



Multi-Modal Transportation Study for Effingham County

NEEDS ASSESSMENT REPORT

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Prepared for the Georgia Department of Transportation by Jacobs Carter Burgess

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Table of Contents

1. Introduction.....	1-1
Overview of Planning Area.....	1-1
Guyton	1-2
Rincon	1-2
Springfield	1-3
Relationship of Effingham County to the Coastal Region	1-3
Plans and Agencies.....	1-3
Planning Agencies and Regions	1-3
Existing Plans Review	1-4
2. Goals and Objectives.....	2-1
Vision	2-1
Transportation Goals	2-2
Transportation Planning.....	2-2
Accessibility and mobility	2-2
Network connectivity	2-2
Public transportation	2-2
Aesthetics and scenic corridors.....	2-2
Land Use and Related Goals	2-3
General policies.....	2-3
Existing infrastructure and services	2-3
3. Public Involvement	3-1
Outreach effort and description	3-1
Study Website	3-1
Public Meetings and Surveys	3-2
Issues and Opportunities Identified	3-2
Stakeholder Interviews.....	3-2
Public Consultation.....	3-2
Previous findings from the 2007 Comprehensive Plan.....	3-3
4. Planning Context.....	4-1
Built and Natural Environment	4-1
Land Use	4-1
Activity Centers and Community Facilities	4-3
Future Zoning and Land Use.....	4-5
Historic Sites	4-8
Wetlands.....	4-8



Residents and Businesses	4-11
Population	4-11
Employment	4-12
Environmental Justice Communities	4-13
 5. Existing and Future Conditions Analysis	 5-1
Roadway	5-1
Functional Classification	5-1
Safety	5-5
Level of Service	5-9
Road Surface and Bridge Conditions	5-11
Intersections and Operations	5-15
Parking	5-17
Emergency Vehicles and Evacuation Routes	5-17
Summary of Roadway Needs	5-18
Freight Movement	5-18
Truck	5-19
Rail	5-19
Summary of Freight Needs	5-21
Pedestrian and Bicycle	5-23
Existing Pedestrian Conditions	5-23
Summary of Pedestrian Needs	5-23
Existing Conditions for Bicycle Transportation	5-26
Summary of Bicycle Needs	5-27
Transit	5-27
Bus Routes and Park and Ride Lots	5-29
Potential for Commuter or Passenger Rail Service	5-29
Summary of Transit Needs	5-30
Identified Deficiencies and Possible Solutions to be Evaluated	5-30
 APPENDIX A. Public Involvement Documentation	 1
Summary of Stakeholder Input	1
Summary of Public Questionnaire Responses	2
 APPENDIX B. Overview of Socioeconomic Data Forecasting	 1
Effingham Population and Employment Projection Methodology	1
Using Population and Employment Forecasts in a Travel Demand Model	8



Table of Figures

Figure 4.1 Existing Land Use.....	4-2
Figure 4.2 Activity Centers and Community Facilities	4-4
Figure 4.3 Effingham County Future Development Map from Comprehensive Plan.....	4-7
Figure 4.4 Historic Sites and Districts	4-9
Figure 4.5 Wetlands and Waterbodies	4-10
Figure 4.6 Historic and Projected Population, 1970-2030.....	4-11
Figure 4.7 Historic and Projected Employment, 1970-2030	4-12
Figure 4.8 Environmental Justice Areas (2000)	4-14
Figure 5.1 Roadway Functional Classification System Diagram.....	5-2
Figure 5.2 2007 GDOT Function Classification	5-3
Figure 5.3 2006 Annual Average Daily Traffic (2006).....	5-4
Figure 5.4A Roadway Crash Frequency and Fatalities (2004 – 2006)	5-6
Figure 5.4B Road Segment Crash Rates by Functional Classification Vs. Statewide Averages (2004 – 2006)	5-7
Figure 5.5 2030 Daily Traffic Volume/Capacity (V/C) and Level of Service (LOS).....	5-10
Figure 5.6 Roadway Surface.....	5-12
Figure 5.7 Signalized Intersections	5-16
Figure 5.8 Truck Percentage on Roadway System.....	5-20
Figure 5.9 Railroads Ownership and Public Grade Crossings	5-22
Figure 5.10 Pedestrian Needs Analysis.....	5-25
Figure 5.11 Existing and Proposed Bicycle Facilities	5-28

Table of Tables

Table 1.1 Resources Consulted During Planning Process	1-4
Table 4.1 Land Use Distribution in Effingham County.....	4-3
Table 4.2 Description of Transportation Facility Character Areas.....	4-5
Table 4.3 Wetland Area in Cities and County.....	4-8
Table 5.1 Roadway Type and Utilization	5-2
Table 5.2 Crash Statistics by Year	5-5
Table 5.3 Bridge Conditions.....	5-13
Table 5.4 FHWA Sidewalk Guidelines.....	5-24
Table 5.5 Transportation Deficiencies Noted on Specific Facilities and Possible Mitigation Strategies	5-31
Table 5.6 Transportation Deficiencies Noted Countywide and Possible Mitigation Strategies	5-32



Glossary of Acronyms

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
CARE	Critical Analysis Reporting Environment
CAT	Chatham Area Transit
CGRDC	Coastal Georgia Regional Development Center
CZM	Coastal Zone Management
DCA	Department of Community Affairs
DHR	Department of Human Resources
DNR	Department of Natural Resources
DRI	Development of Regional Impact
E+C	Existing plus Committed
EDA	Economic Development Authority (Effingham)
EJ	Environmental Justice
FHWA	Federal Highway Administration
GDOT	Georgia Department of Transportation
ISTEA	Intermodal Surface Transportation Efficiency Act (1991)
ITS	Intelligent Transportation System
LOS	Level of Service
LULU	Locally Unwanted Land Use
MMTS	Multi-Modal Transportation Study
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
NBI	National Bridge Inventory
NHRP	National Register of Historic Places
PACES	Pavement Condition Evaluation System
PIP	Public Involvement Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
SR	State Route
STAA	Surface Transportation Assistance Act (1982)
USDOT	United States Department of Transportation
V/C	Volume to Capacity



1. Introduction

Transportation is fundamental to a prosperous economy and quality of life for residents, visitors, and businesses in Effingham County. As emphasized by current SAFETEA-LU legislation, the movement of people and goods is dependent on a safe, accountable, flexible and efficient transportation system, which takes into the account the needs of all users and the environment.

The Georgia Department of Transportation (GDOT), in cooperation with Effingham County, initiated a multi-modal transportation study for the county and the cities of Guyton, Rincon, and Springfield. The study is made necessary by the expected growth that will take place over the next twenty-five years of approximately 30,000 new residents and 15,000 new jobs.

The purpose of this Multi-Modal Transportation Study (MMTS) is to provide an assessment of transportation inventory and needs, and the policy and strategy framework to guide the selection and prioritization of future transportation programs and projects through the year 2030.

The plan aims to improve access and mobility, with improved safety and security, for people and goods throughout the county and as part of the rapidly-growing Georgia Coastal Region. The Multi-Modal Transportation Study supports, and was developed in coordination with, the 2007 update to the Effingham County Comprehensive Plan. This transportation planning process has included a detailed analysis of existing conditions and future needs across multiple aspects of the transportation network, including roads and bridges, bicycles and pedestrian facilities, public transportation, and freight.

Overview of Planning Area

Effingham is a rapidly growing county situated in southeast Georgia. Georgia's Coastal Region comprises 10 counties, with Effingham being one of four that are inland. Effingham is bordered by Chatham County to the south, the Ogeechee River to the west, Screven County to the north, and the Savannah River to the east. Bulloch and Bryan Counties lie to the west of the Ogeechee, while the South Carolina counties of Hampton and Jasper are across the Savannah River. Sizeable cities in neighboring counties include Savannah, Statesboro, and Hilton Head, South Carolina. Fort Stewart and Hunter Army Air Force base are also close by.

In Colonial days, Effingham County was referred to as St. Matthews Parish, of which the historic settlement of Ebenezer was the center. Following the Revolutionary War, the legislature named Effingham County as one of the eight original counties in Georgia in 1777. Ebenezer was the home of Georgia's first governor, John Adam Treutlen, who had represented Ebenezer at the Georgia Provincial Congress in 1775 and was on the drafting committee of Georgia's first Constitution.



10-County Coastal Georgia Region
Source: www.coastalgeorgiadc.org



Today the county covers approximately 480 square miles and includes the incorporated cities of Springfield, Rincon and Guyton which are surrounded by unincorporated areas of Effingham County.

With 4.7% annual growth, Effingham was ranked the 57th fastest-growing county in the nation between July 1st 2004 and July 1st 2005¹. The county and the municipalities of Guyton, Rincon, and Springfield all experienced a higher rate of growth than the State of Georgia as a whole, and ranked among the highest in the fast-growing coastal region.

Guyton

Guyton is located in west central Effingham County and is the smallest of the county's three municipalities. Originally known as "Whitesville", Guyton began as a 250-acre land grant to a squire, following his service in the Revolutionary War. In 1838, the Effingham County Commission seized the land due to non-payment of taxes and proceeded to survey it, plat streets and property boundaries, and auction off lots. Additional streets were laid out when the city was incorporated in 1886. During its heyday in the early 1900's, Guyton saw up to 10 trains a day and was a thriving center of commerce for local farmers. After a period of decline following the 1960's abandonment of the prominent railroad running through the center of town, Guyton grew and prospered again, and has gained new residents at an increasing rate in recent years. In 2005, there were approximately 1,700 residents in the city, which now covers an area of 1.2 square miles. The downtown area has the most historic buildings of the three cities and is considered a historic district.

Rincon

Rincon is situated approximately 20 miles north of Savannah in southern Effingham. It is the youngest of the three cities, having been established in 1890 by the Southbound Railroad Company. As is typical of Georgia's "railroad strip communities"², Rincon is bisected by a railroad and its main street runs parallel to the tracks. Surrounding streets are arranged in a grid pattern. In 1955, Rincon was incorporated and over the next fifty years saw an increase of over 5,000 residents, to the current 2005 estimate of 6,850 people. Much of this growth occurred from 1980 onwards, spurred on by proximity to Savannah and employment opportunities at nearby industrial firms and utilities. The city limits cover approximately 6.7 square miles, making it the largest city in Effingham.

¹ U.S. Census Bureau, Top 100 Fastest Growing Counties, Table HU-EST2005-05

² *Georgia Community Development and Morphology of Community Types*, Georgia Department of Natural Resources, Historic Preservation Section (1989)



Springfield

Located north of Rincon, Springfield was selected as the county seat for Effingham County in 1799. “Little more than a stagecoach stop” at first, Springfield was laid out by surveyors based on a “square town plan” in 1821, with squares and parks reserved for public use.³ In the aftermath of General Sherman’s “March to the Sea” during the Civil War, Springfield waned but rose from the ashes to become a bustling railroad town by the early 1900’s. Passenger rail service has since been discontinued, but an active freight line still runs through the city and various historic structures and businesses are still found in Springfield. Over the past few decades, Springfield experienced steady population growth. By 2005, 2,300 residents called the city home.

Relationship of Effingham County to the Coastal Region

Effingham is part of the Georgia Coastal Region, which covers 10 counties and 35 cities and is the second fastest growing region in the state, second only to Atlanta. The 2000 Census records the regional population at about 560,000 within a 5,110 square mile area. In 2005 Effingham contributed a population of 47,000.

Effingham plays an important role in the coastal community, both as a destination and as a thoroughfare for people and freight traveling to destinations such as Savannah and South Carolina or connecting with I-95 or I-16 for longer distance journeys. The region is well served with strategic transportation connections, including interstates I-16 and I-95; several major highways such as US 80, SR 21, SR 119, and SR 17; as well as rail and the port of Savannah. These are important drivers of growth. Effingham County’s Economic Development Authority (EDA) in cooperation with the Chamber of Commerce has attracted over \$1 billion of new investment since 2000.

Plans and Agencies

Planning Agencies and Regions

The Coastal Georgia Regional Development Center (CGRDC) works with and serves governments in the coastal region, including Effingham County and the Cities of Guyton, Rincon, and Springfield. The CGRDC is the regional planning agency for Coastal Georgia and all planning activities in Effingham County should be consistent with regional plans produced by the CGRDC.

The Georgia Department of Transportation (GDOT) plans, constructs, maintains, and improves the state’s roads and bridges. In addition, GDOT provides planning and financial support for other types of transportation facilities and services including bicycle paths, mass transit, and airports. Effingham County and the Cities of Guyton, Rincon, and Springfield are eligible to receive state and federal transportation funds through GDOT.

³ Effingham County Comprehensive Plan (2007), Natural and Cultural Resources Data Appendix



The Georgia Department of Community Affairs (DCA) serves as an advocate for local governments. State policies are often articulated through DCA which provides extensive resources in the areas of building codes, coordinated planning, housing, and more. DCA's purpose is to seek out ways to improve the quality of life for Georgians. Formal programs include comprehensive planning guidance and Development of Regional Impact (DRI) review.

Within Effingham County, several agencies and private organizations are engaged in planning activities. The county and each of the three incorporated cities have planners on staff. In 2007, county and city planners collaborated with each other and other relevant agencies to update Effingham's countywide Comprehensive Plan. The independent Economic Development Authority is responsible for industrial recruitment and economic development throughout the county. The EDA is composed of representatives from each of the cities and the county commission districts. It works closely with the Chamber of Commerce which supports the business community with special focus on small business development.

Existing Plans Review

In preparing this Multi-Modal Transportation Study, multiple other related planning documents were consulted in order to maintain continuity, as listed in **Table 1.1**.

Table 1.1 Resources Consulted During Planning Process

Planning Documents	Geography	Sponsor
Effingham Comprehensive Plan - Community Assessment and Technical Appendix (2007) - Public Participation Plan (2007) - Community Agenda (November 2007)	Effingham County	CGRDC
Municipal Code and Ordinances	Effingham County	Effingham County Government
Historic Effingham - Ebenezer Scenic Byway Georgia Scenic Byways Map (June 2006)	Effingham County	Effingham County
Developments of Regional Impact, various plans and documents (ongoing)	Effingham County, selected sites	Georgia DCA
Coastal Georgia Regional Plan (June 1998, updated November 2004)	9-County Coastal Region (Bryan, Bulloch, Camden, Chatham, Effingham, Glynn, Liberty, Long, and McIntosh)	CGRDC
Coastal Georgia Regional Bicycle and Pedestrian Plan (May 2005)	10-County Coastal Region (Same as above + Screven)	CGRDC
Regional Plan for Rural and Coordinated Public Transportation (November 2005)	10-County Coastal Region	CGRDC



Table 1.1 Resources Consulted During Planning Process, Continued.

Planning Documents	Geography	Sponsor
2005 – 2035 Georgia Statewide Transportation Plan	State of Georgia	Georgia DOT
2008-2011 Georgia Statewide Transportation Improvement Plan (STIP)	State of Georgia	Georgia DOT
2005 – 2035 Georgia Statewide Freight Plan	State of Georgia	Georgia DOT
Georgia Coastal Comprehensive Plan - Community Agenda (October 2007)	Chatham, Bryan, Liberty, McIntosh, Glynn, Camden	Georgia DCA
Metropolitan Planning Organization 2030 Long Range Transportation Plan (September 2004)	Savannah and Chatham County	Savannah-Chatham MPO
Chatham County Comprehensive Plan - Community Assessment (2007)	Savannah and Chatham County	Savannah-Chatham MPO

Ongoing planning efforts also have an impact on the development of this Multi-Modal Transportation Study. In FY2005, collaborative efforts were initiated with Department of Human Resources (DHR) and the Georgia Department of Transportation (GDOT) to design a Regional Plan for Rural and Coordinated Public Transportation. The concept of the regional plan is to merge the funding and resources of the DHR with GDOT to bring about a seamless regional system providing transportation to DHR consumers and the general public simultaneously in Bryan, Bulloch, Camden, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Screven counties.



2. Goals and Objectives

Thoughtful goals and objectives assist in recognizing deficiencies and appropriate solutions. This Multi-Modal Transportation Study (MMTS) builds on the transportation elements of the 2007 Effingham County Comprehensive Plan, providing a more detailed analysis of each transportation mode and offering specific potential improvements in response to identified needs. The process of developing a strategic plan must also recognize that the plan does not exist in isolation. A robust and realistic plan should be informed by, and seek to inform, the goals and objectives of other related plans.

Effingham's 2007 Comprehensive Plan, the policy basis of this study, is composed of three documents: a Community Assessment, a Community Participation Plan, and a Community Agenda. The Community Assessment portion of the plan was completed in early 2007, and provides an overview of Effingham County – its people, history, environment, infrastructure, services, and industry. Undertaken concurrently was the Community Participation Plan that identified local stakeholders and solicited public input to the planning process. The Community Agenda was completed in November 2007 and defines the vision, issues and opportunities, and implementation program for Effingham County and its three cities of Guyton, Rincon, and Springfield. As required by the DCA, it covers the following eight elements: population change, economic development, natural and cultural resources, community facilities and services, housing, land use, transportation, and intergovernmental coordination. Discussion of a ninth “community character” element is also present due to the volume of public comment received relating to the design of public spaces in Effingham County.

Though this Multi-Modal Transportation Study focuses on providing a more in-depth assessment of Effingham's transportation infrastructure, transportation affects and is affected by all of the aforementioned elements discussed in the 2007 Comprehensive Plan, especially land use. Recognition of planning element interdependency is present throughout the Community Agenda and is reflected in the vision and policies set forth by it. In the interest of truly comprehensive, cooperative, and continuing planning, these guiding principles thus serve to create a foundation for this Multi-Modal Transportation Study as well.

Vision

Exhibiting common themes in their visions, Effingham and its cities desire to be inclusive, sustainable communities that preserve their natural environment and history, while guiding growth and investing in appropriate infrastructure so that old and new residents alike experience a high quality of life. In support of these ideals, a number of goals and objectives were established according to the nine DCA elements previously described. Transportation and supportive land use goals, which were generally the same for the county and its cities, are reproduced on the pages that follow. These goals are the basis of this Multi-Modal Transportation Study.



Transportation Goals

Transportation Planning

- Develop a long-range transportation plan for the county.
- Promote comprehensive, long-range transportation planning in conjunction with comprehensive planning.
- Promote alternative modes of transportation, such as walking, bicycling and public transit.

Accessibility and mobility

- Encourage mixed-use development and design standards that are pedestrian-oriented to promote mobility and access for all citizens.
- Ensure that new and reconstructed roadways will support multiple modes of transportation and enhance the aesthetics of the community.
- Support access management strategies to improve the safety and aesthetics of commercial corridors.

Network connectivity

- Ensure connectivity between road network, public transit, and pedestrian/bike paths.
- Promote higher-density and mixed use developments in areas conducive to walking and bicycling.
- Promote a continuous network of bicycle routes and provide bicycle facilities (e.g., parking racks) at destinations throughout the county.

- Promote pedestrian and bicycle mobility and circulation in and between residential subdivisions and surrounding commercial uses.

Public transportation

- Promote county participation in a regional bus system, such as commuter routes to Chatham County and rural routes between populated areas of the county.
- Identify potential linkages with social service agencies and proposed rural transit to provide transportation for those with special needs.
- Protect opportunities for the future re-use of railroad infrastructure for public transit.

Aesthetics and scenic corridors

- Reduce the visual impact of the automobile in both commercial and residential areas of the county/city
- Protect scenic corridors including preservation of existing trees with the right-of-way.
- Create a “sense of place” along the county’s gateways and entrance corridors.
- Adopt and enforce a signage ordinance to minimize the negative aesthetic impacts of inappropriate signage on the landscape.
- Evaluate the entryways into the community and develop landscaping, signage, etc., at all points of entry in conjunction with private landowners and the Georgia Department of Transportation.
- Develop a vision for the aesthetic quality of future arterial highways, gateway interchanges, and collector streets.



Land Use and Related Goals

General policies

- Address compatible land uses in all districts, especially industrial and commercial uses adjacent to residential.
- Coordinate future land use with transportation.
- Allow greater residential densities in areas where water/sewer infrastructure already exists.
- Protect residential areas from intrusion of incompatible and conflicting non-residential land uses.
- Promote efficient use of land by creating well designed, pedestrian-friendly development patterns that contain a mix of uses [where people have easy access to schools, parks, residences and businesses through walkways, bike paths and other pedestrian-friendly infrastructure.]
- Target reinvestment in declining, existing neighborhoods to further encourage private sector redevelopment and accommodate future growth.

- Encourage efficient land use.
- Promote the development of mixed uses and the redevelopment/revitalization of existing and underutilized commercial and industrial areas over development of new land for commercial purposes.
- Encourage innovative land use planning techniques to be used in building higher density and mixed use developments, as well as infill developments.
- Accommodate new development while enhancing existing local assets.
- Promote mixed-use development by right in appropriate areas.

Existing infrastructure and services

- Encourage development in areas where infrastructure and services already exist to maximize efficiency of services and reduce costs associated with sprawling development patterns.
- Promote increases in residential densities in areas that meet community design standards, environmental constraints and available infrastructure and service capacities.

Unincorporated Effingham County also had a number of land use policies regarding farmland and rural preservation. These are detailed within the Community Agenda.



3. Public Involvement

A public involvement plan (PIP) was developed in the early stages of the planning process for this study. The PIP establishes the framework for public outreach and describes some of the tools and techniques to be used. It also highlights the multiple opportunities for citizen participation in the process and provides the foundation on which future engagement opportunities will build.

This approach is in accordance with the GDOT policy on public involvement in transportation planning and decision-making “to reach out to Georgians of all walks of life and to invite and encourage them to participate in transportation decision-making.”

It is also in line with Federal Executive Order 12898 (Environmental Justice), which sets forth the requirement where federal transportation funds are used “to involve appropriate agencies and all citizens in transportation planning regardless of race, ethnicity, income, or education level.”

Some specific goals of the PIP are to:

- Build public awareness and understanding of the transportation planning process
- Gain an understanding of the public’s transportation needs and priorities
- Engage as many citizens as possible—including representatives from the cities and unincorporated Effingham County as well as traditionally under-represented communities—using a broad range of outreach techniques.
- Encourage public and stakeholder consensus around the most effective and efficient transportation solutions to meet Effingham County’s current and future mobility needs

Outreach effort and description

In October 2007, the Study Team conducted one-on-one briefings/interviews with key stakeholders in the study area to ensure that stakeholders and community leaders in the county and cities had a working knowledge of the Multi-Modal Transportation Study, including its purpose and need, and had a chance to provide input into the process. The list of stakeholders included local government agency representatives as well as leaders of the business community, faith and community-based organizations, homeowners associations, and others. **Appendix A** describes public involvement activities in more detail and includes a summary of stakeholder comments.

Study Website

An internet website has also been launched to provide an accessible repository of information for this Multi-Modal Transportation Study. It is hosted by GDOT at:

<http://www.dot.state.ga.us/DOT/plan-prog/planning/studies/Effingham/>



The website provides information on the study, such as fact sheets, frequently asked questions, public meeting schedules, maps and analysis findings.

Public Meetings and Surveys

A citizen questionnaire was prepared during Fall 2007 to seek opinions on such matters as the long-term vision for the county and the cities, transportation elements and/or needs requiring immediate attention, and opinions of alternative transportation modes such as transit or bicycling. The questionnaire is available on the study website, and has been distributed at public meetings. A summary of questionnaire results is contained in **Appendix A**.

Public meetings are held in locations convenient to the largest number of people and scheduled to coincide with major study milestones. Various methods are utilized to promote the meetings, including newspapers, email notification of stakeholders, and information on the study's GDOT web page. The first meeting was held on December 13, 2007 at Ebenezer Middle School and was attended by about 40 people. This meeting focused on the transportation needs assessment process and preliminary findings.

Fact sheets and meeting flyers are posted on the study website, with hard copies available at city and county government facilities. In addition, stakeholders are provided with copies of the fact sheet and meeting notes to inform those they know about public input opportunities. Outreach to traditionally underserved communities included local contacts such as Reverend Delmons White and Homer Lee Wallace of the NAACP, who distributed extra fact sheets and questionnaires and helped promote public meetings. The initial screening process for potentially underserved areas indicated that Clyo, Egypt, Marlow, and the northern part of the county were among this group.

Issues and Opportunities Identified

Both identified stakeholders and the public provided valuable qualitative insight regarding Effingham's transportation system. Their contributions are summarized in the next sections.

Stakeholder Interviews

The overarching themes included the county's population growth, the balance and geographic spread of people/housing and jobs, traffic congestion, the existing transportation system, and truck traffic.

Interviewees voiced strong support for potential projects such as Effingham Parkway, I-16 Interchange at Old River Road, Rincon Bypass (Old Augusta Road), corridor improvements on SR 21, and expansion of Ft. Howard Road to four lanes with sidewalks. A summary of the findings can be found in **Appendix A**.

Public Consultation

Fifteen questionnaires were received following the public meeting and through the study web page. The questionnaires asked respondents to identify

- their goals and visions for Effingham County



- critical problems the County was likely to face in the next 25 years
- transportation problems they face moving about the county on a day-to-day basis
- areas in the existing transportation network they felt needed immediate attention, and
- the most critical transportation needs in Effingham County

A broad range of issues was highlighted in response to the questions. In their vision for the county, residents wanted to see job and physical growth that occurred in a sustainable and controlled manner. Respondents also desired to see more cultural, shopping, and leisure opportunities, including a shopping mall and more public parks.

“Inadequate clean water” and growing pains from “too many people” were the most popular views on the problems the county is likely to face over the next 25 years, and traffic and congestion was an almost unanimous response to the problems people faced on a daily basis.

Previous findings from the 2007 Comprehensive Plan

Detailed issues and opportunities in Effingham County were first identified by community stakeholders during a series of Comprehensive Plan workshops held in Summer 2006. The nine previous DCA planning elements were addressed, and at the county-level, transportation issues and opportunities are described as follows:

Issues:

- **Reliance on automobiles** – Most residents must rely on their vehicles for traveling to and from their destinations. Most residents understand that traffic congestion will likely worsen as the population increases. Alternatives to the automobile – walking, bicycling, and public transit – will offer residents more mobility choices and reduce automobile dependency.
- **Inter-parcel connectivity and points of conflict** – Commercial development of single parcels has resulted in “strip development” and segregated business activities. Each parcel or development that has a separate access creates a potential point of traffic conflict and reduces the efficiency of arterial roads. Roadway design and access management should ensure that new transportation facilities provide greater connectivity, better travel efficiency, and reduction of hazardous conditions.
- **Disconnected subdivisions** – Accessibility between residential subdivisions is typically restricted to vehicle travel along collector roads, as many subdivisions are isolated and only have single entrances and exits. To promote greater accessibility and mobility options and increase efficient delivery of services, subdivisions should be linked with a network of shared roads that allow movement through and between subdivisions. Such linkages shorten travel distances, improve public safety, and promote walking and bicycling between residential areas and other nearby uses.



