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Cumberland Community Improvement District

South Quadrant Transportation Study

Final Report

September 16, 2008

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South Quadrant Transportation Study

Final Report

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Cumberland Community
Improvement District

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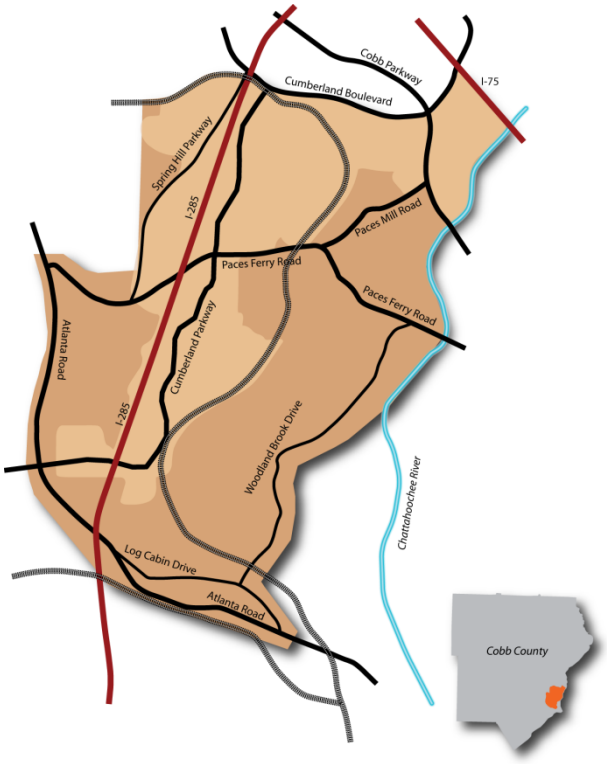
1. Introduction

The South Quadrant area, which includes the Vinings activity center and the Atlanta Road corridor, currently enjoys an efficient and reliable transportation network – a significant benefit that adds to the area's appeal and attractiveness for area business owners and residents. This area is experiencing tremendous growth in residential, commercial, and office development. These development trends are expected to increase area growth and travel demand, potentially pushing the transportation system to capacity.



As a proactive measure, the Cumberland Community Improvement District (CID) initiated a transportation study in 2007 to identify transportation issues in the area and potential measures to preserve the area's character, mobility, and accessibility. This study assesses area transportation problems and identifies potential mechanisms, including transportation infrastructure projects that can support the South Quadrant's current and future transportation mobility and accessibility needs. Exhibit 1 provides an overview of the study area.

This report is organized into the following sections:

Existing Conditions – Documentation of existing infrastructure, travel patterns, and existing land use/development patterns supplemented with an analysis of current and future market conditions

Area Assessment and Goals – An analysis of study area opportunities and constraints based on existing conditions and stakeholder input

Future Conditions – Discussions of two future development scenarios used to project land use densities and traffic conditions

Recommendations – Transportation project recommendations to address specific future needs and opportunities

1.1 Previous Planning Efforts

As part of the Cumberland CID, the South Quadrant study area has been the subject of several previous and ongoing planning studies, including the following:

Cobb County Transportation Master Plan
Blueprint Cumberland Strategic Plan
Southeast Quadrant Transportation Master Plan
Development/Redevelopment Potential Plan
Wayfinding/Signage Plan
Circulator Study

These plans include information relative to this study and are discussed throughout the report. Key findings and issues of previous planning efforts are summarized below.

- There are several planned/programmed improvements in the study area, including intersection improvements at Atlanta Road/I-285 and at Atlanta Road/Paces Ferry Road.

- Shared parking among different land uses can reduce the amount of land consumed for parking spaces and allow more and better use of land.

- A shuttle circulator operations and implementation plan has been completed and a shuttle system is feasible.

- There is a significant need for wayfinding to both brand the Cumberland CID and aid in traffic congestion relief.

- The Cobb County Comprehensive Plan designates portions of the study area as regional activity centers with high-intensity land uses.

1.2 Project Approach

The approach for this South Quadrant Transportation Study combines technical and nontechnical elements to identify realistic solutions for the area. The technical elements rely on facts related to existing and future travel patterns, capacity and operation of the transportation system, and potential growth and redevelopment. The nontechnical elements used in this approach include the issues, needs, concerns, and

desires of the Cumberland CID and the key stakeholders in the area identified through meetings and interviews.

The study consists of three phases, which are described below. This report represents the culmination of all three phases.

Phase I: Data collection and area assessment – This phase includes the collection of land use, zoning, and traffic operation data, and the identification of issues, opportunities, and strengths of the area. This phase culminated in the development of an opportunity definition report, which provides a clear description of opportunities and constraints and serves as a guide to the identification and evaluation of potential solutions.

Phase II: Assess future traffic demands – This phase includes forecasting future development patterns and subsequent travel demand needs through the year 2030. Future travel demand is calculated based on forecasted population and employment data, regional data and studies, traffic simulation modeling and related data, and other computer applications.

Phase III: Development of study document – This phase includes the identification and analysis of candidate transportation infrastructure projects. This improvement screening process relies on the opportunity definition, simulation results, preliminary analyses, and input from the stakeholder group. This phase also includes identifying candidate improvements and cost estimates.

2. Existing Conditions

This section provides an overview of the existing transportation conditions in and near the South Quadrant study area. This analysis creates a baseline against which the potential benefit of projects can be assessed. This section of the report includes an overview of the transportation network, traffic conditions, and development context. Table 1 provides a summary of key findings from the existing conditions analysis.

Table 1 Key Findings

Transportation Network	• The CSX rail line is a defining feature of the study area, roughly dividing the study area into single-family residential on one side and office/commercial/ high-density residential on the other. • Mobility and connectivity in the study area are constrained by the presence of two north-south corridors (I-285 and the CSX freight rail line), which are difficult to cross. These constraints put disproportionate pressure on the roadways that provide connections across these corridors. • The area is served by only one principal arterial (Cobb Parkway) and one minor arterial (Atlanta Road), both of which are located on the outer edges of the study area. • The area to the west of I-285 offers a better overall choice of routes, but fewer roads. • Transit service is available on the outer edges of the study area. • Bicycle and pedestrian facilities exist mostly in the village activity centers with little connections to the surrounding area.
Traffic Conditions	• The I-285 northbound ramp at Atlanta Road is the only intersection operating at Level of Service (LOS) F (a.m. only). • Three intersections operate at LOS E: – Cumberland Parkway at Atlanta Road – Paces Ferry Road at Atlanta Road – Cumberland Parkway at Cumberland Boulevard (p.m. only) • Rush-hour volumes are 4 percent higher in the evening than in the morning. • Vehicular delay is 8 percent higher in the morning than in the evening. • Vehicle crashes occur most frequently on I-285 entrance ramps and/or at major intersections.

Table 1 Key Findings

Development Context	• The area has a wide range and mix of development patterns: – Mixed-use occurs at the activity node and building levels – Single-family ranges from suburban detached homes to townhomes – Multifamily includes garden style, condominiums, and high-rises – Office includes high-rises and single structures • New development is primarily mixed-use and higher-intensity developments. • Multiple gateways and transitional corridors exist. • The Cobb County Character Map aligns with existing and new development. • There is limited to no demand for additional retail. • Demand exists for additional office, single-family, and multifamily development.

2.1 Transportation Network

The following is a description of major corridors, system and service interchanges, transit characteristics, freight infrastructure, bicycle and pedestrian facilities, transportation demand strategies, and planned/programmed projects.

2.1.1 Roadway System Functional Classification

Functional classification is the process by which streets and highways are grouped based on the character of service provided. There are three highway functional classifications: arterial, collector, and local roads. Roadways are classified based on trip types, access, and surrounding land use. The following describes each roadway within the study area and its design. Figure 1 provides an overview of the features of the transportation network, including the functional classification of roads.

2.1.1.1 Urban Interstate Principal Arterial

A road classified as an urban interstate principal arterial provides high-speed, high-capacity mobility for trips on a regional or interstate scale. Access to urban interstate principal arterials is highly restricted, and these roads generally only make seamless connections to other urban interstate principal arterials. Two interstates provide access to the study area: I-285 and I-75.

I-285 is a circumferential interstate highway encompassing the city of Atlanta that connects the region's radial expressways. The section of I-285 within the South Quadrant study area includes two service interchanges: Atlanta and Paces Ferry roads.

I-75 runs north-south through the city of Atlanta and is a major commuter route that connects the downtown and midtown employment centers with Atlanta's northwestern residential suburbs. Although I-75 does not pass through the South Quadrant study area, a portion of it (approximately 0.5 mile in length) forms the study area's northeastern boundary. In the study area vicinity, I-75 provides four general-purpose lanes and one high-occupancy vehicle lane in each direction.

2.1.1.2 Urban Principal Arterial

A road classified as an urban principal arterial is a high-traffic corridor that serves major metropolitan activity centers. The primary purpose of an urban principal arterial is to facilitate the movement of large numbers of vehicles; these roads only serve the land abutting them on a very limited basis. U.S. 41 (Cobb Parkway) is the only roadway within the study area that is classified as an urban principal arterial. U.S. 41 is a major north-south route in the region, but only intersects the South Quadrant study area for about 0.5 mile. It runs parallel to I-75 and provides two travel lanes in each direction. U.S. 41 reaches as far as Cartersville (Bartow County) in the north, providing access to Dobbins Air Force Base and the cities of Kennesaw and Marietta. To the south, it turns into Northside Parkway to serve Buckhead, Atlantic Station, Home Park, and downtown Atlanta. In the South Quadrant study area, sidewalks are provided on only the northern half of U.S. 41. Specifically, sidewalks are available between I-285 and Cumberland Boulevard; however, none are provided between Cumberland Boulevard and the Chattahoochee River. A widening project is proposed for U.S. 41 from the Chattahoochee River to Akers Mill Road. This project will add one lane in both directions and sidewalks on either side of the roadway.

2.1.1.3 Minor Arterial

A road classified as a minor arterial connects with and supports urban principal arterials, but serves trips of only moderate length and handles only moderate traffic volumes. Minor arterials place more emphasis on accessing abutting land uses than they do urban principal arterials. Atlanta Road is the only minor arterial within the study area. This roadway provides north-south access between Marietta/Atlanta and the South Quadrant study area and serves as an important alternative to other north-south

routes such as I-75 and U.S. 41. Atlanta Road provides two lanes in each direction. Between Church Road and I-285, sidewalks exist on portions of the roadway for short stretches. However, through the study area west of I-285, Atlanta Road provides sidewalks on at least one side of the street. Pedestrian facilities at the intersection of Cumberland Parkway and Atlanta Road have been upgraded significantly with the recent addition of pedestrian refuge islands and highly visible pedestrian crossing markings.

2.1.1.4 Urban Collector

A road classified as an urban collector provides access to abutting land uses as well as access to residential, commercial, and industrial neighborhoods. Urban collectors may reach into residential neighborhoods and funnel residents to and from minor arterials. There are four urban collectors in the study area: Cumberland Parkway, Cumberland Boulevard, Paces Ferry Road, and Orchard Road/Simpson Road.

Cumberland Parkway provides north-south connectivity and roughly parallels I-285 through the study area, providing an alternate route to I-285 for local trips. Cumberland Parkway provides direct access to three major destinations: Cumberland Mall, the Vinings area (via Paces Ferry Road), and new development along Atlanta Road. It provides two lanes in each direction and features a planted median or a center left-turn lane along this entire length. Cumberland Parkway features paved sidewalks between Cumberland Boulevard and South Atlanta Road. This roadway is also paralleled by a multiuse path, which is part of a much larger countywide trail system and will eventually connect to the regionally significant Silver Comet Trail.

Cumberland Boulevard serves east-west trips throughout the Cumberland activity center. Within the study area, it connects commercial and office development with area shopping, transit, and residential development. Cumberland Boulevard provides two lanes in each direction with a raised median and sidewalks along its entire length. The Cobb Community Transit (CCT) Cumberland Boulevard Transfer Center is located on Cumberland Boulevard just south of Cumberland Mall.

Paces Ferry Road transects the South Quadrant study area and passes through the heart of Vinings, providing direct access to Vinings from South Atlanta Road, Spring Hill Parkway, I-285, Cumberland Parkway, and Paces Mill Road. Paces Ferry Road provides one lane in each direction from the Chattahoochee River to Vinings, where it expands to two through lanes in each direction. Paces Ferry Road generally provides

sidewalks along its entire length, although the sidewalk is discontinuous in some locations.

The character of Paces Ferry Road changes dramatically in the vicinity of its service interchange with I-285. This location is the road's widest point, with 14 lanes, most of which are designed for turning movements. This short distance (only two-tenths of a mile) reduces turn storage capacity between the signalized intersections, thereby requiring extra lanes to create lateral storage for turning vehicles.

Orchard Road/Simpson Road is the only urban collector that is fully contained within the South Quadrant study area. Orchard Road begins in the east at Cumberland Parkway, crosses over I-285 and Paces Ferry Road before turning into Simpson Road, and terminates as a residential cul-de-sac. Orchard Road/Simpson Road provides one lane in each direction, although it only has lane markings for approximately one-tenth of a mile. Sidewalks are provided on Orchard Road for approximately one-tenth of a mile from Cumberland Parkway to the western side of I-285.

2.1.1.5 Urban Local

A road classified as an urban local serves primarily to provide direct access to abutting land uses. As such, through traffic is purposely not served by urban local roads. All remaining roads in the South Quadrant study area serve residential abutting land uses and are classified as urban local streets. Notable examples include Log Cabin Road, Woodland Brook Drive, and Paces Mill Road.

2.1.2 Connectivity

Connectivity is a measure of how well a street network provides alternate routes between destinations in an area. A network with a high degree of connectivity offers many short links, numerous intersections, and few dead-end streets to maximize the route options available to users. A grid network made up of many small blocks, for example, offers good connectivity. On the other hand, a street network comprised of cul-de-sacs or other streets with infrequent intersections offers poor connectivity. As connectivity increases, travel time generally decreases because route options increase, allowing direct travel between destinations and decreased congestion.

A connectivity ratio is one way to quantify the degree to which a network provides route choice to its users. The connectivity ratio is calculated by dividing the number of roadway links by the number of roadway nodes within a study area (links are the road

segments between intersections, while nodes are intersections and dead-ends). A higher connectivity ratio reflects a higher degree of route choice available to drivers, bicyclists, and pedestrians. For example, a street network surrounding one four-sided block has a connectivity ratio of 1.0 (4 street segments/4 intersections = 1.0). A street grid composed of four blocks has a connectivity ratio of 1.33 (12 street segments/ 9 intersections = 1.33). Finally, a street network composed of nine blocks has a connectivity ratio of 1.5 (24 street segments/16 intersections = 1.5). These examples demonstrate how a grid network with frequent street intersections results in a higher connectivity ratio because of its ability to provide a variety of route options for users. Connectivity ratios typically fall between 0 and 2.

Overall, the study area has a connectivity ratio of 1.3. This moderately high connectivity ratio indicates that travelers within the study area have available route choices. The study area is large enough that by breaking it into a few subareas, more precise statements can be made about connectivity in the study area. The following subareas are roughly delineated by land uses and character: 1) west of I-285, 2) east of I-285 and north of Paces Ferry Road, and 3) east of I-285 and south of Paces Ferry Road. Figure 2 displays the boundaries of the three subareas.

The results show that connectivity ratios are different in various parts of the South Quadrant study area. Subarea 1 has a connectivity ratio of 1.6. Subareas 2 and 3 have connectivity ratios of 1.3. This indicates that the area west of I-285 provides greater route choice than the areas to the east. This is likely a result of the high number of residential cul-de-sacs located in Subareas 2 and 3 that constrict route choice.

2.1.3 Transit Network

Transit service in the study area is provided by two transit agencies: CCT and the Metropolitan Atlanta Rapid Transit Authority (MARTA). CCT operates two local service and three express service routes. The two main CCT bus routes in the South Quadrant study area represent the routes with both the highest and lowest ridership. Route 10 offers more service and captures more trips than any other CCT bus route. Route 70, on the other hand, captures fewer trips than any other CCT bus route. Routes with lower ridership, such as Route 70, have much higher costs per passenger trip; expenses for the three reverse commute routes are almost three times the cost per passenger trip for Route 10 and the express routes.

MARTA rail service does not extend to Cobb County; however, bus service is provided to the Cumberland Boulevard Transfer Center just south of Cumberland Mall via

MARTA Route 12, which is similar to the service provided by the CCT Route 10 bus. However, it has a different in-town terminus (Midtown Station as opposed to Arts Center Station), and, unlike CCT Route 10, it does not utilize I-75. This effectively makes the MARTA Route 12 trip twice as long as the CCT Route 10 trip, although it is able to provide pickup and drop-off service along its entire route.

2.1.4 Freight Network

There are two active freight railroad lines in or adjacent to the South Quadrant study area. The CSX Western & Atlantic Line passes through the heart of the South Quadrant study area and serves freight between Atlanta and Chattanooga. In the study area, the CSX Western & Atlantic Line makes three at-grade crossings at the following roads: Paces Ferry Road, Heavenly Trail Road, and Woodland Brook Drive. While in the study area, the CSX Western & Atlantic Line features some of the highest average daily traffic and total tonnage in the Atlanta metropolitan region. On an average weekday, it handles 60 total trains to 99 total trains (2.5 trains to 4.0 trains per hour). In an average year, the line carries 75 million to 99 million gross tons.

The second CSX rail line in the study area is the former Seaboard Air Line that connected the northeastern and southeastern United States and ended in Birmingham, Alabama. The Silver Comet train used this route. Most of the line west of Smyrna was converted to a paved multiuse trail in the years following its abandonment in 1989. However, the portion remaining to the east of Smyrna is still active. Although it does not pass directly through the South Quadrant study area, the rail line is adjacent to South Atlanta Road, the study area's southern boundary. It ultimately links to the CSX Seaboard Airline line, which links Atlanta with Athens, Georgia, and the eastern seaboard. While near the study area, the CSX Silver Comet line features low levels of total tonnage and average daily train traffic. On an average weekday, it handles 0 trains to 4 trains per day. In an average year, the line carries less than 10 million gross tons.

2.1.5 Bicycle and Pedestrian Facilities

There is one existing multiuse trail in the South Quadrant study area. It follows Cumberland Boulevard, Cumberland Parkway, Spring Hill Parkway, and Paces Ferry Road, beginning at Cobb Parkway and ending at Spring Hill Road. A second facility, the Silver Comet Cumberland Connector, begins at the intersection of Cumberland Parkway and Atlanta Road at the study area's western boundary. This trail provides a connection to the Silver Comet Trail mentioned previously.

In 2003, the Atlanta Regional Commission (ARC) published bicycle suitability maps for Cobb County and other regional counties. The analysis assigned a grade to all roads classified higher than urban local and identified which corridors offer best, medium, and difficult bicycling conditions. Most of the corridors in the study area were rated as offering medium or difficult bicycling conditions. Only two short sections of road received a best conditions rating. A summary of ARC's findings for the study area is provided in the following table.

