of several park-and-ride lease agreements between GRTA and private property owners (shopping centers and churches) suggests a cost of \$10 per parking space per month, or \$120 per space annually. This unit cost is assumed for cost estimating purposes.

Order of magnitude costs for both one-time capital costs and annual costs associated with the proposed park-and-ride lots were calculated using the assumptions described above. Estimates were developed for both an initial year (assumed to be 2020) and a horizon year of 2040. New dedicated park-and-ride lots or expansions of lots assume either 50 or 100 spaces, requiring a half acre or one acre of land, respectively.

The total number of park-and-ride spaces in the initial year (assumed to be 2020) is generally proposed to be in the 135 to 155 space range per corridor. For the horizon year (2040), the total number of park-and-ride spaces is generally proposed to be in the 185 to 205 space range per corridor. These parking space recommendations are sufficient to meet corridor park-and-ride demand estimates for both the initial year and the horizon year.

Specific assumptions applied to each corridor and park-and-ride lot for determining potential capital and annual maintenance/lease costs are summarized below. Note that these are assumptions applied only for the purpose of determining an order-of-magnitude cost estimate. Actual costs will vary depending on final lease vs. construction decisions and actual park-and-ride lot size determination within each corridor.

Northwest (SR 21) Corridor

- **I-95 & SR 21.** This existing 33-space GDOT lot is assumed to be expanded by 50 spaces to 83 spaces.
- **SR 21 South of Rincon.** A shared use (leased) park-and-ride facility is initially assumed as a 50-space lot, eventually expanded to 100 spaces by the horizon year.
- **SR 17 in Guyton.** This existing 20-space GDOT lot is assumed to remain its current size in both the initial and horizon years.

West (I-16 and US 80) Corridor

- **I-16 & US 280/SR 30.** This existing 35-space GDOT lot is assumed to initially remain its current size but be improved, with expansion of 50 spaces to 85 spaces by the horizon year.
- **US 80 & Bloomingdale Road.** A newly constructed park-and-ride facility is assumed as a 100-space lot in both the initial and horizon years.

South (I-95 and US 17) Corridor

- **I-95 & SR 204.** This lot is assumed to be phased out as recommended new park-and-ride lots in this corridor come on-line.
- **US 17 in Vicinity of Walmart.** A shared use (leased) park-and-ride lot of 100 spaces is assumed at this location in both the initial and horizon years.
- **I-95 & SR 144.** A newly constructed park-and-ride facility is initially assumed as a 50-space lot, eventually expanded to 100 spaces by the horizon year.

Table 3 presents estimated park-and-ride lot costs for the initial year (assumed to be 2020) and the horizon year (assumed to be 2040) in current (2014) dollars. Total estimated one-time capital costs are just over \$3 million and annual maintenance and lease costs are estimated at \$70,300 for the initial year (2020), with a total park-and-ride supply of 440 spaces. By the horizon year (2040), the number of park-and-ride spaces would increase to a total of 590. Total estimated one-time capital costs would increase by \$1,275,500 to almost \$4.3 million. Recurring maintenance and lease costs would increase by \$21,000 to \$91,300 per year.

Table 3: Order of Magnitude Park-and-Ride Lot Capital and Annual Maintenance/Lease Costs

Corridor	Park-and-Ride Lot	Improvement Type	Existing Spaces	2020	2040	One-Time Costs			Annual Maintenance and/or Lease Costs	
				Proposed Spaces	Proposed Spaces	Land, Engineering, Construction 2020	2040	Total	2020	2040
Northwest Corridor	I-95 & SR 21	Expand Existing Lot	33	85	85	\$809,700	\$0	\$809,700	\$8,500	\$8,500
	SR 21 South of Rincon	New Leased Lot	0	50	100	\$96,000	\$96,000	\$192,000	\$19,500	\$30,500
	<u>SR 17 in Guyton</u>	<u>Existing Lot - Not Change</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>\$38,400</u>	<u>\$0</u>	<u>\$38,400</u>	<u>\$2,000</u>	<u>\$2,000</u>
	Corridor Total		53	155	205	\$944,100	\$96,000	\$1,040,100	\$30,000	\$41,000
West Corridor	I-16 & US 280/SR 30	Expand Existing Lot	35	35	85	\$63,400	\$525,000	\$588,400	\$3,300	\$8,300
	<u>US 80 & Bloomingdale Rd.</u>	<u>New Public-Owned Lot</u>	<u>0</u>	<u>100</u>	<u>100</u>	<u>\$1,162,100</u>	<u>\$0</u>	<u>\$1,162,100</u>	<u>\$10,000</u>	<u>\$10,000</u>
	Corridor Total		35	135	185	\$1,225,500	\$525,000	\$1,750,500	\$13,300	\$18,300
South Corridor	I-95 & SR 204	Existing Lot	32	0	0	\$0	\$0	\$0	\$0	\$0
	US 17 & Vicinity of Wal-Mart	New Leased Lot	0	100	100	\$192,000	\$0	\$192,000	\$22,000	\$22,000
	<u>I-95 & SR 144</u>	<u>New Public-Owned Lot</u>	<u>0</u>	<u>50</u>	<u>100</u>	<u>\$654,500</u>	<u>\$654,500</u>	<u>\$1,309,000</u>	<u>\$5,000</u>	<u>\$10,000</u>
	Corridor Total		32	150	200	\$846,500	\$654,500	\$1,501,000	\$27,000	\$32,000
REGIONAL TOTALS			120	440	590	\$3,016,100	\$1,275,500	\$4,291,600	\$70,300	\$91,300

Note: Costs in 2014 dollars.