- **Lack of public transportation** – For residents with limited means, or for those who would like an alternative to the auto commute, there are currently few options in the county. A rural transit system would introduce public transportation into the county. Regional bus routes – for example, linking Effingham County with Savannah – may also reduce automobile commutes. However, long-term public transportation solutions may require a more permanent and sustainable system than rural transit. As the county continues to grow, transportation alternatives should be continually re-evaluated. The county should also be prepared to participate in a regional commuter rail plan should one emerge.

Opportunities:

- **Creation of a long-range transportation plan** – The county currently lacks a long-range transportation plan. In cooperation with the cities, the county should create a long-range transportation plan to address proposed long-range mobility in the county. The plan should also take into account regional transportation demands, traffic forecasts, and the plans of surrounding jurisdictions. Future land uses and development patterns, as mentioned previously, should be intimately linked to the transportation plan. Also in conjunction with the land use plan, the transportation plan should be updated regularly to reflect new initiatives, funding opportunities, and public needs. The county is taking pro-active steps in promoting regional transportation through the development of the Effingham Parkway and this regional, long-term planning should continue.
- **Creation of pedestrian routes and bicycle networks** – Several bicycle routes through the county already exist, but they do not form a continuous network that links residential and commercial areas. Extending these networks and providing bicycle facilities will provide a valuable alternative mode of transit in the county, especially at the southern end where development is becoming increasingly contiguous along major roads. In areas where commercial developments are located near housing, sidewalks and pedestrian amenities along the public right-of-way should also be provided.
- **Designation of scenic corridors** – The county's scenic roads, along with its natural resources and historic sites, are irreplaceable components which together form the area's unique character. Honey Ridge Road and Old Louisville Road, for example, are regarded by many residents as valuable aesthetic and historic corridors that need to be protected from inappropriate development, obstructive signage, and clear-cutting. Designation of these corridors as scenic resources will help guide an appropriate level of development while retaining the qualities that make them unique.

The three cities also identified issues regarding automobile dependency and a lack of connectivity between destinations by multiple modes of travel. Immediate opportunities observed by each city include the creation and promotion of multi-use trails within and between city limits.



4. Planning Context

The transportation system cannot be studied in isolation from the environment in which it exists, the people it serves, and the industries whose development it facilitates. Evaluating context is crucial in determining how well the transportation system is performing and what current or future demands on it might be present. For instance, the intensity and arrangement of land development in a place directly relate to the types of transportation services and facilities that can be effectively implemented. Concentrations of jobs, services, and residences allow a wider range of viable multimodal options, especially public transit and walking. More spread-out development patterns tend to increase dependency on private automobiles to satisfy mobility needs.

Because a variety of land development patterns may be desirable to the community, transportation solutions must be tailored towards the character of each area. Conversely, land use decisions must also be tailored towards the type of transportation infrastructure that is or can be effectively implemented. The various economic, social, and land development considerations that influence travel demand are presented in this section. Knowledge and analysis of these considerations are essential in planning an integrated transportation system.

Built and Natural Environment

Effingham draws much of its character from the combination of rapidly growing cities combined with historic districts, the large areas of rural land, the Savannah and Ogeechee Rivers defining county borders, and the proximity to Georgia's beautiful coastline.

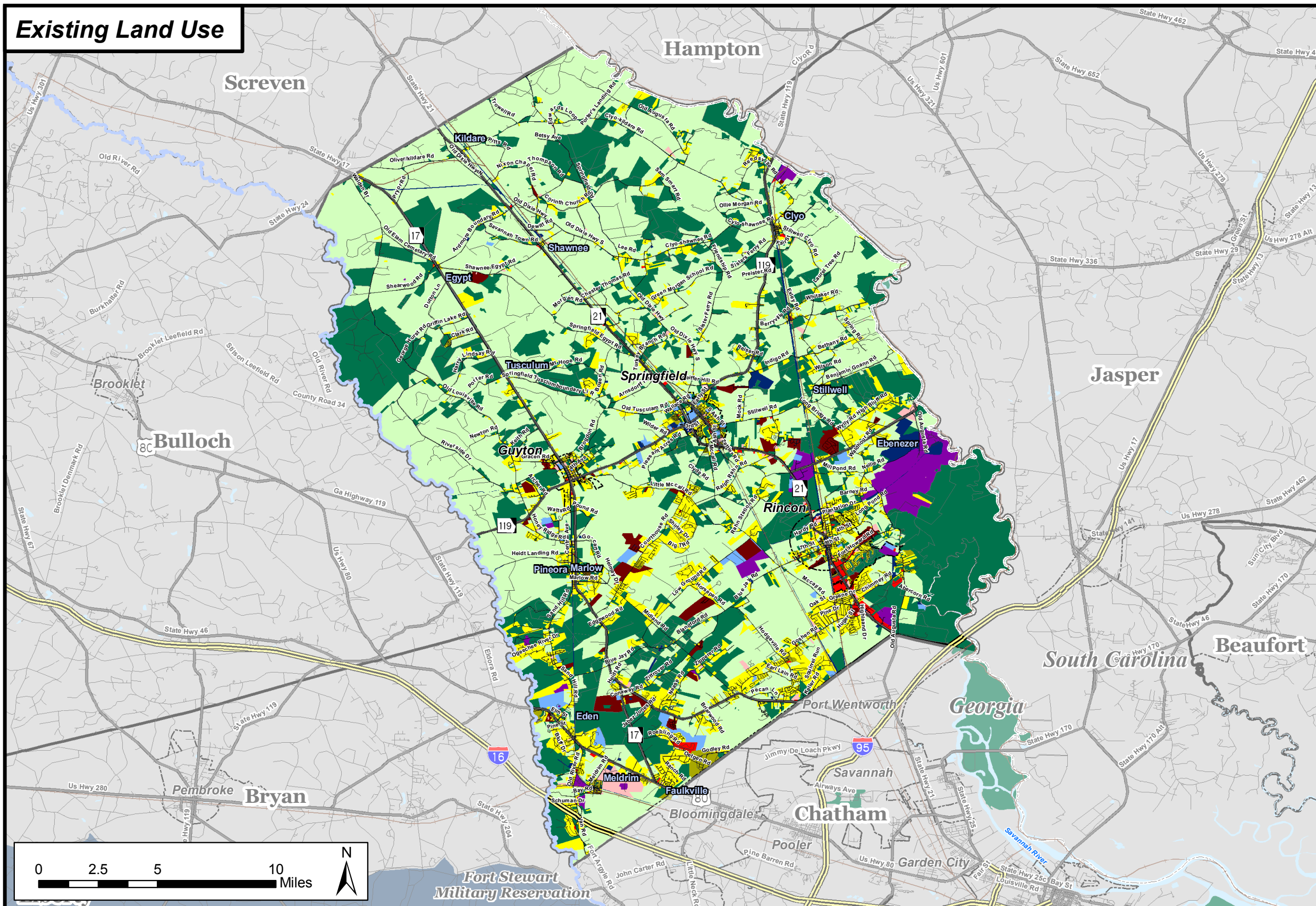
It is therefore an important balancing act to ensure that transportation infrastructure does not detract from the historic character, nor adversely affects sensitive environments such as the county's wetlands, nor takes away from the sense of place in a community. It must respect this wide diversity of character while also providing residents and businesses with the high quality, modern transportation system that they deserve. It is vital that transportation systems and the built environment are designed with mutual respect for one another, and remain sensitive to the natural environment around them.

Land Use

The current parcel-level land use of Effingham County can be seen in **Figure 4.1**. **Table 4.1** shows the percent distribution of land uses in the entire county, as aggregated from city and unincorporated county data in the Community Assessment.

Effingham County Transportation Plan

Existing Land Use



Regional Inset

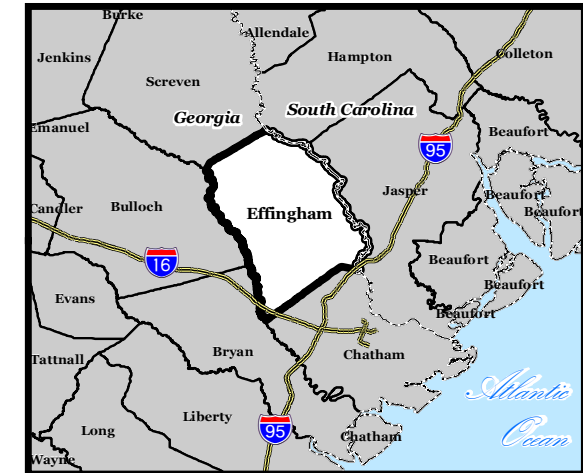


Figure 4.1

Legend

Existing Land Use

- Agriculture / Silviculture
- Conservation / Parks / Recreation / Forested / Woodland
- Greyfield
- Industrial
- Single Family Residential
- Manufactured Home Park
- Multi-Family
- Office / Private Commercial
- Service / Retail Commercial
- Public / Institutional
- Transitional
- Transportation / Utilities

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Railroads

Source: Effingham County, GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.

**Table 4.1 Land Use Distribution in Effingham County**

Source: Community Assessment, combined tables

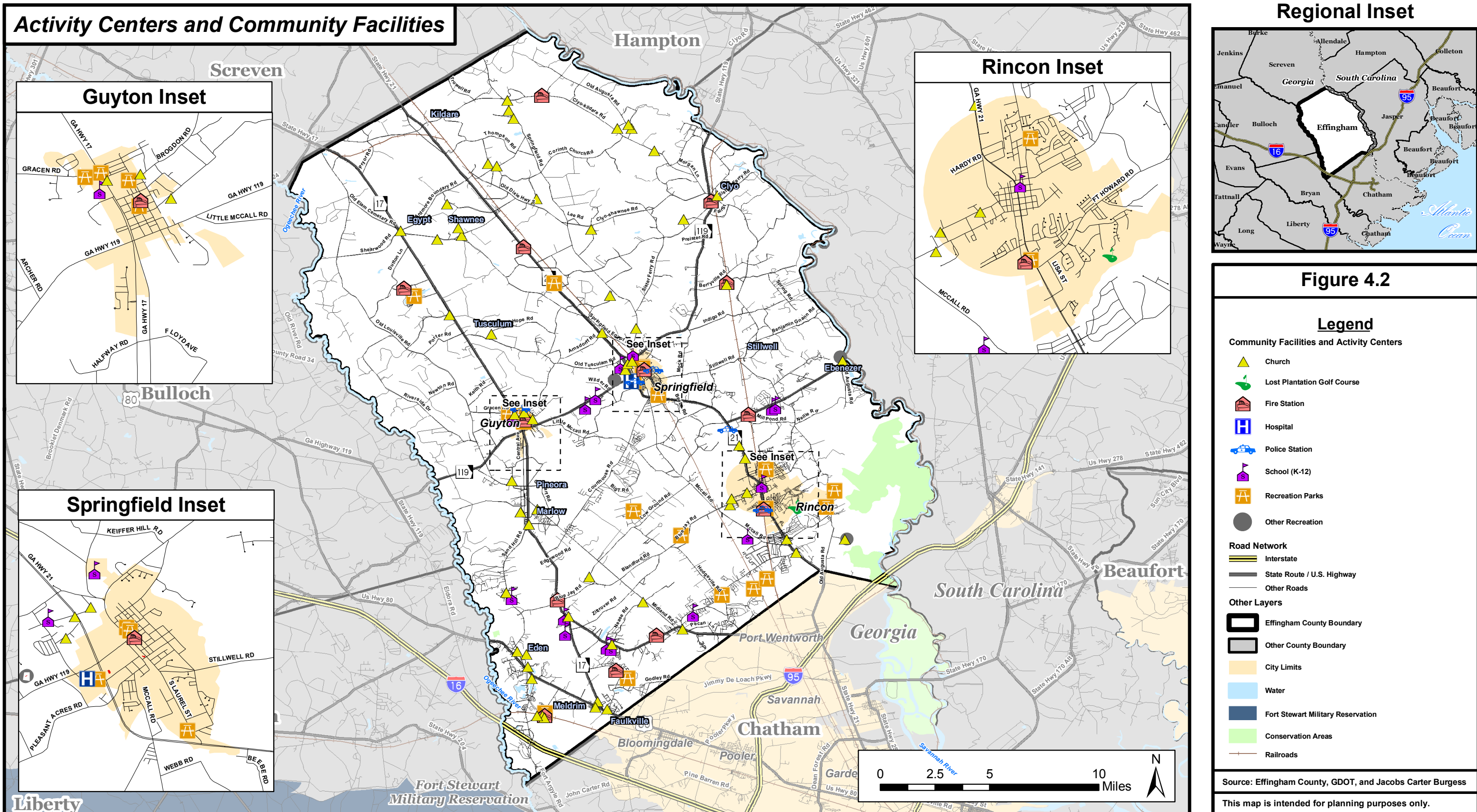
General Land Use	Number of Parcels	Total Acres (rounded)	Percent of Area	Percent of Parcels	average parcel size (acres)
Agriculture/Silviculture	3,717	196,500	63.9%	16.3%	52.9
Commercial	479	2,200	0.7%	2.1%	4.5
Conservation/Recreation	359	43,600	14.2%	1.6%	121.4
Industrial	64	5,200	1.7%	0.3%	80.9
Public/Institutional	451	3,500	1.1%	2.0%	7.8
Residential	15,427	32,800	10.7%	67.5%	2.1
Transportation/Utilities	379	7,100	2.3%	1.7%	18.7
Undeveloped	1,964	16,600	5.4%	8.6%	8.5
TOTAL	22,840	307,500	100.0%	100.0%	13.5

Agriculture and silviculture (tree farming) are undertaken on approximately 2/3 of all county land. Another 14% of land has been set aside for conservation or parks, leaving slightly over 20% of land that is designated for residential, industrial, commercial, civic, and infrastructure use. “Undeveloped” land has been zoned, typically for residential subdivisions, but is still free of structures.

Differing land uses generate different types of travel demand in terms of traffic quantity and mode. Commercial uses tend to have the highest trip generation rates, followed by residential and industrial uses. Industrial, agricultural, and some commercial areas can generate more truck traffic, which has an impact on area roadway operations. Heterogeneous land uses within a relatively small area allow more walking and bicycling trips, while concentrations of activities (employment, cultural, shopping, etc) and direct routes between activity centers are amenable to transit. Multi-acre homogeneous zoning (of any type) and ample parking encourage the use of personal vehicles to fulfill travel requirements. Ultimately, the spatial distribution and quality of land uses, down to the site level, dictate the nature of travel demand even more than the simple quantity of activity generators present.

Activity Centers and Community Facilities

Activity Centers are important community focal points and feature in land use planning policies at regional and local levels. Three cities and a number of unincorporated communities serve as primary activity centers within Effingham County. Additionally, activity centers are found at crossroads areas and locations along key corridors connecting the cities and counties that have some commercial development. Community facilities are individual buildings or amenities (parks, etc) that serve as destinations, but are not necessarily contained within an activity center. **Figure 4.2** depicts these potential travel generators.





Future Zoning and Land Use

When the Comprehensive Planning effort for Effingham County was undertaken in 2007, a future development map delineating “character areas” was developed. This map is shown in **Figure 4.3**. According to the DCA, character areas are simply portions of counties and cities that “have unique or special characteristics, have potential to evolve into a unique area when provided specific and intentional guidance, or require special attention due to unique development issues”. In effect, character areas are defined to serve as the basis for detailed and geography-specific small-area plans. All parts of Effingham County were assigned to character areas, whose unique qualities were agreed upon through an extensive public involvement process. For each character area, a description and vision were provided as well as implementation measures to achieve the vision. The descriptions make it clear what types, forms, styles, and patterns of development are to be encouraged in the area. Several character areas were specific to transportation corridors, and are seen in **Table 4.2**.

Table 4.2 Description of Transportation Facility Character Areas

Character Area, Description, and Location	Vision	Implementation Measures
Regional Connectors		
Arterial roads that provide high capacity access to adjoining counties and states. From a regional transportation standpoint, generally considered the main access routes in or out of the county.(Highways 17, 21, and 119)	These gateway corridors should portray a high quality image of the community through protection and enhancement of vegetation, appropriate signage, accommodations for pedestrians and bicycles, and proper access management. These corridors should continue to support an efficient transportation network.	• Maintain a vegetated buffer along the corridor. • All new development should be set-back behind this buffer, with access roads, shared driveways or inter-parcel road connections providing alternate access to these developments and reducing curb cuts and traffic on the main highway. • Encourage landscaped, raised medians to provide vehicular safety, aesthetics, and also pedestrian crossing refuge. • Provide pedestrian facilities. • Provide paved shoulders that can be used by bicycles or as emergency breakdown lanes. • Coordinate land uses and bike/pedestrian facilities with transit stops, if applicable. • Manage access to keep traffic flowing.



Table 4.2 Description of Transportation Facility Character Areas, Continued.

Primary Commercial Corridor		
Developed or undeveloped land paralleling the route of a street or highway in town that is already or likely to experience uncontrolled strip development if growth is not properly managed. Characterized by high degree of access by vehicular traffic; on-site parking; low degree of open space. (Highway 21, south of 119)	This corridor will support attractive commercial uses that meet the needs of the community, promote multi-modal accessibility (vehicular, bicycle and pedestrian) and provide development that promotes a sense of place through compatible signage, architecture and landscaping.	• Develop an access management program to improve safety and maintain mobility along these corridors. • Focus on appearance with appropriate signage, landscaping and other beautification measures. • Manage access to keep traffic flowing; using directory signage to clustered developments. • Encourage infill and redevelopment of unattractive strip centers to improve the quality along the corridor
Scenic Corridors:		
These corridors provide visual and aesthetic benefits to the community, and are an important part of the county's cultural heritage. They are remarkable for their rural and agricultural landscapes, tree canopy, and views of open fields and spaces. (Highways 119, 17, Ebenezer Road, Rincon-Stillwell Road, Long Bridge Road, Stillwell-Clyo Road)	To protect, enhance and share the cultural, natural, archeological, historic and recreational qualities of this county through the preservation, beautification and presentation of our unique heritage for present and future generations.	• Increase enforcement of ordinances to address old cars, abandoned properties, and debris along the route. • Designate routes as Scenic Byways. • Create corridor management plans to address the preservation of cultural and aesthetic character. • Market the cultural and historical features that the scenic byway encompasses. • Continue to manage and regulate signage along the corridors.

Every other character area also specifically addressed the provision and style of transportation facilities. Further details are listed within the Community Agenda portion of the 2007 Comprehensive Plan.

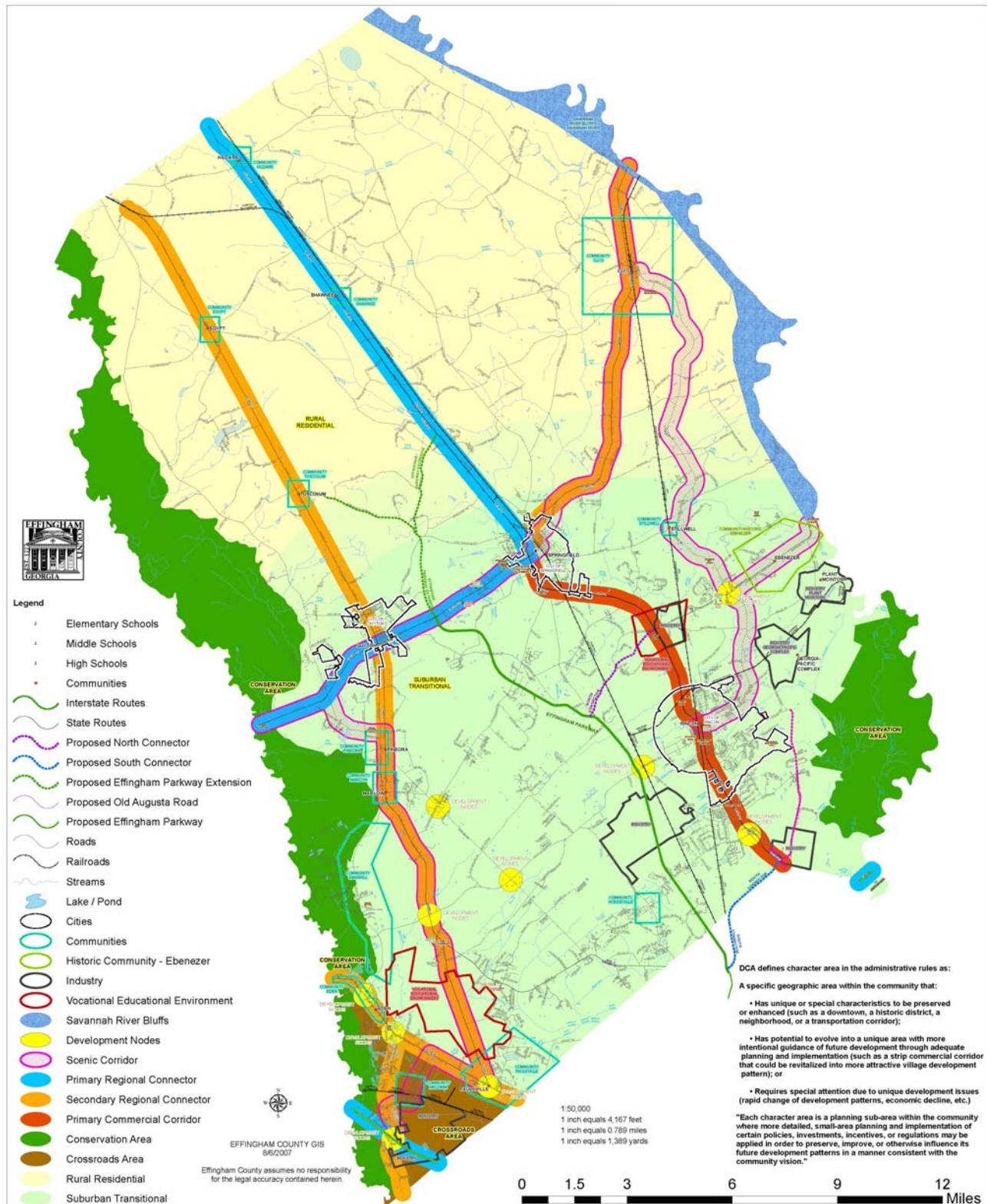


Figure 4.3 Effingham County Future Development Map from Comprehensive Plan



Historic Sites

Effingham County has a rich history as one of the original eight counties in the state of Georgia, home to numerous Indian tribes and settled by Europeans in the late 18th century. There are museums, historic buildings and streets celebrating Effingham's Revolutionary, Civil War, and Native American heritage. The National Historic Preservation Act of 1966 requires that federally funded transportation projects identify historic properties and avoid or mitigate adverse impact.

The National Register of Historic Places (NRHP) contains six sites in Effingham County: Ebenezer Townsite and Jerusalem Lutheran Church, Effingham County Courthouse, Effingham County Jail, Guyton Historic District, New Hope AME Church, and the Reiser-Zoller Farm. The Comprehensive Plan notes that the CGRDC database of local historic sites contains 83 local sites potentially eligible for the NRHP. The plan also mentions that there are twelve properties, including six historic districts, prioritized for nominating to the prestigious Register. **Figure 4.4** depicts places on the NRHP.

Wetlands

Federal law and the Georgia Planning Act also require protection of wetlands and other natural resources from adverse impact. As such, the Georgia Department of Natural Resources maintains a database that defines, identifies, and maps the categories of freshwater wetlands and aquatic habitats. **Table 4.3** shows the acreage of wetlands in the county, totaling 38% of the county area. **Figure 4.5** depicts the geographic distribution of wetlands.

Table 4.3 Wetland Area in Cities and County

Source: Community Assessment

Place	Area in Wetlands (Acres)
Rincon	1,799
Springfield	262
Guyton	189
Unincorporated Effingham County	114,770
Entire County	117,020

As a coastal county, Effingham has substantially more wetland coverage than most other Georgia counties, and thus faces unique challenges relating to development impacts. Through the Comprehensive Plan, the county is also working to adopt the Georgia Planning Act's Wetlands Environmental Planning Criteria, as well as the Groundwater Recharge Environmental Planning Criteria, and the Protected River Environmental Planning Criteria.

Regional Inset

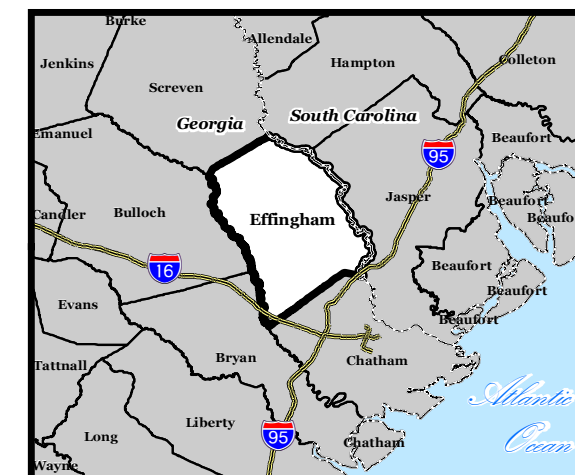
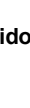


Figure 4.4

Legend

Historic Sites and Districts

- Legend**

 -  Historic Site
 -  Cemetery
 -  Scenic Corridors
 - Road Network**
 -  Interstate
 -  State Route / U.S. Highway
 -  Other Roads
 - Other Layers**
 -  Effingham County Boundary
 -  Other County Boundary
 -  City Limits
 -  Water
 -  Fort Stewart Military Reservation
 -  Conservation Areas
 -  Railroads

Source: NRHS (2006), GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.