Table 2 Bicycle Suitability of South Quadrant – Main Corridors

Condition	Road	Start Point	End Point
Best	Cumberland Parkway	Paces Walk (north)	Orchard Road
	Beech Haven Trail/ Log Cabin Drive	Winchester Trail	Tamarron Parkway
Medium	Cumberland Boulevard	Cobb Parkway	Stillhouse Road
	Cumberland Parkway	Cumberland Boulevard	I-285
	Paces Mill Road	Cobb Parkway	Paces Ferry Road
	Paces Ferry Road	New Paces Ferry Road	Paces Mill Road
	Atlanta Road	I-285	Cumberland Parkway
	Log Cabin Drive	Plant Atkinson Road	Tamarron Parkway
Difficult	Cumberland Boulevard	I-285	Stillhouse Road
	Paces Ferry Road	Paces Mill Road	Atlanta Road
	Cobb Parkway	Cumberland Boulevard	Chattahoochee River
	Paces Ferry Road	New Paces Ferry Road	Chattahoochee River
	Atlanta Road	Paces Ferry Road	Cumberland Parkway

Source: ARC, 2003

Local transportation project sponsors, including the Cumberland CID, Cobb County, and the City of Smyrna, have emphasized improvements to bicycle and pedestrian facilities in the area. In fact, four of the nine planned or programmed projects in or near the South Quadrant study specifically target bicyclists and/or pedestrians. These projects include Akers Mill bicycle and pedestrian improvements, multiuse trails on Spring Road and Atlanta Road, and pedestrian improvements on Cobb Galleria Parkway. All of these lay just outside the study area's boundaries. Details on each, including their scheduled date of completion, are available in Section 2.1.7, Planned and Programmed Projects, of this report. Overall, the study area's larger, busier roads

typically have sidewalks on at least one side, while the urban local roads typically do not have sidewalks.

2.1.6 Transportation Demand Management

The Cumberland CID is a self-taxing district of business leaders that generates funds to improve access to the Cumberland area through transit, sidewalks, streetscapes, and community planning. About one-third of the Cumberland CID area lies within the South Quadrant study area, and the Cumberland CID is focused on main transportation corridors and office/commercial areas.

One component of the Cumberland CID is its Commuter Club, a transportation management association that provides transportation alternatives to employers and employees in the Cumberland CID. Many of these employees and employers are also located in the South Quadrant study area. The strategies employed by the Commuter Club include cash incentives for registered alternate-commute participants and services including the following:

- Carpool matching for individual commuters or entire companies
- Vanpool coordination
- Discounted transit fare programs
- Bicycling information and discounts on effective cycling classes
- Teleworking advocacy, including information provided to employers on the benefits of teleworking

2.1.7 Planned and Programmed Projects

Table 3 lists transportation projects that are planned or programmed for the South Quadrant study area or its vicinity. The table includes projects inside South Quadrant study area boundaries and projects that are outside the South Quadrant but near enough to be relevant to local transportation issues. Most project descriptions are taken directly from Envision6 Regional Transportation Plan fact sheets provided by ARC, which represent the most current project descriptions and status reports as of February 2008.

Table 3 South Quadrant Study Area Planned and Programmed Projects

Project Name	Project Type	Inside/Outside Study Area	Status	Estimated Completion
U.S. 41 Capacity Improvements	Capacity Addition	Inside	Right-of-Way Acquisition	2020
I-285 West Managed Lanes	Congestion Management	Inside	Preliminary Engineering	2030
Atlanta Road/Paces Ferry Road Intersection Improvements	Operational Improvement	Inside	Construction	2010
I-285/Atlanta Road Interchange	Operational Improvement	Inside	Preliminary Engineering	2011
Akers Mill Road Bike/Ped	Bike/Ped Facility	Outside	Construction	2009
NW Corridor Managed Lanes	Congestion Management	Outside	Construction	2020
Spring Road Multiuse Trail/Cumberland Connector (Cobb County)	Bike/Ped Facility	Outside	Construction	2009
Cobb Galleria Parkway Pedestrian Improvement	Bike/Ped Facility	Outside	Construction	2009
Atlanta Road Multiuse Trail (City of Smyrna)	Bike/Ped Facility	Outside	Unknown	2010

2.2 Traffic Patterns

The roadway network was modeled using Synchro 7.0 traffic simulation software to analyze existing traffic conditions. In addition, crash data were obtained and analyzed. Several data items were collected as inputs to the model. A.m. and p.m. peak-period turning volume data were collected at 24 intersections in the study area. Twenty-four-hour traffic volume counts were gathered at 11 locations throughout the study area. License plate tag information was obtained through visual surveys to identify potential travel patterns. To refine the model, field visits were conducted during a.m. and p.m. peak periods to observe traffic flow and to identify critical intersections. The following is a description of vehicular LOS, crash history, and origins/destinations in the study area.

2.2.1 LOS and Delay

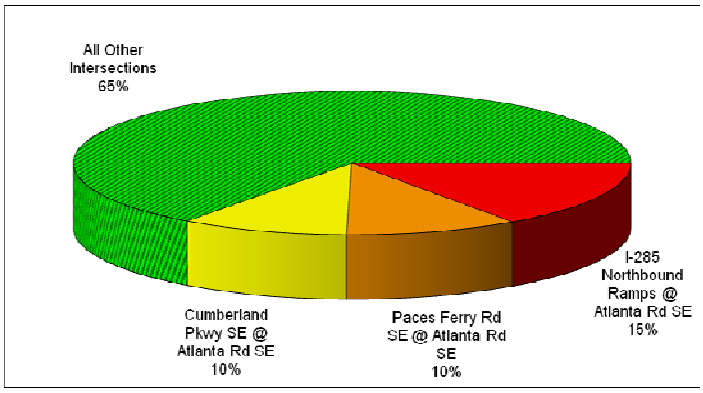
Traffic flow was analyzed for a.m. and p.m. peak-hour conditions. The simulation analysis resulted in a determination of existing peak-hour delays and corresponding LOS for each of the 24 intersections studied. LOS is based on average delay and provides a qualitative assessment of traffic conditions. LOS A represents excellent conditions, while LOS F corresponds to severe congestion. In dense urban environments, LOS A through LOS D is considered acceptable. In Cobb County, LOS D is the service standard, which means intersections operating at LOS E or LOS F are considered unacceptable.

Based on the traffic analysis, conditions in the study area are largely comparable during a.m. and p.m. peak periods. Traffic volumes during the p.m. peak period are 4 percent higher than volumes during the a.m. peak period. Congestion, measured in terms of average vehicular delay, is 8 percent higher in the a.m. peak period than in the p.m. peak period.

Traffic data tables in Appendix A show LOS and delay for all 24 intersections studied during a.m. and p.m. peak hours. The majority of intersections (87 percent in a.m. and p.m. peak periods) are currently operating at an acceptable LOS. This section presents details for intersections with a failing LOS (LOS E or LOS F), intersections that are near capacity and approaching failure (LOS D), and the five intersections with the highest volume for both a.m. and p.m. peak periods. Figure 3 displays existing LOS at study area intersections.

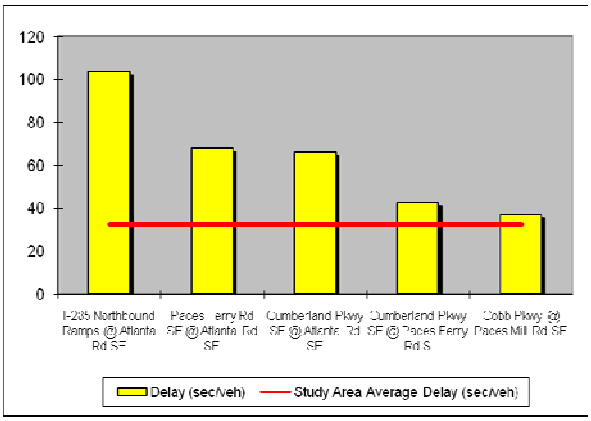
During the a.m. peak period, Cumberland Parkway at Atlanta Road, Paces Ferry Road at Atlanta Road, and the I-285 northbound ramp at Atlanta Road are the only intersections that operate at an unacceptable LOS. The intersection of the I-285 northbound ramps at Atlanta Road operates at LOS F, and the intersections

Chart 1 Intersection Delay (A.M. Peak Period)



of Cumberland Parkway at Atlanta Road and Paces Ferry Road at Atlanta Road operate at LOS E. As shown on Chart 1, these three intersections alone account for approximately 35 percent of the delay in the study area during the a.m. peak period. Projects that reduce delay at these three intersections will maximize return on transportation investments.

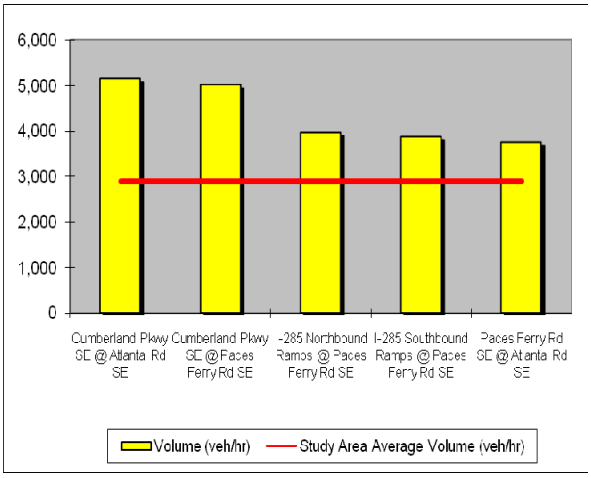
Chart 2 Intersections with LOS F, E, or D – Sorted by Delay (A.M. Peak Period)



Study area intersections were sorted by delay for the a.m. peak period in descending order to identify the five intersections that experience the highest level of delay, as shown on Chart 2. Although only three of the five intersections are currently operating at an unacceptable LOS during the a.m. peak period, all five currently experience delays above the average vehicular delay of the study area.

Additionally, Chart 2 shows that the worst intersection, the I-285 northbound ramps at Atlanta Road, has approximately 50 percent more delay than the intersection with the next highest level of delay, Paces Ferry Road at Atlanta Road. During the a.m. peak period, southbound left-turning movements onto I-285 at the intersection of the I-285 northbound ramps at Atlanta Road account for 40 percent of the southbound approach volume on Atlanta Road. Because of the absence of an exclusive left-turn bay at this location, left-turning vehicles were observed blocking through vehicles in the left lane, resulting in a long queue that spilled back to upstream intersections.

Chart 3 Top Five Intersections by Volume (A.M. Peak Period)

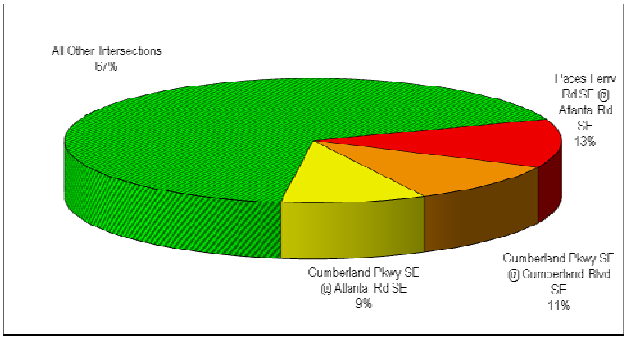


Intersections were sorted by traffic volume in descending order to determine the five intersections with the highest traffic volume during the a.m. peak period, as

shown on Chart 3. In the a.m. peak period, high volumes do not necessarily correspond to a high rate of intersection delay. For example, the intersection of Cumberland Parkway at Atlanta Road carries the highest volume in the study area, yet it is not the intersection with the highest rate of delay. By comparison, Cobb Parkway at Paces Mill Road is fifth with regard to delay, but is not among the five intersections with the highest volumes.

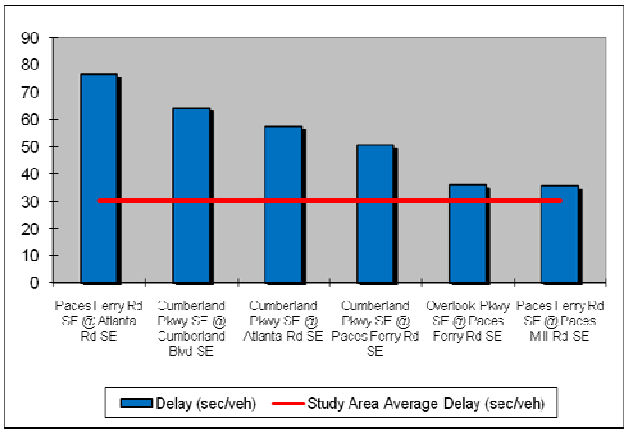
During the p.m. peak period, Paces Ferry Road at Atlanta Road, Cumberland Parkway at Cumberland Boulevard, and Cumberland Parkway at Atlanta Road are the only intersections that operate at an unacceptable LOS. All three intersections operate at LOS E. As shown on Chart 4, these three intersections account for approximately 33 percent of the delay in the study area. Therefore, projects that reduce delay at these three intersections will maximize return on transportation investments for the p.m. peak period.

Chart 4 Intersection Delay (P.M. Peak Period)



Study area intersections were sorted by p.m. peak-period delay in descending order to identify the intersections that experience the highest level of delay, as shown on Chart 5. Three of the six intersections currently operate at an unacceptable LOS (LOS E or LOS F) during the p.m. peak period, and all six are currently above the average study area delay. In contrast to the a.m. peak period, the gap in delay between failing intersections and other intersections in the top six is smaller. This means that intersections in the top six during the p.m. peak period, although currently operating at acceptable LOS, are on the verge of failing. Long queues were observed

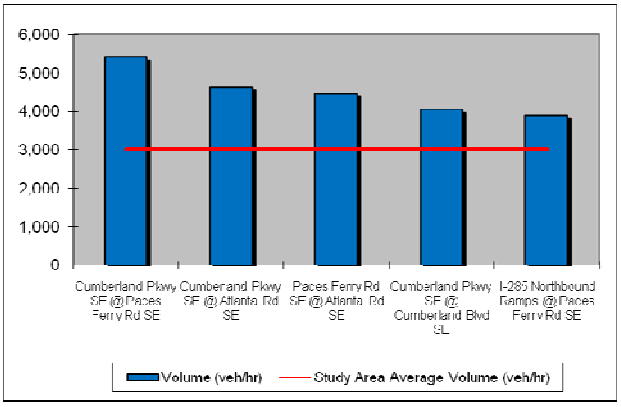
Chart 5 Intersections with LOS F, E, or D – Sorted by Delay (P.M. Peak Period)



on the southbound approach of Atlanta Road at the intersection of Paces Ferry Road, on the westbound approach of Cumberland Boulevard at the intersection of Cumberland Parkway, and on the northbound and westbound approaches of Paces Ferry Road at Paces Mill Road.

Intersections were sorted by traffic volume in descending order to determine the five intersections with the highest traffic volume during the p.m. peak period, as shown on Chart 6. Although the order of the top five intersections by volume changed slightly between the a.m. and p.m. peak periods, the intersections are the same. In the p.m. peak period, high volumes correlate to high intersection delay, as four of the top five intersections by volume also appear in the top five intersections by delay.

Chart 6 Top Five Intersections by Volume (P.M. Peak Period)



During the p.m. peak period, each of the top five intersections experiences high left-turning volumes at most approaches. This is mainly a result of insufficient capacity and green time for the left-turn demand.

Two trains per peak period were observed at the railroad crossing between the intersections of Overlook Parkway at Paces Ferry Road and New Paces Ferry Road at Paces Ferry Road. It was noted that the occurrence of trains in the peak period introduces delay to vehicular traffic at the intersections of Paces Ferry Road at Overlook Parkway, Paces Ferry Road at New Paces Ferry Road, and Paces Ferry Road at Paces Mill Road. Typically, the trains take up to two minutes to pass the crossing and traffic conditions normalize in 10 minutes to 15 minutes.

2.2.2 Origins/Destinations

Origin and destination (O-D) analysis takes a higher-level view to draw rough conclusions as to where drivers in the study area are starting and ending their trips. For a study area such as the South Quadrant, the results can illustrate whether the area road network is used to access the study area or as a conduit to access other areas.

For the South Quadrant, an O-D analysis was performed to determine the proportion of cut-through traffic and the traffic generated within downtown Vinings. A license plate study was conducted to perform the O-D analysis in the vicinity of downtown Vinings.

Video cameras were installed at two control stations to record license plates:

- East of Cumberland Parkway on Paces Ferry Road
- West of New Paces Ferry Road on Paces Ferry Road

Cut-through traffic and neighborhood traffic were determined by comparing data collected at all the gateway points with peak-hour volumes within the study area. Cut-through traffic in the study area was captured at two control stations located at the ends of the study corridor. Traffic generated within the downtown Vinings area was estimated by correlating intersection traffic volume data for the study corridor and cut-through traffic captured under the O-D data collection. Tables 4 and 5 summarize the O-D data as a function of the gateway points for a.m. and p.m. peak hours.

During the a.m. peak period, cut-through traffic accounts for 38 percent of the traffic heading eastbound on Paces Ferry and Paces Mill roads (between Cumberland Parkway and Cobb Parkway) and 16 percent of the traffic heading eastbound on Paces Ferry Road (between Cumberland Parkway and the Fulton County line). The remaining 46 percent of traffic is retained within the study area in the eastbound direction. In the westbound direction, 12 percent of the traffic on Paces Ferry Road (east of Cumberland Parkway) accounts for cut-through traffic, while the remaining 88 percent is retained within the study area.

During the p.m. peak period, cut-through traffic accounts for 19 percent of the traffic heading eastbound on Paces Ferry and Paces Mill roads (between Cumberland Parkway and Cobb Parkway) and 12 percent of the traffic heading eastbound on Paces Ferry Road (between Cumberland Parkway and the Fulton County line). The remaining 69 percent of traffic is retained within the study area in the eastbound direction. In the westbound direction, 21 percent of the traffic on Paces Ferry Road (east of Cumberland Parkway) accounts for cut-through traffic, while the remaining 79 percent of traffic is retained within the study area. Tables 4 and 5 summarize the results from the O-D analysis for the Vinings downtown area.

A significant amount traffic is generated within downtown Vinings when compared to cut-through traffic within the study area. The analysis indicates that approximately

70 percent of vehicular traffic is generated by the land uses within the vicinity of downtown Vinings.