Transit Service Opportunities

Major employment centers were identified in the greater Savannah region with significant employment densities. Work-related travel demand was estimated for each proposed park-and-ride lot location to each major employment areas. Through this process, it was determined that the two employment centers most likely to support commuter transit services were: Downtown Savannah and the Gulfstream/Crossroads/Airport area. Hunter Army Airfield may also be viable at some point – particularly from the south I-95/US 17 corridor. However, the current demand for Hunter Army Airfield commuters was not as strong as the other two locations, thus was not included as a potential “first tier” of regional commuter transit service.

Proposed Service

For each corridor, it is proposed that there be one route to each destination (i.e., one route to Downtown Savannah and one route to the Airport/Gulfstream/Crossroads area). Each route would start from the farthest park-and-ride lot, make a mid-route stop at the closest park-and-ride lot, and then continue non-stop to the employment destination. **Figures 7 through 8** illustrate proposed routing from each corridor to these two destinations.

A key attribute to attracting ridership is providing the riders with a sufficient number of trip choices for traveling to and from their destinations. It is proposed that each route consists of three morning and three afternoon trips, weekdays only (excluding holidays). Three trips is the recommended minimum number for each peak period to provide potential customers with the option of trip choices over an approximate 90-minute period.

Tables 4 and 5 present potential schedules for transit service for each corridor to/from Downtown Savannah and the Airport/Gulfstream/Crossroads area. Two buses have been identified for each route. In the morning the first scheduled bus trip makes a non-revenue trip back to the park-and-ride lots to make the third scheduled inbound trip. Similarly, in the afternoon the first scheduled bus trip makes a non-revenue trip back to the destination to make the third scheduled outbound trip. Overall, twelve (12) buses are required to provide service to both Downtown Savannah and the Airport/Gulfstream/Crossroads area from all three corridors.

A key element to providing successful park-and-ride transit services is providing a guaranteed means of returning to the park-and-ride lot in the midday in the event of an emergency (e.g., to pick-up a sick child from school). Included in the statistics is the assumption that one bus remains available for midday guaranteed ride home service for each destination.