Regional Inset

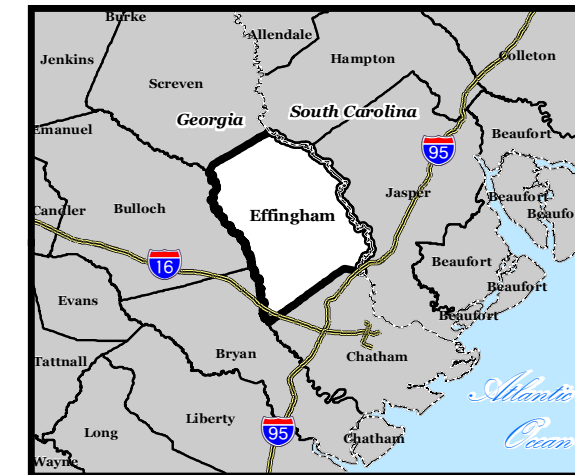


Figure 4.5

Legend

- ## Wetlands and Waterbodies

-  **Freshwater Wetlands**
-  **Lakes / Ponds / Rivers**

Road Network

-  Interstate
 State Route / U.S. Highway
 Other Roads

Other Layers

-
- Effingham County Boundary**
- Other County Boundary**
- City Limits**
- Water (Outside Effingham County)**
- Fort Stewart Military Reservation**
- Conservation Areas**
- Railroads**

Source: NWI, Effingham County, GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Residents and Businesses

Between 1990 and 2006, the number of residents and jobs in Effingham County doubled. Over the next 20 to 25 years, is anticipated that population and employment will increase over 60 and 180 percent, respectively, from present-day levels. Approximately 80,000 people and 24,000 jobs are expected in the year 2030. Proximity to Savannah, a well-regarded school system, and an abundance of scenic rural land are factors that contribute to this growth. The Economic Development Authority and Chamber of Commerce have also been quite active in working to attract employment to the county, which has resulted in over \$1 billion of new investment since 2000. Much of this investment has occurred in designated industrial parks and, as such, manufacturing and logistics-related businesses make up a relatively large segment of the local economy, though a more diverse industry mix should arise in the near future.

Population

In 1970, less than 14,000 people lived in Effingham County. By 2005, another 33,000 residents called Effingham home, and by 2030, 33,000 more are expected to move in. According to CGRDC population estimates, Effingham will have 79,935 residents in 2030 as seen in **Figure 4.6**. The predicted geographic distribution of the population is detailed in **Appendix B**, and is based on the future development map. While growth may seem inevitable, it is possible to manage it so that new residents are perceived as an asset to the community rather than a burden.

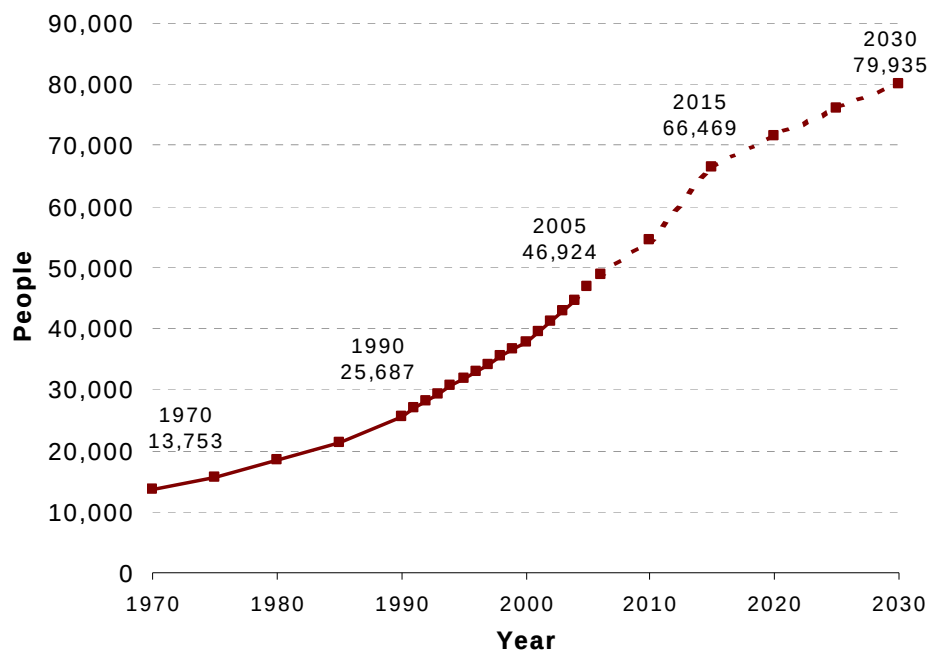


Figure 4.6 Historic and Projected Population, 1970-2030

A number of significant demographic changes have accompanied the population growth in Effingham County. For example, the median age has increased steadily since 1980 going from 28 years of age in 1980 to 33.6 in 2000. County school enrollment data from the past ten years shows total enrollment in-



creasing by about 25% between fall 1994 and spring 2000 and increasing by approximately 19.5% between fall 2000 and spring 2006. The strong growth in school enrollment numbers, approximately 52% over the 12-year period, is no surprise given rapid population growth experienced by the county during this time.

Employment

Until 1990, Effingham was a very rural county, with less than 20,000 people and relatively little in-county employment. The period between 1990 and 2005 saw accelerated employment growth, particularly in manufacturing and port-related industries, and by 2005, there were 8,412 jobs in the county. The five top private sector employers in Effingham County in 2006 were Georgia Pacific (1500), Wal-Mart (350), Flint River Services (150), Doncasters, Inc. (135), and International Paper (125). The major public sector employers are the Board of Education (1703), Effingham County (280), and Effingham Hospital (224). Savannah Electric, a utility, employed 593 people. Together, these nine places currently provide two-thirds of the jobs in Effingham.

While 4,000 new jobs were added between 1990 and 2005, 20,000 new residents came during the same time period. Thus, it is likely that business growth will continue to accelerate into the future as commercial investment follows the residential market. Based on detailed trend forecasting methods and the presence of new industrial parks planned in the county, the number of jobs in the county is expected to increase almost three-fold, to 23,850 by 2030. This will result in population to employment ratio of 3.35 to 1, a more balanced number than the current 5.58 residents for every job. The employment forecasting process is further explained in **Appendix B. Figure 4.7** shows historic and projected employment in Effingham.

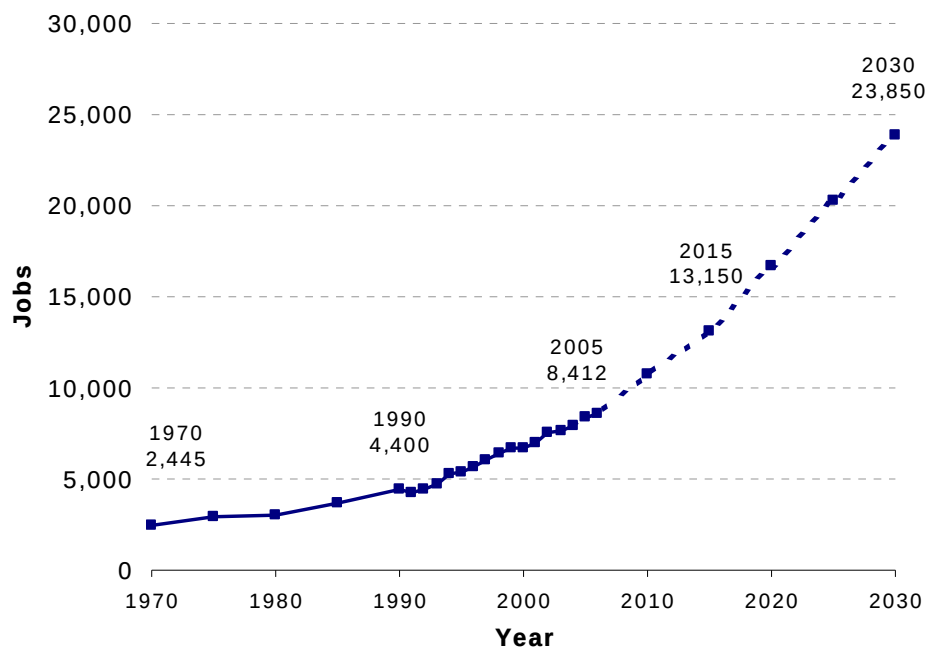


Figure 4.7 Historic and Projected Employment, 1970-2030



Despite the growing number of jobs in the county, two-thirds of the labor force still works in other places, including Chatham County, Fort Stewart, and Hilton Head, South Carolina. In 2000, the labor force was approximately 17,200 people; 2006 statistics from the Georgia Department of Labor imply that there are 25,000 workers, just over half of the population.

According to the 2000 US Census, Effingham County had the highest percentage (83.5%) of its labor force driving alone to work of any county in the Coastal Region. Approximately 14.1% of workers carpooled, while the remainder (2.4%) commuted using other forms of transportation or worked at home. Seventy percent of workers left home between 6-9 AM. This reliance on inter-county peak-time solo commuting does not make the most efficient use of existing transportation facilities.

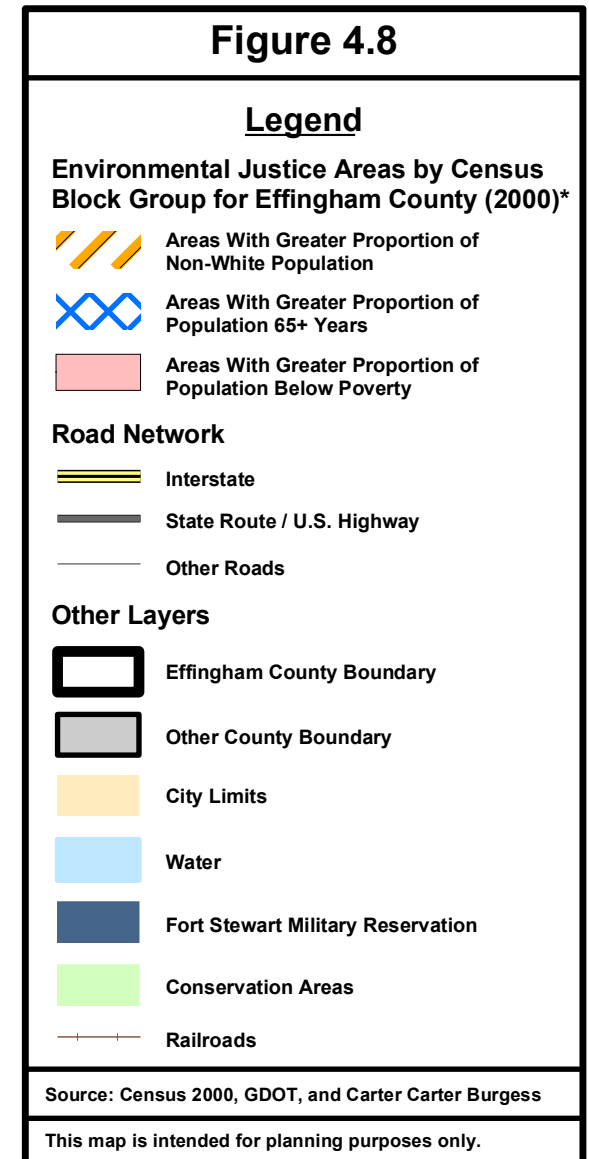
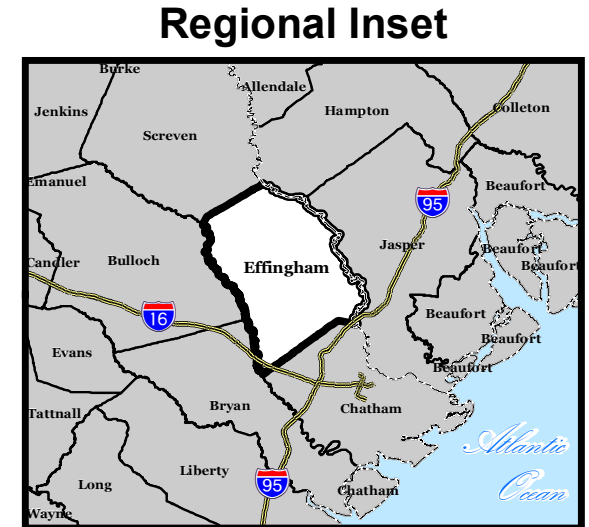
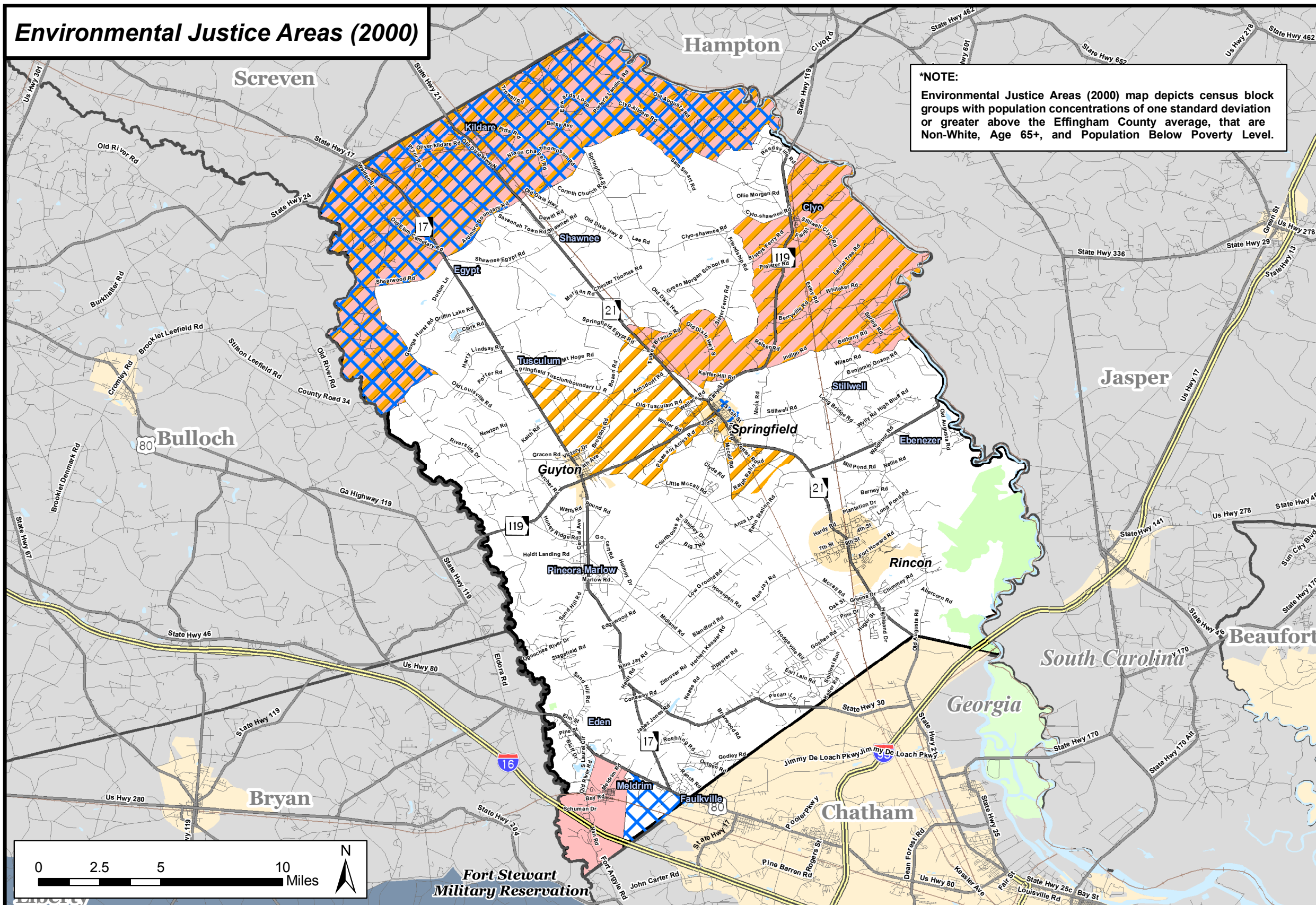
Environmental Justice Communities

Among populations, there are certain groups of people who have been historically marginalized in decision-making processes or who have borne disproportionate negative effects from various programs or sitings of locally unwanted land uses (LULU) or facilities. The term “Environmental Justice” (EJ) refers to a series of federal regulations requiring that human health and environmental impacts (negative or positive) from programs and activities are distributed equitably throughout the population. It involves significant components of public outreach and analysis of the nature, extent, and incidence of various impacts on a community.

In response to federal directives, the Georgia Department of Transportation (GDOT) devised Draft Environmental Justice Planning Guidelines in 2002 to assist transportation planning agencies in addressing EJ issues. The initial step in the process is to identify EJ target populations in the study area. The target populations include low-income (below poverty level), minority (non-white), elderly (over age 65), young (under age 15), and disabled residents. For financial, cultural, legal, or physical reasons, all of these groups display more propensity or need to utilize alternative modes of transportation than the general population. “Alternative” refers to all modes of transportation except personal vehicles. People without access to a personal vehicle would also benefit from increased attention to their needs during the planning process. Approximately four percent of Effingham households lack a personal vehicle, including ten percent of all renter households.

The following **Figure 4.8** depicts the locations of EJ populations in Effingham County. Census tracts with one standard deviation above average numbers (as compared to the county as a whole) of minority, elderly, and impoverished people were highlighted. During the public involvement process described in the previous chapter, concentrated effort was made to solicit input from EJ groups. As transportation improvement alternatives are evaluated, the effects on the aforementioned populations will be considered.

Effingham County Transportation Plan





5. Existing and Future Conditions Analysis

In order to prepare for the future, it is necessary to examine past and present trends. This section provides an inventory of the transportation network according to mode and describes the usage, characteristics, and performance of the system now and in the future.

Roadway

Effingham's roadway network is the backbone of its transportation system. It provides mobility for residents to get to spread-out destinations in a reasonable amount of time and also provides access to activity centers for drivers, walkers, bicyclists, and transit users. The next sections review the following topics relating to the roadway system: functional classification, safety, level of service, surface and bridge conditions, intersections and operations, parking, and emergency use.

Functional Classification

Functional classification refers to the design, capacity, and role of a facility within the roadway network hierarchy. There are three basic types of roads: arterials, collectors, and locals. As defined by the Federal Highway Administration (FHWA), a spectrum of roadway function exists with through movement at one end and access on the other. As seen in **Figure 5.1**, Interstates (a type of principal arterial) provide a high level of mobility, while local roads provide the most access to abutting destinations at lower design speeds. Arterials and collectors fall in the middle of the spectrum, and each roadway is either "rural" or "urban" depending on whether adjacent land has been formally designated as in an urbanized area by the U.S. Census.

The functional classification of a roadway can change over time as improvements are made to the facility or as the surrounding area urbanizes. To be eligible for federal money for improvements, rural roadways must be designated as a major collector or above, and urban roadways must be collectors or above. Though Effingham is currently predominantly rural, it is anticipated that the southern portion of the county will be folded into the urban Savannah Metropolitan Statistical Area (MSA) during the 2010 Census. Thus, Effingham County will contain both "urban" and "rural" roadway classifications in the future.

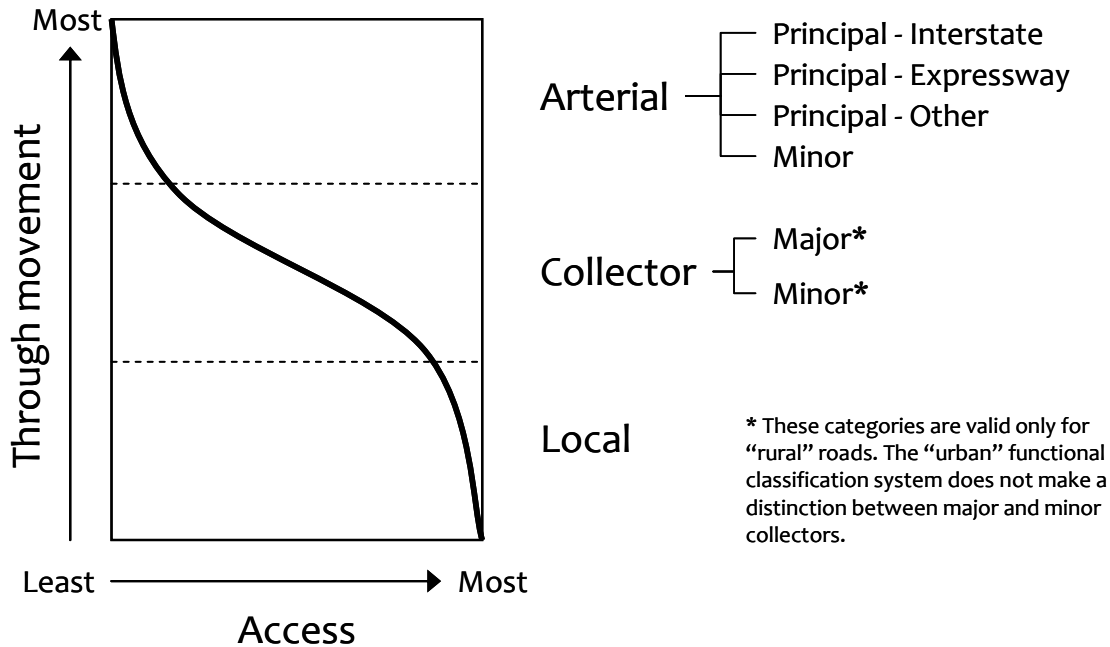


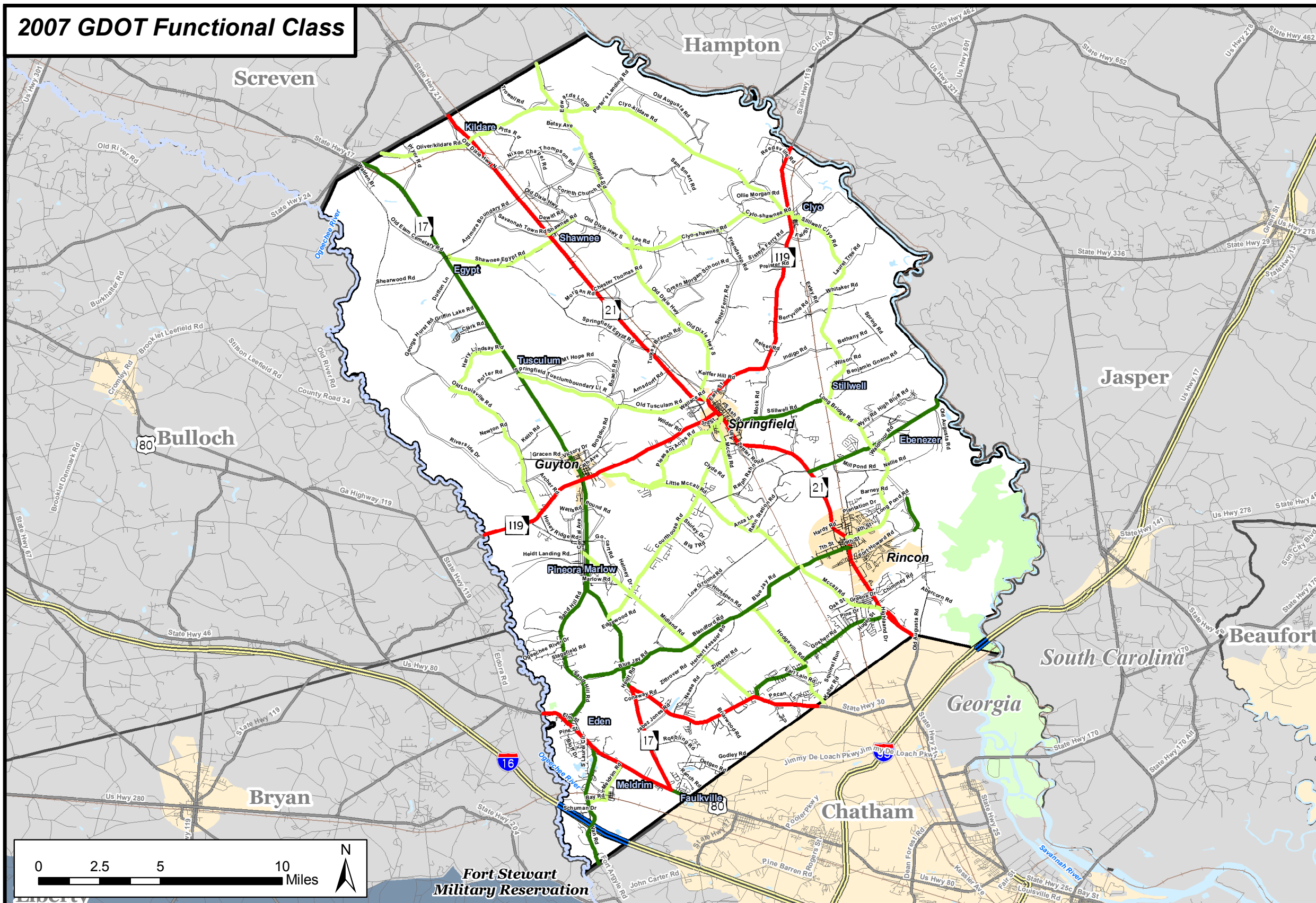
Figure 5.1 Roadway Functional Classification System Diagram

There are 737 miles of roadway in Effingham County, including 79 miles of (non-Interstate) arterials, 74 of major collectors, 121 of minor collectors, 459 of local roads, 11 of unclassified roads, and small portions of interstates in the southwest and southeast corners. **Figure 5.2** depicts the current functional classification of county roadways. **Figure 5.3** shows the average annual daily traffic as obtained from traffic count stations throughout the county. **Table 5.1** depicts the recommended percentage of roadway miles by type and distribution of roadway miles by functional class in Effingham. As Effingham grows, it will likely need to upgrade some of its collectors to arterial status, providing greater mobility, and also construct more local roads for greater accessibility to abutting land.

Table 5.1 Roadway Type and Utilization

Functional Classification	FHWA recommended (rural)	FHWA recommended (urban)	Effingham County (rural)
Interstates and Expressways	2 – 4%	5 – 10%	3 %
Principal (other) and Minor Arterials	6 – 12%	15 – 25%	10.8%
Major and Minor Collectors	20 – 25%	5 – 10%	26.5%
Local Roads	65 – 75%	65 – 80%	62.3 %

2007 GDOT Functional Class



Regional Inset

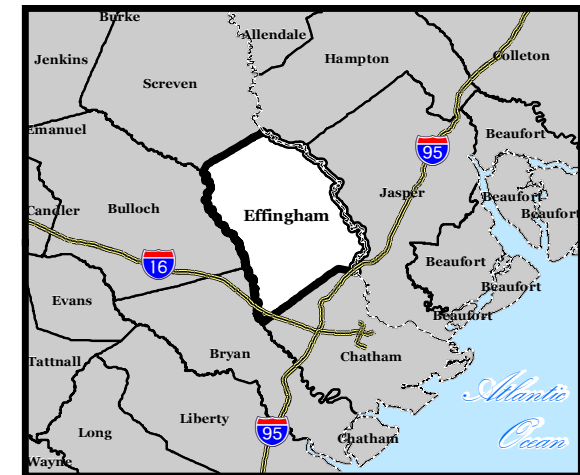


Figure 5.2

Legend

GDOT Roadway Functional Classification (2007)

- Interstate
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- Unclassified (Paved)
- Unclassified (Unpaved)

Road Network

- Interstate (Outside Effingham County)
- Other State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT RC File (2007), and Jacobs Carter Burgess

This map is intended for planning purposes only.