Table 4 A.M. Peak-Hour O-D Data for Downtown Vinings

Gateway In	Gateway Out												Total Gateway In	
	Gateway 5			Gateway 6			Gateway 8			Gateway 9				
		% of Total			% of Total			% of Total			% of Total			%
	Vol.	In	Out	Vol.	In	Out	Vol.	In	Out	Vol.	In	Out	Vol.	In
1	12	40.0	1.9	9	30.0	3.4	6	20.0	4.8	3	10.0	5.9	30	100
2	204	65.0	33.1	88	28.0	32.8	15	4.8	11.9	7	2.2	13.7	314	100
3	305	70.3	49.5	109	25.1	40.7	13	3.0	10.3	7	1.6	13.7	434	100
4	83	43.7	13.5	50	26.3	18.7	37	19.5	29.4	20	10.5	39.2	190	100
7	12	12.9	1.9	12	12.9	4.5	55	59.1	43.7	14	15.1	27.5	93	100
Total Gateway Out	616		99.9%	268		100.1%	126		100.1%	51		100%	1,061	

Table 5 P.M. Peak-Hour O-D Data for Downtown Vinings

Gateway In	Gateway Out												Total Gateway In	
	Gateway 5			Gateway 6			Gateway 8			Gateway 9				
		% of Total			% of Total			% of Total			% of Total			%
	Vol.	In	Out	Vol.	In	Out	Vol.	In	Out	Vol.	In	Out	Vol.	In
1	10	30.3	5.6	9	27.3	7.6	7	21.2	3.5	7	21.2	5.6	33	100
2	18	48.6	10.0	10	27.0	8.4	6	16.2	3.0	3	8.1	2.4	37	100
3	119	51.7	66.1	74	32.2	62.2	19	8.3	9.5	18	7.8	14.3	230	100
4	23	29.5	12.8	16	20.5	13.4	25	32.1	12.6	14	17.9	11.1	78	100
7	10	4.1	5.6	10	4.1	8.4	142	57.7	71.4	84	34.1	66.7	246	100
Total Gateway Out	180		100.1%	119		100%	199		100%	126		100.1%	624	

Table 6 O-D Analysis for South Quadrant Study Area

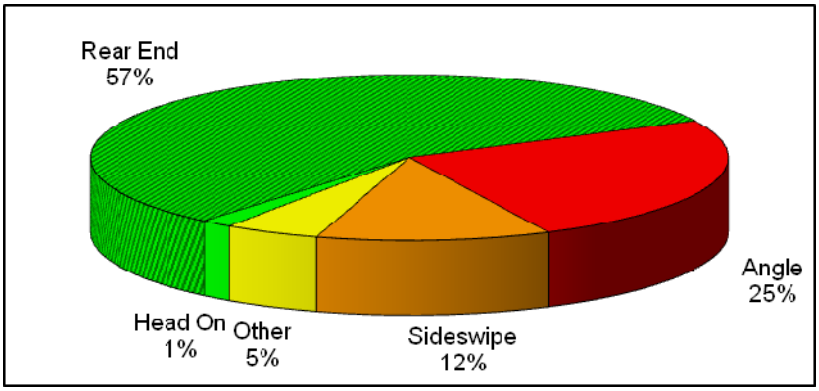
Eastbound on Paces Ferry Road	A.M. Peak Hour			P.M. Peak Hour		
	Raw O-D Volume (vph)	Approximate Peak-Hour Traffic Volume (vph)	Percent	Raw O-D Volume (vph)	Approximate Peak-Hour Traffic Volume (vph)	Percent
Cut-through traffic headed toward Cobb Parkway	604		38	170		19
Cut-through traffic on Paces Ferry Road	256		16	109		12
Neighborhood traffic	996	1,600	46	773	903	69
Westbound on Paces Ferry Road	**A.M. Peak Hour**			**P.M. Peak Hour**		
	Raw O-D Volume (vph)	Approximate Peak-Hour Traffic Volume (vph)	Percent	Raw O-D Volume (vph)	Approximate Peak-Hour Traffic Volume (vph)	
Cut-through traffic	69		12	226		21
Neighborhood traffic	484	553	88	861	1,087	79

2.2.3 Crash History

Intersection crash data for the years 2004 to 2006 were obtained to perform a crash analysis for the study area. Crashes were analyzed both by type and location to determine common patterns. A summary of the analysis is presented in Appendix B.

Between the years 2004 and 2006, there were a total of 1,260 reported crashes in the study area. As shown on Chart 7, rear-end crashes are the predominant type in the study area and account for 57 percent of crashes. Angle crashes are a distant second, making up 25 percent of all crashes. Sideswipe crashes are the third most common type of crash at 12 percent.

Chart 7 Study Area Crashes by Type



An analysis of the total crashes in the study area from the years 2004 to 2006 indicates that the highest number of crashes occurs at the following service interchanges:

- I-285 northbound ramp at Atlanta Road (188 crashes, 14.9 percent of total crashes)
- I-285 northbound ramp at Paces Ferry Road (176 crashes, 13.9 percent of total crashes)
- I-285 southbound ramp at Atlanta Road (149 crashes, 11.8 percent of total crashes)
- I-285 southbound ramp at Paces Ferry Road (147 crashes, 11.7 percent of total crashes)

The surface street intersections with the highest number of total crashes between 2004 and 2006 include the following:

- Cumberland Parkway and Paces Ferry Road (128 crashes, 10.2 percent of total crashes)
- Cumberland Parkway and Atlanta Road (83 crashes, 6.6 percent of total crashes)
- Cobb Parkway and Paces Mill Road (82 crashes, 6.5 percent of total crashes)
- Paces Ferry Road and Atlanta Road (65 crashes, 5.2 percent of total crashes)

Figure 3 indicates the locations of the intersections with the highest number of crashes between 2004 and 2006.

Crash data analyses of the period from 2004 through 2006 indicate that rear-end and angle crashes are the major crash types along Paces Ferry Road and Atlanta Road, especially at the intersection of these roadways with the northbound and southbound ramps to I-285. Table 7 indicates the percentage of the predominant crash types at these intersections.

Table 7 Crash History

Intersection	Rear-End Crashes	Angle Crashes
I-285 northbound ramp at Paces Ferry Road	48%	30%
I-285 southbound ramp at Paces Ferry Road	58%	18%
I-285 northbound ramp at Atlanta Road	72%	7%
I-285 southbound ramp at Atlanta Road	50%	39%

Factors that may contribute to the existing pattern of crashes include large turning volumes, a lack of gaps to perform lane changes as a result of heavy traffic volumes, and queue spillback caused by high volumes and delay.

2.3 Land Use and Development Context

Travel demand and patterns are highly dependent on socioeconomic conditions, land use, and development patterns. Most analyses of transportation take into account a wide array of socioeconomic conditions. The following is an overview of the office, retail, and residential development conditions that impact travel, mode choice, and number of trips. The assessment includes scenario-based projections of future population and employment to allow for the projection of future travel patterns.

2.3.1 Land Use

The study area is a contrast in land uses and patterns with a spectrum of intensities ranging from low-density residential to high-rise office uses. The study area includes several development nodes surrounded by lower-intensity residential use, as follows:

- The Vinings activity center
- The Atlanta Road development
- Office uses

The Vinings activity center is a village-style grouping of retail and service-oriented commercial development in the center of the Vinings area. The Atlanta Road corridor is a transition area from older strip-style commercial retail to higher-intensity mixed-use. A third nodal area exists in the study area and consists of high-intensity office development with townhome and condominium development interspersed throughout. This node is centered at Overlook Parkway, but includes the newer office development on the western side of I-285. Maps of existing and future land use in the study area are included as Figures 4 and 5, respectively.

Two sources were used for existing and future land uses, which resulted in the potential for inconsistencies between the two sets of data. Existing land use data were collected through a windshield survey, and future land use data were obtained from the Cobb County Comprehensive Plan. Overall, these results appear to accurately and reasonably reflect both existing and future distributions of land use classes. The following table displays a comparison of existing and future land use in the South Quadrant study area.

Table 8 Existing and Future Land Use

	Existing (2007)		Future (2030)		
Classification	**Acres**	**Percent**	**Acres**	**Percent**	**Change**
Very Low/Low/Medium-Density Residential	1,091	34.3%	1,353	43.5%	24%
High-Density Residential	648	20.4%	750	24.1%	16%
Trans./Comm./Util./Right-of-Way	594	18.7%	306	9.8%	–48%
Undeveloped/Conservation	353	11.1%	129	4.2%	–63%
Office	170	5.3%	222	7.1%	31%
Other	102	3.2%	48	1.6%	–52%
Retail	92	2.9%	61	2.0%	–33%
Neighborhood/Community Activity Center	75	2.4%	184	5.9%	146%
Industrial	30	1.0%	23	0.8%	–21%
Public/Institutional	25	0.8%	34	1.1%	38%

The greatest absolute change is an increase in the single-family residential category (very low/low/medium-density residential), which will increase by more than 200 acres by 2030. Neighborhood/community activity centers will have the greatest percentage increase at 146 percent. Both the high-density residential and office categories are anticipated to increase significantly, while the greatest absolute decrease in acreage is in the undeveloped/conservation category. While retail-only land use will decrease, it is likely that overall increases in retail activity will be contained in the activity center class.

2.3.2 Zoning

Land uses are controlled by the zoning code. Because of setback, lot coverage, and parking requirements, zoning ordinances significantly influence urban design. Most of the study area is in unincorporated Cobb County and is under the county zoning

ordinance. However, the western edge of the study area falls within the city of Smyrna, for which the city zoning ordinance applies. The study area includes most of the zoning classifications allowable in Cobb County. It should be noted that district requirements can be varied by the Cobb County Commission. The following describes recent development activity that reflects current zoning decisions.

2.3.3 Developments of Regional Impact

Six developments of regional impact (DRIs) are occurring in the South Quadrant study area. These projects are highly indicative of likely change in the area and are listed in chronological order by expected build-out date below:

- Cumberland Boulevard: The proposed development is located on Cumberland Boulevard between Stillhouse Road and River Oaks Drive. It is residential-only with 400 condominium units and 214 apartment units. Site access is proposed at one location on Cumberland Boulevard and one location on Stillhouse Road.

- Paces Ferry Commons: The proposed development is located on Paces Ferry Road in Vinings. It is mixed-use with residential, office, and retail space. Site access is proposed at two locations on Paces Ferry Road: Boulevard Hill Road and Twin Lakes Drive.

- Vinings West: The proposed development is located at the southwestern corner of Atlanta Road and I-285. It is mixed-use with residential, office, and retail space. Phase I of the project is largely completed. Site access is available or proposed at four locations along Atlanta Road, West Atlanta Road, and Oakdale Road.

- Village at Vinings: The proposed development is located on Cumberland Parkway at Paces Walk. It is mixed-use with residential, senior housing, hotel rooms, office space, and retail space. Site access is proposed at two sites on Cumberland Parkway.

- Regent Riverwood: The proposed development is located at the northwestern corner of Cumberland Boulevard and U.S. 41. It is mixed-use with high-rise residential, office, and retail space. Site access is proposed at two sites on Cumberland Boulevard, and one each on Riverwood Parkway and U.S. 41.

- V at Vinings: The proposed development is located on the northern side of Paces Ferry Road in Vinings. It is mixed-use with residential, senior housing, office, and

retail space. Site access is proposed at three sites along Bert Adams Road and one site at the Paces West commercial driveway.

2.3.4 Urban Design

Mobility is affected by urban design. Urban design that overwhelmingly favors the automobile can preclude bicycle and pedestrian modes, while pedestrian-friendly design encourages the use of modes that provide an alternative to congested roadways. The study area includes a variety of urban design styles, from suburban to village. Some retail development has defaulted to standard strip commercial architecture that meets current zoning and development regulations. The village activity center and the new development along Atlanta Road demonstrate a relationship between the buildings, the street, and the internal area. However, this development is nodal in nature and relates internally with limited connectivity to the surrounding area. Office development, while higher in parcel density, is isolated on individual lots surrounded by parking and landscaped areas. Future urban design will likely be guided by the Cobb County Comprehensive Plan character areas and the location of future public spaces.

2.3.4.1 Future Character Areas

Future land use development patterns in the study area are guided by the Cobb County Comprehensive Plan character areas, which outline the type and scale of future land uses. There are eight character areas within the study area, as described in Table 9.

Table 9 Character Areas Within the South Quadrant Study Area

Character Area	Desirable Land Uses	Location in Study Area	Percentage of Study Area
Suburban Residential (SR)	Almost exclusively residential. Features include cul-de-sac street design; low-density, minimal pedestrian facilities; and a high to moderate degree of building separation. Can be improved by sidewalks and new street interconnections with traffic calming.	Residential area east of train tracks, south of Paces Ferry Road	40

Table 9 Character Areas Within the South Quadrant Study Area

Character Area	Desirable Land Uses	Location in Study Area	Percentage of Study Area
Village (V)	Predominantly residential with small neighborhood-scale businesses. High level of pedestrian orientation, sidewalks, and variety of housing types/sizes. Focus should be on the preservation of original neighborhood character with the addition of pedestrian and bicycle facilities where appropriate.	Both sides of Paces Mill Road; Vinings area between I-285 and train tracks from Paces Ferry Road southward	25
Activity Center (AC)	Neighborhood focal point with a concentration of commercial/retail activities; may have higher residential densities than surrounding community. Residential should be mixed-use or buffer areas; pedestrian accommodations are an important factor.	Area of I-285/Atlanta Road; Overlook office park	10
Urban Center (UC)	Concentration of high-intensity commercial and office uses. High degrees of access by vehicular traffic and transit; low degree of internal open space and high floor area ratio. Should contain high-density retail, office, and services. Diverse higher-density housing should be incorporated, and pedestrian amenities enhanced.	Both sides of I-285 north of Paces Ferry Road; area between Overlook and Cumberland Boulevard	10
Office Warehouse (OW)	Wholesale trade/distribution and office parks. Uses do not generate excessive noise, dust, etc. New developments should incorporate landscaping or other design solutions to soften views of buildings. Vital that industrial lands be preserved for future economic expansion.	South Atlanta Road corridor	2

Table 9 Character Areas Within the South Quadrant Study Area

Character Area	Desirable Land Uses	Location in Study Area	Percentage of Study Area
Industrial Manufacturing (IM)	Manufacturing, assembly, and processing activities. Noise, dust, etc. are not contained on site. New developments should incorporate landscaping or other design solutions to soften views of buildings and should mitigate impacts on adjacent developments and natural environment. IM lands should be protected from residential and retail incursion.	South Atlanta Road corridor	3
Park, Recreation, Conservation, and Historic (PRCH)	Includes undeveloped, natural, environmentally sensitive recreational uses; significant landmarks; and areas with significant historical/cultural interest. Substantial developments resulting in major land disturbance activity should not be allowed here. New developments in specified historic districts should be of a scale and architectural design that fits well within community's historical fabric.	Along Chattahoochee River	8
River Line District	An area with a large quantity of significant archaeological resources that includes a long line of trenches and other earthen defenses.	Cuts east-west through study area at roughly the point where Cumberland Parkway and the railroad tracks abut	2

2.3.4.2 Public/Open Space

Public park space in the study area is limited primarily to the Chattahoochee National Recreation Area, which serves as the southeastern border of the study area, and a linear park along Log Cabin Road. Streets make up the only significant public space. Large parking lots and building setbacks also degrade the quality of public space in the study area. A key recommendation of Blueprint Cumberland is to strategically locate "vest pocket parks" throughout the Cumberland activity center.

2.3.5 Market Demand

The following market research and analysis study is provided to identify likely future development in the area. This information includes an overview of the region and an analysis of office, retail, and residential markets. It was obtained from the following sources:

- U.S. Census
- Bureau of Economic Analysis
- Georgia Regional Transportation Authority (GRTA)
- ARC
- CoStar Group
- Dorey Publishing and Information Services
- Dale Henson and Associates

Conclusions and recommendations are based on the following assumptions regarding future performance of global, national, and local economies, including the local real estate market:

1. The economy and real estate markets are assumed to grow at a stable and moderate rate. This assumption is made based on monetary and temporal constraints, which prevent more detailed economic forecasting and analyses. Contrary to this assumption, the economy is historically cyclical and real estate markets are sensitive to these cycles. This analysis does not take into account major economic shocks, which either have potential negative or positive effects on the economy, the real estate market, and the competitive environment.

2. It is expected that growth will occur in accordance with current trends and ARC forecasts of demographic and economic patterns. This assumes that the level of consumer confidence, cost of development and construction, tax laws, and availability and cost of capital and mortgage financing for real estate interests will remain more or less stable. While the cost of capital has increased and mortgage financing availability has declined recently, interest rates and capital available are expected to revert to historic norms within the next two years.

Because of the dynamic and ever-changing nature of economies and real estate patterns, continuous monitoring of the economy and real estate market indicators with respect to the information presented in this report is highly recommended. Should any of the aforementioned assumptions or expectations change, this analysis should be

updated, and the conclusions and recommendations should be reviewed and revised as necessary.

2.3.5.1 Regional Context

Atlanta is one of the fastest-growing regions in the country. Approximately 1.3 million people were added to the 20-county Atlanta metropolitan statistical area (MSA) between 1990 and 2000, representing a 44 percent increase. By 2006, an estimated 890,000 more people called the Atlanta MSA home, representing a 20 percent increase over 2000.

From 1990 to 2000, employment increased at an equal rate, with the MSA adding 671,000 jobs by 2000, representing an increase of 41 percent. Employment growth slowed substantially from 2000 to 2006. During this period, employment increased 10 percent, or at half the rate of population increase. Total employment increased by 240,200 from 2000 to 2006.

Along with population and employment, annual per capita income grew substantially from 1990 to 2000 and then slowed from 2000 to 2006. Between 1990 and 2000, per capita income increased 61 percent, or $12,500. In contrast, from 2000 to 2006, per capita income increased by $2,700, or 8 percent. Table 10 details population, employment, and per capita income from 1990 to 2006.

Growth and development in metropolitan Atlanta have historically occurred in the favored corridor, which is roughly defined as the area north of I-20 along I-75 and I-85. Within the favored corridor, downtown areas and locations at the intersections of two high-capacity freeways have historically experienced the most intensive development. Examples include the Central Perimeter area in Fulton and DeKalb counties and the Cumberland/Galleria area in Cobb County. Although growth in the favored corridor is still strong and contains the bulk of the region's employment, the favored corridor could shift as this area becomes more built out.