Figure 7: Northwest Corridor Proposed Transit Routes

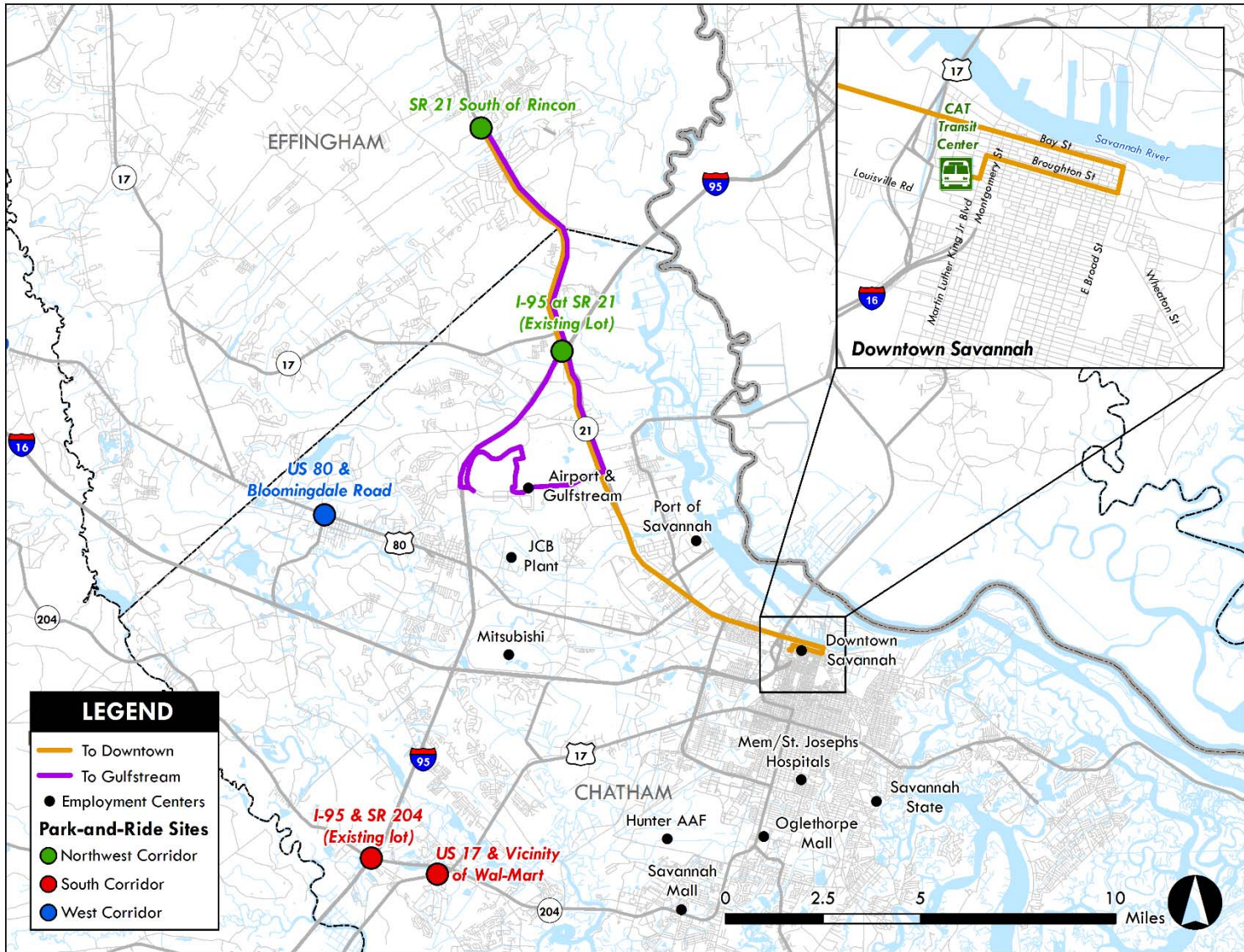


Figure 8: West Corridor Proposed Transit Routes

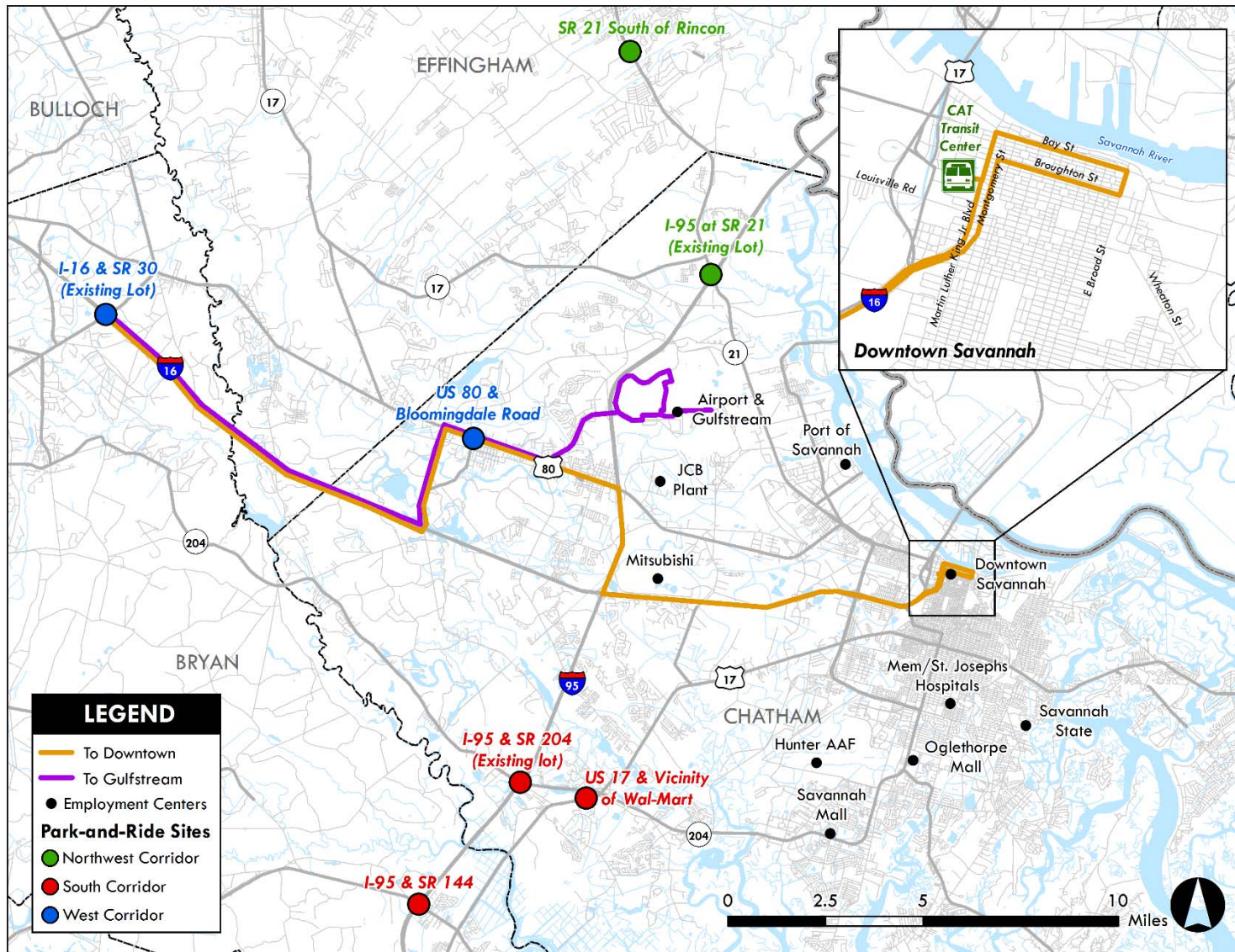


Figure 9: South Corridor Proposed Transit Routes

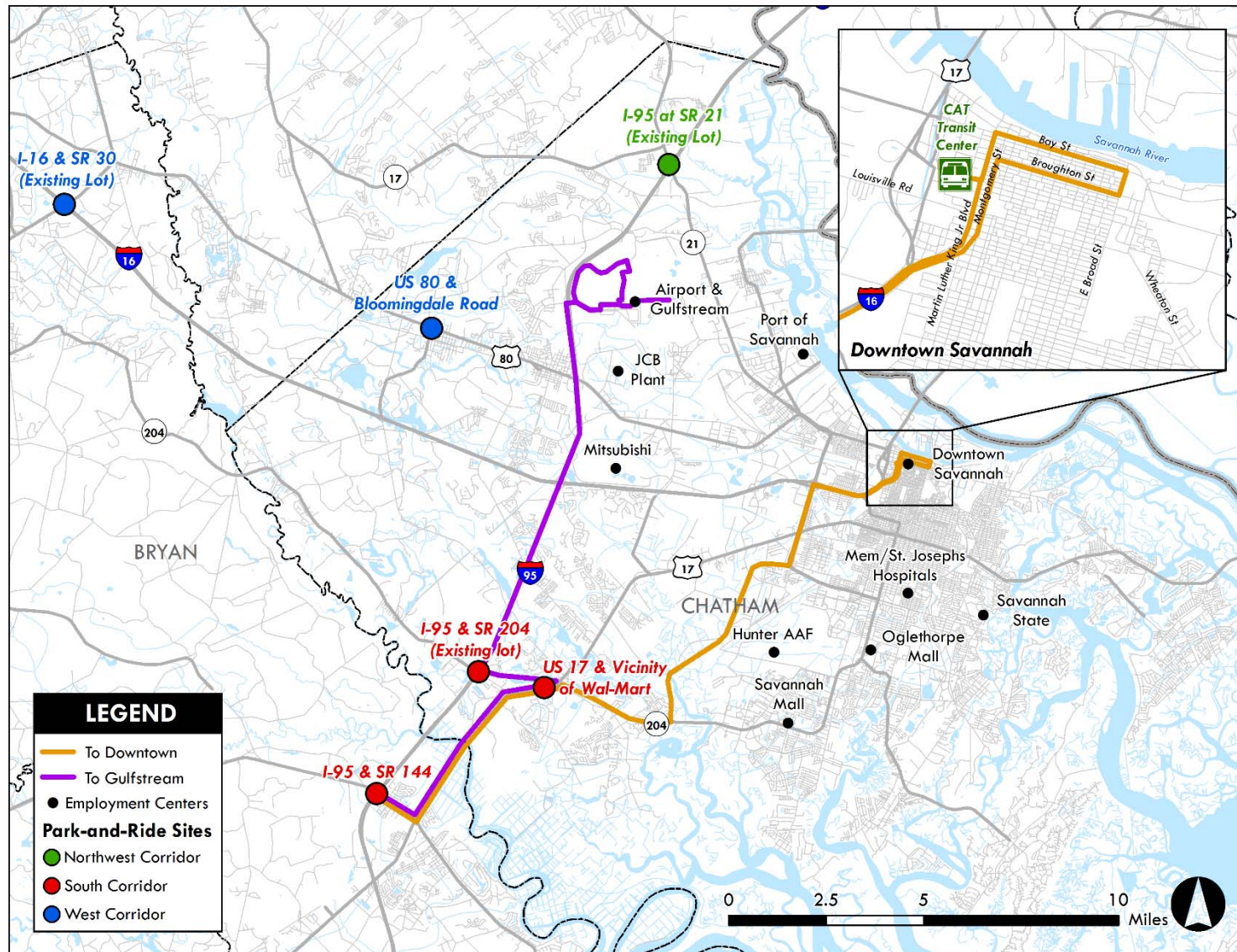


Table 4: Proposed Transit Service Plan to/from Downtown Savannah

Corridor	AM Service Plan				PM Service Plan			
Northwest	<u>Bus</u>	<u>Rincon</u>	<u>SR 21/I-95</u>	<u>Downtown</u>	<u>Bus</u>	<u>Downtown</u>	<u>SR 21/I-95</u>	<u>Rincon</u>
	1	6:30 AM	6:40 AM	7:20 AM	1	4:30 PM	5:10 PM	5:20 PM
	2	7:00 AM	7:10 AM	7:50 AM	2	5:15 PM	5:55 PM	6:05 PM
	1	8:00 AM	8:10 AM	8:50 AM	1	6:00 PM	6:10 PM	6:50 PM
West	<u>Bus</u>	<u>US 280/I-16</u>	<u>Bloomingdale</u>	<u>Downtown</u>	<u>Bus</u>	<u>Downtown</u>	<u>Bloomingdale</u>	<u>US 280/I-16</u>