Regional Inset

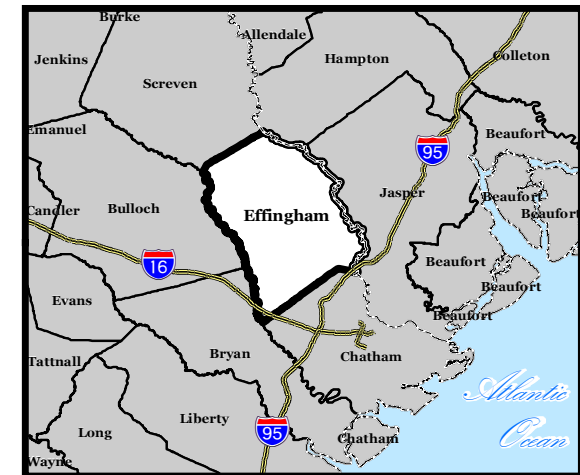


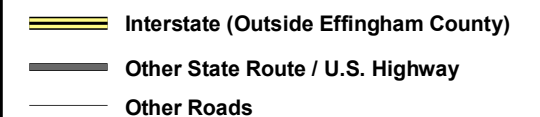
Figure 5.3

Legend

2006 Traffic Count Stations with AADT



Road Network



Other Layers



Source: STARS (2006) and Jacobs Carter Burgess

This map is intended for planning purposes only.



Safety

Assessing the safety of the roadway system is a critical component of a transportation plan, and incident statistics can help identify key locations where safety improvements would be most beneficial. To perform a safety analysis, GDOT crash data and the Critical Analysis Reporting Environment (CARE) incident database were used to map incident locations and provide crash rates for road segments and intersections throughout Effingham County.

Between January 1st, 2004 and December 31st, 2006, a total of 3,310 traffic incidents were reported in Effingham County, an average of over 1,000 crashes a year as seen in **Table 5.2**. These incidents involved 5,254 vehicles and resulted in 24 fatalities and 1,310 injuries. Nine fatalities occurred during single vehicle crashes, which made up almost half of all incidents.

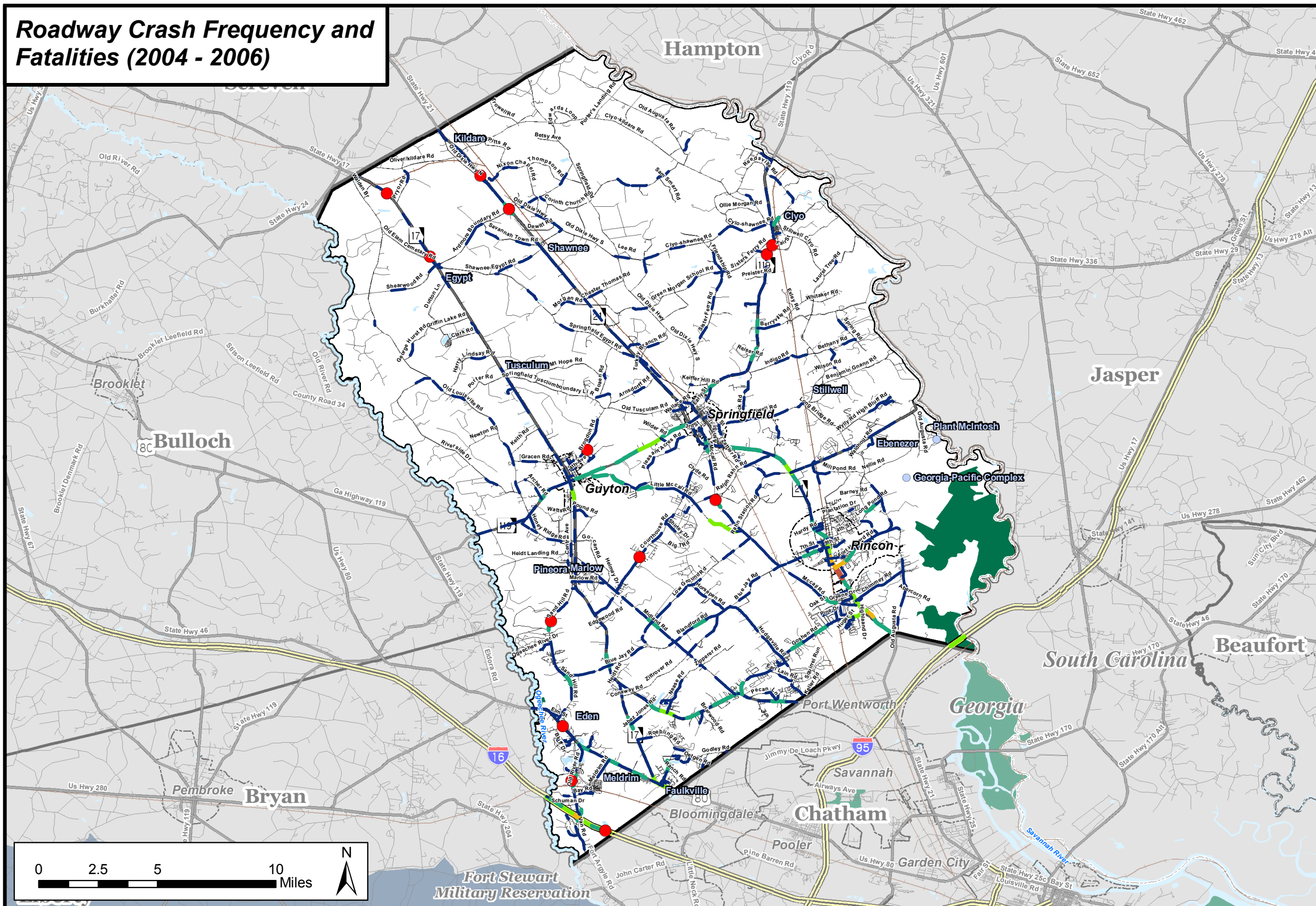
Figure 5.4A shows the combined number of crashes occurring at intersections and along roadway segments, with fatal crash locations called out. **Figure 5.4B** depicts crash rates on ½ mile roadway segments experiencing three or more crashes between 2004 and 2006.

Table 5.2 Crash Statistics by Year

Year	Number of Crashes	Number of Fatalities	Number of Injuries	Number of Vehicles Involved	Crash Rate per 1,000 population
2004	1,012	5	433	1,616	22.7
2005	1,196	9	409	1,889	25.5
2006	1,102	10	468	1,749	22.5
TOTAL	3,310	24	1,310	5,254	23.6

Of the 21 fatal crashes (one crash resulted in four deaths), almost half occurred between 4-9 pm, and 17 (81%) occurred on roadways with a speed limit of 55mph or over, primarily minor arterials and major collectors. Driver age did not seem to be a factor and only three were confirmed to be under the influence of alcohol or drugs. While not unusual for rural counties, dark unlighted conditions were more prevalent in Effingham's crashes than they were in the rest of the state, as were off-roadway collisions. Fatal single-vehicle incidents typically resulted from failure to negotiate a curve. From analysis of fatal incident data, it appears that targeted improvements on county arterials and collectors would have the most beneficial safety impacts. Street lighting and wider shoulders in sections of difficult roadway geometry may decrease the number of fatal crashes. SR 119 near Laurel Hill Road in Clyo is a hotspot that deserves further investigation, having had three fatal incidents occur within half a mile of this location.

Roadway Crash Frequency and Fatalities (2004 - 2006)



Regional Inset

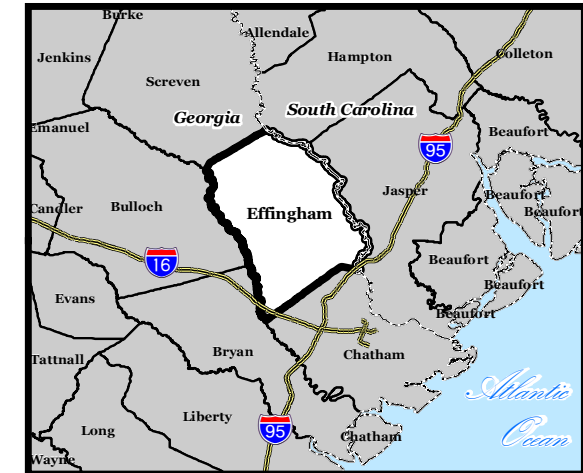


Figure 5.4A

Legend

Roadway Crash Frequency and Fatalities (CARE Data)

- Fatal Crash
- 51 or More Crashes
- 26 to 50 Crashes
- 11 to 25 Crashes
- 6 to 10 Crashes
- 1 to 5 Crashes

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

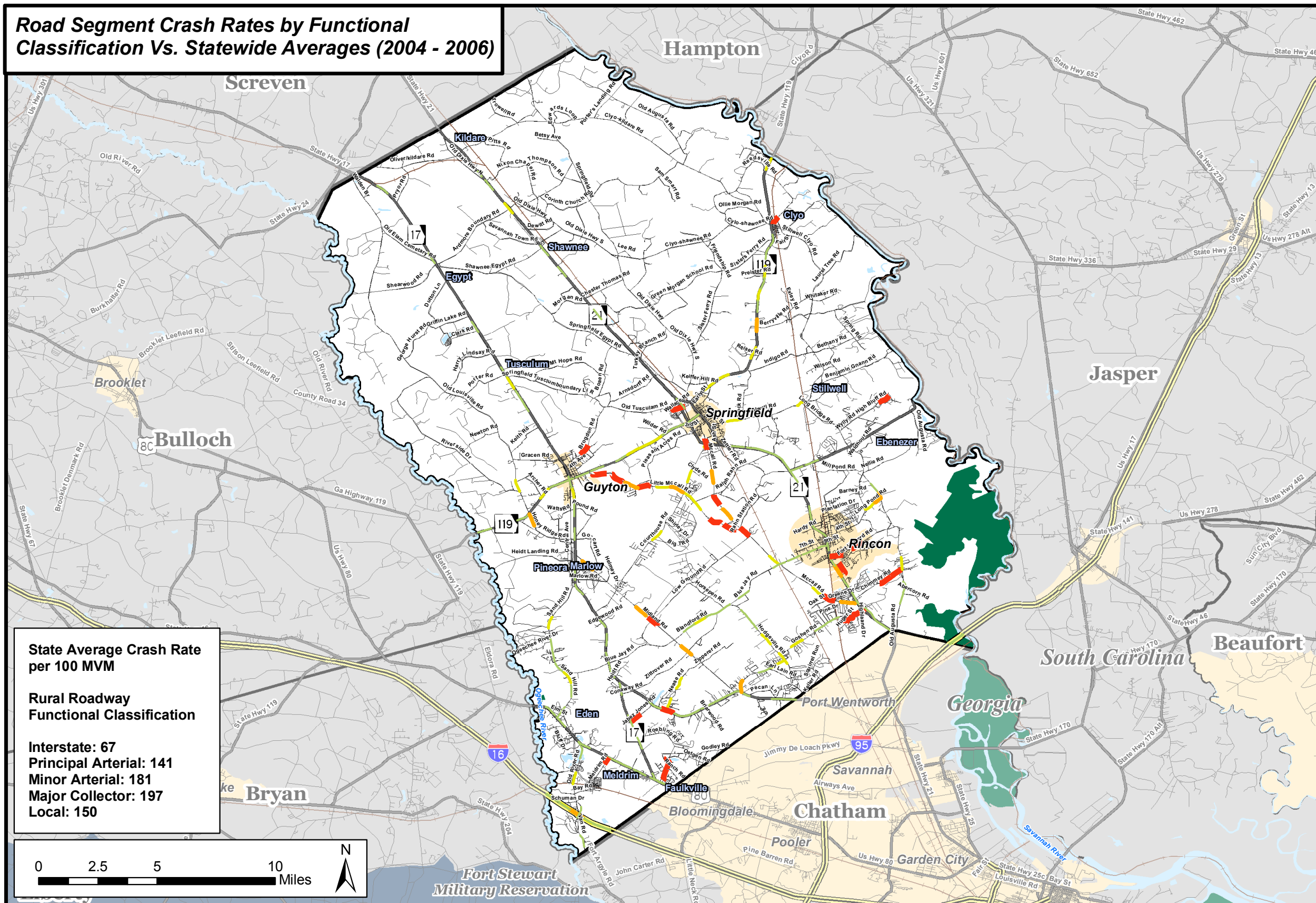
Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Railroads

Source: University Alabama CARE and Jacobs Carter Burgess

This map is intended for planning purposes only.

Road Segment Crash Rates by Functional Classification Vs. Statewide Averages (2004 - 2006)



Regional Inset

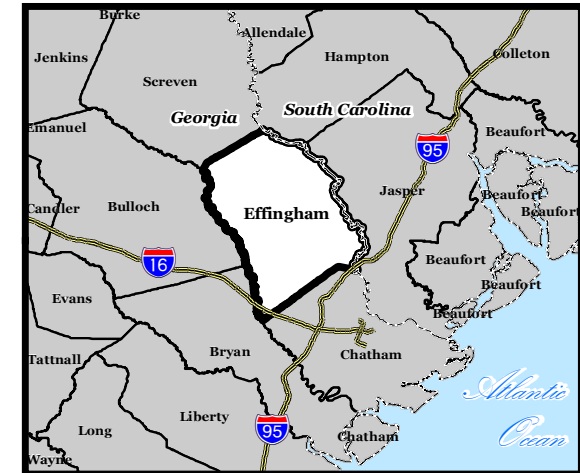


Figure 5.4B

Legend

Percent of State Average Crash Rate

- Greater than 400%
- 251 to 400%
- 151 to 250%
- 0 to 150%

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Railroads

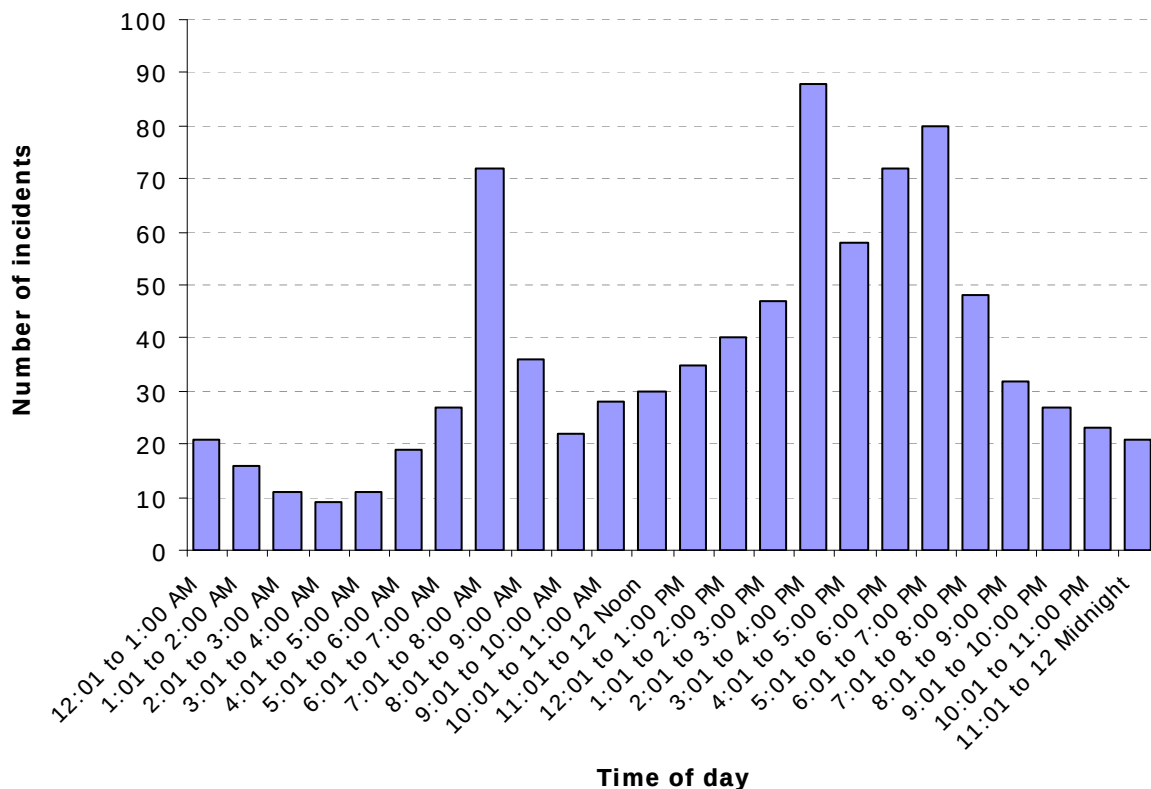
Note:
Crash rates are only shown for roadways experiencing three or more incidents between 2004-2006.

Source: University Alabama CARE and Jacobs Carter Burgess

This map is intended for planning purposes only.



There were 873 injury crashes (including the aforementioned 21 fatal crashes) in Effingham over the three-year period of 2004 to 2006. According to the time-of-day chart, seen next, it appears that many of the incidents are associated with evening and morning commute activity, with an additional spike in early afternoon. Cross-tabulating driver age with time-of-day, teenage drivers account for a disproportionate share of crashes occurring between 3-4 pm, though 35-44 year-old drivers also see their highest incident share during this time period. Data seems to indicate that transporting children from school via personal vehicles could result in higher crash exposure and extra attention should be paid to safety mitigation measures in the vicinities of elementary, middle, and high schools.



Two-thirds of injury crashes occur on roadway segments, whereas the remainder occurs at or near intersections. Some roads experiencing frequent incidents include a seven-mile stretch of SR 21 between the Effingham-Chatham county line to just north of Rincon, SR 119, SR 17 approaching the intersection of US 80, and Old River Road at I-16. Intersections with the highest crash frequency in the county are

- SR 21 at Ebenezer Road
- SR 21 at Chimney Road
- SR 17 at US 80
- SR 17 at Blue Jay Road
- Blue Jay Road at Midland Road, and
- US 80 at Sandhill Road.



Each intersection saw 20 to 50 incidents over three years. According to crash rate data, Little McCall Road, McCall Road, Fort Howard Road, and Chimney Road have experienced crash rates significantly higher than the statewide average for their functional classification.

Level of Service

Level of Service (LOS) is a measure of how well a facility is performing given its function and use. For roads, LOS is typically a function of the roadway volume-to-capacity (v/c) ratio that provides a quantitative measure of network congestion. The following definitions of LOS are used here:

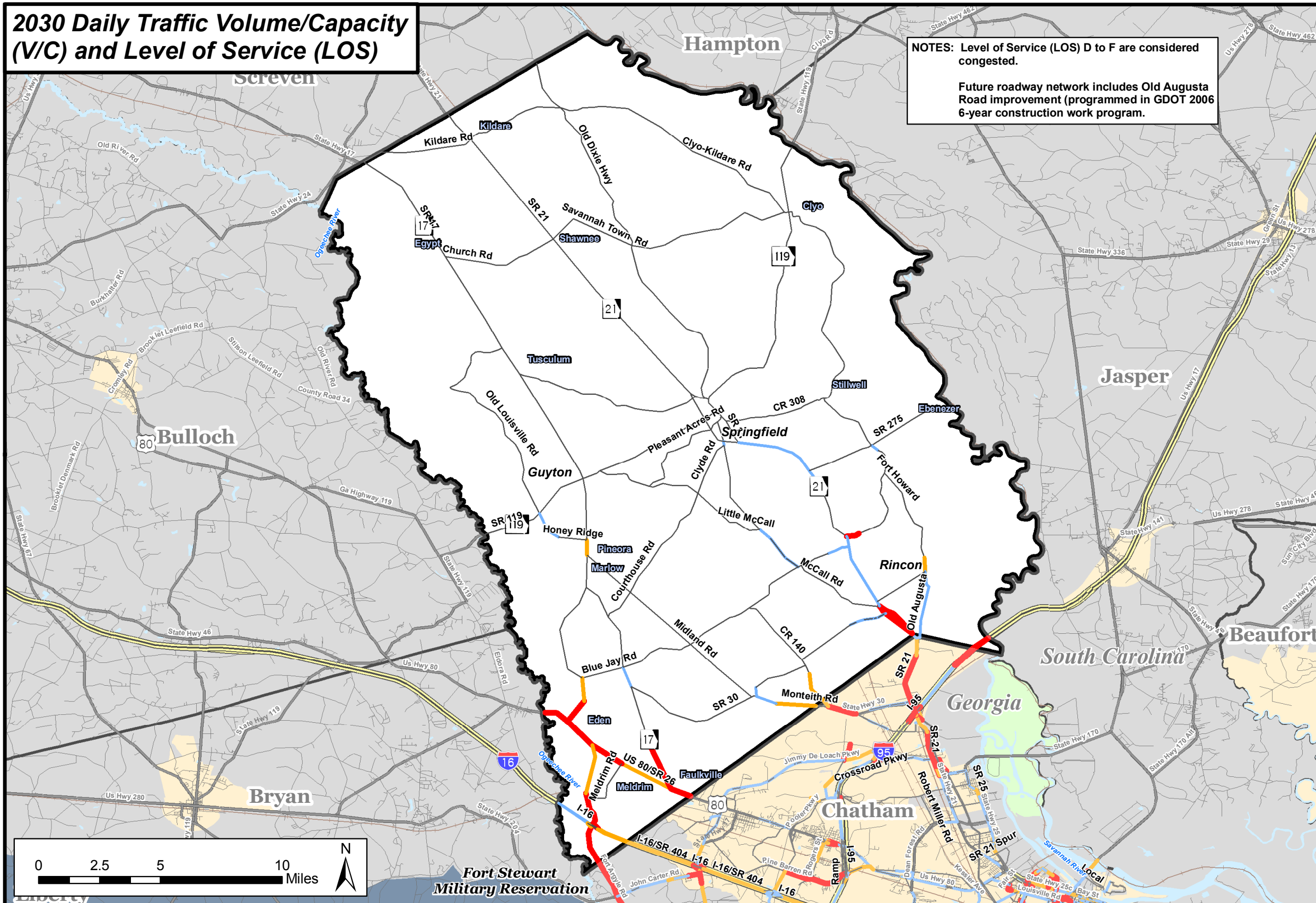
- LOS A – C: Conditions where traffic is moving relatively freely, corresponding to $v/c \leq 0.7$
- LOS D: Conditions where vehicle speed and freedom of movement is beginning to decline slightly due to increasing volume, where $0.7 < v/c \leq 0.85$
- LOS E: Conditions where traffic volume is at or close to capacity, resulting in delays. $0.85 < v/c \leq 1.00$
- LOS F: Conditions where the demand for space exceeds the capacity of the roadway ($v/c > 1.00$) and a breakdown in vehicular flow occurs

At the planning level, GDOT strives to provide service at LOS C, though in some cases, LOS D is considered acceptable due to the impacts required to obtain LOS C. Though slightly congested, traffic is still flowing at LOS D. Created using the travel demand model described in **Appendix B, Figure 5.5** depicts the expected level of service on existing and committed roads in 2030. “Existing” roads refer to present-day facilities, while “committed” projects are those planned and budgeted in the GDOT 2006 6-year construction work program.

The 2030 E+C network includes scheduled operational, capacity, and maintenance improvements. According to preliminary analysis, most of the county roadways are expected to be operating at acceptable levels of service in 2030. However, several locations are seen to experience unacceptable levels of congestion during peak periods, including US 80, SR 17, Old River Road, and the southern portion of SR 21. This congestion is due primarily to commuter movement into and out of Chatham County. In the case of SR 21, its difficult interchange with I-95 in Chatham is a cause of problems further upstream. In addition to the corridors identified in the year 2030 analysis, observation of current traffic conditions indicates congestion along SR 119 between Springfield and Guyton during school start and finish times. This results in significant queuing and delay for travel along the corridor and turning movements accessing the schools. These conditions are likely to worsen with increasing daily traffic volumes projected along SR 119.

Effingham County Transportation Plan

2030 Daily Traffic Volume/Capacity (V/C) and Level of Service (LOS)



Regional Inset

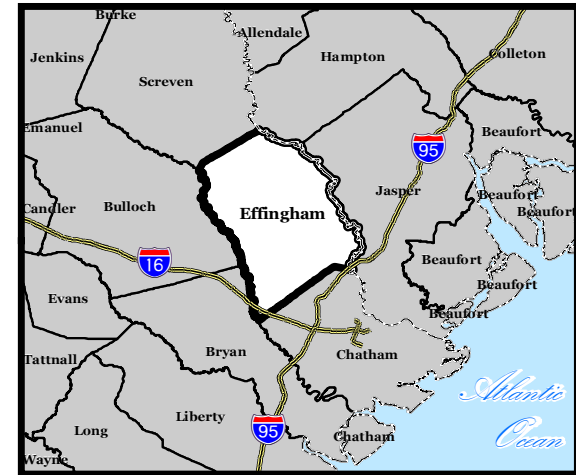


Figure 5.5

Legend

2030 Daily V/C Ratios

- V/C Ratio: > 1.0 (LOS F)
- V/C Ratio: 0.86 - 1.0 (LOS E)
- V/C Ratio: 0.71 - 0.85 (LOS D)
- V/C Ratio: <= 0.70 (LOS A to C)

Road Network

- Interstate (Outside Effingham County)
- Other State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: CUTS, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Road Surface and Bridge Conditions

ROAD SURFACE

Slightly less than two-thirds of Effingham County's roads are paved. 128 miles of roads are dirt, while an additional 71 miles are covered in ash. As traffic volume has increased in parts of the county from population growth, ash and dirt roads have become more difficult to maintain. Future development and freight movement will necessitate the paving of ash and more heavily traveled dirt roads, particularly in southern Effingham. Areas of northern Effingham, where connectivity between paved roads is limited, will also need to resurface some roads in order to better accommodate residents and emergency vehicles. Improved pavement conditions will help in terms of safety, as well as continuing maintenance responsibilities. **Figure 5.6** displays the surface status of Effingham's roads.

Some existing paved roads are also in need of maintenance. The state evaluates roadway condition using the Pavement Condition Evaluation System (PACES) system, which rates segments of roads based on a 100-point scale. Roads scoring less than 65 indicate that there are maintenance needs that may require improvements such as patching or resealing. According to GDOT pavement condition data from 2007, approximately 43% of paved roads are in very good or good condition while 57% need some type of repair.