Table 10 Metro Atlanta Economic Indicators

Year	Population		Employment		Unemployed	Labor Force	Unemployment Rate (%)	Per Capita Income	
	Total	% Change	Total	% Change				Total	% Change
1990	2,959,950	N/C	1,633,519	N/C	81,126	1,714,645	4.7	$20,603	N/C
1991	3,052,580	3.1	1,634,594	0.1	81,750	1,716,344	4.8	$20,914	1.5
1992	3,132,523	2.6	1,666,509	2.0	110,521	1,777,030	6.2	$22,098	5.7
1993	3,225,429	3.0	1,734,405	4.1	99,778	1,834,183	5.4	$22,887	3.6
1994	3,329,074	3.2	1,824,771	5.2	87,961	1,912,732	4.6	$23,960	4.7
1995	3,430,377	3.0	1,896,164	3.9	84,530	1,980,694	4.3	$25,161	5.0
1996	3,531,390	2.9	1,981,031	4.5	79,086	2,060,117	3.8	$26,656	5.9
1997	3,632,206	2.9	2,054,573	3.7	77,916	2,132,489	3.7	$27,710	4.0
1998	3,744,022	3.1	2,145,565	4.4	73,077	2,218,642	3.3	$29,618	6.9
1999	3,857,097	3.0	2,215,775	3.3	67,561	2,283,336	3.0	$30,973	4.6
2000	4,247,981	10.1	2,304,515	4.0	72,668	2,377,183	3.1	$33,120	6.9
2001	4,436,353	4.4	2,335,175	1.3	87,493	2,422,668	3.6	$33,371	0.8
2002	4,564,540	2.9	2,330,487	–0.2	119,317	2,449,804	4.9	$32,825	–1.6
2003	4,687,191	2.7	2,337,883	0.3	118,138	2,456,021	4.8	$32,621	–0.6
2004	4,822,140	2.9	2,384,251	2.0	117,838	2,502,089	4.7	$33,553	2.9
2005	4,972,219	3.1	2,461,193	3.2	133,827	2,595,020	5.2	$34,825	3.8
2006	5,138,223	3.3	2,544,722	3.4	121,340	2,666,062	4.6	$35,846	2.9

Sources: U.S. Census, Georgia Department of Labor, Bureau of Economic Analysis

Notes: N/C = Not calculated
All figures are for the 20-county MSA
1990 and 2000 populations are actual Census counts; all other years are estimates.

2.3.5.2 Office Market

CoStar Group, an office market information and analysis firm, provides data for a 16-county Atlanta metropolitan region and subdivides that region into 10 submarkets for the purpose of more refined analyses. The South Quadrant study area lies in the Northwest Submarket, which encompasses Cherokee County, most of Cobb County, and portions of Paulding, Bartow, and Fulton counties. Figure 6 displays the Atlanta region, CoStar Northwest Submarket, and the South Quadrant area.

Office space is generally divided into Class A, B, or C space. Class A office space features a high quality of finish, maintenance, and amenities; is recently constructed; and is located in prime locations. Class B office space offers a good quality of finish and maintenance, but may not offer the same amenities, location, or building age that a Class A space would offer. Class C office space offers poor finish, is likely more than 25 years old, and is located in an undesirable location.

2.3.5.2.1 Employment

The office market is driven by employment. From 1990 to 2005, office employment in the metropolitan area defined by CoStar increased by almost 99 percent.[1] In contrast, from 2005 to 2020, ARC projects office employment to increase 20 percent. The employment sectors summed to estimate office employment are the financial, insurance, real estate (FIRE) sector; the services sector; and the government sector. Table 11 provides more detail regarding employment trends and future projections at the regional, submarket, Cobb County, and study area level.

[1] All office market data obtained or derived from "The CoStar Office Report: Third Quarter 2007, Atlanta Office Market." CoStar Group, 2007.

Table 11 Office Employment

	1990	2000	2005	2010	2015	2020	2030
16-County Total	446,898	719,570	887,787	847,049	947,491	1,064,347	1,331,040
Northwest Submarket*	237,646	346,068	401,440	375,412	412,305	453,695	542,196
Cobb County	45,434	91,948	124,109	108,891	119,638	132,117	163,504
Study Area	N/A	14,479	15,367	16,375	17,623	19,012	21,980

Sources: 1990–2005 Georgia Department of Labor
2010+ ARC
Study Area 2000+ ARC

Notes: *Total for all counties in the Northwest Submarket
Office jobs are generally defined as FIRE, services, and government
N/A = Not available

2.3.5.2.2 Inventory and Supply

At the end of the third quarter of 2007, total office inventory in the Atlanta region was comprised of 250,535,902 square feet in 8,843 buildings. In the first half of 2007, 68 office building sales were completed, totaling $2,041,598,486 and resulting in an average price per square foot of $149.87. This represents an increase in activity over the first half of 2006, when 99 office building sales were completed, totaling $1,525,412,971 and resulting in an average price per square foot of $141.55.

The current office supply in the Northwest Submarket outpaces all other submarkets in terms of both number of buildings (1,801) and rentable building area (41,566,782 square feet). This represents an average building size of 23,080 square feet. The submarket's rentable building area represents 16.5 percent of the entire region's inventory, significantly higher than the 25 million square feet each submarket would contain if office activity was distributed evenly across all submarkets. Additionally, the Northwest Submarket contains three of the six largest leases (based on total square footage) signed in 2007. However, these indicators of the submarket's relative strength are tempered by its position as the submarket with the fourth-highest vacancy rate (14.8 percent) of the 10 CoStar submarkets.

The Northwest Submarket office space inventory is distributed among the three classes as follows: Class A: 41 percent (ranked sixth); Class B: 44 percent (ranked fifth); and Class C: 15 percent (ranked fifth). As the ranks (relative to the other nine submarkets) indicate, the Northwest Submarket does not dominate in any one class of office space. It contains a balance of all three office classes.

In terms of office space under construction, the relative position of the Northwest Submarket varies depending on the metric used. The submarket ranks only sixth out of 10 for total square footage under construction with 542,805 square feet. Under-construction square footage ranges from a low of 3,187 square feet in the Downtown Atlanta Submarket to a high of 1,963,000 square feet in the Buckhead Submarket.

However, the Northwest Submarket ranks second for total number of buildings under construction with 22 (averaging 24,673 square feet each). Construction in the submarkets ranges from a low of one in the Downtown and Central Perimeter submarkets to a high of 40 buildings in the Northeast Atlanta Submarket. Finally, 70 percent of the office development in the Northwest Submarket is pre-leased, bested only by the Central Perimeter Submarket (100 percent) and the West Atlanta Submarket (89.7 percent). These high pre-lease percentages could indicate that the properties under construction are more desirable and/or closer to completion.

Ultimately, it depends on the metric used to evaluate the pipeline for new office construction in the Northwest Submarket. In terms of total square footage, the submarket's position is relatively weak in the Atlanta region. However, in terms of number of buildings and percent pre-leased, its position is relatively strong.

Because CoStar does not break inventory at a geographic level that corresponds precisely to the South Quadrant study area's boundaries, current study area supply was determined using a windshield survey and aerial photography. Office buildings were separated into a low-rise category (one floor to two floors) and a high-rise category (three floors or more). It was assumed that each floor of a typical office building contains 25,000 square feet of rentable space.

There are 28 low-rise office buildings in the study area, accounting for an estimated 1,050,000 square feet, and 35 high-rise office buildings, accounting for an estimated 4,375,000 square feet. This yields an estimated total of 5,425,000 square feet of office space within the South Quadrant study area's boundaries.

There is at least one office development under construction in the South Quadrant study area at the Vinings Main mixed-use development, which will include 35,000 square feet of office space.

2.3.5.2.3 Vacancy

Office vacancy rates in the metropolitan Atlanta region have decreased from a high of approximately 17 percent in early 2004 to 13.9 percent in the third quarter of 2007.

This compares to 20-year historical lows of approximately 7 percent in 2000 and a high of approximately 19 percent in 1987. From 2005 to 2007, Atlanta's vacancy rates have consistently been approximately 14 percent. This is higher than the office vacancy rate nationwide, which began at 12 percent but dropped to 11 percent over the same 2005 to 2007 period.

Vacancy rates in the Northwest Submarket have been slightly higher than the regional average and have ranged from a high of 16.5 percent in 2004 to a low of 14.8 percent in the third quarter of 2007. It is significant that absorption rates have been strong enough to cause the vacancy rate to decrease despite office space inventory that has increased every quarter in this period. In the Northwest Submarket, net absorption has been positive in 12 of the 16 quarters preceding the third quarter of 2007. It should be noted, however, that two of the quarters with negative absorption were very recent, in 2006 and 2007.

The vacancy rate within the South Quadrant study area boundaries is unknown, although it is reasonable to assume that it has the same vacancy rate (14.8 percent) as the Northwest Submarket. Based on the estimated study area supply, a 14.8 percent rate yields a total of 80,290 vacant square feet.

2.3.5.2.4 Rental Rates

The average rental rate for available office space in the Atlanta region was $19.44 per square foot per year at the end of the third quarter of 2007. This was a 0.5 percent increase over the second quarter of 2007.

Rental rates in the Northwest Submarket were very stable between 2004 and 2007, ranging from a low of $18.32 to a high of $18.98. The average rental rate in the third quarter of 2007 was $18.80 per square foot.

Rental rates within the South Quadrant study area are unknown. However, it is likely that they are similar to rental rates in the Northwest Submarket.

2.3.5.2.5 Demand and Gap Analysis

Future demand for office space was calculated based on employment projections for the Atlanta metropolitan region. A regional analysis was conducted using the regional boundaries defined by CoStar in developing its Atlanta Office Market report. This matched office market data with Census tract-based employment data as closely as possible.

Employment projections at the Census tract level were obtained from ARC. Demand for office space can be estimated by using employment projections to calculate the number of square feet of space typically required for each office employee in the region. This is calculated simply by dividing the current number of employees in the region by the current number of square feet of office space. For the purposes of this analysis, total occupied office square footage as of the third quarter of 2007 was used in conjunction with employment numbers from 2005 and 2010 to derive a reasonable average square foot per employee. As shown in the table below, the 2005 employment total yielded 243 square feet per employee, while the 2010 employment projection yielded 255 square feet per employee.

Table 12 Office Square Feet Per Employee – Metro Atlanta

Year	Employees	Square Feet Per Employee
2005	887,787	243
2010	847,049[2]	255

Sources: Georgia Department of Labor (2005 Employment); ARC (2010 Employment); CoStar Group (third quarter total office square footage). Compiled by ARCADIS.

Notes: Based on third-quarter 2007 metro Atlanta office supply of 215,711,412 square feet.

For the purposes of this market analysis, a simplified square foot per employee ratio of 250 was selected. As the rough midpoint between the 2005 and 2010 ratios, this number is reasonably accurate.

Across the region, the existing supply of office space is insufficient to meet projected demand, and a significant amount of office space is expected to be constructed in future years. In 2010, the estimated gap between supply and demand will be approximately 1.5 million square feet. In 2020, the gap will be roughly 55 million square feet of office space, and in 2030, the gap will be roughly 132 million square feet. The following table displays these results.

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[2]Because of employment growth in the Atlanta region, it may seem odd that 2010 is projected to have 40,000 fewer jobs than 2005. This disparity is likely explained by the following two factors. First, different sources were used for 2005 and 2010. Second, labor sectors were classified differently between these two years, making it impossible to perfectly correlate the two sets of employment data.

Table 13 Projected Gap in Office Supply – Metro Atlanta

	2010	2020	2030
Office Demand (SF)	252,097,917	305,846,839	382,482,759
Current Supply (SF)	250,558,872	250,558,872	250,558,872
Gap (demand – supply)	1,539,045	55,287,967	131,923,887

Sources: CoStar Group (supply); demand and gap calculated by ARCADIS

The same methodology was used to estimate future demand for office space in the Northwest Submarket. Employment projections were obtained from the 122 Census tracts, for which boundaries approximated the CoStar Northwest Submarket. These employment projections were normalized by the assumed 250 square feet per employee ratio to determine future demand for office space.

In the Northwest Submarket, the existing supply of office space is insufficient to meet projected demand, and a significant amount of office space is expected to be constructed in future years. Roughly 358,000 square feet of office space will have to be added to meet 2010 demand. For 2020, the gap is approximately 9.8 million square feet, while the gap for 2030 is approximately 25 million square feet. The table below displays these results.

Table 14 Projected Gap in Office Supply – Northwest Submarket

	2010	2020	2030
Office Demand (square feet)	41,924,515	51,439,726	66,754,317
Current Supply (square feet)	41,566,782	41,566,782	41,566,782
Gap (demand – supply)	357,733	9,872,944	25,187,535

Sources: CoStar Group (supply); demand and gap calculated by ARCADIS

The current supply of office space in the study area was determined through a windshield survey of office buildings, verification through analysis of aerial footage, and assumptions made about the size of the office buildings. Office buildings were separated into a low-rise category (one floor to two floors) and a high-rise category (three floors or more). It was assumed that each floor of a typical office building contains 25,000 square feet of rentable space. To estimate square footage, low-rise buildings were assumed to contain an average of one-and-a-half floors and high-rise buildings were assumed to contain five floors. The following table displays the factors

used to calculate current office space demand in the South Quadrant study area. Several office buildings from just outside the study area were included in the analysis, since office space projections were made based on employment by Census tract and the tract boundaries include areas just outside the study area. Figure 7 displays the four Census tracts used to approximate the South Quadrant study area.

Table 15 Office Supply – South Quadrant Study Area

Type	No. of Buildings	Assumed Average Stories Per Building	Assumed Square Footage Per Floor	Total Square Footage by Type
1 to 2 stories	28	1.5	25,000	1,050,000
3+ stories	35	5	25,000	4,375,000
			Total	5,387,500

Source: ARCADIS

Based on calculated supply and demand for office space, the South Quadrant study area currently has a surplus of office space. However, the surplus will disappear in later years. In 2010, the surplus will be approximately 550,000 square feet. In 2020, the surplus is projected to disappear with demand exceeding supply by roughly 38,000 square feet. In 2030, demand is estimated to exceed supply by approximately 890,000 square feet. The following table displays these results.

Table 16 Office Market – South Quadrant Study Area

	2010	2020	2030
Total Office Demand	4,873,595	5,463,190	6,316,155
Third Quarter 2007 Supply	5,425,000	5,425,000	5,425,000
Gap (demand – supply)	(551,405)	38,190	891,155

Sources: CoStar (supply); demand and gap calculated by ARCADIS

The gap between office demand and supply in the study area may be overstated as a result of employment forecasts that could be unrealistically low. These low employment forecasts for the study area Census tracts would consequently understate likely demand for office space.

A detailed overview of the methodology used to measure and calculate office supply and demand is contained in Appendix C.

2.3.5.3 Retail Market

The *Fall/Winter 2007 Atlanta Retail Space Guide* published by Dorey Publishing and Information Services was used to conduct retail analyses. The report divides the Atlanta region into 28 submarkets for detailed analyses. The South Quadrant study area lies in the Cumberland/East Cobb Submarket, is anchored by the Cumberland/ Galleria area at the intersection of I-75 and I-285, and reaches north to include most of eastern Cobb County. To capture retail activity in the near vicinity that serves the households in the study area, two significant properties from a neighboring submarket were also included. Figure 8 displays the Atlanta region, the Dorey Cumberland/East Cobb Submarket, and the South Quadrant study area.

The findings below indicate a major surplus of retail development in the South Quadrant study area. In fact, the surplus of retail space is likely even larger than presented here because several existing retail centers known to ARCADIS were not included in Dorey's data, including the Galleria Specialty Mall, the Ivy Walk mixed-use development at the intersection of Cumberland Parkway and South Atlanta Road, the West Village mixed-use development on South Atlanta Road near I-285, and Vinings West at South Atlanta Road at Church Road. As a result of these omissions, it is likely that the Dorey report understates retail supply in the study area and consequently understates the gap between retail supply and demand.

2.3.5.3.1 Inventory and Supply

The study area used for retail analysis is slightly larger than the South Quadrant study area. This is to align the boundaries with the Census tracts used for analysis and to capture neighboring retail centers that serve the South Quadrant study area. As identified in the Fall/Winter 2007 Dorey report, there are a total of 23 retail centers in the South Quadrant study area. These centers are typically 10 years to 20 years old and are located in Vinings and along Cumberland Parkway. Collectively, they represent an existing retail supply of 2,821,641 leasable square feet. Cumberland Mall accounts for 1,200,000 square feet, or fully 43 percent of the retail space in the study area.

There are a variety of retail center types in the study area, which are presented in categories listed from highest to lowest percentage of retail square footage. First is the super regional center of Cumberland Mall, which comprises 43 percent of the area's retail square footage. Super regional centers contain general or fashion-oriented merchandise and are typically enclosed malls with more than 800,000 square feet. The second category contains retail center types constituting between 10 percent and

20 percent of the retail square footage in the study area. Included are power centers, community centers, and neighborhood centers. Power centers typically encompass 250,000 square feet to 600,000 square feet; community centers may range in size from 100,000 square feet to 450,000 square feet; and neighborhood centers range in size from 30,000 square feet to 100,000 square feet. The final category contains five smaller types of retail centers, each of which constitute less than 10 percent of the retail square footage in the study area.

The Cumberland/East Cobb Submarket garners favorable comparisons to the Atlanta regional retail market with well above-average total and available retail square footage, rental rates, and number of retail centers. The Cumberland/East Cobb Submarket offers only slightly above-average levels of under-construction retail square footage and available retail square footage. Details of the Cumberland/East Cobb Submarket, including its relative rank among all 28 submarkets, are highlighted below:

- Third with 11,338,878 square feet of existing retail space (7.9 percent of the region's retail square footage)
- Fourth with 1,095,258 square feet of available retail space (7.1 percent of the region's available retail square footage)
- Sixth with an average rental rate of $18.48, compared to the regional average of $15.01
- Third with 146 retail centers (7.4 percent of the Atlanta region's retail centers)
- Eleventh with 28,400 square feet under construction (only 0.5 percent of regional total)
- Fourteenth with 9.7 percent of retail square footage available, compared to a regional total of 10.9 percent

The Cumberland/East Cobb Submarket is larger than most submarkets. It contains 8 percent of all of the retail space in metropolitan Atlanta, which is approximately twice as much as the 3.5 percent that each submarket would contain if retail activity was distributed evenly across all 28 submarkets. This is a result of the presence of very large retail developments such as regional centers and power centers.

2.3.5.3.2 Vacancy

In the entire Atlanta region, 10.9 percent of retail space is vacant, representing about 15.5 million square feet of available space.

Currently, 9.7 percent of retail space in the Cumberland/East Cobb Submarket is available. This is slightly below the regional vacancy rate of 10.9 percent. Additionally, this vacancy rate lies at the median of all the submarkets identified in the Dorey report, across which submarket vacancy rates range from 3.9 percent to 29.7 percent.

Vacancy rates for the retail centers in the South Quadrant study area are unknown. However, it is reasonable to assume that vacancy in the study area mirrors the 9.7 percent vacancy rate of the submarket.

2.3.5.3.3 Rental Rates

The average rental rate in the metropolitan Atlanta region is $15.01 per square foot. The submarket with the highest average rental rate is the Central Business District Submarket with rates of $25.47 per square foot. The lowest average rental rate is found in the Griffin/Spalding County Submarket with $7.81 per square foot.

The Cumberland/East Cobb Submarket average rental rate is approximately 20 percent higher than the regional rental rate at $18.48 per square foot. This is the sixth-highest average rental rate among the 28 submarkets, illustrating the submarket's relative retail strength in the Atlanta region.