	1	6:25 AM	6:42 AM	7:20 AM	1	4:30 PM	5:08 PM	5:25 PM
	2	6:55 AM	7:12 AM	7:50 AM	2	5:15 PM	5:53 PM	6:10 PM
	1	8:05 AM	8:22 AM	9:00 AM	1	6:10 PM	6:48 PM	7:05 PM
South	<u>Bus</u>	<u>SR 144</u>	<u>Walmart</u>	<u>Downtown</u>	<u>Bus</u>	<u>Downtown</u>	<u>Walmart</u>	<u>SR 144</u>
	1	6:35 AM	6:45 AM	7:20 AM	1	4:30 PM	5:05 PM	5:15 PM
	2	7:05 AM	7:15 AM	7:50 AM	2	5:15 PM	5:52 PM	6:09 PM
	1	7:55 AM	8:05 AM	8:40 AM	1	5:50 PM	6:27 PM	6:44 PM
Summary of Service	<u>Statistics</u>		<u>Daily</u>	<u>Annual</u>				
Requirements	Peak Buses		6	n/a				
	Rev. Miles		489	124,206				
	Rev. Hours		15.0	3,810				
	Midday Hours		7.5	1,905				
	<u>Deadhead Hrs.</u>		<u>8.5</u>	<u>2,159</u>				
	Total Hours		31.0	7,874				