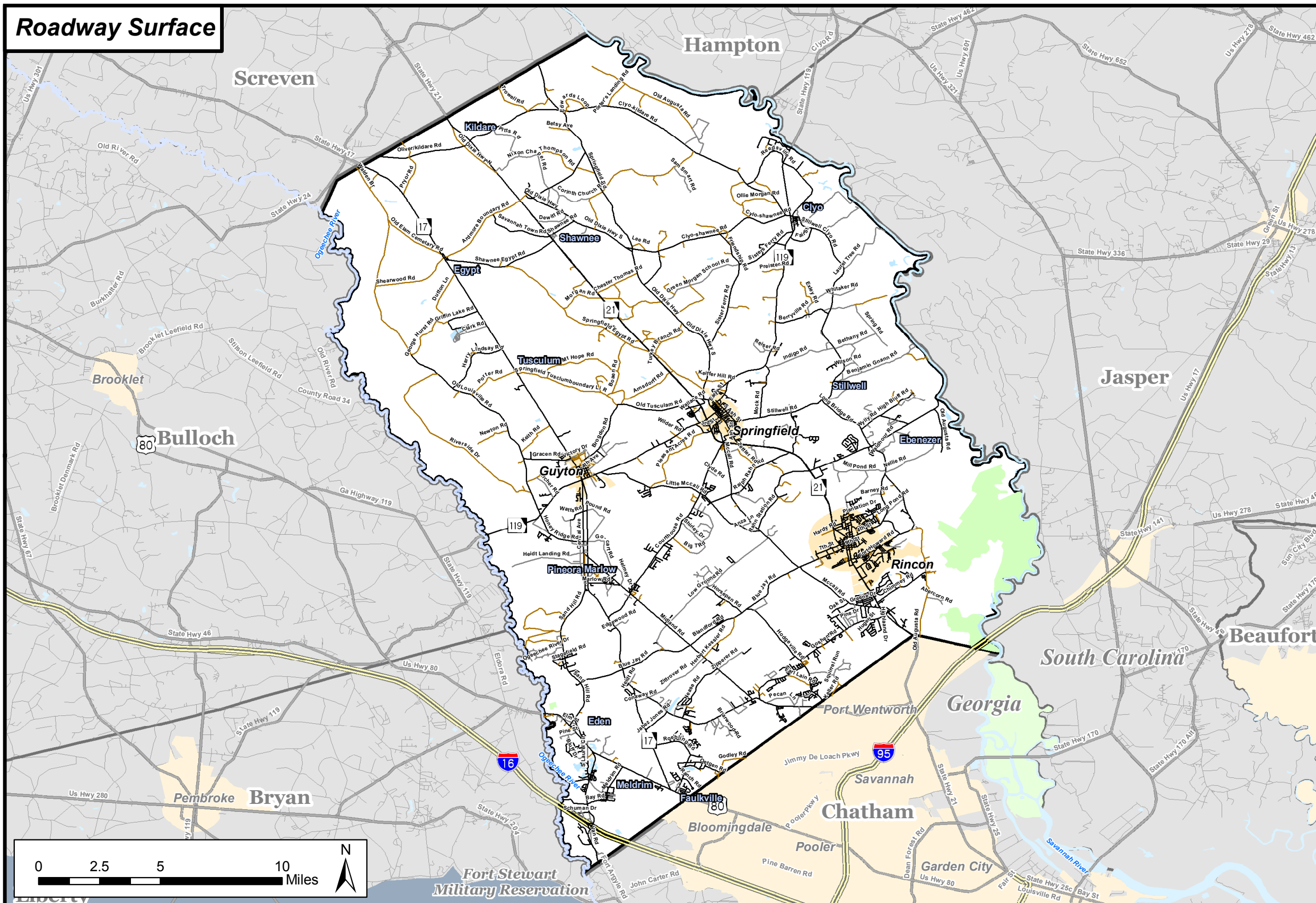
BRIDGES

There are 72 bridges in Effingham, 36 of which are maintained by the county. Keeping bridges in good condition is important for safety as well as to avoid delays created by diversions when bridges are closed or have weight limit postings. The Federal Highway Administration (FHWA) established the National Bridge Inventory (NBI) to monitor the condition of bridges on public roads. The NBI identifies bridge characteristics including age, sufficiency and composition. The National Bridge Inspection Standards require that all bridges carrying public roads be inspected and evaluated for safety biennially. Additionally, each bridge must be rated for its safe load capacity. If the maximum legal load exceeds the operating load, the bridge must be immediately strengthened, closed, or posted.

The calculated NBI sufficiency rating, on a scale of 0 to 100, is indicative of the fitness of the bridge to remain in service. Typically, a rating of 50 or less signifies a need for near-term replacement. The general characteristics and sufficiency ratings of county bridges is shown in **Table 5.3**. Prioritization of repairs and allocation of moneys (a lump sum is usually set aside for maintenance) is conducted by county officials.

Effingham County Transportation Plan

Roadway Surface



Regional Inset

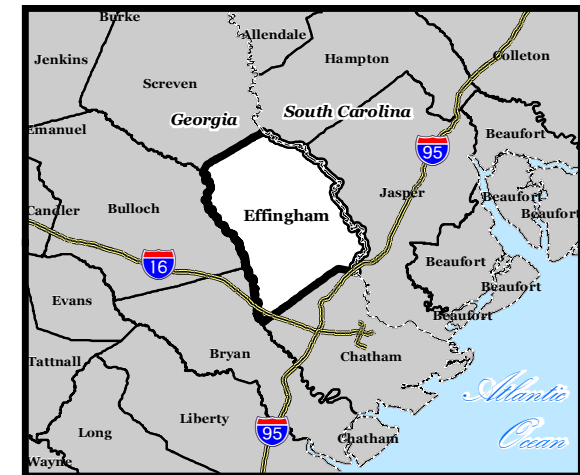


Figure 5.6

Legend

Roadway Surfaces

- Ash Surface
- Dirt Surface
- Paved Surface

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas (Outside Effingham County)

Source: Effingham County, GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Table 5.3 Bridge Conditions
Source: National Bridge Inventory

Facility Carried by Structure	Features Intersected	Location	Sufficiency Rating	Maintenance Responsibility	Functional Class of Route	Year Built	Year Reconstructed	AGE (2008)	Age(2008) inc reconstruction	Average Daily Traffic	Historical significance	Posting Status	STRAHNET Highway Designation
BUNYAN KESSLER RD	DASHER CREEK	2 MI E OF RINCON	100.0	2	9	2001	-	7	7	100	0	A	0
LOG LANDING ROAD	EBENEZER CREEK	4 MI N OF RINCON	100.0	2	9	2002	-	6	6	100	0	A	0
CLYO-KILDARE ROAD	EBENEZER CREEK	13 MI N OF SPRINGFIELD	99.9	2	7	1996	-	12	12	600	0	A	0
SPRINGFIELD-TUSCLU	JACKS BRANCH	1 MI NW OF SPRINGFIELD	99.9	2	8	1997	-	11	11	800	0	A	0
LITTLE McCALL ROAD	LITTLE EBENEZER CREEK	5 MI NW OF RINCON	99.6	2	8	1995	-	13	13	3020	0	A	0
LONG BRIDGE ROAD	LOCKNER CREEK	3 MI E OF RINCON	99.6	2	7	1996	-	12	12	2400	0	A	0
McCALL ROAD	LITTLE EBENEZER CREEK	3 MI S OF SPRINGFIELD	99.6	2	8	1983	-	25	25	3020	0	A	0
SR 21 (NBL)	LITTLE EBENEZER BRANCH	3 MI N OF RINCON	99.5	1	6	1996	-	12	12	9800	0	A	0
SR 21 (NBL)	CSX RAILROAD	.75 MI OF SPRINGFIELD	99.5	1	6	1997	-	11	11	9800	N	A	0
SR 21 (NBL)	JACKS BRANCH	1 MI E OF SPRINGFIELD	99.5	1	6	1996	-	12	12	9800	0	A	0
SR 21 (SBL)	CSX RAILROAD	.75 MI S OF SPRINGFIELD	99.5	1	6	1997	-	11	11	9800	N	A	0
SR 21 (SBL)	JACKS BRANCH	1 MI E OF SPRINGFIELD	99.5	1	6	1997	-	11	11	9800	0	A	0
SR 21 (SBL)	LITTLE EBENEZER BRANCH	3 MI N OF RINCON	99.4	1	6	1959	1996	49	12	13900	0	A	0
SECKINGER FORD RD	DASHER CREEK	1.5 MI E OF RINCON	99.3	2	7	1986	-	22	22	5000	0	A	0
SR 119	JACKS BRANCH	IN SPRINGFIELD CITY LIMIT	99.3	1	9	1964	-	44	44	5300	0	A	0
OLD AUGUSTA ROAD	SWEIGOFFER CREEK	2 MI SE OF RINCON	99.2	2	7	1991	-	17	17	3020	0	A	0
OLD LOUISVILLE ROA	SHRIMP CREEK	1.5 MI NW OF GUYTON	98.9	2	8	1974	-	34	34	3020	0	A	0
STANDARD LANE	JACKS BRANCH	1 MI W OF SPRINGFIELD	98.9	2	9	1997	-	11	11	1050	0	A	0
SR 21	COW PEN CREEK	14 MI N OF SPRINGFIELD	97.4	1	6	1986	-	22	22	3300	0	A	0
SR 119	OGEECHEE RIVER O/F	3.5 W OF GUYTON	94.6	1	6	1992	-	16	16	2800	0	A	0
SR 21	CSX RAILROAD (635128B)	IN RINCON CITY LIMITS	94.0	1	6	1960	1989	48	19	13900	N	A	0
I-95 (NBL)	SAVANNAH RIVER	4 MI N OF JCT SR 21	93.7	1	1	1976	-	32	32	48720	1	A	1
I-95 (SBL)	SAVANNAH RIVER	4 MI N OF JCT SR 21	93.7	1	1	1976	-	32	32	48720	1	A	1
SR 119	WHITE DEER BRANCH	1 MI W OF SPRINGFIELD	93.7	1	6	1989	-	19	19	5000	0	A	0
MILL POND ROAD	POLLY CREEK	2.5 MI NE OF RINCON	92.5	2	9	1967	-	41	41	100	0	A	0
OLD DIXIE HIGHWAY	COW PEN CREEK	2 MI NE OF SHAWNEE	92.5	2	9	1950	-	58	58	100	0	A	0
PRYOR ROAD	JINK FORD BRANCH	15 MI N OF GUYTON	92.5	2	9	1950	-	58	58	100	0	A	0
RACE PATH ROAD	LITTLE EBENEZER CREEK	3 MI S OF SPRINGFIELD	92.5	2	9	1950	-	58	58	90	0	A	0
RIVERSIDE DRIVE	SHRIMP CREEK	3 MI E OF GUYTON	92.5	2	9	1957	-	51	51	100	0	A	0
SHEAROUSE SPUR RD	WHITE DEER BRANCH	2 MI W OF SPRINGFIELD	92.5	2	9	1950	-	58	58	100	0	A	0
SPRINGFIELD-EYGPT	HEIDT BRANCH	6 MI NE OF SPRINGFIELD	92.5	2	9	1950	-	58	58	100	0	A	0
CENTRAL AVENUE	MILL CREEK	2 MI S OF GUYTON	92.4	2	9	1950	-	58	58	530	0	A	0
EARLY STREET	JACKS BRANCH	CTY LMT OF SPRINGFIELD	92.4	2	9	1970	-	38	38	740	0	A	0
STILLWELL-CLYO RD	GROOVER BRANCH	4 MI E OF SPRINGFIELD	92.4	2	7	1955	-	53	53	1000	0	A	0
SR 17	MILL CREEK	1 MI S OF GUYTON	91.7	1	7	1960	-	48	48	5300	0	A	0
OLD DIXIE HIGHWAY	TURKEY BRANCH	4 MI N OF SPRINGFIELD	91.6	2	8	1950	-	58	58	3020	0	A	0
OLD DIXIE HIGHWAY	TURKEY BRANCH O/F	4 MI N OF SPRINGFIELD	91.6	2	8	1950	-	58	58	3020	0	A	0
SISTERS FERRY	EBENEZER CREEK	6 MI NE OF SPRINGFIELD	91.5	2	9	1978	2003	30	5	100	0	P	0
HONEY RIDGE ROAD	MILL CREEK	4 MI S OF GUYTON	91.4	2	8	1950	-	58	58	1900	0	A	0
SR 119	DEEP BRANCH	2 MI S OF CLYO	91.3	1	6	1963	-	45	45	2600	0	A	0
SR 26 - US 80	LITTLE OGEECHEE CREEK	8 MI S OF GUYTON	90.9	1	6	1926	-	82	82	8000	0	A	0
SR 26 - US 80	LITTLE OGEECHEE CRK O/F	8.5 S OF GUYTON	90.9	1	6	1926	-	82	82	8000	0	A	0



Table 5.3 Bridge Conditions, Continued

Facility Carried by Structure	Features Intersected	Location	Sufficiency Rating	Maintenance Responsibility	Functional Class of Route	Year Built	Year Reconstructed	AGE (2008)	Age(2008) inc reconstruction	Average Daily Traffic	Historical significance	Posting Status	STRAHNET Highway Designation
SR 17	OGEECHEE CREEK	11 MI S OF GUYTON	90.6	1	7	1960	-	48	48	4100	0	A	0
SR 26 - US 80	MELDRIM BRANCH	7.5 MI S OF GUYTON	90.0	1	6	1926	-	82	82	8000	0	A	0
SR 17	LITTLE BLOCK CREEK	6 MI N OF GUYTON	89.8	1	7	1951	-	57	57	2100	0	A	0
SR 26 - US 80	REDDING BRANCH	8 MI S OF GUYTON	89.5	1	6	1926	-	82	82	7300	0	A	0
SR 26 - US 80	REDDING BRANCH	8 MI S OF GUYTON	89.5	1	6	1926	-	82	82	7300	0	A	0
SR 30	MONTIETH CREEK	3 MI NE INT US 80 & SR 17	89.5	1	7	1955	-	53	53	3400	0	A	0
LEWIS RAHN ROAD	LITTLE EBENEZER CREEK	4 MI N OF RINCON	86.4	2	9	1996	-	12	12	100	0	A	0
ARNSDORFF LOOP RD	TURKEY BRANCH TRIB.	5 MI N OF SPRINGFIELD	81.5	2	9	1955	-	53	53	100	0	A	0
LEXINGTON AVE EXT.	POLLY CREEK	1.5 MI N OF RINCON	81.5	2	9	1950	-	58	58	100	0	A	0
MORGAN ROAD	TURKEY BRANCH	7 MI NE OF SPRINGFIELD	81.4	2	9	1950	-	58	58	100	0	A	0
OLD AUGUSTA ROAD	DEVILS BRANCH	12 MI NE OF SPRINGFIELD	80.3	2	8	1978	2005	30	3	1470	0	A	0
SR 21	TURKEY BRANCH	4 MI N OF SPRINGFIELD	80.0	1	6	1986	1998	22	10	4400	0	A	0
SR 119	EBENEEZER CREEK	1 MI NE OF SPRINGFIELD	78.0	1	6	1963	-	45	45	2890	0	A	0
SR 26 - US 80	STILL BRANCH	9 MI S OF GUYTON	77.5	1	6	1944	-	64	64	7300	0	A	0
SISTERS FERRY	TURKEY BRANCH	4.5 MI N OF SPRINGFIELD	76.7	2	9	1993	-	15	15	740	0	P	0
I-16 (WBL)	OGEECHEE RIVER O/F	16 MI S OF GUYTON	74.7	1	1	1966	2004	42	4	22400	0	A	1
I-16 (EBL)	OGEECHEE RIVER O/F	16 MI S OF GUYTON	74.5	1	1	1966	2004	42	4	25410	0	A	1
CLYO-SHANNEE ROAD	EBENEZER CREEK	8 MI NE OF SPRINGFIELD	72.9	2	8	1975	2003	33	5	3020	0	A	0
OLD AUGUSTA ROAD	LOCKNER CREEK	6 MI NE OF RINCON	71.4	2	9	1974	-	34	34	740	0	A	0
SR 21	POLLY CREEK	IN CITY LIMITS OF RINCON	70.4	1	6	1931	1998	77	10	13900	0	A	0
LONG BRIDGE ROAD	EBENEZER CREEK	4 MI E OF SPRINGFIELD	68.8	2	7	1968	-	40	40	2800	0	A	0
CAROLINA AVENUE	DASHER BRANCH	CITY LIMIT OF RINCON	64.3	4	9	1960	-	48	48	740	0	P	0
SR 21	DASHER CREEK	IN CITY LIMITS OF RINCON	63.8	1	6	1931	1989	77	19	23800	0	A	0
SR 21	SWEIGOFFER CREEK	1 MI S OF RINCON	62.5	1	6	1960	1990	48	18	28700	0	A	0
STILLWELL ROAD	EBENEZER CREEK	SPRINGFIELD CITY LIMITS	61.3	2	7	1959	-	49	49	1500	0	P	0
SR 26 - US 80	OGEECHEE RIVER O/F	9 MI S OF GUYTON	47.4	1	6	1944	-	64	64	7300	0	A	0
LOG LANDING ROAD	EBENEZER CREEK	4 MI N OF RINCON	47.1	2	9	1978	-	30	30	100	0	P	0
OLD RIVER ROAD	I-16 (SR 404)	15 MI S OF GUYTON	47.1	1	7	1966	-	42	42	3500	N	A	0
CSX RR (620047G)*	SR 21 SPUR	.5 MI N OF SPRINGFIELD	0.0	0	6	1936	-	72	72	1400	0	0	0
I-16*	S-1868 OLD RIVER ROAD	15 MI S OF GUYTON	0.0	0	1	1966	-	42	42	22300	0	0	1
TOTAL	72 Bridges	Average:	87.2					41 years	36 years	6,315 vehicles	2 Significant	5 Posted	

Key:

Sufficiency Rating (0-100): Less than 50 signifies potential short-term need for replacement or repairs

Maintenance Responsibility: 1 = GDOT, 2 = Effingham County, 4 = Municipality, 0 = not coded

Functional Class: 1 = Interstate Highway, 2 = Principal Arterial (rural), 6 = Minor Arterial (rural), 7 = Major Collector (rural), 8 = Minor Collector (rural), 9 = Local Road (rural)

Average Daily Traffic: Average number of vehicles crossing bridge each day

Historical Significance: 1 = National Register of Historic Places, 0 = not on NRHP or being considered for it

Posting Status: A = Open with no weight restriction, P = Posted for reduced load

STRAHNET Designation: 0 = not a STRAHNET highway, 1=on an interstate STRAHNET route

* not included in totals or statistical calculations due to incomplete data



Intersections and Operations

Effingham County has 14 signalized intersections, seven of which are located in incorporated areas as seen in **Figure 5.7**. Numerous other intersections exist, most of which are controlled by an all-way stop sign, while some have two-way stops and/or flashing lights. (The latter accounts for two of the aforementioned signalized intersections.) The presence of intersections in a road network impacts mobility, connectivity, and safety. Closely spaced intersections with traffic control devices can significantly slow down vehicle through-movements, though coordination of electronic signals can improve traffic flow. Either effect may be desirable depending on the character of roadway where devices are installed.

A higher number of intersections in a given area leads to improved connectivity and access to destinations. This is especially beneficial for users of non-motorized travel modes or public transit, though local businesses also gain from increased vehicular accessibility to their locations. Where speed and hierarchy differentials exist at intersections (such as a local road bisecting an arterial), however, it is crucial to provide appropriate traffic control devices and geometric design features such as adequate sight distance or turn lane channelization to maintain safety. Redundant warning devices, including rumble strips, signage, and flashing lights may need to be installed at intersections experiencing frequent or severe vehicular crashes.

Because roadway capacity improvements are expensive and financial resources are limited, it is important to make as efficient use as possible of the existing transportation system before widening or adding roads. Controlling operations through coordinated signal timing or other Intelligent Transportation System (ITS) technologies will increase efficiency. Implementing access management techniques can also improve efficiency by reducing congestion and safety issues.

Access management refers to a number of techniques used to provide or manage access to land development while simultaneously preserving roadway capacity, speed, and safety. It is typically incorporated on roadways accommodating a high volume of through traffic or commercial vehicles. Access management techniques include limiting abutting driveways through zoning (both commercial and residential), installing medians, providing or improving signalized intersections, and generally pursuing roadway enhancements that decrease the number of potential conflict points occurring on travel routes. SR 21, the most heavily traveled surface road in Effingham County, currently employs some access management techniques though application is inconsistent. The prominently featured grassy median helps to enhance the corridor aesthetics in addition to controlling access and turning movements.

Regional Inset

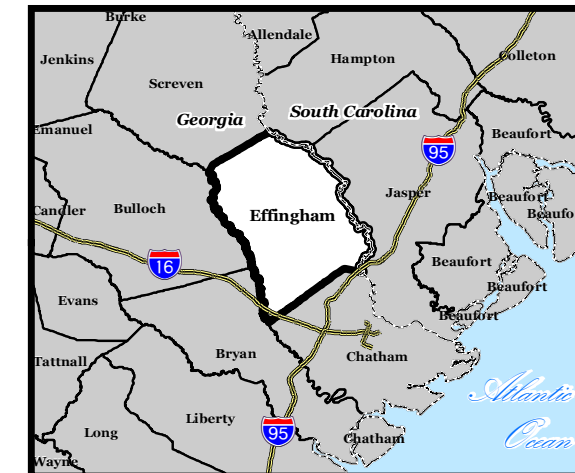


Figure 5.7

Legend

Signalized Intersection

	Signal
	4 Way Stop

Road Network

 **Interstate**
 **State Route / U.S. Highway**
 **Other Roads**

Other Layers

 Effingham County Boundary

 Other County Boundary

 **City Limits**

Water (Outside Effingham County)

Fort Stewart Military Reservation

Conservation Areas

Railroads

Source: GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Parking

The quantity, location, and design of parking facilities affect the character and function of public space. Providing too little parking at businesses or other destinations may cause patrons who drove there to park their vehicles in places not originally intended to accommodate them. Conversely, providing too much parking, particularly if visible from public rights-of-way, degrades the aesthetic quality of the corridor, inhibits use of alternative modes to access destinations, and increases water quality problems due to stormwater runoff from impervious pavement. The costs associated with constructing off-street parking can also pose a barrier to market entry for small businesses wishing to locate in a community if too many spaces are required by local zoning and development codes.

Observations and interviews with local officials indicated no parking shortages anywhere in Effingham County, including the historic centers of Guyton, Rincon, and Springfield. On-street parking is available in cities while off-street parking facilities are seen throughout the county. Newer commercial developments have tended to provide exclusively off-street lots in strip-mall type layouts. In revitalizing historic downtown areas in coming years, it may be necessary to provide parking exemptions or require parking to be located on-street or behind buildings if the community wishes to preserve the existing character of these locations. Directional signage can be installed to direct drivers to parking lots, if necessary.

Emergency Vehicles and Evacuation Routes

Emergency vehicles such as police cars, ambulances, and fire trucks depend on well-maintained and accessible transportation infrastructure to reach those in need in an acceptable amount of time. It is thus important to provide a grid of paved roads throughout the county. Currently, connectivity problems exist in northern Effingham forcing emergency vehicles to navigate circuitous dirt roads and slowing emergency response time, particularly for east-west travel movements. There is a need to pave dirt roads, align intersections, and add new roads in selected locations to benefit public safety. Signal pre-emption for ambulances transporting severely sick or injured patients to Savannah hospitals would also be beneficial; this technology is already implemented in Chatham County.

Natural disasters also put stress on the transportation system. In a coastal region, it is imperative to provide hurricane evacuation routes leading inland to higher ground. Interstates and arterials provide the greatest capacity for vehicles, with I-16, US 80, and SR 21 being designated official Atlantic hurricane evacuation routes through Effingham County. I-16 has the ability to handle accommodate contra-flow traffic, thus doubling its capacity. Effingham should continue to uphold the highest performance standards for these roadways, which accommodate not only Effingham residents, but also numerous people from other southern coastal counties during natural disasters.



Summary of Roadway Needs

Based on public and stakeholder input, as well as quantitative safety and travel demand analysis, significant capacity and operational improvements are needed to accommodate 2030 travel demand in the southern part of Effingham County. Additional roadway improvement needs include:

- Paving of some ash and dirt roads to decrease maintenance needs associated with higher volumes of traffic and to aid in emergency vehicle travel
- Constructing new local roads in places where connectivity is lacking at a variety of scales (intra-county trips to interparcel access)
- Addressing roadway and intersection characteristics in places experiencing a high number or relatively severe vehicular crashes
- Improving operations through safety and ITS enhancements, particularly on roads experiencing a high commuter and truck volume
- Adding capacity to address deficiencies along key corridors and interstate access roads
- Upgrading bridges as needed according to inspection results
- Implementing access management on existing or potential arterials while providing alternatives to their use through adequate supportive infrastructure (i.e. parallel local routes)
- Reviewing and revising parking regulations, particularly in commercial or mixed-use areas

Some needs identified for specific facilities and corresponding potential improvement strategies are detailed at the end of this chapter.

Freight Movement

Understanding and planning for goods movement has been a part of metropolitan and statewide transportation planning requirements since ISTEA in 1991. Commercial operators within the private sector manage freight movement, which is a complex, multimodal endeavor. The distribution of goods has become a field of its own; called logistics, it is the systematic process of moving a shipment from its origin to its destination. One shipment of consumer goods may move via ship, train, airplane, and/or truck from the manufacturer to the retail outlet. Therefore, not only are the means for transporting goods important (waterways, roadways, air routes, and railways), but so are the connections between the modes, known as the intermodal junctions.

In Georgia, freight is moved primarily by truck (72%) and rail (26%). Water and air modes transport an additional two percent of freight tonnage.⁴ For shorter freight routes (less than 500 miles), trucking tends to be the dominant freight mode for economic reasons. For longer journeys, rail is utilized to a

⁴ 2005-2035 Georgia Statewide Freight Plan, GDOT and Cambridge Systematics. Data is from 1998.

greater extent. The Port of Savannah is the nation's fastest growing container port and is the second largest freight generator in the state; much of this freight travels through Effingham County via Interstates and rail. Because I-16 and I-95 have very little mileage within county boundaries, rail freight movement and smaller routes used for local trucking or access to the Interstates are of primary concern in this Multi-Modal Transportation Study. Effingham has no public air or seaports used for freight movement, but the conditions of truck and rail facilities are detailed in the following sections.