Rental rates in the study area are approximate at best because the Dorey report only contains rental rates for half of the retail centers in the study area. Rental rates range from $12 per square foot to $32 per square foot with the exception of Cumberland Mall, where the rental rates are much higher at $30 per square foot to $80 per square foot. Given the limited data, it is difficult to draw any firm conclusion about rental rates in the study area. However, it appears that South Quadrant rental rates are generally higher than both the average regional rental rates ($15.01) and average submarket rental rates ($18.48). This indicates the study area's strong performance as a retail destination relative to the rest of the market.

2.3.5.3.4 Demand and Gap Analysis

Retail demand was calculated based on the expenditures made by households and employees in the South Quadrant area. Expenditure totals were then converted to total retail square feet demanded based on typical earnings per square foot for a variety of retail sectors. Household and employee figures were obtained at the Census tract level to approximate figures for the South Quadrant study area. As mentioned previously, Figure 7 displays the four Census tracts that contain the study area.

Based on calculated supply and demand for retail space, the South Quadrant study area currently has a significant surplus of retail space. This surplus is expected to continue well into the future. The calculated surplus for 2010 is approximately 1.2 million square feet. For 2020, the gap is approximately 1.0 million square feet, and in 2030, the gap is approximately 900,000 square feet. The following table displays these results.

Table 17 Retail Market – South Quadrant Study Area

	2010	2020	2030
Total Retail Demand	1,649,115	1,837,131	1,931,945
Total Retail Supply	2,821,641	2,821,641	2,821,641
Gap	1,172,526	984,510	889,696

Sources: Dorey Publishing & Information Services (supply); demand and gap calculated by ARCADIS

The results indicate that the study area currently offers much more retail activity than demanded by its residents and employees. This disparity is expected to continue over the next couple of decades, although decreasing slightly. Therefore, new retail construction in the study area is unlikely.

However, it is likely that many shoppers from households located outside the study area visit the study area to shop. Cumberland Mall, in particular, is likely a large retail draw from areas such as greater Cobb County. This is significant because retail demand was calculated based on the number of households in the study area. A future assessment of external demand could build on the results outlined here.

A detailed overview of the methodology used to measure and calculate retail demand is contained in Appendix C.

2.3.5.4 Residential Market Conditions

The metropolitan Atlanta residential market is comprised of 11 counties: Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, and Rockdale. Driven by employment and population growth, the residential market in the 11-county Atlanta region was strong from 1996 to its peak in 2004. While single-family permits continued increasing in 2005, multifamily permits declined substantially. In 2005, 2006, and 2007, the total number of housing units permitted declined 4.8 percent, 6.5 percent, and 29.4 percent, respectively. This decline was driven primarily by substantial decreases in multifamily permits in 2005 and single-family permit declines of 12.8 percent in 2006 and 41.3 percent in 2007. Multifamily permits, which tend to be more volatile, recovered in 2006 and 2007, increasing by 22.8 and 3.8 percent, respectively.

The residential market in Cobb County was more volatile than in the 11-county region over the last 10 years. In contrast to the region, total permits in Cobb County declined

from 1999 through 2002. After a brief recovery in 2003 and 2004, total permits declined again from 2005 through 2007. During 2005 and 2006, total units permitted dropped 10.9 and 26.4 percent, respectively, which were both higher rates than experienced by the 11-county region. In 2007, permits in Cobb County decreased 32.2 percent, a smaller decline than for the 11-county region. In contrast to the 11-county region, single-family permits in Cobb County began declining in 2005. Similarly to the region, multifamily residential product drove the decline in 2005 with a 30.1 percent drop and posted a 15 percent increase in 2006. However, multifamily units permitted then dropped 10.9 percent in 2007 in contrast to the region, which showed a slight increase. Table 18 provides an overview of permit activity from 1996 to 2007 with projected activity from 2008 to 2010 for the 11-county region and Cobb County.

The study area is currently undergoing rapid change as more up-market developments are under construction or being planned. In the heart of the South Quadrant, Vinings Main is now under construction, offering condominiums from $200,000 to $500,000 and townhomes from $600,000 to more than $1 million. Vinings Main replaces a 1970s-era garden apartment complex. The Aberdeen, also located in the South Quadrant's thriving commercial center, is under construction and selling condominiums starting in the $900,000s and ranging to more than $2 million.

Table 18 Metro Atlanta and Cobb County Residential Real Estate Indicators

Year	11-County Area						Cobb County					
	Single-Family		Multifamily		Total		Single-Family		Multifamily		Total	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
1996	28,411	N/C	10,406	N/C	38,817	N/C	5,147	N/C	1,121	N/C	6,268	N/C
1997	28,996	2.1	11,001	5.7	39,997	3.0	5,314	3.2	1,761	57.1	7,075	12.9
1998	35,127	21.1	10,980	–0.2	46,107	15.3	6,711	26.3	1,663	–5.6	8,374	18.4
1999	36,647	4.3	11,463	4.4	48,110	4.3	7,143	6.4	865	–48.0	8,008	–4.4
2000	34,147	–6.8	15,770	37.6	49,917	3.8	5,455	–23.6	1,187	37.2	6,642	–17.1
2001	35,963	5.3	15,274	–3.1	51,237	2.6	4,513	–17.3	1,144	–3.6	5,657	–14.8
2002	36,916	2.6	16,359	7.1	53,275	4.0	4,703	4.2	853	–25.4	5,556	–1.8
2003	39,343	6.6	10,439	–36.2	49,782	–6.6	4,993	6.2	970	13.7	5,963	7.3
2004	41,221	4.8	16,168	54.9	57,389	15.3	5,432	8.8	1,457	50.2	6,889	15.5
2005	43,688	6.0	10,925	–32.4	54,613	–4.8	5,123	–5.7	1,019	–30.1	6,142	–10.8
2006	37,643	–13.8	13,412	22.8	51,055	–6.5	3,346	–34.7	1,172	15.0	4,518	–26.4
2007	22,112	–41.3	13,920	3.8	36,032	–29.4	2,018	–39.7	1,046	–10.8	3,064	–32.2
2008	17,275	–21.9	9,455	–32.1	26,730	–25.8	1,536	–23.9	992	–5.1	2,528	–17.5
2009	18,054	4.5	9,744	3.1	27,798	4.0	1,468	–4.4	962	–3.0	2,430	–3.9
2010	19,301	6.9	10,290	5.6	29,591	6.4	1,425	–2.9	932	–3.1	2,357	–3.0

Sources: 1996–2006 – U.S. Census
2007 – Estimate based on U.S. Census through November 2007
2008–2010 – ARCADIS
N/C = Not calculated

2.3.5.4.1 Macro-Level Trends

Live-work-play communities and revitalization of first-ring suburbs are two national- and local-level trends that contribute to the desirability of the Cumberland/Galleria area and the South Quadrant. According to Robert Charles Lesser & Co., consumer preferences are shifting toward walkable, vibrant, mixed-use neighborhoods. According to Robert Charles Lesser & Co.'s research, more than 12 percent of homeowners prefer traditional neighborhood design communities.

These shifting consumer preferences are evident in the newly built Manhattan high-rise condominium in Perimeter Center's live-work-play Perimeter Place and the planned Aberdeen in the South Quadrant. Also notable is the increasing amount of mixed-use development in the city of Atlanta, specifically Atlantic Station in midtown Atlanta. Based on the types of developments under construction and planned in the study area, the South Quadrant is following this trend toward increasing mixed-use development.

A negative trend affecting the United States, Atlanta, and the study area is the mortgage market meltdown of 2007, whereby the default rate among subprime and other alternative borrowers is increasing rapidly. According to *Georgia Trend*, almost 55 percent of loans made in metropolitan Atlanta during 2005 and 2006 were these exotic types. As lenders become unwilling to write these loans over the next several quarters, a substantial amount of demand will be removed from the housing market.

The Blueprint Cumberland Strategic Plan, dated 2001, focuses on the area just north of the South Quadrant. The vision of Blueprint Cumberland includes reduced setbacks that bring buildings closer to the street, increased residential density, integrated land uses and vertical mixed uses, and enhanced pedestrian access. Developments in the study area that are under construction or planned are compatible with the above vision and often include substantial mixed-use components as well as pedestrian enhancements and amenities.

2.3.5.4.2 Metropolitan Atlanta and Market Analysis Study Area

The study area's residential market is completely within Cobb County and is comprised of four Census tracts that intersect the South Quadrant area of influence. Figure 7 displays the four Census tracts used to approximate the South Quadrant boundary. Because data necessary to the market analysis are only available at the tract level and parts of the four Census tracts fall outside of the area of influence boundary, the residential market analysis study area is slightly larger than the South Quadrant area of influence.

2.3.5.4.3 Demand and Gap Analysis

Population growth in the 11-county Atlanta region has accelerated from 1970 through 2005. The region had an average annual increase of 40,000 persons per year during the 1970s; 63,000 during the 1980s; 95,000 through the 1990s; and 109,000 from 2000 to 2005. For comparison purposes, the entire population of the city of Athens in 2005 was 104,400 persons.

Overall, the 11-county region grew 110 percent from 1980 to 2005. In comparison to the region, Cobb County grew at a slightly higher rate of 123 percent. From 1990 to 2005, the study area population increased 41 percent, somewhat slower than the 48 percent increase in Cobb County during the same time. Population data for the study area for 1980 were unavailable.

This rate of population increase in the 11-county region is projected to moderate to 46,500 persons per year through the second half of the 2000s, begin increasing to 59,600 persons per year during the 2010s, and increase from 76,000 persons per year from 2020 to 2030.

In contrast to the past 25 years, the total rate of growth in the region over the next 25 years is predicted to drop to 39 percent. As Cobb County becomes built out, it is projected to experience a substantial slowing in growth to 19 percent from 2005 to 2030. The study population is predicted to grow 20 percent during the same time, or slightly faster than Cobb County as a whole. Table 17 provides a detailed overview of population trends and projections at the regional, county, and study area levels.

Table 19 Population (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	2,567,919	3,518,594	4,062,684	4,295,268	4,588,898	4,891,695	5,651,738
Cobb County	447,745	607,751	663,528	689,029	715,019	740,218	786,806
Study Area	22,097	28,682	31,075	33,749	34,802	36,268	37,370
Share of Cobb County (%)	4.9	4.7	4.7	4.9	4.9	4.9	4.7

Sources: 1980 – 2000 – U.S. Census
2005 – 2030 – ARC with ARCADIS adjustment

Note: 1990 figure for the study area is an estimate because of changes in Census tract geography.

Trends in household growth parallel trends in population growth. The annual average increase in households in the region accelerated from 1980 through 2005, from

27,000 per year during the 1980s through 33,000 per year in the 1990s and up to 42,000 during the first half of the 2000s.

From 1980 to 2005, the number of households in the 11-county region increased 118 percent. The number of Cobb County households grew faster than the region during this period, increasing by 137 percent. Between 1990 and 2005, the number of households in the study area increased 40 percent, which is slower than the 47 percent increase in Cobb County during the same time.

Similar to population trends, regional household growth is expected to slow substantially in the second half of the 2000s, dropping roughly in half to 19,200 households. Growth then picks up in the 2010s to 24,500 households per year and increases again to 29,400 through 2030.

Household growth in the 11-county region is forecasted to decline to 44 percent from 2005 to 2030. The projected rate of growth in Cobb County during the same time drops below the region and comes in at 24 percent. Study area household growth also slows over the next 25 years to 22 percent. Table 20 provides a detailed overview of household trends and projections at the regional, county, and study area levels.

Table 20 Households (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	963,531	1,293,336	1,502,926	1,599,233	1,719,165	1,844,726	2,160,190
Cobb County	171,288	227,487	252,209	264,299	276,801	289,227	313,270
Study Area	11,918	15,276	16,697	17,795	18,552	19,550	20,488
Share of Cobb County (%)	7.0	6.7	6.8	7.0	6.9	7.0	6.7

Sources: 1980–2000 – U.S. Census
2005–2030 – ARC with ARCADIS adjustment

Notes: 1990 figure for the study area is an estimate because of changes in Census tract geography.

2.3.5.4.3.1 Housing Demand

A projected increase in the number of households drives a complementary demand for housing units. The forecasted increase in number of households with projected changes in average household size and vacancy rates was used to project housing demand to 2030. Tables 21 and 22 detail household size and vacancy rates by year at the regional, county, and study area levels.

Table 21 Household Size (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	2.62	2.67	2.61	2.59	2.57	2.55	2.50
Cobb County	2.60	2.64	2.60	2.58	2.55	2.53	2.48
Study Area	1.85	1.87	1.85	1.83	1.81	1.79	1.76

Sources: 1980–2000 – U.S. Census
2005 ARC

Table 22 Vacancy Rate (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	10.2	5.2	8.8	9.5	7.0	7.0	7.0
Cobb County	9.8	4.2	8.2	9.0	6.2	6.2	6.2
Study Area	14.3	7.0	11.8	12.8	9.4	9.4	9.4

Sources: 1980–2000 – U.S. Census
2005 ARC

By 2030, there will be demand for 45 percent more units in the 11-county region, 26 percent more units in Cobb County, and 19 percent more units in the study area. Table 23 shows housing demand trends and projections at the regional, county, and study area levels.

Table 23 Housing Units Demanded (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	1,072,974	1,364,278	1,600,064	1,767,999	1,848,565	1,983,576	2,322,785
Cobb County	189,898	237,460	265,542	290,529	295,097	308,344	333,977
Study Area	13,907	16,426	18,933	20,405	20,477	21,578	22,613
Share of Cobb County (%)	7.3	6.9	7.1	7.0	6.9	7.0	6.8

Sources: 1980–2000 – U.S. Census
2005 ARC

2.3.5.4.3.2 Housing Supply

At the regional, county, and study area levels, housing supply was projected to 2010. Forecasts of supply further into the future were not made because pipeline data past 2010 are extremely limited and trends are difficult to predict with accuracy. Because

the purpose of this analysis is to identify the amount of land needed rather than to provide near-term supply, it is assumed that developers will provide supply roughly in line with demand after 2010.

Housing supply was determined by adding existing 2005 inventory to projected supply based on building permit trends at the regional and county levels. For the study area pipeline, GRTA DRI filings and Cobb County rezoning requests were used to determine the number of new housing units proposed through 2010. Table 24 shows housing supply trends and projections at the regional, county, and study area levels.

Table 24 Housing Units (1990–2010)

	1990	2000	2005	2010
11-County Total	1,072,843	1,364,446	1,600,102	1,771,306
Cobb County	189,872	237,522	265,715	280,613
Study Area	13,873	16,418	18,945	21,107
Share of Cobb County (%)	7.3	6.9	7.1	7.5

Sources: 1980–2000, 2010 – U.S. Census, GRTA, ARCADIS
2005 ARC

Although housing supply is predicted to increase from 2005 to 2010, the rate of increase will slow substantially compared to the first half of the decade. From 2000 to 2005, housing supply increased 17 percent, 12 percent, and 15 percent at the regional, county, and study area levels, respectively. Based on the observed declines in building permits from 2005 to 2007 and the curtailment of subprime and Alt-A mortgage lending through the latter half of 2007, housing supply between 2005 and 2010 is expected to increase at roughly half the rate as during the first half of the 2000s. An increase in supply of 11 percent, 6 percent, and 11 percent at the regional, county, and study area levels, respectively, is projected.

Current trends and near-term projections indicate that the study area housing supply is increasing faster than demand. The number of households at the regional and county levels increased 16 percent and 11 percent from 2000 to 2005, respectively, which is roughly in line with the increase in housing units. In contrast, the number of households in the study area increased 9 percent during the same period compared to a 15 percent increase in supply. During the second half of the decade, the study area imbalance is predicted to continue with a projected 7 percent increase in number of households and an 11 percent increase in dwelling units.

2.3.5.4.3.3 Housing Gap Analysis

A housing gap analysis is used to identify existing and potential real estate opportunities. The gap is the difference between demand and supply. If the gap is positive, an opportunity may exist. In contrast, a negative difference indicates an oversupply of product in the market. This analysis is sensitive to changes in future projections; if future households are higher or lower than forecasted, the gap will also be higher or lower.

From 1990 to 2005, supply and demand in the 11-county region were relatively balanced with a small undersupply of units in 1990 shifting to a small oversupply in 2000 and a marginal surplus of units in 2005. Cobb County showed a similar trend, but with a slightly larger oversupply in 2005. Supply and demand in the study area were also in balance between 1990 and 2005.

By 2010, the 11-county region is expected to have approximately 3,300 surplus dwelling units, while Cobb County will have excess demand for 9,900 units and the study area will have a 702-unit surplus. With several large projects under construction (Vinings Main, Aberdeen) or in the pipeline (Aspen Hills, Cumberland Boulevard, Regent Riverwood, Village at Vinings, Vinings West), the near-term excess of dwelling units in the study area is not surprising.

This analysis assumes subprime and Alt-A mortgage lending declines of 98 percent, 95 percent, and 90 percent below 2005 and 2006 levels during 2008, 2009, and 2010, respectively. A significant rebound in the exotic mortgage market, while unlikely during this time period, would result in higher demand levels in the near term.

It is forecasted that by 2015, the region will need an additional 77,300 dwelling units with 14,500 of those units in Cobb County. The study area is projected to have a surplus of 630 units in 2015. Ultimately, by 2030, the region is projected to need 551,500 dwelling units, while Cobb County will require 53,400 units and the study area will need 1,500 units. Table 25 shows housing gap trends and projections at the regional, county, and study area levels.

Table 25 Housing Units Gap (1990–2030)

	1990	2000	2005	2010	2015	2020	2030
11-County Total	131	–168	–38	–3,307	77,259	212,270	551,479
Cobb County	26	–62	–173	9,916	14,484	27,731	53,364
Study Area	115	8	–12	–702	–630	471	1,506

Sources: 1980–2000 U.S. Census, 2005 ARC, 2010–2030 ARCADIS

2.3.5.4.3.4 Housing Types

Aggregate housing demand is further broken down into single-family, townhomes and condominiums, and apartments to identify market opportunities. Based on projected income through 2010, demand is then further disaggregated into price ranges for each product type. For years after 2010, a for-sale versus for-rent ratio is calculated; however, price ranges are not predicted because of a lack of reliable income projections.

In the study area, the disaggregation into for-sale and rental property is based on historical propensity to rent from 1990 to 2000 projected to 2030. The study area has substantially more renters than the 11-county region and Cobb County. In the region during 2000, the latest year for which data are available, 35 percent of households were rented, compared with 32 percent in Cobb County. In contrast, the study area is almost completely the opposite with 70 percent of households renting in 2000.

Most households being rented in the study area are likely rented by choice renters. While the median income in three of the Census tracts in the study area is below the Cobb County median, the study area is by no means low income. In fact, in one tract, the median income is significantly higher than that of the county. Additionally, the median income in the study area is in line with, or slightly higher than, most of the 11-county region. Table 26 shows income levels for Cobb County and the study area Census tracts.