Notes: Revenue-Miles and Revenue-Hours are the number of miles and hours that a bus is in service, available for passengers to board.
Annualization of statistics based on weekday service only, excluding holidays (254 service days a year)

Table 5: Proposed Transit Service Plan to/from Airport/Gulfstream/Crossroads Area

Corridor	AM Service Plan					PM Service Plan				
Northwest	<u>Bus</u>	<u>Rincon</u>	<u>SR 21/I-95</u>	<u>Gulfstream</u>	<u>Crossroads</u>	<u>Bus</u>	<u>Crossroads</u>	<u>Gulfstream</u>	<u>SR 21/I-95</u>	<u>Rincon</u>
	1	6:15 AM	6:25 AM	6:35 AM	6:50 AM	1	4:10 PM	4:25 PM	4:20 PM	4:35 PM
	2	6:45 AM	6:55 AM	7:05 AM	7:20 AM	2	4:40 PM	4:55 PM	4:50 PM	5:05 PM
West	1	7:20 AM	7:30 AM	7:40 AM	7:55 AM	1	5:05 PM	5:20 PM	5:15 PM	5:30 PM
	<u>Bus</u>	<u>US 280/I-16</u>	<u>Bloomingdale</u>	<u>Gulfstream</u>	<u>Crossroads</u>	<u>Bus</u>	<u>Downtown</u>	<u>Gulfstream</u>	<u>Bloomingdale</u>	<u>US 280/I-16</u>
	1	6:00 AM	6:17 AM	6:35 AM	6:50 AM	1	4:10 PM	4:25 PM	4:43 PM	5:00 PM
South	2	6:30 AM	6:47 AM	7:05 AM	7:20 AM	2	4:40 PM	4:55 PM	5:13 PM	5:30 PM
	1	7:30 AM	7:47 AM	8:05 AM	8:20 AM	1	5:40 PM	5:55 PM	6:13 PM	6:30 PM
	<u>Bus</u>	<u>SR 144</u>	<u>Walmart</u>	<u>Gulfstream</u>	<u>Crossroads</u>	<u>Bus</u>	<u>Downtown</u>	<u>Gulfstream</u>	<u>Walmart</u>	<u>SR 144</u>
Summary of Service	1	6:00 AM	6:10 AM	6:35 AM	6:50 AM	1	4:10 PM	4:25 PM	4:50 PM	5:00 PM
	2	6:30 AM	6:40 AM	7:05 AM	7:20 AM	2	4:40 PM	4:55 PM	5:20 PM	5:30 PM
	1	7:30 AM	7:40 AM	8:05 AM	8:20 AM	1	5:40 PM	5:55 PM	6:20 PM	6:30 PM
Requirements	<u>Statistics</u>	<u>Daily</u>	<u>Annual</u>							
	Peak Buses	6	n/a							
	Rev. Miles	189	48,006							
	Rev. Hours	13.5	3,429							
	Midday Hours	7.5	1,905							
	Deadhead Hrs.	8.3	2,096							
	Total Hours	29.25	7,430							

Notes: Revenue-Miles and Revenue-Hours are the number of miles and hours that a bus is in service, available for passengers to board.

Annualization of statistics based on weekday service only, excluding holidays (254 service days a year)

Potential Ridership and Costs

Order-of-magnitude ridership estimates were prepared by utilizing corridor travel demand estimates and applying typical express route mode share rates. Daily one-way passenger trips for the three Downtown Savannah routes (combined) is estimated to be approximately 400 with today's regional population and 560 with Year 2040 regional population forecasts. Daily ridership for the three Airport/Gulfstream/Crossroads routes (combined) is estimated to be approximately 170 with today's regional population and 250 with Year 2040 regional population forecasts. The Downtown Savannah ridership is estimated to be twice as high as the Airport/Gulfstream/Crossroads ridership due partially to stronger travel demand to/from Downtown Savannah. It is also because Downtown Savannah is farther in distance from most of the park-and-ride lots where service is proposed (employees are more likely to use express route services as distances between home and the workplace increases). There are also higher employment densities, thus concentrations of employees in Downtown Savannah. Many employees must pay for downtown parking, an influencing factor for encouraging transit usage.

Monthly parking at the City of Savannah's (City's) parking garages is \$30/month at the Liberty Street garage, and \$80/month at the City's other four garages (Bryan Street, Robinson, State Street and Whitaker Street). There are also higher levels of traffic congestion in Downtown Savannah. Studies have shown that transit usage is heavily influenced by time (i.e., is the transit travel time competitive with the auto travel time) and cost (i.e., is the transit fare competitive with the cost of driving).