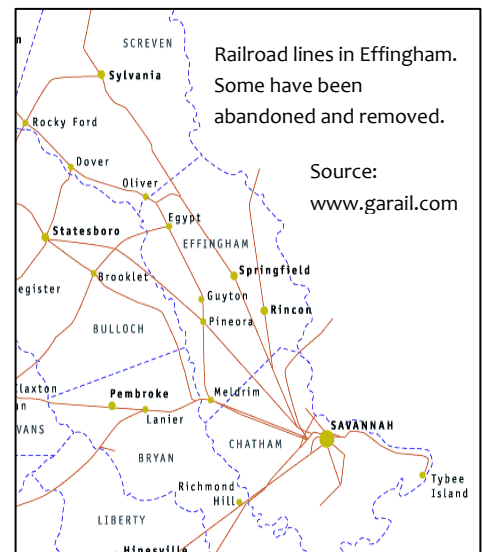
Truck

To facilitate traffic flow, improve safety, and offer economic development incentives, governments often regulate truck use of public roadways. It is imperative that industrial sites, which are important to the economic well-being of a community, are served by appropriate roadways designed, constructed, and designated for truck use. Connectivity to interstate highways and other regional arterials is essential to attract and retain industrial users. However, large trucks may hinder the operation and maintenance of local roads built for use by automobiles and light trucks. Heavier vehicles take more time than lighter vehicles to accelerate and decelerate, negatively affecting traffic flow and causing significantly more damage to roadway facilities.

Specific routes for oversized trucks are designated by the Surface Transportation Assistance Act of 1982 (STAA), a federal highway program administered by GDOT. All interstates are considered freight routes, including I-16 and I-95 in Effingham County. Additionally, United States and Georgia State Highways are intended to accommodate large trucks given their generous geometric design standards and purpose of aiding regional mobility. In Effingham, US 80, SR 21, SR 119, SR 17 are de facto truck routes. **Figure 5.8** shows truck usage on the entire roadway network. As freight movement via trucks is expected to double in the future, it will become increasingly important to ensure that routes typically used by trucks can safely accommodate them in addition to local traffic.

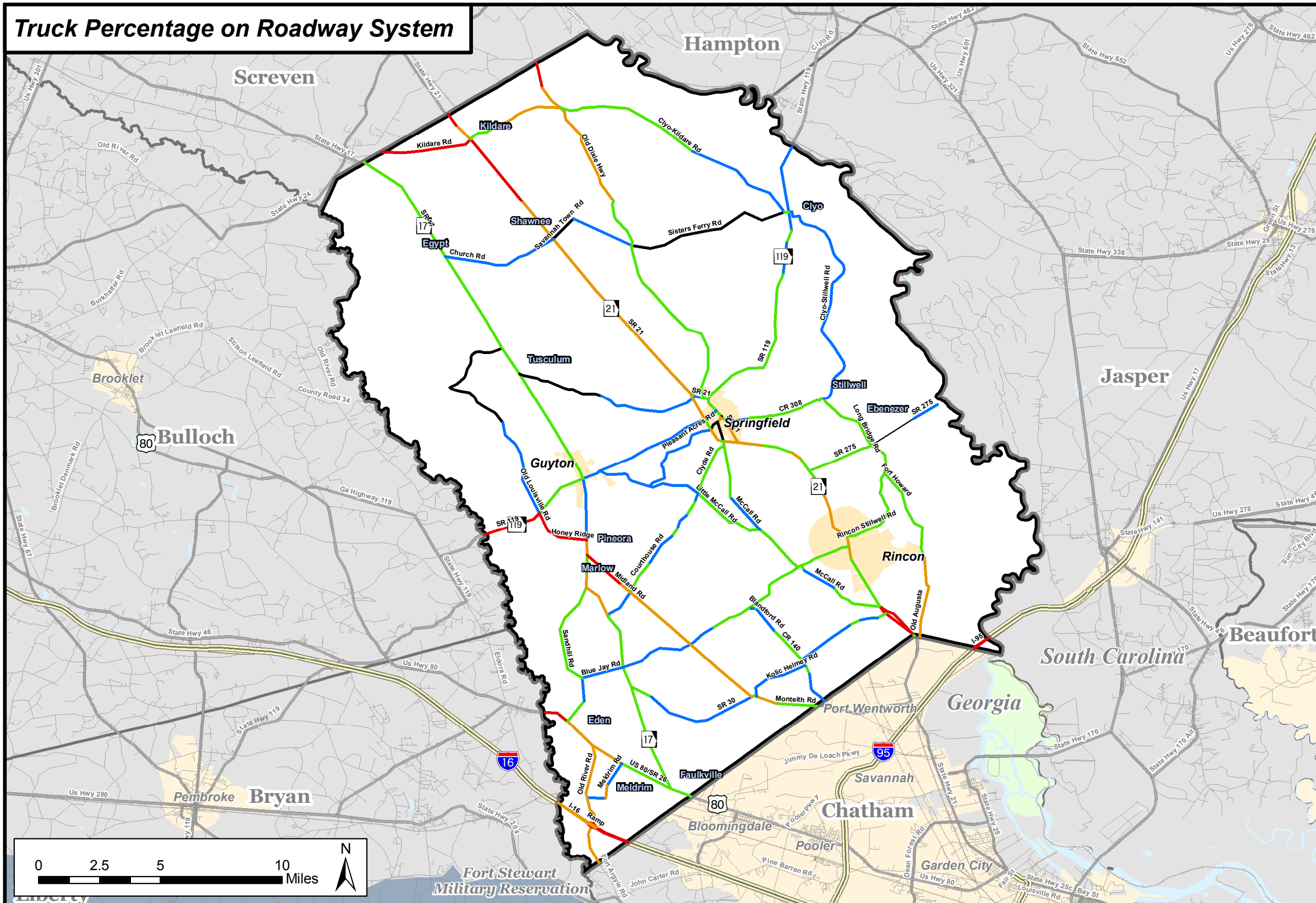
Rail

During much of Effingham's history, railways fueled its population growth and commerce. Thriving communities were prominently located along several major rail lines, two of which are still in operation today. Norfolk-Southern owns one north-south line in the central portion of the county, connecting Savannah to Springfield and Shawnee before continuing on to Screven County. It is used exclusively for freight movement. CSX owns a rail line on the eastern side of the county, connecting Savannah to Denmark, SC via Rincon and Clyo. This line is used primarily for freight movement, but also accommodates daily Amtrak service. Several spur lines from each set of railroad tracks exist to accommodate local power and manufacturing plants in the county. A small length of spur track in the northern part of the county is owned by GDOT.



Effingham County Transportation Plan

Truck Percentage on Roadway System



Regional Inset

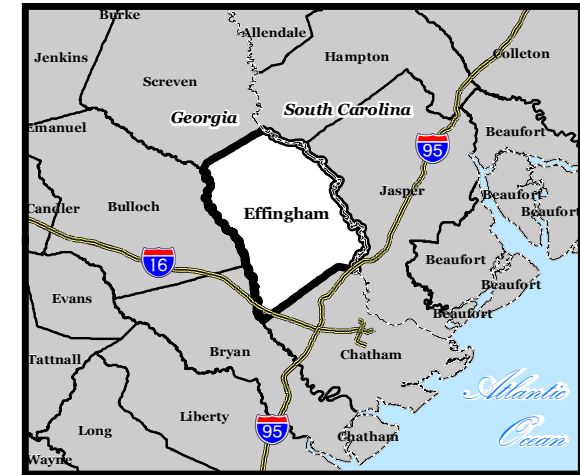


Figure 5.8

Legend

Truck Percentage on Roadway System
(From 2001 Effingham County Model Network)

- > 15 %
- 10 to 15 %
- 5 to 10 %
- Less than 5 %
- Unknown

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water (Outside Effingham County)
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: Effingham County, GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Because most railroads are privately owned, they have latitude regarding the manner in which they conduct their operations. Thus, the primary role of Effingham County is to ensure safety at crossings and maintain access to future intermodal facility locations. There are currently 82 rail crossings in the county, 48 of which are at-grade crossings on public roads. The others are on private land and/or are grade-separated. All of these railroad crossings have signage or signal warnings, though only two-thirds of the crossings (31) are on paved roads. The number of daily trains at each site varies between 0 and 21, with thirteen crossings experiencing almost one train per hour. **Figure 5.9** shows Effingham's rail infrastructure and public grade crossings.

From 2000 to 2007, there were six collisions between trains and motor vehicles at railroad crossings resulting in two injuries. (An additional fatality occurred when a person was struck by a train while laying on the tracks.) Three incidents took place at W Johnson Street in Rincon, while single incidents occurred at crossings at W 9th Street in Rincon, Indigo Road north of Stillwell, and Rahn Station Road south of Springfield. Due to safety concerns, it is the general policy of the federal government and major railroad owners to discourage the construction of new at-grade crossings. Existing crossings experiencing train incidents may need additional warning signals or barriers installed. It may also be wise to consider new or alternative roadways to avoid at-grade crossings. At this time, several of these crossings are slated for enhancement in the county's Capital Improvement Program.

Summary of Freight Needs

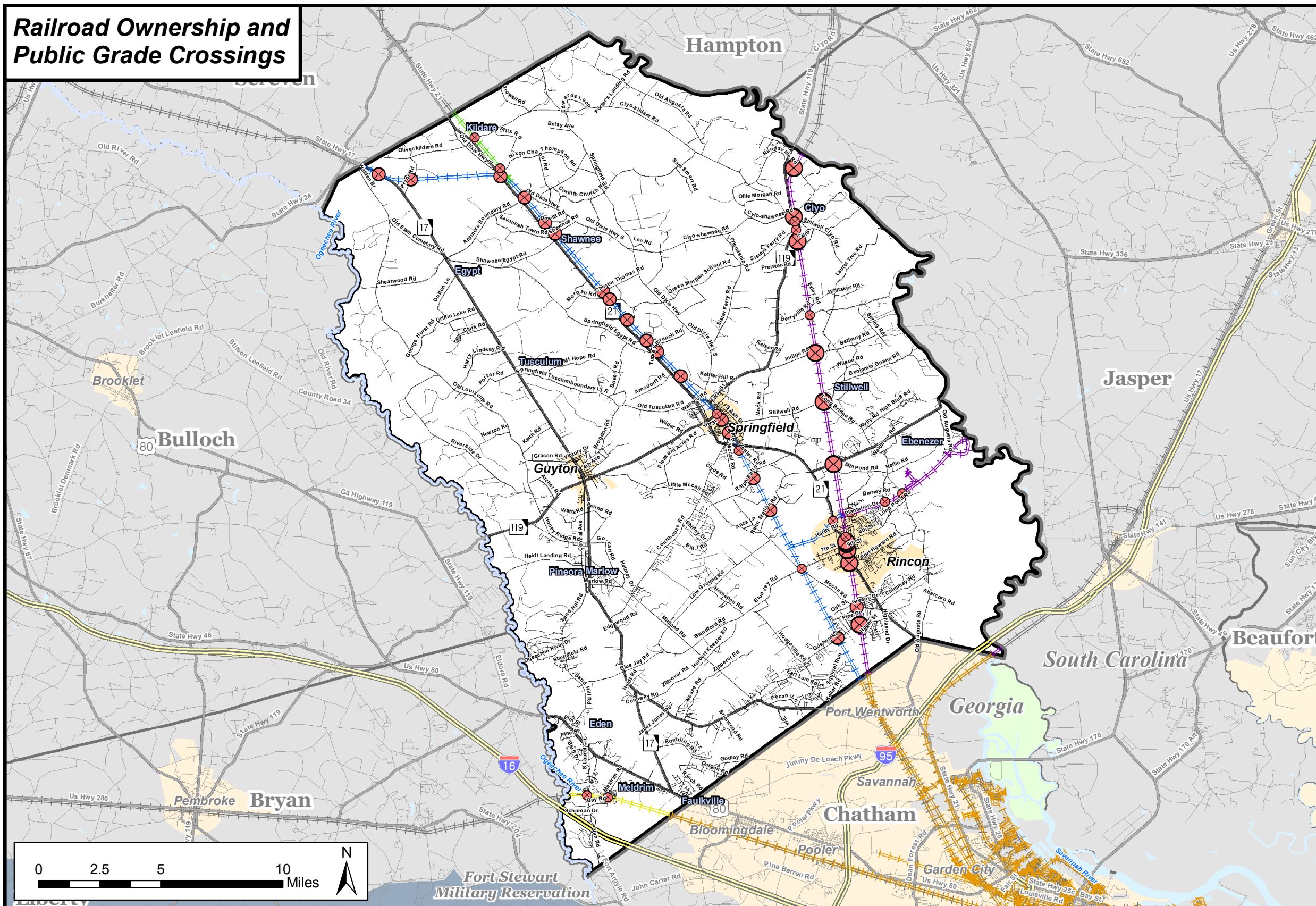
The Port of Savannah is one of the largest container ports in the United States and handles over 15 million tons of freight each year, which is distributed inland mostly via truck and railroad. Logistics sector employment spills over into Effingham, which offers a number of comparative advantages including inexpensive large tracts of land set aside by the Economic Development Authority, access to major highways, and amenities important to employees and their families such as high-quality schools and housing opportunities.

The Port of Savannah has plans for expansion to accommodate even more container movement and larger vessels. This will certainly impact Effingham as more truck and rail traffic will be distributed through the county. New jobs created by the port expansion will also increase the number of commuters from Effingham to Chatham County. Both impacts necessitate adequate north-south roadway and rail transportation facilities. In addition, the increased commuter volume may generate need for public transportation options to relieve stress on the network.

Designating some roads as official truck routes may help to better contain truck traffic, while installing more warning devices at problematic railroad crossings can increase the safety of car-train interactions. On the land use side, it is imperative that the county provide freight access to the industrial parks it is developing, first to provide stimulus for in-county employment, but second to channel trucks away from roadways that are used by a high volume of local traffic.

Effingham County Transportation Plan

Railroad Ownership and Public Grade Crossings



Regional Inset

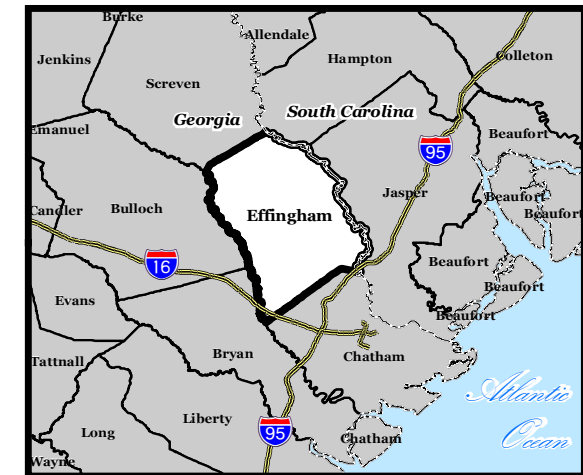


Figure 5.9

Legend

Trains per Day at Crossing

- Greater than 15 Trains
- 8 to 14 Trains
- 1 to 7 Trains

Railroad Ownership

- CSX-T Railroad
- Georgia Central Railway
- Georgia Department of Transportation
- Norfolk Southern
- Chatham Railroad
- Surrounding County Railroad

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas (Outside Effingham County)

Source: Effingham County, GDOT, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Pedestrian and Bicycle

Bicycle and pedestrian infrastructure provide a safe environment for making short trips between home, school, work, or recreational destinations. Because of the marginal cost involved and the need to provide transportation choice, it is the policy of the USDOT to incorporate bicycle and pedestrian facilities in all new transportation projects unless exceptional circumstances exist⁵. Further, for roadways that may need to accommodate transit in the future, setting aside right-of-way or space for shelters ahead of time will increase the possibility that transit can be easily implemented, if warranted, with minimized costs. Ensuring that roadways are designed to accommodate pedestrians, bicyclists, and transit vehicles in addition to automobiles is known as providing “complete streets”.

Existing Pedestrian Conditions

GIS data on existing sidewalks in Effingham do not yet exist, but field surveys and interviews with local officials revealed the locations of sidewalks in Effingham County. They are primarily located in the historic areas of incorporated cities, in some subdivisions, and along portions of roads experiencing relatively recent development activity. Most county roadways completely lack sidewalks, and where sidewalks do exist, they are often narrow and present on just one side of the road. Sidewalks are not required by Effingham County regulations, and therefore are not included in many developments.

Summary of Pedestrian Needs

Areas of pedestrian need were identified by creating ½ mile walking distance buffers around community facilities (including schools, parks, libraries, civic buildings, and hospitals) and along various road types according to FHWA guidelines⁶. **Table 5.4** shows the FHWA sidewalk recommendations as classified by roadway types and adjacent development.

⁵ **Accommodating Bicycle and Pedestrian Travel: A Recommended Approach** is a policy statement adopted by the United States Department of Transportation. The Policy Statement was drafted by the U.S. Department of Transportation in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups.

⁶ *Designing Sidewalks and Trails for Access. Part II of II: Best Practices Design Guide*, FHWA (2001)



Table 5.4 FHWA Sidewalk Guidelines

Roadway Classification and Land Use	Sidewalk Requirements	Future Phasing
Highway (rural)	Min. of 60 inch shoulders required.	Secure/preserve ROW for future sidewalks.
Highway (rural/suburban - less than 1 d.u./acre)	One side preferred. Min. of 60 inch shoulders required.	Secure/preserve ROW for future sidewalks.
Suburban Highway (1 to 4 d.u./acre)	Both sides preferred. One side required.	Second side required if density becomes greater than 4 d.u./acre.
Major Arterial (residential)	Both sides required.	
Collector and Minor Arterial (residential)	Both sides required.	60 inch
Local Street (Residential - less than 1 d.u./acre)	One side preferred. Minimum of 60 inch shoulders required.	Secure/preserve ROW for future sidewalks.
Local Street (Residential - 1 to 4 d.u./acre)	Both sides preferred. One side required.	Second side required if density becomes greater than 4 d.u./acre
Local Street (Residential - more 4 d.u./acre)	Both sides required.	
All Streets (commercial areas)	Both sides required.	
All Streets (industrial areas)	Both sides preferred. One side required.	

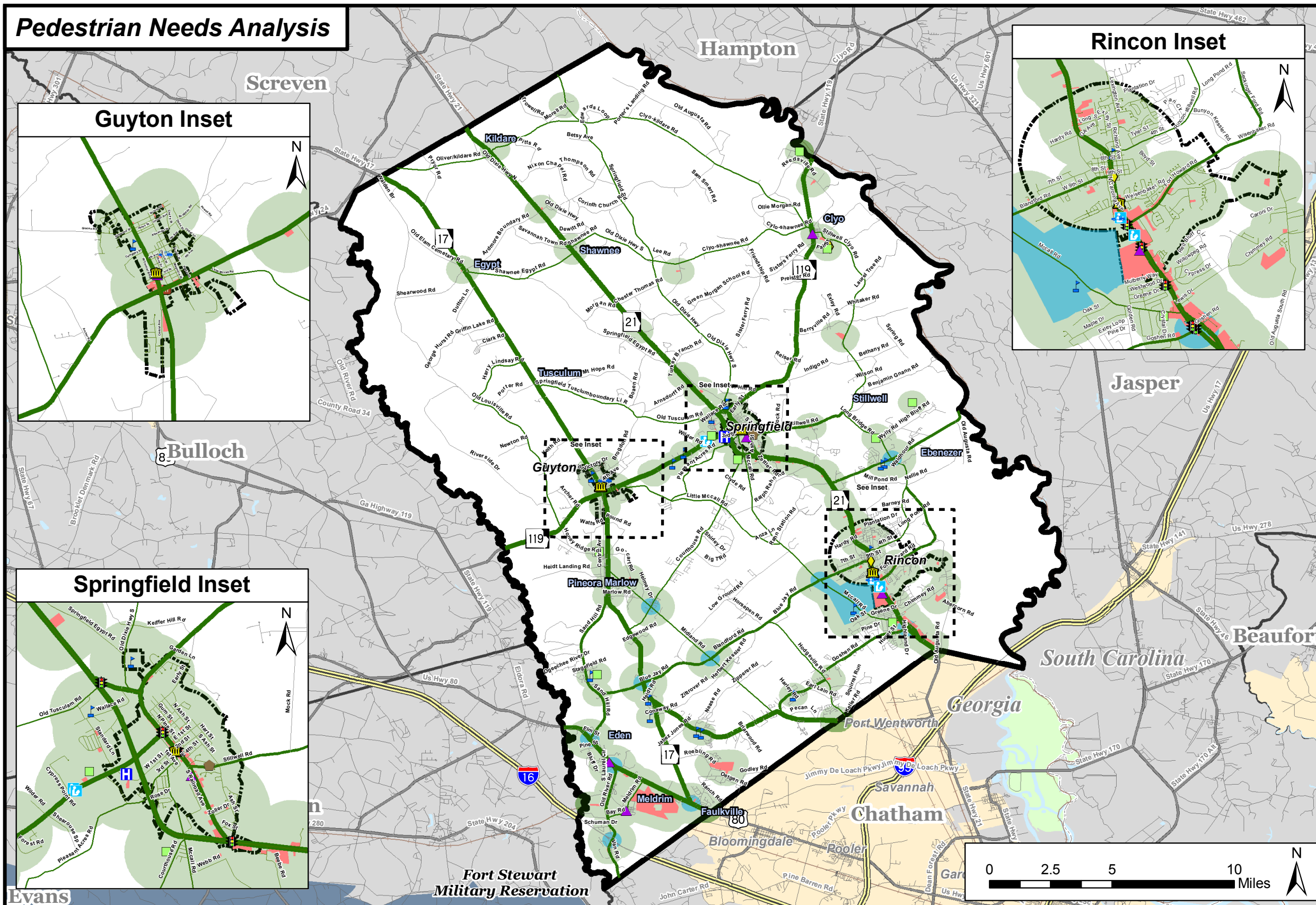
Note: d.u. stands for dwelling unit.

Based on GIS analysis, **Figure 5.10** displays areas and roadways that would benefit most from the addition and/or maintenance of sidewalks. For Effingham County, all roadways in the vicinities of commercial areas are shown as needing sidewalks on both sides of the streets. All arterials and collectors are identified for pedestrian needs with potential improvements ranging from right-of-way preservation to implementing sidewalks. Although FHWA guidelines suggest sidewalks along local roads, many communities prefer to focus their resources on collector and arterial roads first, allowing pedestrians to make use of the street on lower volume residential roads.

If sidewalk improvements are to be prioritized, clusters of ½ mile “need buffers”, commercial areas, and the highest functional classes of roadways should obtain sidewalks first. New roadway capacity projects (widened or new roads, including those located in subdivisions) should require sidewalks or otherwise preserve right-of-way. In making pedestrian travel accessible and attractive, installation of sidewalk ramps, marked crosswalks, and possibly pedestrian signals in appropriate places is needed to ensure safety. Sidewalks are an essential part of the public realm and their use links people to community facilities on a scale that promotes social interaction. In addition, studies have documented the health benefits of regular walking for transportation and recreation.

Effingham County Transportation Plan

Pedestrian Needs Analysis



Regional Inset

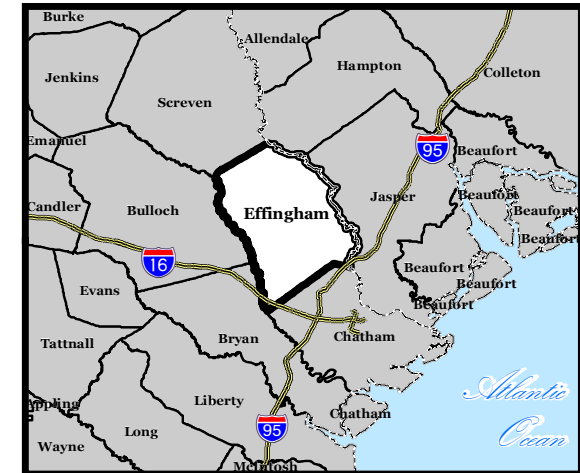


Figure 5.10

Legend

Pedestrian Needs Analysis

- Roads Identified For Pedestrian Improvements (thicker lines are higher roadway functional class)
- 1/2 Mile Buffer of Community Facilities
- Schools
- Library
- Parks
- City Hall
- Police Department
- Post Office
- Community Center
- Senior Center
- Park & Ride Lot
- Commercial Zoning
- Future Development Nodes

Signal Type

- Signalized Intersection
- 4-Way Stoplight

Road Network

- Interstate (Outside Effingham County)
- Other State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits (Inside Effingham County)
- City Limits (Outside Effingham County)
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT, Effingham County, and Jacobs Carter Burgess

This map is intended for planning purposes only.



Existing Conditions for Bicycle Transportation

Over half of all car trips are less than 5 miles in length, and approximately one quarter of car trips are less than 2 miles in length. While areas that are more rural may experience somewhat higher average trip lengths, bicycles can provide convenient transportation for destinations 1 to 5 miles away. More experienced riders may be comfortable commuting up to 20 miles provided there are adequate facilities.

According to the American Association of State Highway and Transportation Officials (AASHTO), there are three types of bicycle facility:

- Bicycle Routes, where route is defined as “a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways”
- Bicycle Lanes, where lane is defined as “a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists”
- Shared Use Paths, where shared use path is defined as “a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users”

Any of these facilities may be implemented in Effingham, depending on their predicted users, coordination with automobile traffic, and several other factors. On-road bicycle lanes (both sides) are generally preferred because they allow higher bicycle speeds and cross over the ends of fewer driveways. Shared-use paths are useful for children and relaxed recreational riders who are uncomfortable sharing the road with automobiles. Just as for sidewalks, connectivity in the bicycle network is very important. Riders of all abilities should be able to use the network.

There are sizeable portions of three State bicycle routes in Effingham, two existing and one proposed by the Coastal Georgia Regional Bicycle and Pedestrian Plan: Coastal route 95, Savannah River Run route 85, and a proposed route on SR 21 that provides direct access to Savannah and connects existing State Bike Routes. All are on-road facilities demarcated solely by signage. The Coastal route (95) runs from Florida to South Carolina via Camden, Glynn, McIntosh, Liberty, Bryan, Chatham, and Effingham counties. The Savannah River Run (85) connects Savannah to North Carolina along the eastern border of the state. Both of these routes utilize GA 17 and GA 119 in Effingham. The proposed new route begins at Jimmy DeLoach Parkway and SR 21 in Chatham, travels north along SR 21, and terminates in Springfield at Coastal route 95. Small lengths of two other State bicycle routes utilize US 80 in the southwest corner of Effingham, connecting Chatham to Bulloch County.

Besides designated State bicycle routes, there are is one other existing bicycle facility in Effingham County. A striped county bike lane runs the length of Ebenezer Road, connects to a boat landing, and



maintained. Lastly, a planned shared-use trail and park is located along an abandoned rail bed in the center of Guyton. Funded by a Transportation Enhancement grant, it is approximately one mile long, but it could be extended as the rail bed spans the length of the county.