Table 26 Median Income

	1989	1999	2004
Cobb	$41,297	$58,289	$52,936
Tract 303.21/303.39	$29,087	$52,037	N/A
Tract 312.02	$32,018	$45,106	N/A
Tract 312.03	$34,464	$49,565	N/A
Tract 312.04	$44,635	$70,948	N/A

Sources: 1980–1999 – U.S. Census
2004 – City-data.com

Notes: N/A = Not available

According to an analysis of median income and median house prices in the study area, owner-occupied housing is relatively affordable. House prices in the study area tracts are approximately 3 times the median income and range from 2.6 times the median income to 4.7 times the median income.

Although renters are projected to decline as a percentage of the study area over time, demand for rental is likely to remain strong. Based on predicted income levels, a substantial number of households in the study area will not be able to afford the high-end condominiums or townhomes currently being built in the study area. Two projects currently under construction or in the selling phase are priced out of the reach of almost half the study area households. Vinings Main is under construction and selling condominiums from the high $200,000s to over $500,000, while townhomes start in the $600,000s and run to more than $1 million. The Aberdeen is currently selling condominiums with prices starting in the $900,000s and ranging to more than $2 million. Approximately 43 percent of the study area households are projected to have incomes below $60,000 per year in 2010, which is too low to qualify them for either project based on three times their income.

Table 27 shows the rental trend from 1990 to 2000 at the regional, county, and study area levels as well as projections through 2030 for the study area.

Table 27 Percentage of Renters

	1990	2000	2005	2010	2015	2020	2030
11-County Total	38.7	35.4	N/C	N/C	N/C	N/C	N/C
Cobb County	35.4	31.8	N/C	N/C	N/C	N/C	N/C
Study Area	71.7	69.7	68.7	67.7	66.7	65.7	63.7

Sources: 1980–2000 – U.S. Census
2005+ – ARCADIS

Notes: N/C = Not calculated

The study area is comprised of four smaller geographic areas corresponding to Census tracts: the northern, north-central, south-central, and southern tracts.

2.3.5.4.3.4.1 Single-Family Detached

Opportunities for single-family detached product throughout the study area do not exist through 2010. Supply exceeds demand in all tracts except the northern tract, which has a small gap of 31 single-family units.

In the northern tract (Census tract 303.39), projected excess for-sale product demand is weak. Across all price ranges, the likely total owner gap is 29 units; however, there is marginal excess demand for single-family units with a gap of nine units priced at $390,000 or more. Because this tract is relatively small, constrained by the Chattahoochee National Recreation Area, and currently built out with apartment and condominium product, finding sites for single-family development presents a challenge that is likely insurmountable.

An oversupply of 1,722 for-sale units in the north-central tract (Census tract 312.03) is projected for 2010. At the high end of the market, a gap of 26 units exists at a price of $570,000 or higher. However, given the excess supply in the study area as a whole and in the north-central tract in particular, this is likely a very poor opportunity.

Similar to the study area, excess demand for single-family detached product in the south-central tract (Census tract 312.04) is limited. The lowest-priced single-family residence in the south-central tract recently sold for $441,000 with all others going for a minimum of $500,000. A gap of 61 homes in the $470,000 to $587,499 range and a gap of 39 homes at $705,000 or more exist, but this is balanced by a surplus of 85 homes in the $587,500 to $704,999 range.

No opportunities exist in the southern tract (Census tract 312.02). The southern tract is currently oversupplied with single-family homes and the Vinings West project has 23 units in the pipeline.

2.3.5.4.3.4.2 Townhomes and Condominiums

With several major projects currently under construction or planned to be built by 2010, excess demand for townhome and condominium projects in the study area is underwhelming.

Projected excess demand for townhome and condominium product in the northern tract is limited. A gap of nine units exists at the extreme low end of the market priced from $104,000 to $116,999. An additional gap of 31 units exists at the low end from $130,000 to $155,999. However, there is a substantial projected oversupply of 64 units in the $117,000 to $129,999 price range and an oversupply of 10 units in the $156,000 to $194,999 range. In contrast, at the $195,000 to $389,999 price range, there is a gap of 63 units. Several condominium units have recently sold for between $248,000 and $294,000 toward the middle of this range.

The north-central tract is projected to have an oversupply of 1,722 owner-occupied units in 2010. Two large projects, Cumberland Boulevard and Regent Riverwood, contribute significantly to this with 608 condominium units planned from these developments. An oversupply of 1,418 townhome and condominium units is expected in 2010.

Although the south-central tract is predicted to suffer from an oversupply of condominium and townhome units, some gaps do exist. The lowest-cost single-family home in the south-central tract went for $441,000 and all others went for more than $500,000; therefore, townhome and condominium product is expected in price ranges below $470,000. The lowest-cost recently sold condominium went for $195,000. A gap of 104 units is projected in the $211,500 to $234,999 range. At the higher end of the market, a gap of 70 units is expected from $352,500 to $469,999. In contrast, substantial oversupply is projected in the middle of the market with 520 excess units from $235,000 to $352,499. At the low end of the market, an oversupply of 69 units is projected for the $188,000 to $211,499 price range. Oversupply issues in the south-central tract are exacerbated by three projects under development: Aberdeen, Village at Vinings, and Vinings Main. These developments will add 533 condominium units and 81 townhomes by 2010.

The southern tract is projected to have an oversupply of 97 townhome and condominium units in 2010. The Vinings West project has 135 townhomes and 912 condominiums in the pipeline, and Aspen Hills will add another 38 townhomes to the pipeline. While a gap of 302 units exists in the $135,000 to $179,999 price range, recently sold condominiums and units at Vinings West are selling in the $200,000s.

2.3.5.4.3.4.3 Apartments

The apartment market in the 11-county region is relatively healthy with realized rent (quoted rent less concessions) increasing 2.1 percent from $777 to $793 per month from mid-year 2006 to mid-year 2007. Occupancy rates during this time dropped slightly from 92.9 percent in mid-2006 to 92 percent in mid-2007.

The apartment market in Cobb County is similar to that of the 11-county region. From mid-2005 to mid-2007, realized rents increased by 1.6 percent from $767 to $779 per month, which is slightly slower than the regional pace. Cobb County rents are also slightly lower than the regional average.

In contrast to Cobb County, the Cumberland/Galleria submarket, which includes the study area, experienced an increase in realized rent of 2.4 percent from mid-2006 to mid-2007 from $753 to $773 per month.

The study area has substantially more renters than the 11-county region and Cobb County. While the percentage of the population renting is expected to decline slightly by 2010, the forecasted increase in household growth will serve to backstop rental demand. By 2010, there will be a gap of 587 for-rent units in the study area. However, this demand is not distributed evenly; half of the study area's tracts are projected to experience a surplus of units in 2010.

In the northern tract, there is a projected oversupply of 69 rental units.

The north-central tract is predicted to have 609 excess rental units in 2010, which is partially a result of 214 apartments to be developed as part of the Cumberland Boulevard development.

In contrast, a small opportunity is available in the south-central tract, which is projected to have a gap of 66 for-rent units in 2010. This is attributable to the demolition of approximately 200 units to make way for Vinings Main, which is all for-sale product. Demand is estimated to be highest in the $700 to $1,167 per month range.

Unlike the other three tracts, the southern tract is projected to have a substantial gap of 1,199 units in 2010. Demand is highest over a wide range of rents from $817 to $1,633 per month.

2.3.5.4.3.5 For-Sale and Rental 2015–2030

It is projected that there will be an oversupply of both for-sale and rental units in 2015. Demand is projected to recover by 2020 with rental unit demand running at 1.9 times for-sale demand. This trend is projected to continue to 2030 with for-rent demand beginning to moderate slightly relative to for-sale demand. Table 28 shows the study area projected gap in for-sale and rental product from 2015 to 2030.

Table 28 Housing Units Gap by Tenure (Study Area)

	2015	2020	2030
For-Sale	–214	165	565
For-Rent	–416	306	941

Source: 2010–2030 ARCADIS

Notes: Positive numbers indicate excess demand for units.
Negative numbers indicate oversupply of units.
Numbers may not add to housing unit gap because of rounding.

A detailed overview of the methodology used to measure and calculate residential supply and demand is contained in Appendix C.

3. Area Assessment and Goals

The existing conditions analysis provides a baseline assessment of the study area, but it does not address stakeholder issues, concerns, and desires. To incorporate these conditions, two stakeholder meetings and individual stakeholder surveys were conducted. Summaries from the meetings are included in Appendix D. Stakeholder input was incorporated with the opportunities and constraints that were identified through the existing conditions analysis. The resultant list of area strengths, issues, and opportunities is presented in Table 29.

Table 29 Area Assessment Strengths, Issues, and Opportunities

Strengths		
Transportation	**Location/Identity**	**Development Context**
Built-in traffic calming (train) Interstate access Plentiful major routes	Near Chattahoochee Recreation National Park Near Cumberland activity center Vinings activity center Historic feel New development along Atlanta Road Neighborhood feel Nodal development along Atlanta Road Suburban feel outside nodes	In favored quarter Recent development/zoning activity oriented toward mixed-use Wide array of land uses
Issues		
Transportation	**Location**	**Identity**
Limited connectivity Cut-through traffic Limited modal options Vehicular congestion Limited non-major roadways	Topographic challenges Gateway aesthetics Corridor aesthetics Limited wayfinding	Potential for competing markets with Cumberland activity center Limited future retail demand

Table 29 Area Assessment Strengths, Issues, and Opportunities

Opportunities		
Transportation	**Location**	**Identity**
Multimodal connectivity Future growth balanced with infrastructure improvements Basis for project prioritization	Serve surrounding area Protect neighborhoods Gateway/wayfinding enhancement	Office development potential Housing development potential (executive housing) Mixed-use

3.1 Opportunity Statement

The study area's strengths, issues, and opportunities were synthesized to develop a cohesive guiding opportunity statement. The opportunity statement provides a basis and framework for the development, evaluation, and selection of projects and programs to include in the study. The opportunity statement is below.

The area's role as a village activity center, high-intensity office area, and resource for the Cumberland activity center can be strengthened by:

- Addressing traffic impacts by increasing modal choice, reinforcing corridor roles, maintaining intersection LOS, and improving safety
- Protecting area character by promoting development patterns that are consistent with the existing character
- Improving aesthetics by protecting area resources, enhancing transportation corridors, and preserving gateway functions

4. Future Conditions

This section describes the potential future land use and transportation conditions in the study area. The findings follow from the real estate demand analysis presented in Section 2, Existing Conditions, and traffic modeling conducted to measure the traffic impacts of the assumed future development. Future conditions findings are used to formulate recommendations, which can be found in Section 5.

4.1 Future Development Conditions

Two possible development futures were considered: a policy-based scenario and a likely scenario. The two scenarios offer significantly different images of the future that allow for a comparison of two different sets of transportation impacts.

The policy scenario assumes a conservative level of development based purely on calculated demand and parcels that are available for development and redevelopment. The scenario is constrained by future Cobb County land use policy because it distributes projected future development only into those parcels that are identified by the county as developable or redevelopable and in accordance with the Cobb County future land use map.

The likely scenario is more liberal and subjective and relies on stakeholder input on the location and type of development that is likely to occur in the study area in the future. The likely scenario is not constrained by projected demand, the Cobb County developable/redevelopable parcels, or the Cobb County future land use map.

4.1.1 Policy Development Scenario

The policy land use scenario distributes all of the calculated office, retail, and residential development demand into available developable and redevelopable parcels in the study area. Demand was calculated as a component of the real estate market analysis described earlier. Cobb County provided a parcel-level geographic information system shapefile that identified available developable or redevelopable parcels. This shapefile was used in conjunction with the Cobb County 2030 Future Land Use map to identify possible locations for future office, retail, and residential development.

4.1.1.1 Policy Scenario Assumptions

The assumptions below were used to distribute future demand under the policy development scenario.

- No new mixed-use development was assumed, except where planned as part of the seven future DRIs in the study area.

- Policy development was hypothetically distributed at the maximum intensities allowed by Cobb County land use regulations to account for expected higher-density development in the future. Appendix E contains the maximum allowable densities as restricted by current Cobb County land use regulations.

- After accounting for DRI development, remaining demand for office, retail, and residential land use was distributed to available parcels based on two criteria:

    - Proximity to existing roadway network

    - Size (largest developable or redevelopable parcels)

Each development type was characterized by a unique distribution outcome. The full quantity of office demand was supplied by planned DRIs and additional distribution in the study area. However, there are 761,929 remaining square feet of office capacity in Cobb County developable/redevelopable parcels in accordance with the future land use map. Demand for residential product far outstripped available developable/ redevelopable residential parcels. For example, while demand for single-family product is calculated to be 565 dwelling units, only 17 could be supplied by the developable/ redevelopable parcels in accordance with the future land use map. Finally, retail development is unique in that the demand analysis showed an oversupply of retail in the study area, thus creating negative demand. Therefore, 0 square feet of retail were distributed in the study area, even though there is an available retail capacity of 383,818 square feet in accordance with the developable/redevelopable parcels and future land use map. The following table summarizes the three land use outcomes created under the policy scenario. Figure 9 displays the projected land use distribution under the policy development scenario.

The intensity of land use at DRI sites is typically higher than that permitted under Cobb County land use regulations. As such, planned DRI development satisfies significant

quantities of calculated demand. Specific information on Atlanta-area DRIs can be found on the ARC website.

Table 30 Policy Land Use Scenario – Distribution of 2030 Market Demand

Land Use	Unit	Market Demand	Distributed	Remaining Demand	Remaining Capacity
Office	square feet	889,696	889,696	0	761,929
Single-Family	dwelling units	565	17	548	0
Multifamily	dwelling units	941	253	688	0
Retail	square feet	0	0	0	383,818

4.1.2 Likely Development Scenario

The likely development scenario represents the location, type, and intensity of future development as identified by participants at a February 2008 South Quadrant stakeholder meeting. Each participant was asked to identify the development trends that he/she thinks are likely to occur by the year 2030. Because the results were an amalgam of multiple viewpoints, the likely scenario described here is probably larger, more intense, and more widespread than the future development and redevelopment that will actually occur. Therefore, all land use and transportation conclusions derived herein should be considered accordingly.

Three likely scenario development themes emerged from the stakeholder input:

- Existing office and residential sites along Cumberland Parkway, Paces Ferry Road, and Cobb Parkway are likely to be redeveloped at higher densities in the future. Further, high-density mixed-use development is likely to increase along these corridors.

- The Vinings Village center, located between the railroad tracks and the Chattahoochee River, is likely to remain as it is, with commercial activity nodes surrounded by largely single-family residential neighborhoods.

- The Atlanta Road corridor and other sites to the west of I-285 are not likely to experience significant change.

Figure 10 displays the projected land use distribution under the likely scenario. It is important to note that some of the sites identified for redevelopment already provide

office or residential use at a high-density level (such as 12 dwelling units per acre), but are likely to be redeveloped at even higher densities. The developments displayed in the map include planned or under-construction DRIs.

The total acreage for each likely land use category is summarized in the following table. The largest likely development type is high-density mixed-use, followed by high-density residential and high-density office.

Development Type	Likely Acres
High-Density Mixed-Use	221
High-Density Residential	175
High-Density Office	72

A hypothetical development scenario was created for each development type in which the likely maximum unit densities were created according to currently established zoning restrictions or, in the case of mixed-use development, the characteristics of currently planned DRIs. Descriptions of the assumed intensities for each likely development type follow below and are summarized in Table 31.

For high-density residential sites, the highest density permitted by current residential zoning restrictions is 12 units per acre. This level of intensity would result in 2,072 likely new units of housing by the year 2030. However, redevelopment of existing high-density residential sites could result in variances for densities higher than 12 units per acre. This would drive the total likely new housing units even higher.

For high-density office sites, the most intense office development permitted by current office zoning restrictions is a 2.0 floor-to-area ratio. This results in a total of 6,250,701 new square feet of office space in the likely scenario. However, redevelopment of existing large office parcels could result in variances for larger floor-to-area ratios. Again, this would drive the likely quantity of new office square footage even higher.

High-density mixed-use sites in the study area have been characterized by development intensities that do not correspond to standard zoning restrictions. Therefore, expected development intensities were extrapolated based on the characteristics of the seven mixed-use DRIs currently approved in or near the South Quadrant study area. Average intensities were calculated for each land use type, resulting in the following levels of intensity used for the likely scenario: average

housing density of area DRIs: 21 dwelling units per acre; average office floor area ratio: 0.58; and average retail floor area ratio: 0.10. These figures yield 4,643 likely new housing units; 5,585,676 likely new square feet of office space, and 963,048 likely new square feet of retail space in the South Quadrant study area. The results are summarized in the table below.

Table 31 Likely Land Use Scenario – Distribution of 2030 Market Demand

Land Use	Unit	Market Demand	Distributed	Remaining Demand	Remaining Capacity*
Office	square feet	889,696	11,836,377	10,946,681	0
Single-Family	dwelling units	565	0	565	17
Multifamily	dwelling units	941	6,741	5,800	0
Retail	square feet	0	963,048	963,048	0

*Based on existing zoning

4.2 Future Traffic Conditions

The roadway network was modeled using Synchro 7.0 traffic simulation software to analyze future year 2030 traffic conditions within the study area and to identify potential issues. ARC's Envision6 regional travel demand model was used to estimate an annual traffic growth rate from 2007 to 2030. Population and employment estimates based on the policy and likely land use scenarios presented previously were input to the 2030 model to determine 2030 volumes. Appendix F contains the density assumptions used to convert development assumptions into population and employment figures for use in the traffic simulation model.

The following is a summary of future vehicular traffic conditions based on the two land use scenarios. Traffic data tables, including a.m. and p.m. peak-period LOS and delay, are provided in Appendix A for the 23 analyzed intersections. Figures 11 and 12, respectively, display intersection LOS results for the policy and likely development scenarios.

The Synchro 7.0 traffic simulation software predicts trip-making behavior based on the spatial distribution of residents and employees in a given study area. The following table highlights the differences between the two scenarios, expressed as the total population and employment figures for the South Quadrant study area, as derived from the hypothetical future land use scenarios. As illustrated, the likely scenario represents significantly higher levels of development intensity. For example, population is forecast

to be 41 percent higher in the likely scenario than in the policy scenario. Employment is forecast to be 152 percent higher in the likely scenario than in the policy scenario.

Table 32 Land Use Scenario Projections

2030 Scenario	Population	Employment
Policy	25,088	27,480
Likely	35,274	69,380

4.2.1 Policy Land Use Scenario

This section describes the results of the traffic simulation modeling conducted using the policy land use scenario to guide population and employment inputs. Of the two scenarios tested, the policy scenario assumes a lower level of development intensity in the study area. The simulation analysis resulted in the determination of future peak-period delays and corresponding LOS for each of the 23 intersections studied during a.m. and p.m. peak periods. LOS is based on average delay and provides a qualitative assessment of traffic conditions. LOS A represents excellent conditions, while LOS F corresponds to severe congestion. In dense urban environments, LOS A through LOS D is generally considered acceptable. However, for this study LOS D, LOS E, and LOS F were considered unacceptable.