It is recommended that a large-sized bus be utilized for the Downtown Savannah service (i.e., 29' or more in length) and a small-sized bus (typically referred to as "cutaways") be used for the Airport/Gulfstream/Crossroads routes (e.g., 22').

Costs for transit services are dependent on the service contracting arrangements. For this analysis, a contract service provider arrangement is assumed, where the sponsoring agency contracts with a private service provider to operate the service and maintain the buses. At this point, it is not known who the sponsoring public agency (or agencies) may be. A contract service provider arrangement is similar to CAT's operations prior to 2013 when CAT contracted with a service provider. The only costs incurred directly by CAT were fuel and administrative costs. For this analysis, it is also assumed that the contract service provider's hourly rate will include the provision of buses (i.e., the sponsoring agency will not be purchasing buses, rather the contract service provider builds the cost for supplying buses into the hourly rate). A total of 12 buses are needed for the proposed service plan (six for each destination). Two spare buses are assumed for each service, resulting in a total of 16 buses.

Table 6 presents estimated costs for the provision of transit service per the operating plan described above. This cost could be reduced by phasing implementation of transit service (e.g., do not start with transit service in all three corridors or to both destinations).

Table 6: Estimated Annual O&M Costs (2014 dollars)

Cost Item	Unit Cost	Unit Type	Units	Cost Estimate
Contract Operator O&M	\$56.00	per Total Bus Hr.	15,304	\$857,000
Fuel & Agency G&A =	\$11.00	per Total Bus Hr.	15,304	\$168,300
Small Bus Costs =	\$18,000	per Bus	8	\$144,000
Large Bus Costs =	\$29,000	per Bus	8	\$232,000
Total Annual O&M Cost Estimate				\$1,401,300

Notes:

1. O&M - operating and maintenance costs.
2. G&A - general administrative costs
3. Small (cutaway) bus estimated to be \$90,000 with a 5-year useful life
4. Larger (29' or more) diesel bus estimated to be \$350,000 with a 12-year useful life
5. Costs are in 2014 dollars.

From a benefits standpoint, the projected 2040 ridership can result in a reduced need of over 400 parking spaces for Downtown Savannah and the Airport/Gulfstream/Crossroads area. This is parking that would not be required of employers or businesses served by the proposed transit routes. It also does not include additional potential savings in parking requirements resulting from carpoolers.

For riders of the service, there is also a financial benefit. For riders destined to Downtown Savannah, fuel savings are estimated to range from \$2.40 to \$4.60 per one-way trip, with an average savings of \$2.90 per one-way trip (i.e., \$5.80 round trip). For riders destined to the Airport/Gulfstream/Crossroads area, fuel savings are estimated to range from \$1.50 to \$4.00 per one-way trip, with an average savings of \$2.60 per one-way trip (i.e., \$5.20 round trip). These calculations are based on the 2040 ridership projections, distances to and from each park-and-ride lot, an average 24 mpg fuel consumption rate and a fuel cost of \$3.50 per gallon. In addition to fuel costs, riders destined to Downtown Savannah also realize a savings in parking costs. Monthly parking fee at the City's parking garages ranges from \$30 to \$80. Assuming an average rate of \$50 per month, a downtown-destined rider could be saving over \$8.00 in fuel and parking costs a day (\$5.80 in round trip fuel costs and \$2.25 in average daily parking costs).

Finally, there are less quantifiable benefits associated with park-and-ride and transit usage. There are environmental benefits in the form of reduced traffic congestion and air pollution, and less usage of automobiles results in reduced auto maintenance costs for the auto owner. The AAA estimates auto maintenance costs average 5 cents for every mile driven.

Potential Farebox Revenues and Subsidy Requirements

In addition to ridership and costs, it is important to determine likely farebox revenues so the sponsoring agency (or agencies) has an understanding of potential service subsidy requirements. For this analysis, a \$2.50 cash fare has been assumed with multi-ride and monthly pass discounts that bring the net effective fare to \$2.25 (10% lower than the cash fare). This fare assumption is based on a review of express fares in other regions, and has been applied to each route's ridership estimates to determine potential farebox revenues. Annual O&M costs (including the lease of buses) have been calculated for each route. This provides the ability to calculate the subsidy required on a route-level basis. **Table 7** presents these calculations for 2040 horizon year forecasts. All cost figures in these tables are in 2014 dollars. As shown in this table, subsidy requirements are less for the Downtown Savannah transit service.

It is important to note that transit service does not necessarily have to begin concurrent with the opening of corridor park-and-ride lots. Rideshare and vanpool programs/promotions can be an initial step in the encouragement of park-and-ride lot usage. Transit services can also be phased (e.g., begin with the Downtown Savannah service and then expand to the Airport/Gulfstream/Crossroads service, or begin service in a particular corridor and then expand to other corridors).