Despite the general lack of formal bicycle facilities in the county, residents still use bicycles for recreation and have, on occasion, suffered injuries in bicycle/car collisions. Between 2000 and 2006, eighteen incidents were recorded, two of which resulted in fatalities. Based on the incident data, approximately half the bicycle victims were under the age of 20, and many accidents occurred in the afternoon and early evening. Additional bicycle facilities could enhance cycling safety while providing for recreational bicyclists, especially children, throughout the county.

Summary of Bicycle Needs

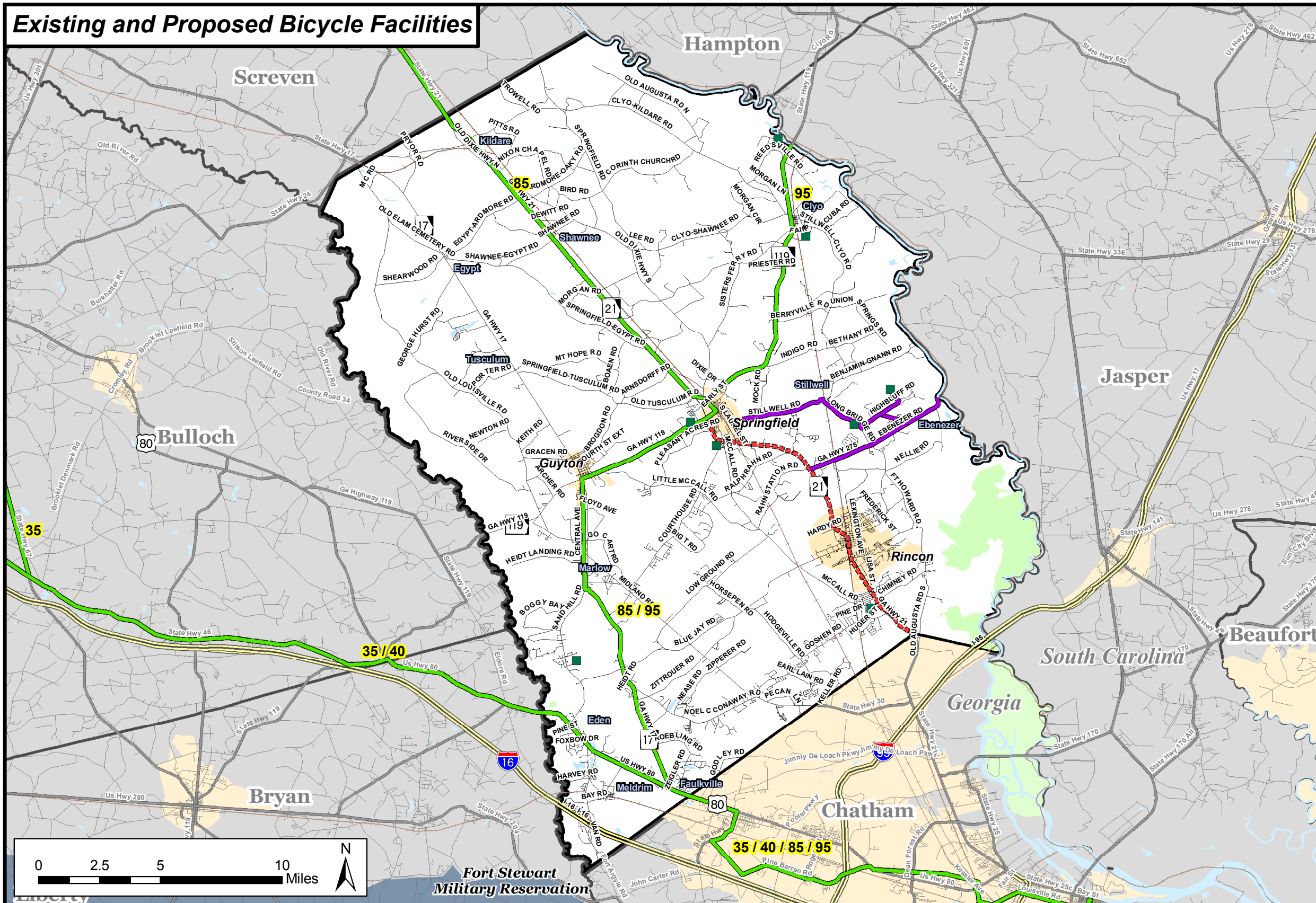
Though the existing and proposed routes connect to each other and provide recreational opportunities for citizens, there is a need to upgrade these facilities and add others so that bicycling is a viable and accessible transportation option in Effingham County. It is recognized by the Coastal Georgia Regional Bicycle and Pedestrian Plan that existing and proposed on-road routes utilizing state highways present some danger to cyclists due to the volume and proximity of high-speed motor vehicle traffic.

Providing dedicated facilities, either marked lanes or off-roadway shared-use paths as described by AASHTO, and better maintaining these facilities would be beneficial to cyclists. New facilities are needed connecting activity centers, especially schools and parks, as well as existing bicycle routes to provide a comprehensive network for current and potential cyclists. Consideration regarding placement of bicycle facilities should take into account the potential level of service, which is based on a variety of factors, including outside lane width, traffic volume, grade, pavement conditions, and truck percentage on shared or adjacent roadways.

Transit

The purpose of the transportation system is to move people and goods from place to place. If people and goods are spread out among many vehicles, congestion results when there are more vehicles vying for space than there is roadway capacity. In order to increase the efficiency of the transportation system, public transit vehicles can be utilized to accommodate the many people who are taking similar routes to common destinations. Because of its phenomenal growth, Effingham is approaching the point to where various forms of mass transit can be financially viable. Commuters as well as the one-third of Americans who do not drive for various physical, legal, or financial reasons can benefit from having increased travel choices in the county.

Existing and Proposed Bicycle Facilities



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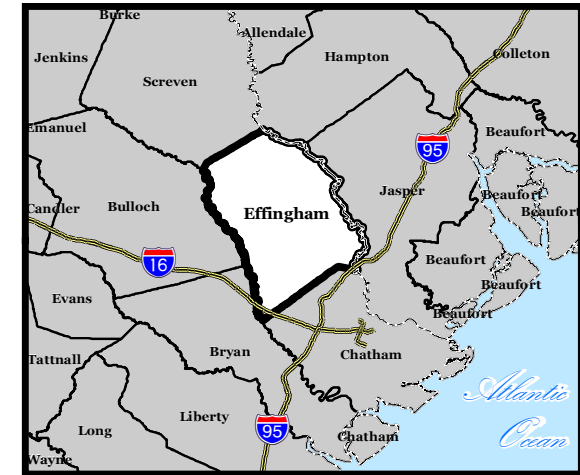


Figure 5.11

Legend

Existing and Proposed Bicycle Facilities

- 00 Bicycle Route Number
- Existing State Bicycle Route
- Existing County Bicycle Route
- Proposed State Bicycle Route

Road Network

- Interstate (Outside Effingham County)
- Other State Route / U.S. Highway
- Other Roads

Other Layers

- Parks
- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT, Effingham County, and Jacobs Carter Burgess

This map is intended for planning purposes only.

**Bus Routes and Park and Ride Lots**

Though approximately half of Effingham's labor force commutes to Chatham County for work, no regional bus routes exist to provide an alternative to commuting in a personal vehicle. As a result, peak period congestion is a common occurrence in the southern portion of the county where the road network is not developed enough to handle demand from so many individual vehicles. The Chatham Area Transit (CAT) system, by charter, is confined to Chatham County, though this situation may change as parts of Effingham are incorporated into the Savannah MSA in the next Census.

To provide a central meeting place for car/vanpool formation and future commuter bus stops, there are two park-and-ride lots in Effingham. One lot has 20 spaces in downtown Guyton and the other has 53 spaces at the Effingham County Courthouse in Springfield. No formal programs exist to increase the knowledge and utilization of these lots.

Rural demand-response [para]transit providers do have a presence in the county. The CGRDC contracts with the Georgia Department of Human Resources (DHR) for provision of coordinated transportation services. It administers the DHR transportation contract and subcontracts with various providers throughout the region for provision of coordinated transportation services for the Division of Aging Services; the Department of Family and Children Services; the Division of Mental Health, Developmental Disabilities, and Addictive Diseases; and the GoodWorks Program. Paratransit gives eligible DHR consumers an opportunity to enhance their health, independence, and self-sufficiency.

Initiated in 2005, the *Regional Plan for Rural and Coordinated Public Transportation* study is currently underway to develop seamless regional transit service. Phase I, which explored the need for service based on public input and census data, has been completed. In this initial phase, it was determined that Effingham had an estimated minimum demand of almost 25,000 annual transit trips⁷.

The county anticipates being able to make transit a more realistic option for many residents, with help from *United We Ride* for which Georgia received a grant of \$75,000 in 2006. *United We Ride* is an interagency Federal initiative that supports states and their localities in developing coordinated human service delivery systems. The grant will help with completion of the CGRDC Regional Plan – the final phase will develop implementation measures such as routes and a fee structure. It is likely that most of Effingham's transit needs will be fulfilled, at least initially, using paratransit services.

Potential for Commuter or Passenger Rail Service

The CSX tracks are used primarily for freight movement, but Amtrak also operates daily passenger service on them via its Silver Star route connecting New York to Miami. Though the tracks go through central Rincon, there are currently no stops in Effingham County on this route; the nearest passenger

⁷ Regional Plan for Rural and Coordinated Public Transportation. Presentation: Final Report, November 30, 2005. CGRDC.



terminal is located in northwest Savannah. The CSX tracks and Amtrak route are part of the National High Speed Rail Corridor connecting Florida to Maine. Regional commuter service to nearby cities could also be implemented along existing rail rights-of-way when demand is sufficiently high to justify capital and operational investments. In the interim, it should be the policy of Effingham and its cities to protect these rights-of-way from development.

Summary of Transit Needs

In addition to providing commuter service to Chatham, a need exists to transport citizens to hospitals, community facilities, and other non-work destinations as indicated by public and stakeholder feedback. In areas with low or geographically dispersed populations, however, a fixed route transit system is often not financially feasible and other alternatives such as taxis, vanpools, and paratransit must fill in the gap. This plan supports the ongoing efforts of the CGRDC and *Regional Plan for Rural and Coordinated Public Transportation*.

Identified Deficiencies and Possible Solutions to be Evaluated

Through interviews of stakeholders and general public input, specific facilities with perceived deficiencies were noted, often repeatedly. These facilities, along with possible mitigation strategies to be evaluated, are compiled in **Table 5.5**. There were a number of issues that occurred countywide which were mentioned as well. Countywide problems and mitigation strategies are listed in **Table 5.6**. These issues and mitigation strategies by no means compose a fully inclusive list; rather they reflect recorded concerns and preliminary responses.

Primary capacity projects to be tested in the travel demand model include the construction of Effingham Parkway, improvements to Old Augusta Road / Rincon Bypass, the potential widening of SR 21, and new paved roads in selected locations. Numerous operational and intersection improvements will be evaluated as well.


Table 5.5 Transportation Deficiencies Noted on Specific Facilities and Possible Mitigation Strategies

Location	Issue	Possible Mitigation Strategies
SR 21, south of Rincon	Congestion	Traffic signal synchronization and other ITS improvements Access Management – limit driveways along corridor, control access at intersections Add network capacity to SR 21 or parallel routes (Effingham Parkway, Old Augusta Road) Work with Chatham County to address downstream interchange problems at I-95 and SR 21
SR 21 in vicinity of Rincon	Too many trucks	Rincon Bypass – pave and possibly widen Old Augusta Road, realign intersection of Old August Road and Fort Howard Road Construct Effingham Parkway, extend Fort Howard Road to it
SR 21, various locations	Unsafe or poorly performing intersections	Signalization, realignment, sight distance improvements as necessary • 9th Street, Rincon • McCall Road, Rincon • Chimney Road, Rincon (possible to realign with McCall Road to make one intersection) • 4th Street, Rincon • SR 119, Springfield
SR 119 between Guyton and Springfield	Capacity and safety issues when schools let out	Widen road to accommodate school bus turning movements and lessen disruption of traffic flow
SR 119	Unsafe pedestrian and bicycle environment	Add sidewalks on both sides to safely accommodate children walking to school Add shoulder bike lanes on both sides to accommodate both schoolchildren and recreational bicyclists since SR 119 has two state bicycle routes on it Install marked crosswalks in front of schools and pedestrian/traffic signals if necessary
I-16 and Old River Road	Deficient interchange	County has prepared an Interchange Modification Report (IMR) to address this
Downtown areas – Springfield, Guyton, Rincon	Streets do not effectively accommodate pedestrians, etc	Conduct streetscape and pedestrian study with planning staff Springfield – connect sidewalks along Ash Street and South Laurel Street. Provide pedestrian crossing facilities at McCall Road and SR 21 bypass
SR 119 at SR 21	Not enough clearance for trucks pass under railroad bridge so they go through downtown	Divert trucks from historic center of city with new bypass connecting SR 119 to SR 21 in better location Increase bridge clearance at SR 21, north of Springfield
US 80, SR 17	Congestion, safety issues	Signalization, intersection realignment, sight distance improvements as necessary Traffic signal synchronization and other ITS improvements Access Management – limit driveways along corridor, control access at intersections
Sandhill Road at US 80	Safety issues	Signalization, intersection realignment, sight distance improvements as necessary
Fort Howard Road	New subdivisions anticipated to cause more traffic	Increase capacity of Fort Howard Road and/or create neighborhood access to nearby roads (improve connectivity so travel can occur on other routes)



Table 5.6 Transportation Deficiencies Noted Countywide and Possible Mitigation Strategies

Issue	Possible Mitigation Strategies
Limited connectivity inhibits emergency vehicle response, paratransit service, and emergency evacuation; increases congestion along key corridors	Identify areas of least connectivity and add new roads and/or improve existing roads and intersections as necessary • Require new subdivisions to have road stubs at parcel boundaries to connect to future or existing development • Require that all new roadways connect to future or existing roads at both ends, with easements set aside where necessary • Pave dirt and ash roads in areas of limited paved road connectivity • Extend Carolina Street to Lowe's (Home improvement) • Extend Morgan Road to SR 17 • Extend Shawnee Road to Corinth Church Road • Extend McCall Road to Chimney Road • Extend Smith Avenue north to 4th Street to relieve 9th Street intersection
Lack of pedestrian facilities	Add sidewalks in cities, commercial areas, residential streets with >1 unit / acre, near community facilities.
Lack of bicycle facilities	Add bicycle lanes, paths, and routes along connective roadways (collectors, arterials), in commercial areas, near community facilities, in higher density residential areas
Lack of transit services	Recommendations from Regional transit plan, additional coordination with Chatham Area Transit Services
Ambulances to Savannah get stuck in traffic	Give ambulances traffic signal preemption devices



APPENDIX A. Public Involvement Documentation

Summary of Stakeholder Input

Twenty-two stakeholders were identified and interviewed. Detailed question and answer forms were provided under separate cover, and will be included in final document. The following stakeholders were interviewed:

Name	Title	Affiliation
John Henry	Director and CEO	Effingham County Chamber of Commerce and Economic Development Authority
Charles Hinely	Councilman	City of Springfield and Effingham County Economic Development Authority
Delmons White	Pastor	Macedonia Baptist Church and Effingham County Economic Development Authority
Adam Kobeck	Assistant County Administrator	Effingham County
George Shaw	Planner	Effingham County
Steve Liotta	Engineer	Effingham County
David Crawley	Zoning Administrator	Effingham County
Lowell Morgan	Public Works Director	Springfield
Brett Bennett	City Manager	Springfield
Donald Toms	City Manager	City of Rincon
LaMeisha Hunter	City Planner	City of Rincon
Walter Wright	Fire Department	Effingham County
Jimmy McDuffie	Sheriff	Effingham County
Richard Bush	Chief Deputy	Effingham County
Val Ashcraft	Fire Chief	Effingham County
Homer Wallace	President	NAACP – Effingham County
Lucy Powell	Secretary	NAACP – Effingham County
Randy Shearhouse	Superintendent	Effingham County Board of Education
Ed Brown	Chief Financial Officer	Effingham Hospital
Carrie Thompson	Public Affairs Manager	Georgia Pacific
Jay Ryczkowski	Engineering Manager	Georgia Pacific
Brent Howell	Manager, Government Affairs	Georgia Pacific



The following overarching themes of the stakeholder interview are listed below:

- Effingham County is experiencing significant population growth that is going to continue and it must be planned and controlled.
- Need more balance between people/housing and jobs and between the southern and northern portion of the county.
- Traffic congestion is a critical challenge in certain transportation corridors that requires immediate action to prevent gridlock in those corridors.
- The existing transportation system does not adequately support land use.
- Truck traffic is a major concern. However, there are several additional routes proposed to address the problem.

Summary of Public Questionnaire Responses

Questionnaire Responses were received from 15 participants. Although this is not a statistically significant quantity, the comments do provide an insight into the issues that are important to people, and there are some clear commonalities in where people see the most immediate problems as being.

Of the 15 respondents, 12 were employed, 2 were retired and 1 was disabled and not working. As can be seen in the highlighted cells in **Figure A.1**, only one of the respondents worked in the same area as they live. Two respondents cited more than one area in which they worked.

		<u>WORK</u>					
		Springfield	Guyton	Rincon	Uninc Effingham Co	Chatham Co	Other
<u>LIVE</u>	Springfield					1	
	Guyton						
	Rincon					4	
	Uninc Effingham Co			1	1	5	2

Figure A.1 Where People Live and Work

Of those people in employment, the majority (10 out of 12 people, 83%) worked in Chatham County, with five of these living in unincorporated Effingham County, 4 in Rincon and 1 in Springfield.

The questionnaire first asked. **what are your visions and goals for Effingham County? (Include live, work, play, shop, education, growth)** Figure A.2 summarizes the results.

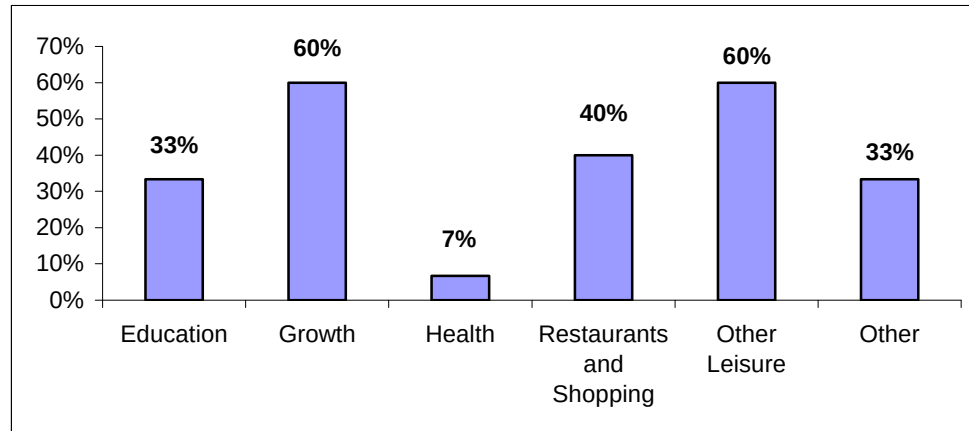


Figure A.2 Goals and Objectives for Effingham County

(figures do not total 100% because people could provide several goals and objectives)

Of the nine responses relating to growth, four specified the area of jobs and industry, and two specified environmentally sensitive or continued but slower growth. Of the nine responses on *other leisure*, two specified young people or families, and three specified more parks.

Respondents were then asked to choose three issues from a list of **What do you think are the most critical problems the county will face over the next 25 years?**

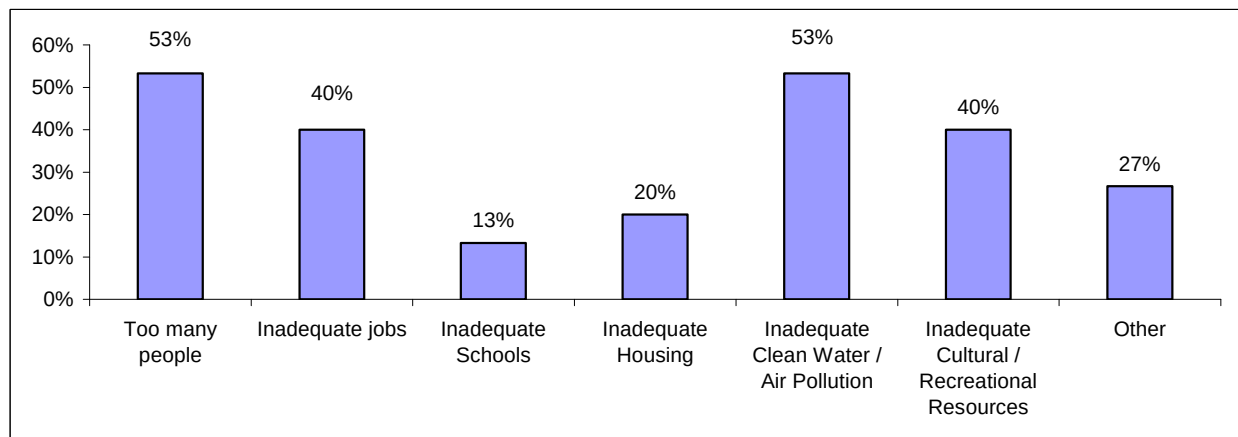


Figure A.3 Critical problems over the next 25 years

(figures do not total 100% because people could make up to 3 choices)

Respondents selected a range of the available issues, though *too many people* and *inadequate clean water/air pollution* were the joint-favorites, closely followed by jobs and cultural/recreational resources. The issues specified by the 5 people answering *Other* included traffic, high taxes, less traffic signals, limiting developments that generate a lot of traffic, and the condition of rented property.



Traffic and congestion was an almost unanimous response to the question **what are the major transportation problems you face as you move about Effingham County on a day-to-day basis?**

Twelve comments relating to congestion were received, of with over half specifying Highway 21. Other comments mentioned better road maintenance, bottlenecks, throughways and stop lights, and better road safety and pedestrian crossing facilities.

The questionnaire then asked to **identify areas in the existing transportation network that you feel need immediate attention.**

Twelve people responded on this, and 10 of those responses mentioned Highway 21. Four of these mentioned the need for widening of Highway 21 or for a North-South alternative to provide relief for the I-95 interchange at US 21 and US 21 North of Rincon. Other responses included a need for door-to-door transit to serve the handicapped population.

Finally people were asked to make four choices from a list in response to **what do you believe are the most critical transportation needs in Effingham County?**

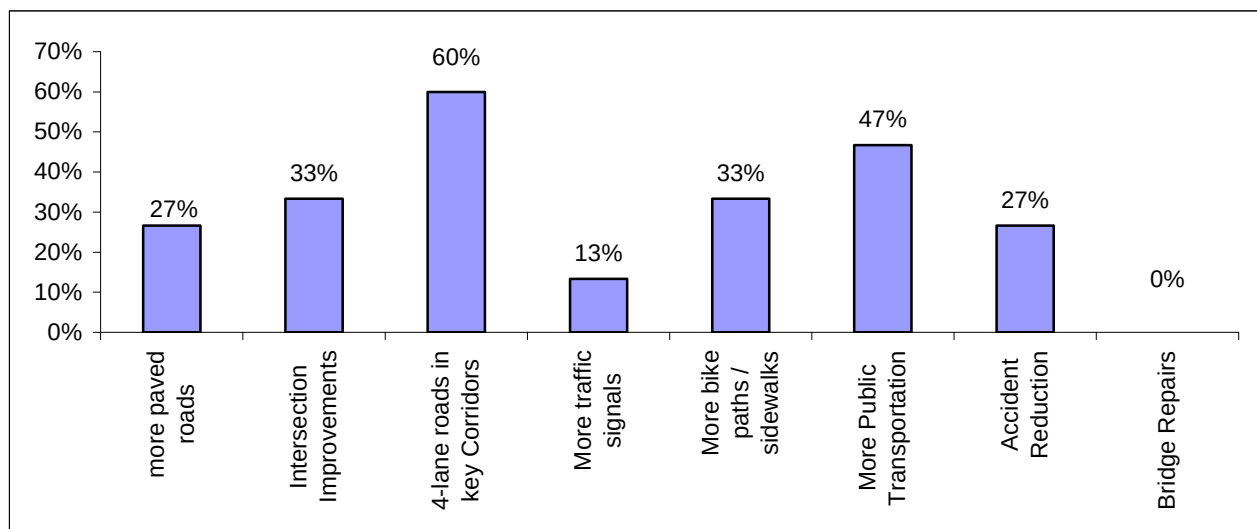


Figure A.4 Critical transportation needs in Effingham County

(figures do not total 100% because people could make up to 4 choices)

As illustrated in **Figure A.4**, 60% of respondents were in favor of 4-lane highways, citing Hwy 17, Hwy 21/95, Hwy 30 and Midland Road, Blue Jay Road and Old Augusta Road in response to the request to identify which corridors should be 4-lane. 33% also felt intersection improvements were critical. 47% felt that more public transportation was a priority.



APPENDIX B. Overview of Socioeconomic Data Forecasting

This section provides an overview of the creation of socioeconomic data for use in the travel demand model and the workings of the travel demand model itself. Population and employment projections and geographic distribution thereof are tied to character areas and other growth factors set forth by the county's Future Zoning and Development map.

Effingham Population and Employment Projection Methodology

Introduction

Effingham County is in the process of creating a long-range transportation plan, which helps to identify and prioritize transportation needs throughout the county over the next 20-25 years. In order to determine what infrastructure improvements may be necessary in this timeframe, the overall population and employment of Effingham County must be forecast to the planning horizon year, 2030. The locations of residents and jobs can then be allocated to smaller geographic areas throughout the county to determine potential travel stresses on individual transportation facilities. A computerized Travel Demand Model (TDM) is used to quantify these stresses.

Historic and Current Population

Effingham County is part of the 10-County Coastal Region of Georgia, as well as the three-county Savannah Metropolitan Statistical Areas (MSA). The 10-County Coastal Region consists of Bryan, Bulloch, Camden, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Screven. Major regional cities include Savannah in Chatham County, Statesboro in Bulloch, Hinesville in Bryan, Brunswick in Glynn, and St. Mary's in Camden.

In recent years, the Coastal Region has experienced a high rate of population growth with a 17.5% increase between 1990 and 2000 alone. Because of this rapid growth and the perceived inability of traditional population projection methods to adjust to the unique context and trends of the Coastal Region, the Coastal Georgia Regional Development Center (RDC) collaborated with the Georgia Tech Center for Quality Growth and Regional Development (CQGRD) to produce population projections for the 10-County area. The populations of each county and its incorporated areas were forecasted to 2030.