Across the study area as a whole, 2030 traffic volumes during the p.m. peak period will be 4 percent higher than volumes during the a.m. peak period. However, congestion, measured in terms of average vehicular delay, will be 4 percent higher in the a.m. peak period than in the p.m. peak period. This is similar to existing conditions in the study area. However, the model results show that only 55 percent of the intersections will operate at an acceptable LOS in the year 2030 as compared to current conditions, where 87 percent operate at an acceptable LOS.

4.2.1.1 *A.M. Peak-Period Conditions*

The intersections listed below will operate at or near capacity (LOS E or LOS F) during the 2030 a.m. peak period.

- LOS F
  - Cumberland Parkway at Atlanta Road
  - Paces Ferry Road at Atlanta Road
  - I-285 northbound ramp at Atlanta Road
- LOS E
  - Overlook Parkway at Paces Ferry Road
  - Cobb Parkway at Paces Mill Road

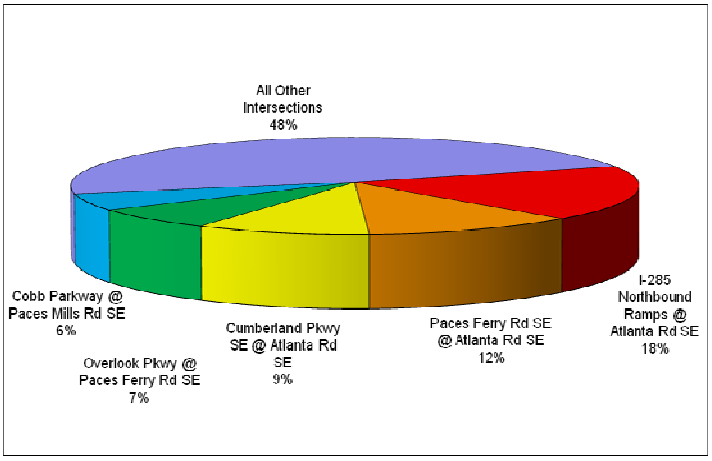
Additionally, the following five intersections will operate at LOS D:

- Cumberland Parkway at Paces Ferry Road
- Cooper Lake Road at Atlanta Road
- Paces Ferry Road at Paces Mill Road
- North Church Lane at South Atlanta Road
- New Paces Ferry Road at Paces Ferry Road

As shown on Chart 8, intersections operating at or near capacity (LOS E or LOS F) will collectively account for approximately 52 percent of the delay in the study area during the a.m. peak period. The intersections are at capacity and contribute to a majority of the congestion in the study area, becoming bottlenecks for traffic flow through the study area. Projects that reduce delay at these intersections will reduce congestion and delay and increase traffic flows through the study area, thereby maximizing return on transportation investments.

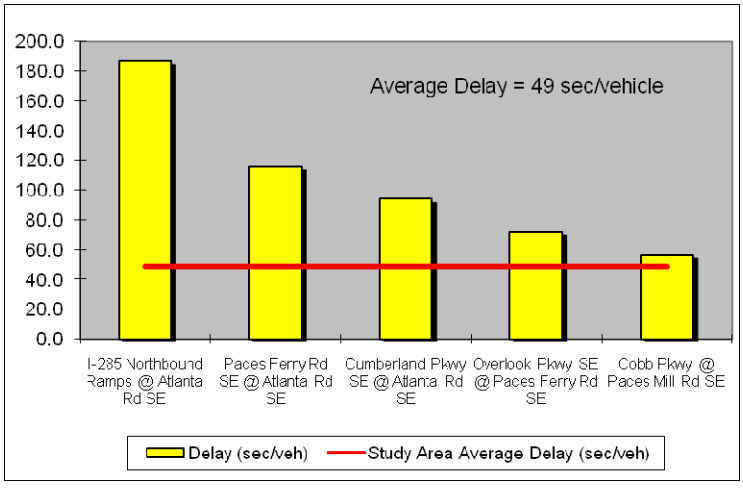
Chart 9 provides an overview of the amount of delay experienced at these intersections compared to the study average of 49 seconds.

Chart 8 Percent of Intersection Delay (2030 A.M. Peak Period) – Policy Scenario



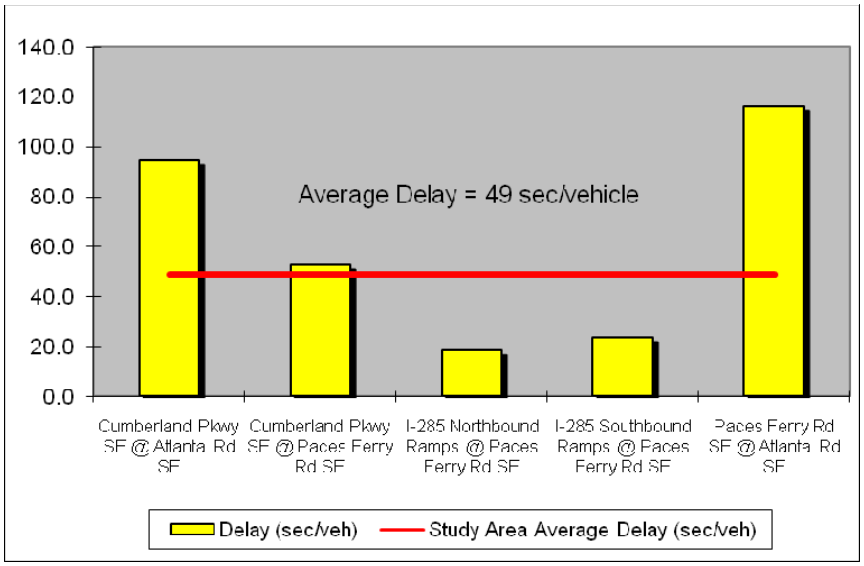
The intersection with the most delay (I-285 northbound ramp at Atlanta Road) will experience approximately 60 percent more delay than the intersection with the next highest level of delay (Paces Ferry Road at Atlanta Road). During the a.m. peak hour, the southbound left-turn movement onto I-285 at the intersection of the I-285 northbound ramp at Atlanta Road will account for 40 percent of the southbound approach volume on Atlanta Road. Because of the absence of an exclusive left-turn bay at this location, left-turning vehicles were observed to block through vehicles on the left lane, resulting in a long queue that spills back to upstream intersections.

Chart 9 Highest Delay (2030 A.M. Peak Period) – Policy Scenario



The five intersections with the highest traffic volumes during the a.m. peak period are shown on Chart 10. As the chart demonstrates, high volumes do not necessarily correspond to a high rate of intersection delay. For example, the intersection of Cumberland Parkway at Atlanta Road carries the highest volume in the study area, yet it ranks third in amount of delay. Cobb Parkway at Paces Mill Road is fifth with regard to delay, but is not among the five intersections with the highest volumes.

Chart 10 **Delay at Intersections with Highest Volumes (2030 A.M. Peak Period) – Policy Scenario**



4.2.1.2 P.M. Peak-Period Conditions

The intersections listed below will operate at an unacceptable LOS during the 2030 p.m. peak period. There are no intersections approaching failure (LOS D).

- LOS F
  - Overlook Parkway at Paces Ferry Road
  - Paces Ferry Road at Atlanta Road
  - Access Road (provides access to FedEx Kinko's and Home Depot) at Paces Ferry Road
  - Cumberland Parkway at Atlanta Road
- LOS E
  - Cumberland Parkway at Cumberland Boulevard
  - Cumberland Parkway at Paces Ferry Road
  - Paces Ferry Road at Paces Mill Road

As shown on Chart 11, these intersections collectively account for approximately 64 percent of the delay in the study area. As mentioned earlier, projects that reduce delay at these intersections can improve congestion across the study area and maximize return on transportation investments.

Chart 11 **Percent of Intersection Delay (2030 P.M. Peak Period) – Policy Scenario**

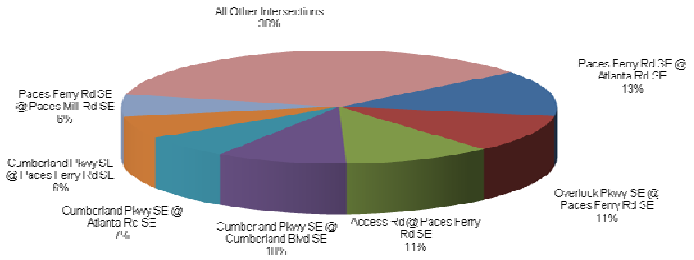
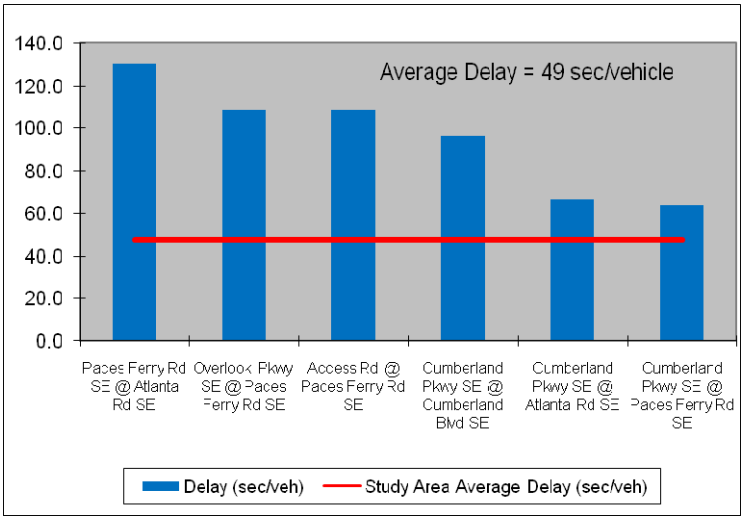


Chart 12 provides an overview of the amount of delay experienced by the seven intersections that will operate at LOS E or LOS F and compares them to the study area average (approximately 47 seconds of delay). As opposed to a.m. conditions, the delay is spread throughout the study area rather than concentrated at one intersection.

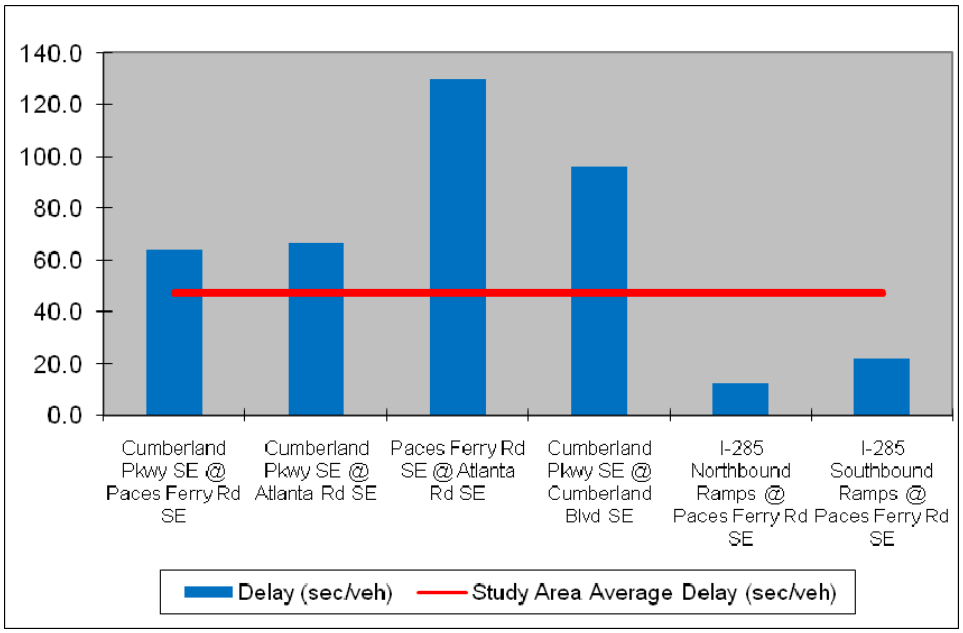
Chart 12 **Highest Delay (2030 P.M. Peak Period) – Policy Scenario**



The top five intersections with the highest traffic volumes during the p.m. peak period are shown on Chart 13. In the p.m. peak period, high volumes correlate to high intersection delay, as four of the top five intersections by volume also appear in the top five intersections by delay.

During the p.m. peak hour, each of the top five intersections experiences high left-turning volumes in most approaches, primarily because of insufficient capacity and green time for the left-turn demand.

Chart 13 Delay at Intersections with Highest Volumes (2030 P.M. Peak Period) – Policy Scenario



4.2.2 Likely Land Use Scenario

This section describes the results of the traffic simulation modeling conducted using the likely land use scenario to guide population and employment inputs. Of the two scenarios tested, the likely scenario assumes a higher level of development intensity in the study area. The simulation analysis resulted in the determination of future peak-period delays and corresponding LOS for each of the 23 intersections studied during a.m. and p.m. peak periods. LOS is based on average delay and provides a qualitative assessment of traffic conditions. LOS A represents excellent conditions, while LOS F corresponds to severe congestion. In dense urban environments, LOS A through LOS D is generally considered acceptable. However, for this study LOS D, LOS E, and LOS F were considered unacceptable.

Across the study area as a whole, 2030 traffic volumes during the p.m. peak period will be 4 percent higher than volumes during the a.m. peak period. However, congestion, measured in terms of average vehicular delay, will be 10 percent higher in the a.m. peak period than in the p.m. peak period. This is similar to existing conditions in the study area. Total vehicular delay is also 7 percent higher than in the p.m. However,

only 43 percent of the intersections will operate at an acceptable LOS in the year 2030 as compared to current conditions, where 87 percent operate at an acceptable LOS.

4.2.2.1 *A.M. Peak-Period Conditions*

The intersections listed below will operate at or near capacity (LOS E or LOS F) during the 2030 a.m. peak period.

- LOS F
  - Cumberland Parkway at Atlanta Road
  - Paces Ferry Road at Atlanta Road
  - I-285 northbound ramp at Atlanta Road
  - New Paces Ferry Road at Paces Ferry Road
  - Overlook Parkway at Paces Ferry Road
  - Cobb Parkway at Paces Mill Road
  - Paces Ferry Road at Paces Mill Road
- LOS E
  - Cumberland Parkway at Paces Ferry Road
  - Cooper Lake Road at Atlanta Road
  - Spring Hill Road at Paces Ferry Road

Additionally, the following three intersections will approach failure (LOS D):

- North Church Lane at South Atlanta Road
- Spring Hill Parkway at Paces Ferry Road
- Cumberland Parkway at Cumberland Boulevard

As shown on Chart 14, these failing intersections (LOS E or LOS F) collectively account for approximately 74 percent of the total delay in the study area during the a.m. peak period. Projects that reduce delay at these intersections will reduce congestion and delay and increase traffic flows through the study area, thereby maximizing return on transportation investments.

Chart 14 Percent of Intersection Delay (2030 A.M. Peak Period) – Likely Scenario

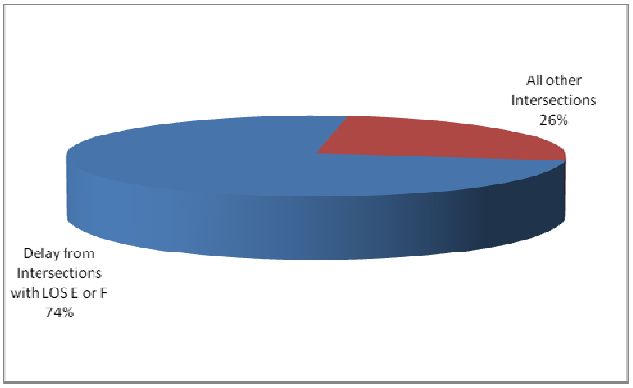
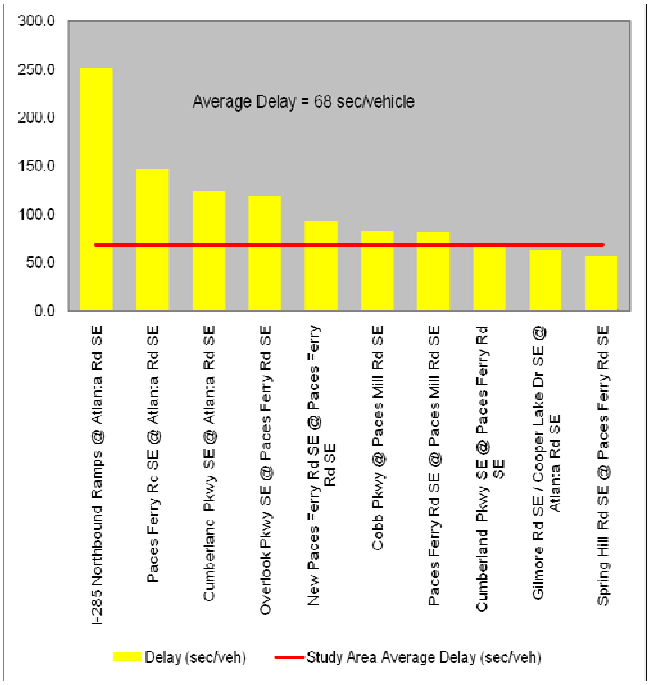


Chart 15 provides an overview of the amount of delay experienced at these intersections as compared to the study average of 68 seconds. The intersection experiencing the most delay (I-285 northbound ramp at Atlanta Road) experiences approximately 58 percent more delay than the intersection with the next highest level of delay (Paces Ferry Road at Atlanta Road).

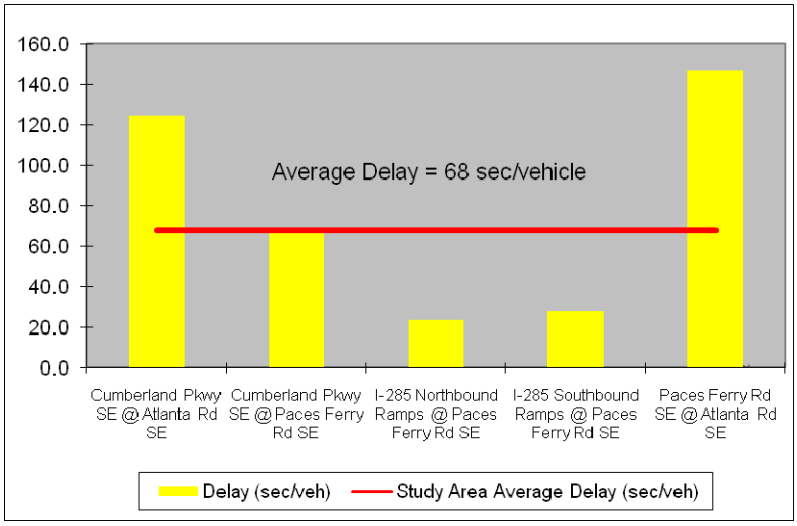
Chart 15 Highest Delay (2030 A.M. Peak Period) – Likely Scenario



4.2.2.1.1 Volumes

The top five intersections with the highest traffic volume during the 2030 a.m. peak period are shown on Chart 16. High volumes do not necessarily correspond to a high rate of intersection delay. The intersection of Cumberland Parkway at Atlanta Road carries the highest volume in the study area, yet it is not the intersection with the highest rate of delay. New Paces Ferry Road at Paces Ferry Road is fifth with regard to delay, but is not among the five intersections with the highest volumes.