Table 7: 2040 Horizon Year Revenue and Subsidy Estimates

Service	Corridor	Daily Ridership	Annual Ridership	Total Bus-Hours	Fare Revenues	Annual O&M Costs	Farebox Recovery %	Subsidy Required	Subsidy/ 1-Way Trip
Downtown Routes	Northwest	120	30,480	2,625	\$68,580	\$223,900	31%	\$155,320	\$5.10
	West	250	63,500	2,887	\$142,875	\$241,400	59%	\$98,525	\$1.55
	<u>South</u>	<u>190</u>	<u>48,260</u>	<u>2,362</u>	<u>\$108,585</u>	<u>\$206,300</u>	<u>53%</u>	<u>\$97,715</u>	<u>\$2.02</u>
Downtown Totals		560	142,240	7,874	\$320,040	\$671,600	48%	\$351,560	\$2.47
Gulfstream/Crossroads Routes	Northwest	90	22,860	1,926	\$51,435	\$206,400	25%	\$154,965	\$6.78
	West	100	25,400	2,752	\$57,150	\$261,700	22%	\$204,550	\$8.05
	<u>South</u>	<u>60</u>	<u>15,240</u>	<u>2,752</u>	<u>\$34,290</u>	<u>\$261,700</u>	<u>13%</u>	<u>\$227,410</u>	<u>\$14.92</u>
Gulfstream Totals		250	63,500	7,430	\$142,875	\$729,800	20%	\$586,925	\$9.24
FULL SYSTEM TOTALS		810	205,740	15,304	\$462,915	\$1,401,400	33%	\$938,485	\$4.56

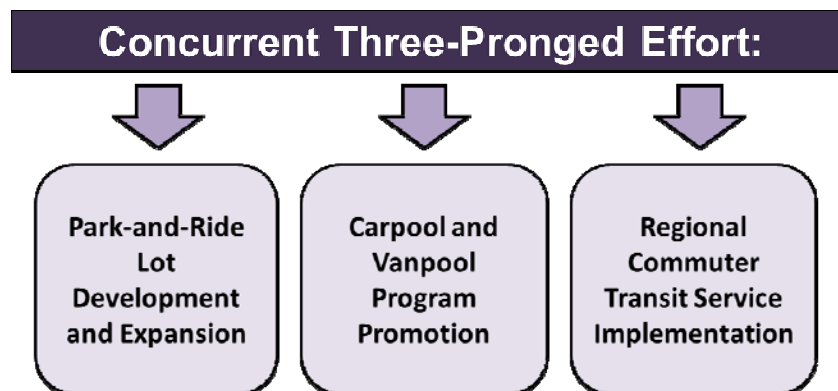
Notes

1. Ridership Annualization Factor = 254
2. Fare per Passenger Trip = \$2.25
3. Hours distributed to routes based on each route's 1-way trip revenue time. Midday hours are shared proportionally.
4. Costs for spare buses shared proportionally in O&M cost calculations.
5. Costs presented in 2014 dollars.

Implementing the Park-and-Ride Program

Analyses of the commuter travel market in the greater Savannah region clearly show that the demand for expanded park-and-ride facilities is present today. While completing fieldwork for this project, it was quite evident that there is a significant amount of informal park-and-ride (carpool) activity at commercial businesses around the Savannah region (e.g., parking at the fringe of grocery store and hardware store parking lots). The provision of safe and convenient formal park-and-ride lots will further encourage carpooling activities in the short term, with possible provision of commuter transit services in the longer-term.

It is recommended that expansion of park-and-ride lot spaces and ridesharing activities be realized through a three-pronged effort that is concentrated on the following activities:



All three activities will require extensive coordination among the CORE MPO, GDOT, local jurisdictions, and public transit providers in the greater Savannah region. Specific efforts recommended within each of these activities are described below.

Park-and-Ride Lot Development and Expansion

This study has identified general locations where park-and-ride lot development, lease arrangements and/or expansion of existing lots is appropriate. Multi-agency participation will be required to determine specific sites that should be advanced to development, and to establish funding arrangements for engineering, land acquisition, construction, lease payments and annual maintenance. Following are descriptions of coordination efforts that will be required for each proposed lot location within each of the three primary travel corridors.

Northwest (SR 21) Corridor

- Work with GDOT in the programming of I-95 and SR 21 lot expansion. Eliminate Effingham County Courthouse from GDOT park-and-ride lot inventory.

- Work with City of Rincon and Effingham County to further investigate potential sites in the vicinity of the existing Lowes and Wal-Mart (lease options and lot development options), and potential funding strategies for capital and ongoing lease/maintenance costs.

West (I-16 and US 80) Corridor

- Work with GDOT in programming lot improvements for the existing I-16 and US 280/SR 30 park-and-ride lot.
- Work with City of Bloomingdale and Chatham County to further investigate potential sites (lease options and lot development options), and potential funding strategies for capital and ongoing lease/maintenance costs.

South (I-95 and US 17) Corridor

- Work with City of Savannah and Chatham County to further investigate potential sites (lease options and lot development options) around the existing Wal-Mart on US 17 at SR 204, and potential funding strategies for capital and ongoing lease/maintenance costs. As noted earlier, CAT is presently in the process of securing shared-use park-and-ride spaces at the Savannah Mall to address near-term park-and-ride space needs. Longer-term, however, the US 17/SR 204 site, in the vicinity of Wal-Mart, is seen as a preferable site to address South Corridor commuter needs.
- Work with City of Richmond Hill and Bryan County to further investigate potential sites around SR 144/I-95/US 17 (lease options and lot development options), and potential funding strategies for capital and ongoing lease/maintenance costs.

Carpool and Vanpool Program Promotion

CORE MPO presently administers the region's Coastal Commuters program. Currently the program mainly consists of a ridematching system that can be used by individuals or by employers who request to have a dedicated network within the system. Although the system can potentially be used to set up vanpools, the necessary management activity for that is not funded and staffed at this time. Coastal Commuters participants are able to enter commute origin and destination information at the Coastal Commuters website (<http://www.coastalcommuters.org>), and look for matches for potential ridesharing. In recent years, there has not been an extensive effort to promote this program. A challenge for participants in this program is the lack of collection points at the origin (home) end of the trip for participants to meet and carpool together. Expansion of park-and-ride lots will provide these much needed collection points and should result in increased participation in the program. Another challenge is the rapidly changing environment of tools available to reach out to potential participants. Reliance on web sites to find a potential ridematch is no longer sufficient. Social media sites must also be used to successfully reach out to commuters.

In conjunction with the park-and-ride lot expansion program, it is recommended that efforts be made to expand promotion of the Coastal Commuters program (or successor program) for commuters to find

ridematching opportunities. Chatham Area Transit (CAT) has expressed an interest in providing a ridesharing/vanpooling program, and CAT staff has discussed this with CORE MPO staff. Whatever agency handles the ridematching system in the future, it is recommended that they initiate the expanded promotional effort by first conducting an evaluation of ridematching programs in other similar-sized cities in the country. The focus of this peer review would be to identify demonstrated successful outreach activities to both employers and their employees. Such activities may include ridesharing incentive programs, sign-up drives at major employers and use of social media apps. Results of the peer review should then be used to define a program for improving promotion of a rideshare program in the Savannah region.

A successful carpool/vanpool program requires a full time mobility manager to manage the various activities necessary to attract participants. Responsibilities for the mobility manager include maintaining and marketing the rideshare database, and promoting park-and-ride use to both employers and employees through various traditional and social media marketing efforts. Funding for a full-time mobility manager, within an appropriate agency, is recommended.

Promotion and incentives for park-and-ride use must also occur at the destination end of the trip. As noted throughout this study, Downtown Savannah has the greatest potential for park-and-ride use by downtown employees because of high employment densities, relatively long-distance trips from home origins to Downtown Savannah, roadway congestion to and from Downtown Savannah and parking costs. The City benefits from increased park-and-ride use through reduced downtown traffic volumes and parking space demand. A pilot park-and-ride incentive program is recommended at City-owned parking facilities. Incentives could include preferential parking and/or lower parking costs for carpoolers. The Chatham County - Savannah Metropolitan Planning Commission (MPC), on behalf of the CORE MPO and in partnership with the City of Savannah, is about to initiate a Parking and Mobility Study. Specific actions that will encourage and incentivize park-and-ride activities should be considered as a part of this study.

Finally, The Coastal Regional Commission (CRC) is currently conducting a study to determine the potential market for a vanpool program. Similar to the rideshare program, expansion of park-and-ride lots will greatly increase the success of a vanpool program, for the park-and-ride lots can be used as collection points. CORE MPO should continue to support the CRC in this study, with recommendations from that study folded into this study's overall recommendations.

Regional Commuter Transit Service Implementation

This study has determined that regional commuter transit service is likely viable for Downtown Savannah and the Gulfstream/Airport/Crossroads area. Regional transit service may also be viable longer-term for other major employment areas. For example, there appears to be a strong travel demand to Hunter Army Airfield in the South I-95/US 17 corridor.

The provision of regional commuter transit service will greatly enhance use of expanded park-and-ride lots. However, we do not believe it is an essential first step. There appears to be a significant carpool/vanpool market that will benefit from new and expanded park-and-ride lots. The provision of regional commuter transit service will be the most challenging recommendation to implement. Thus, it is envisioned as a longer-term recommendation. Transit service has a high on-going annual cost for operations and maintenance and requires sustainable funding sources. There is presently no mechanism in place in the greater Savannah region to fund a regional commuter transit service that would be multi-jurisdictional.

CAT and CRC are the two public transit service providers in the Savannah region. Both agencies could be the service provider for regional commuter transit service. Both, however, have funding restrictions. CAT is funded by a millage rate within portions of Chatham County. CAT could enter into inter-local agreements to operate some or all proposed transit routes, with these agreements specifying funding arrangements for jurisdictions outside of CAT's current millage-rate supported service district. CRC provides rural and human services transportation in the coastal region. As a Section 5311 recipient, CRC can only provide service for rural-to-rural, urban-to-rural and rural-to-urban trips. Some of the proposed park-and-ride lots are located within the Savannah Urbanized Area Boundary. CRC could, however, still provide services to and from these park-and-ride lots through inter-local funding agreements that do not utilize CRC's Section 5311 funds.

Further discussions are needed regarding governance, funding and service delivery options for regional commuter transit service. Tech Memo 5 of this study presented potential federal, state and local funding sources and transit service delivery options that could potentially be used for regional commuter bus service in the Savannah region. These discussions must involve both administrative staff and elected representatives of the affected jurisdictions. CORE MPO, through its role as the region's MPO, is in a position to coordinate these discussions. These discussions should be initiated through existing CORE MPO committees, and include participation by both CAT and CRC representatives.