Chart 16 Delay at Intersections with Highest Volumes (2030 A.M. Peak Period) – Likely Scenario



4.2.2.2 P.M. Peak-Period Conditions

The following intersections will operate at an unacceptable LOS during the 2030 p.m. peak period:

- LOS F
  - Overlook Parkway at Paces Ferry Road
  - Paces Ferry Road at Atlanta Road
  - Cumberland Parkway at Cumberland Boulevard
  - Cumberland Parkway at Paces Ferry Road
  - Paces Ferry Road at Paces Mill Road
- LOS E
  - Cumberland Parkway at Atlanta Road

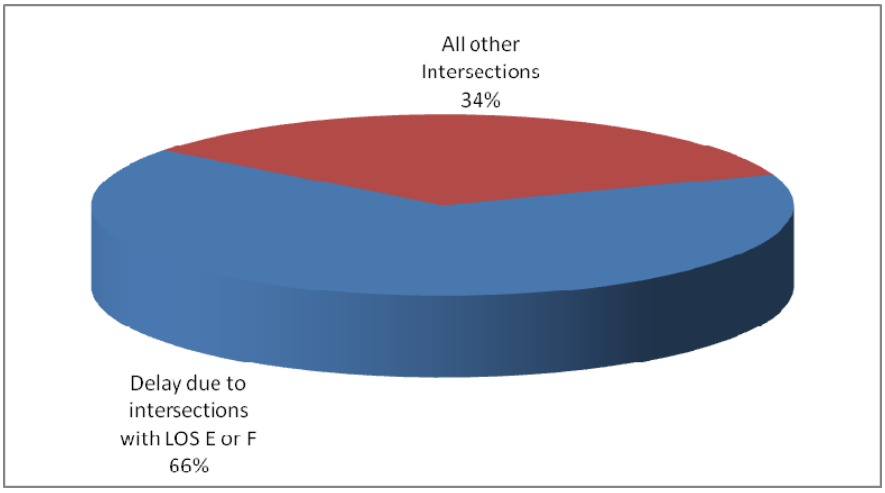
- New Paces Ferry Road at Paces Ferry Road
- I-285 southbound ramps at Atlanta Road

Additionally, the following four intersections will approach failure (LOS D):

- I-285 northbound ramps at Atlanta Road
- Plant Atkinson Road at South Atlanta Road
- Spring Hill Parkway at Paces Ferry Road
- Access road (provides access to FedEx Kinko's/Home Depot) at Paces Ferry Road

As shown on Chart 17, the intersections operating at a failing LOS (LOS E or LOS F) collectively account for approximately 66 percent of the delay in the study area. As mentioned earlier, projects that reduce delay at these intersections will reduce congestion and delay and increase traffic flows through the study area, thereby maximizing return on transportation investments.

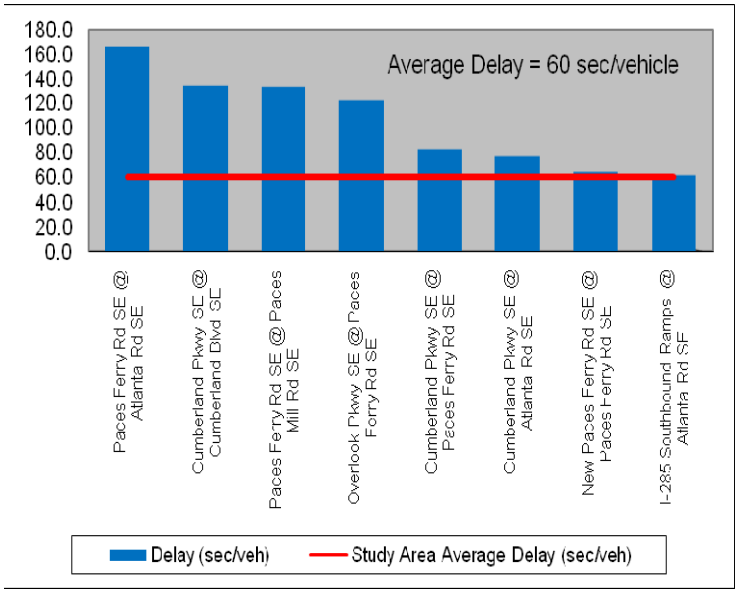
Chart 17 Percent of Intersection Delay (2030 P.M. Peak Period) – Likely Scenario



The intersections experiencing the highest level of delay (LOS E or LOS F) are shown on Chart 18. As the chart demonstrates, the intersection with the highest level of delay (Paces Ferry Road at Atlanta Road) experiences 23 percent more delay than the intersection with the next highest level of delay.

The five intersections with the highest traffic volumes during the p.m. peak period are depicted on Chart 19. Four of the top five intersections by volume also appear in the top five intersections by delay. During the p.m. peak period, each of the top five intersections will experience high left-turning volumes in most approaches. This is mainly because of insufficient capacity and green time for the left-turn demand.

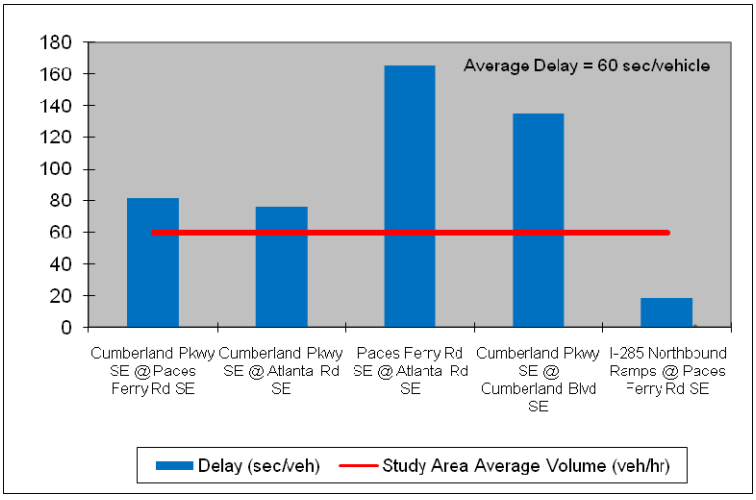
Chart 18 Highest Delay (2030 P.M. Peak Period) – Likely Scenario



4.2.3 Intersection Analysis (LOS)

Chart 19 Delay at Intersections with Highest Volumes (2030 P.M. Peak Period) – Likely Scenario

The purpose of assessing future traffic conditions for two scenarios is to determine the highest priority problem areas. Those intersections failing in both the policy and likely scenarios should receive top priority.



The following intersections operate at a failing LOS

during the a.m. peak period in both future scenarios:

- I-285 northbound ramps at Atlanta Road (also failing in 2007)
- Paces Ferry Road at Atlanta Road
- Cumberland Parkway at Atlanta Road
- Overlook Parkway at Paces Ferry Road

The following intersections operate at a failing LOS during the p.m. peak period for both future scenarios:

- Paces Ferry Road at Atlanta Road (also failing in 2007)
- Cumberland Parkway at Cumberland Boulevard (also failing in 2007)
- Paces Ferry Road at Paces Mill Road
- Overlook Parkway at Paces Ferry Road
- Cumberland Parkway at Paces Ferry Road
- Cumberland Parkway at Atlanta Road

As illustrated, intersection performance varies substantially between a.m. and p.m. peak periods. The only intersections that are predicted to fail during both a.m. and p.m. periods are Overlook Parkway at Paces Ferry Road and Cumberland Parkway at Atlanta Road.

A table summarizing the modeled LOS for all intersections, including existing conditions and future land use scenarios, can be found in Appendix A.

5. Recommendations

The following guidelines, as related to specific goals, were used to identify potential projects within the South Quadrant study area.

Table 33 Project Identification Guidelines

Criteria (derived from opportunity statement)	Goal	Potential Solution
Vehicular LOS	Reduce turning movement conflicts.	Limit turns during high-volume time periods. Restrict specific turning movements.
	Reduce delay.	Increase capacity of intersection. Increase capacity of receiving lanes.
	Reduce crashes.	Restrict cross movements. Decrease speed.
Multimodal Accessibility	Increase connections between destinations.	Build crosswalks. Connect sidewalks.
	Reduce pedestrian/vehicle conflicts.	Ensure ADA accessibility. Identify key locations for pedestrian crossings.
	Reduce pedestrian/destination conflicts.	Create building/street design guidelines.
	Address increase in intrastudy area trips.	Provide for bicycle and pedestrian facilities on all corridors.
Community Character	Create recognizable gateways.	Provide signage. Enhance landscaping. Enhance street design.
	Create a recognizable center.	Create a square. Create a traffic circle. Create a focal point.
	Maintain consistency in look.	Design buildings accordingly. Enhance the relationship between public and private domains. Provide a mixture of land use.

5.1 Candidate Projects

The following describes the specific list of candidate projects for the study area, organized by project types.

5.1.1 Complete Streets

Complete streets is a relatively new planning term referring to a comprehensive approach to designing a public street that addresses all modes of travel and relationship between street and building. Specific recommended complete street corridors with potential project elements include:

- Paces Ferry Road from Paces Mill Road to Cumberland Parkway
    - Restricted turning movements
    - Intersection realignment (i.e., Overlook Parkway)
    - Midblock crossings
    - Sidewalk enhancements (i.e., railroad crossing)
    - Crosswalks
    - Bicycle lanes
    - Future building sitings
- Cumberland Parkway from Cumberland Boulevard to the I-285 bridge
    - Raised median
    - Midblock crossings
    - Bike lanes
    - Continuous sidewalks
    - Crosswalks
    - Future building sitings

For each of these corridors, a complete streets analysis will identify specific infrastructure improvements at the conceptual level.

Because complete streets addresses more than just infrastructure, these projects should be a Cobb County undertaking with the Cumberland CID participating as a stakeholder. However, there are two important components of the Paces Ferry Road complete streets project that could be "pulled out" of the complete streets analysis and implemented by the Cumberland CID: the intersection realignment of Overlook Parkway at Paces Ferry Road, and turning movement restriction signage. Both of these components will address severe LOS issues that will develop in the future.

5.1.2 Intersection Modifications

Specific intersections will operate below the standard LOS for Cobb County. To address these issues, the following intersection modifications are recommended.

Table 34 Intersection Modifications

Location	Project Elements	Purpose
Access Road at Paces Ferry Road and Rite Aid	Convert to right-in/right-out; restrict turning movements during peak periods.	Improves safety by reducing conflict between vehicles queuing to turn left at Cumberland Parkway to access the shopping center.
Cumberland Parkway at Paces Ferry Road	Provide dual left-turn lanes (westbound Paces Ferry Road to southbound Cumberland Parkway); add gateway treatments and pedestrian elements (islands, crosswalks, and countdown signals).	Improves safety and adds turning movement capacity (LOS E/LOS F 2030 likely scenario); reinforces gateway image.
Cumberland Boulevard between Akers Mill Road/ Stillhouse Road and Cumberland Parkway	Widen Cumberland Boulevard between Akers Mill Road/ Stillhouse Road and Cumberland Parkway from two lanes to three lanes in the westbound direction and make the new lane a left-turn lane at the intersection of Cumberland Boulevard at Cumberland Parkway for the westbound approach. Lengthen left-turn bay length for the eastbound left-turn movement at the intersection of	Facilitates free-flow movement of heavy southbound right-turning traffic at the intersection of Akers Mill Road/Stillhouse Road with the addition of the third lane along Cumberland Boulevard in the westbound direction. Minimizes spillback from the eastbound left-turn lanes at the intersection of Akers Mill

Table 34 Intersection Modifications

Location	Project Elements	Purpose
	Akers Mill Road/Stillhouse Road at Cumberland Boulevard. Lengthen turn bay length and/or add a left-turn phasing for eastbound left-turn movement at the intersection of the Cumberland Mall entrance/food court entrance and Cumberland Boulevard.	Road/Stillhouse Road at Cumberland Boulevard. Minimizes spillback onto through lanes.

5.1.3 Supporting Strategies

The projects above address most of the issues associated with future conditions in light of the goals for the study area. However, there are two additional projects that would help those projects more fully address the future congested conditions. Variable message signs informing travelers that a train is crossing at Paces Ferry Road can improve traffic operations by dynamically routing travelers around the at-grade train crossing, thereby reducing queuing and clearance time. These message boards could be placed at two intersections: Cobb Parkway at Paces Mill Road and Cumberland Parkway at Paces Ferry Road.

In addition, increased transit service via shuttle and/or trolley serving key transportation corridors would provide an added LOS in the study area. However, the transit service should not be implemented alone; it should be combined with other future shuttle service initiatives.

5.2 Advanced Action Plan

The Cumberland CID has initiated an implementation effort called the Advanced Action Plan. The purpose of this effort is to move projects that are regulated by federal requirements to implementation at a quicker pace. The Cumberland CID is currently evaluating each of the candidate projects to determine whether they should be included in the Advanced Action Plan. The following table provides full project descriptions/considerations and planning-level cost estimates that can be used for the Advanced Action Plan if a project is selected for implementation by the Cumberland CID. Figure 13 provides the locations for each of these projects. Conceptual drawings are also provided for several of the intersection alignments in Appendix G.

Table 35 Candidate Projects

Project Type	Project Elements	Location(s)	PE/Study	ROW	CST	Total	Project Cost Considerations
Complete Streets	Restricted turning movements; intersection realignment (Overlook Parkway); midblock crossings, sidewalk enhancements (i.e., railroad crossing), crosswalks, and bicycle lanes; address future building siting	Paces Ferry Road between Paces Mill Road and Cumberland Parkway	$626,761	$3,139,210	$2,782,969	$6,548,940	Because this analysis addresses more than just infrastructure, it is more appropriate as a Cobb County undertaking with the Cumberland CID as a stakeholder. PE cost includes a complete streets analysis estimated at $40,000.
	Intersection realignment	Paces Ferry Road at Overlook Parkway	$57,473	$304,442	$373,837	$735,752	This intersection realignment can be implemented on its own.
	Turning movement restrictions; signage concept	Paces Mill Road from Cobb Parkway to Paces Ferry Road; Paces Ferry Road to I-285	$22,800		$114,000	$136,800	This turning movement restrictions concept can be implemented on its own.
	Raised median, midblock crossings, bike lanes, continuous sidewalks, crosswalks, and address future building siting	Cumberland Parkway between Cumberland Boulevard and Atlanta Road	$1,943,021	$8,779,247	$10,047,987	$20,770,255	PE cost includes a complete streets analysis estimated at $80,000.
Intersection Modifications	Convert to right-in, right-out; restrict turning movements during peak periods	Access road at Paces Ferry Road and Rite Aid	$4,000	N/A	$40,000	$44,000	
	Provide dual left-turn lanes (westbound Paces Ferry Road to southbound Cumberland Parkway); add gateway treatments and pedestrian elements (islands, crosswalks, and countdown signals)	Cumberland Parkway at Paces Ferry Road	$92,724	$256,198	$726,726	$1,075,648	465-foot-long standard 12-foot-wide left-turn lane. Construction cost includes base and pavement, signing and marking, erosion and sediment control, drainage, curb and gutter, and signal upgrade at one approach.

Table 35 Candidate Projects

Project Type	Project Elements	Location(s)	PE/Study	ROW	CST	Total	Project Cost Considerations
	Widen Cumberland Boulevard between Akers Mill Road/ Stillhouse Road and Cumberland Parkway from two lanes to three lanes in the westbound direction and make the new lane a left-turn lane at the intersection of Cumberland Boulevard at Cumberland Parkway for the westbound approach Lengthen left-turn bay length for the eastbound left-turn movement at the intersection of Akers Mill Road/Stillhouse Road at Cumberland Boulevard Lengthen the turn bay length and/or add a left-turn phasing for eastbound left-turn movements at the intersection of the Cumberland Mall entrance/food court entrance at Cumberland Boulevard	Cumberland Boulevard between Akers Mill Road/ Stillhouse Road and Cumberland Parkway	$473,360	$2,222,222	$4,334,025	$7,029,607	1,250-foot-long standard 12-foot-wide left-turn lane and raised median. Construction cost includes base and pavement, signing and marking, erosion and sediment control, drainage, curb and gutter, sidewalk, and signal upgrade at two approaches.
	Restripe the northbound segment of Cumberland Boulevard between the I-285 bridge and Spring Hill Parkway to channelize through traffic along Cumberland Boulevard and northbound left-turning traffic onto Spring Road	Cumberland Boulevard from Cumberland Parkway to Spring Road	$20,511		$21,591	$42,102	Construction cost includes signing and marking.

Table 35 Candidate Projects

Project Type	Project Elements	Location(s)	PE/Study	ROW	CST	Total	Project Cost Considerations
Rail Crossing ITS/ATMS Improvements	Install variable message signs to inform travelers that a train is crossing at Paces Ferry Road	Cobb Parkway (U.S. 41) at Paces Mill Road and Cumberland Parkway at Paces Ferry Road	$200,000	$200,000	$480,000	$880,000	Variable message sign system with four signs at two sites. Construction cost includes variable message signs, wireless communications or fiber, power and miscellaneous wiring, and traffic control center equipment. PE cost includes engineering, design, specification, and software.
Shuttle Service	Trolley system with a northern (Cumberland Parkway and Cumberland Boulevard, U.S. 41, Paces Mill Road, Paces Ferry Road) and southern loop (Cumberland Parkway, Paces Ferry Road, Woodland Brook Drive, and Atlanta Road)	Atlanta Road, Paces Ferry Road, Woodland Brook Drive, Cumberland Boulevard, Cumberland Parkway	$50,000		$474,240	$524,240	This project should be implemented with other shuttle service provided by the Cumberland CID. Trolley construction cost is annual operating cost + annualized capital cost. Cost based on four vehicles operating eight hours a day on weekdays only for 8,320 revenue hours per year. Operating cost of $57 per hour based on previous 2002 study cost of $45 per hour inflated 4 percent per year.

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Appendix A

Traffic Data

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Appendix B

Crash Data

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Appendix C

Real Estate Market Analysis Methodology

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Appendix D

Stakeholder Meeting Summaries

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Appendix E

Maximum Allowable Densities in Cobb County

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Appendix F

Population and Employment Density Assumptions for Model Inputs

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Appendix G

Intersection Modification
Conceptual Drawings