10-County Georgia Coastal Region
Source: www.coastalgeorgiardc.org



Effingham County's population has grown from less than 14,000 people in 1970 to almost 47,000 people in 2005. The county has benefited from its proximity to the region's largest city, military bases, and universities. The perceived quality of the public school system, rural character, and relatively low taxes also serve to attract residents. **Figure B.1** depicts historic population growth for Effingham County.

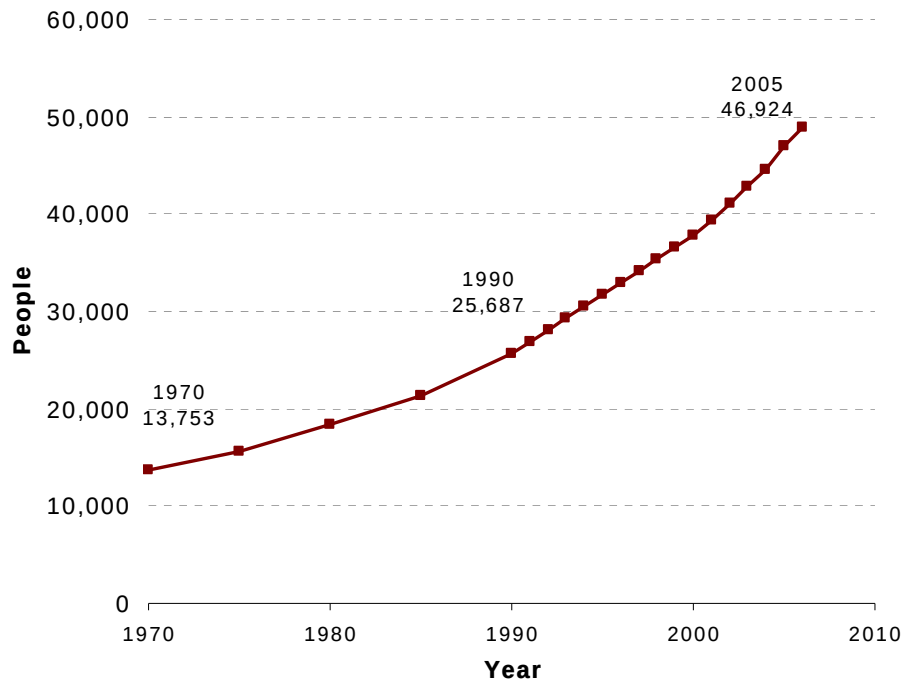


Figure B.1 Population of Effingham County, 1970 – 2005

(Source: CQGRD, Georgia Coast 2030)

Historic and Current Employment

Though population growth has exploded in recent years, the number of jobs in the county has not kept pace and Effingham is primarily a bedroom community to Savannah and, to a lesser degree, Fort Stewart, Statesboro, and Hilton Head, South Carolina. **Figure B.2** depicts county employment from 1990 to 2005. The current population to employment ratio, an indicator of how well local employment serves county residents, is 5.59 i.e., $47,000 \div 8,412$. Thus, there are more than five residents for every job, and many workers must commute to other places to obtain employment. Because not all residents work, for financial, legal, or other reasons, a more balanced ratio would be somewhere between 1.6 and 2.5, corresponding to approximately one job per household.

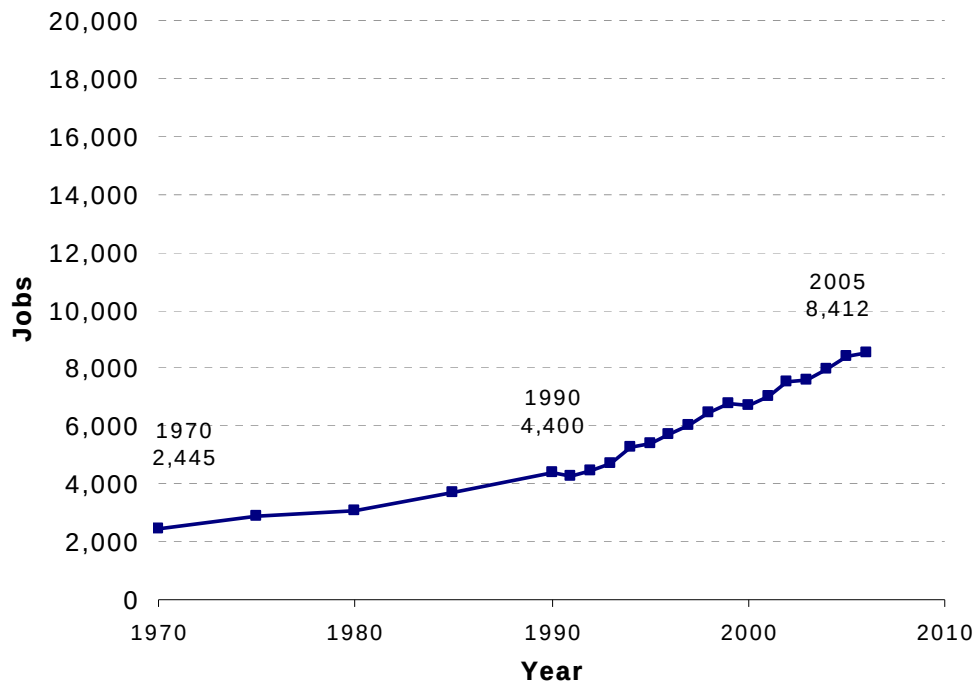


Figure B.2 Employment of Effingham County, 1970 – 2005

Though Effingham has historically been a bedroom community, and will continue to be in the foreseeable future, the county population is reaching a critical level necessary to support a diverse local economy. The population growth resulting from the transition from rural to higher-density suburban land uses, particularly in the southern part of the county, will enable Effingham to develop retail and service jobs at a much greater rate than in the past. New jobs in these industry sectors, especially, will begin to close some of the gap between the number of workers and the number of jobs in the county. At the same time, manufacturing will continue to be a primary employment sector for many county residents. The current employment mix of Effingham County can be seen in **Figure B.3**. Government, which includes the workers in the education and health systems, makes up the largest slice of county employment, though the service and manufacturing sectors are prominent as well.

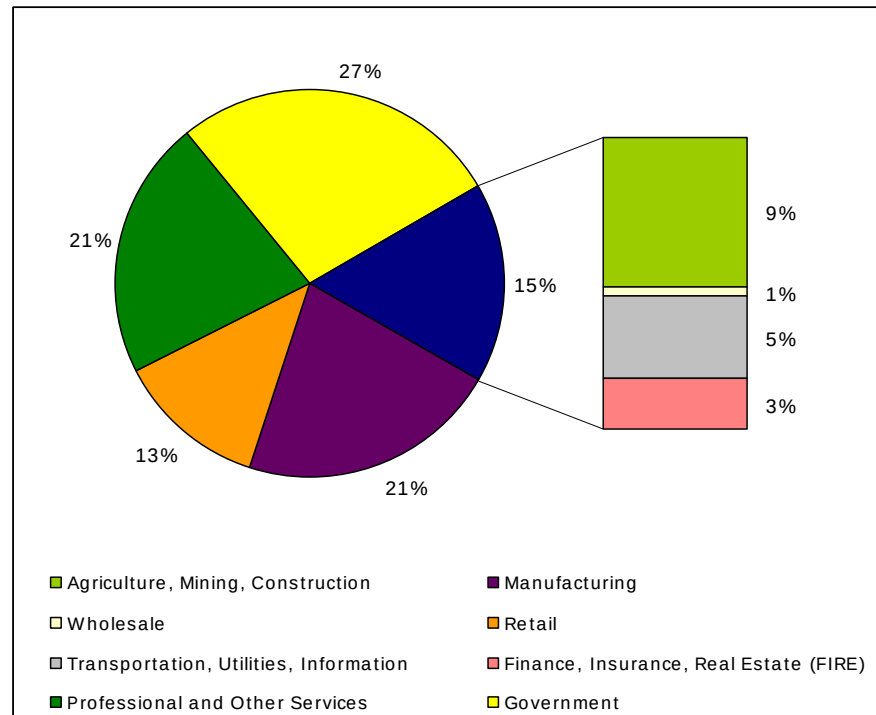


Figure B.3 Employment Mix 2006 (GDOL)

Establishing County Population and Employment Control Totals for 2030

2030 POPULATION

To determine the future population of Coastal counties, the CQGRD used a cohort-component projection method calibrated by interviews with local representatives and sources such as building permits, occupancy certificates, military base personnel changes, and school enrollment databases. Cohort-component projections measure births, deaths, and in/out migrations in a place over time, tracking population by age and gender “cohorts”, or groups.

In Effingham County, the population through 2030 was determined via cohort-component projection with forecasts calibrated by recent building permit activity and population estimates from the Georgia Office of Planning and Budget¹⁰. **This method resulted in a forecast of 79,935 residents in 2030, which is used as the county population control total for further employment and small-area forecasts.** This value has been accepted by the RDC as a realistic 2030 population to be used in long-range comprehensive planning efforts for Effingham County.

¹⁰ Effingham County was the only county in the region to have its population forecast calibrated using the GA OPB model values. This is because it was the only county whose cohort-component forecast values were lower than those predicted by the OPB.



2030 EMPLOYMENT

No detailed Effingham County employment forecast to 2030 existed to use as a control total, so it was necessary to develop one to give an overview of county employment and for geographically disaggregated use in a travel demand model.¹¹ To determine a realistic range of the number of future jobs in Effingham County, a variety of projection methods were applied using applicable historic employment and/or population data. **Table B1** depicts the results of those methods, and a brief description of each follows.

Table B.1 Results of Various Employment Projection Methods

#	Projection Method	2010 Proj. Employment	2020 Proj. Employment	2030 Proj. Employment
1	Simple Linear	9,749	12,424	15,099
2	Simple Geometric	10,440	16,082	24,773
3	Simple Exponential	10,440	16,082	24,773
4	Linear	9,671	12,475	15,279
5	Geometric	10,775	17,152	27,303
6	Parabolic	9,920	13,371	17,192
7	Cubic	9,187	8,143	768
8	Modified Exponential	9,008	10,311	11,208
9	Logistic	9,452	11,122	11,971
10	Constant Share	8,758	9,904	12,536
11	Growth Share - GA	9,726	11,731	16,340
12	Growth Share - Coastal Region (10-Cnty)	-	-	20,954
13	Growth Share - Savannah MSA (3-Cnty)	-	-	18,987
14	Shift Share - Agg - GA	10,020	13,184	19,035
15	Economic Base Theory / Location Quotients	-	10,371	12,373
16	Shift Share - DisAgg - GA - '02 to '06 growth	-	-	20,990
17	Shift Share - DisAgg - Region (WIA) - '02 to '06 growth	-	-	18,103
18	Shift Share - DisAgg - GA - '02 to '06 capped growth	-	-	16,159
19	Shift Share - DisAgg - Region (WIA) - '02 to '06 capped growth	-	-	14,637

The first nine methods shown in Table X2 are trendline extrapolations based entirely on historic aggregate employment levels from 1990-2005 for Effingham County. These methods are simple to apply and

¹¹ The CQGRD report contained a brief reference to “Economic Conditions” within the county, and provided industry projections to 2030 based on national Woods and Poole Economics data. No methodology was detailed, and the expected 2030 county employment was approximately 15,000 jobs. Because the CQGRD report primarily concentrated on population and there was no obvious justification for the 2030 employment forecast value, it was not considered a reliable source to use as the county employment control total.



are most useful in areas with relatively stable growth rates and diverse industry mixes. In many cases, however, simplicity comes at the expense of reality.

Methods 10-14 predict the aggregate future employment of the county, taking into account the overall job market trends of a larger reference area, such as the State of Georgia, Coastal Region, or Savannah MSA. Constant share projections assume that the small area (e.g., Effingham County) will retain employment in constant proportion to the larger reference area over time. Growth share projections apply the growth rate of the larger area to the smaller area, which is useful if the behavior of the smaller area is expected to mimic the area it references. The shift share method projects forward historic growth trends in the smaller area tempered by the predicted behavior of the larger reference area. A “shift-term” is used to capture the difference between these growth rates, and provides some measure of local advantage or disadvantage.

Method 15 utilizes Economic Base Theory to provide future employment projections, disaggregated by industry sector. Economic base theory states that some industries are “basic” and export their goods or services to other geographic areas due to surplus capacity, whereas other industries are “local” and consist of jobs that provide support for basic industries. Typically, there are 3-4 “local” workers for each “basic” worker. For each industry sector, a “location quotient” may be calculated to determine the relative advantage or disadvantage that an area has in attracting employment versus a larger reference area. The location quotient is a ratio of industry share in a small area divided by industry share in the larger area. A location quotient greater than 1 indicates that an industry has a local advantage and produces more goods or services than necessary for the area, and thus exports some of their products to other places.

Methods 16-19 are disaggregated (by industry sector) employment projections utilizing the shift-share method previously described. Different reference areas and historical employment base data can be used, depending on how accurately certain geographical areas or past trends are perceived to be a model for the future. Additionally, annual growth rate caps can be applied to particular industries to mitigate the effects of employment gains in industry sectors or areas with relatively few jobs at the beginning of the projection period. Very high growth rates resulting from this scenario are typically not sustainable in the long term, and should be capped to preserve some semblance of reality.

Ultimately Method 18, a growth-capped industry-disaggregated shift-share analysis utilizing the trends of Effingham County and the State of Georgia, was chosen to generate the employment control total for the county. Because Effingham does not border the Atlantic Ocean, unlike most of the other counties in the Coastal Region, it is thought that the county more closely follows state trends than regional trends. Additionally, growth in other coastal region counties is so strong that Effingham appears to have little comparative advantage over these counties and displays lower than expected employment growth. Expected employment due to organic continued growth according to observed trends is 16,159 jobs in 2030. The process by which this number was arrived at is seen in the following **Table B.2**, which is split over three pages for clarity.



Table B.2 Shift-Share Employment Projection Method

TDM Category		D	E	F	G	H	I	J	K	L	M	N
	Industry	Effingham Emp. 2002	Effingham Emp. 2006	Effingham Growth Rate 2002-2006	Effingham Growth Rate 100 % Cap	GA Emp. 2002	GA Emp. 2006	GA Growth Rate 2002- 2006	GA Growth Rate 100 % Cap	Four Year Shift Term	Ten Year Shift Term	250 % Capped Ten Year Shift Term
	SOURCE	GDOL	GDOL	(E-D)/D*100	F at 25%	GDOL	GDOL	(I-H)/H*100	J at 25%	G-K	(1+L) ^ (10/4))-1	M at 250%
O/S	Agriculture, forestry, & fishing	122	88	-27.90%	-27.90%	26,867	26,044	-3.10%	-3.10%	-24.80%	-51.00%	-51.00%
O/S	Mining	17	8	-52.90%	-52.90%	7,238	6987	-3.50%	-3.50%	-49.50%	-81.90%	-81.90%
O/S	Construction	550	660	20.00%	20.00%	195,951	218,487	11.50%	11.50%	8.50%	22.60%	22.60%
M	Manufacturing	1,881	1,916	1.90%	1.90%	466,855	447,877	-4.10%	-4.10%	5.90%	15.50%	15.50%
W	Wholesale trade	59	47	-20.30%	-20.30%	204,584	215,703	5.40%	5.40%	-25.80%	-52.50%	-52.50%
R	Retail trade	929	1,106	19.10%	19.10%	451,192	469,722	4.10%	4.10%	14.90%	41.70%	41.70%
O/S	Transportation and warehousing	75	254	238.70%	100.00%	148,194	156,711	5.70%	5.70%	94.30%	425.90%	250.00%
O/S	Utilities	87	119	36.80%	36.80%	20,547	20,096	-2.20%	-2.20%	39.00%	127.70%	127.70%
O/S	Information	41	32	-22.00%	-22.00%	132,317	115,956	-12.40%	-12.40%	-9.60%	-22.30%	-22.30%
O/S	Finance and insurance	117	166	41.90%	41.90%	151,267	162,577	7.50%	7.50%	34.40%	109.40%	109.40%
O/S	Real estate and rental and leasing	72	92	27.80%	27.80%	57,035	64,458	13.00%	13.00%	14.80%	41.10%	41.10%
O/S	Professional, scientific/tech svcs	225	320	42.20%	42.20%	191,438	210,980	10.20%	10.20%	32.00%	100.20%	100.20%
O/S	Management: companies/enterprises	5*	10*	100.00%	100.00%	73,930	52,420	-29.10%	-29.10%	129.10%	694.40%	250.00%
O/S	Administrative and waste svcs	394	447	13.50%	13.50%	249,934	286,696	14.70%	14.70%	-1.30%	-3.10%	-3.10%
O/S	Educational services	3*	7*	133.30%	100.00%	40,567	53,128	31.00%	31.00%	69.00%	271.50%	250.00%
O/S	Health care and social services	212	296	39.60%	39.60%	312,973	360,917	15.30%	15.30%	24.30%	72.30%	72.30%
O/S	Arts, entertainment and recreation	42	40	-4.80%	-4.80%	35,258	39,928	13.20%	13.20%	-18.00%	-39.10%	-39.10%
O/S	Accommodation and food services	415	579	39.50%	39.50%	300,920	343,858	14.30%	14.30%	25.20%	75.60%	75.60%
O/S	Other services (except government)	163	205	25.80%	25.80%	100,175	98,913	-1.30%	-1.30%	27.00%	81.90%	81.90%
O/S	Unclassified - industry not assigned	18	12	-33.30%	-33.30%	16,668	14,672	-12.00%	-12.00%	-21.40%	-45.20%	-45.20%
O/S	Federal government	65	68	4.60%	4.60%	95,717	94,709	-1.10%	-1.10%	5.70%	14.80%	14.80%
O/S	State government	75	51	-32.00%	-32.00%	146,482	152,301	4.00%	4.00%	-36.00%	-67.20%	-67.20%
O/S	Local government	1,968	2,324	18.10%	18.10%	376,871	410,433	8.90%	8.90%	9.20%	24.60%	24.60%
	All industries	7,535	8,847	17.40 %	17.40 %	3,802,980	4,023,573	5.80 %	5.80 %	11.60 %	31.60 %	31.60 %



TDM Category		O	P	Q	R	S	T	U	V	W
	Industry	GA Emp. 2004	GA Emp. 2014	10 –Year GA Growth Rate 2004-2014	9 – Year GA Growth Rate	Effingham Employment 2015	24 -year GA Growth Rate	Effingham Employment 2030	Change in Employment 2006 - 2030	Industry Share Effingham 2030
	SOURCE	GDOL	GDOL-Projected	(P-O)/O	(1+Q)^(9/10)-1	(1+N+R)*E	(1+Q)^(24/10)-1	(1+N+T)*E	U-E	%
O/S	Agriculture, forestry, & fishing	44,230	45,260	2.30%	2.10%	45	5.70%	48	-40	0.30%
O/S	Mining	7,056	7,845	11.20%	10.00%	2	29.00%	4	-4	0.00%
O/S	Construction	200,010	241,930	21.00%	18.70%	933	57.90%	1191	531	7.40%
M	Manufacturing	448,000	452,840	1.10%	1.00%	2231	2.60%	2263	347	14.00%
W	Wholesale trade	206,640	238,910	15.60%	14.00%	29	41.70%	42	-5	0.30%
R	Retail trade	446,510	518,360	16.10%	14.40%	1726	43.10%	2043	937	12.60%
O/S	Transportation and warehousing	178,810	205,580	15.00%	13.40%	923	39.80%	990	736	6.10%
O/S	Utilities	20,160	20,550	1.90%	1.70%	273	4.70%	277	158	1.70%
O/S	Information	119,450	137,870	15.40%	13.80%	29	41.10%	38	6	0.20%
O/S	Finance and insurance	161,459	170,454	5.60%	5.00%	356	13.90%	371	205	2.30%
O/S	Real estate and rental and leasing	59,460	69,260	16.50%	14.70%	143	44.20%	170	78	1.10%
O/S	Professional, scientific/tech svcs	192,940	246,360	27.70%	24.60%	720	79.80%	896	576	5.50%
O/S	Management: companies/enterprises	53,300	62,060	16.40%	14.70%	36	44.10%	39	29	0.20%
O/S	Administrative and waste svcs	264,430	368,230	39.30%	34.70%	588	121.40%	976	529	6.00%
O/S	Educational services	345,470	432,130	25.10%	22.30%	26	71.10%	29	22	0.20%
O/S	Health care and social services	368,710	487,190	32.10%	28.50%	594	95.20%	792	496	4.90%
O/S	Arts, entertainment and recreation	36,810	46,620	26.70%	23.70%	34	76.30%	55	15	0.30%
O/S	Accommodation and food services	322,580	407,210	26.20%	23.30%	1152	74.90%	1450	871	9.00%
O/S	Other services (except government)	165,570	199,750	20.60%	18.40%	411	56.90%	489	284	3.00%
O/S	Unclassified - industry not assigned	25	11	-56.00%	-52.20%	0	-86.10%	-4	-16	0.00%
O/S	Federal government	72,170	60,700	-15.90%	-14.40%	68	-34.00%	55	-13	0.30%
O/S	State government	80,720	86,730	7.40%	6.70%	20	18.80%	26	-25	0.20%
O/S	Local government	133,270	155,150	16.40%	14.70%	3236	44.00%	3918	1594	24.20%
	All industries	3,927,780	4,661,000	18.70%	16.70%	13575	50.80%	16159	7312	100.00%



Columns “D” and “E” in the previous table provide industry mix data for the boundary years of the time period thought to best predict future employment trends. Because business practices and technologies have changed significantly in recent years and cause differing growth patterns among industries, a relatively recent time frame was chosen. Between 2002 and 2006, the fastest growing industries in Effingham were transportation and warehousing, educational (support) services, management, and professional services. Georgia’s fastest growing industries during the same time period were education, healthcare, accommodations, and entertainment (column J). The growth rate of each industry was then capped at 25% maximum annual growth (columns G and K), as higher levels are not likely to be sustainable in the long run. In order to generate a shift term, the relative advantage in different industries that Effingham has over the State of Georgia, Georgia’s capped growth was subtracted from Effingham’s. This has the effect of both acknowledging and tempering the influence of greater economic trends.

The state of Georgia has official employment projections for the year 2014, based on 2004 data. Thus, the four-year industry growth rates that Effingham experienced had to be extrapolated to a 10-year time period, and then further modified in order to match up to base data time periods and the forecast years (i.e. Georgia growth rates from 2004-2014 had to be modified/applied to a 2006 Effingham base year to generate forecasts for both 2015 and 2030.) Column U shows the forecasted employment of the county based on continued organic industry growth. **Figure B.4** shows a pie chart of Effingham’s industry mix resulting from the shift-share analysis. Recent local and state trends predict that services and infrastructure-related jobs will increase at a greater rate in the future, with retail holding steady as “organic” manufacturing jobs decline relative to their previous impact on county employment.

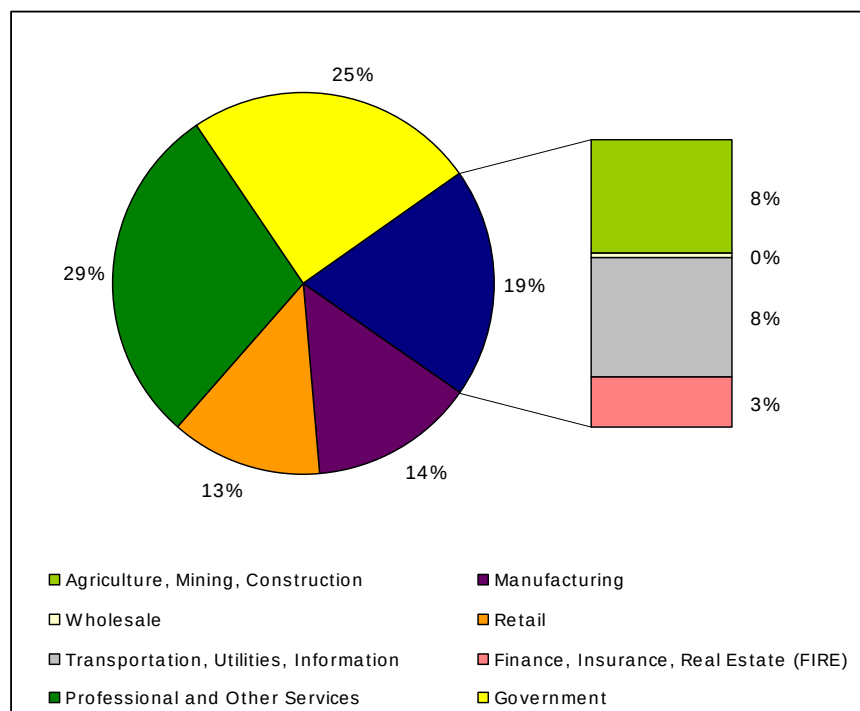


Figure B.4. Employment Mix 2030 (Shift-share)



ADJUSTMENTS TO SHIFT SHARE ANALYSIS

The Effingham Economic Development Authority has set aside several large tracts of land for new manufacturing, logistics, and research-related businesses. As of 2006, these tracts had no existing employment, but they are all predicted to have various levels of build-out and accompanying jobs by 2030. The first industrial tract is located at the intersection of SR-21 and Ebenezer Road. A Portuguese manufacturing firm bought the site and expects to build a plant and generate 600 new jobs by 2010. A second tract, “Logisticenter”, on 1,600 acres near SR-80 and I-16, has begun attracting new firms and expects that it will be mostly built out by 2030. According to the site plan, approximately 5 million square feet of space is distributed in 13 buildings, some of which are predicted to be used for warehousing, while other buildings will house offices. The third site, “Research Forest” is located on 2,200 acres east of Rincon. While marketing of this property has begun, its development is at least partially dependent on adding new transportation capacity and access to the site. Assuming that appropriate infrastructure improvements are undertaken, partial build-out and associated employment could be expected by 2030. Employment is predicted to be distributed among a number of sectors, including commercial, office, manufacturing, warehousing, research and services. There is also room for a school in Research Forest.

Because the shift-share analysis relied on relatively steady growth, based on historic numbers, it cannot forecast non-organic growth. Thus, additional analysis had to be undertaken to account for employment growth in completely new geographic areas. Using available site plans, estimates for building areas and uses, square footage per employee (based on building use), and potential build-out timelines, the number of jobs generated at each industrial site was calculated. The Portuguese site was known to generate 600 jobs by 2030, whereas LogistiCenter was expected to have just over 4,000 jobs by the same point (at 90% build-out), and Research Forest was predicted to have approximately 3,000 jobs by 2030 (50% build-out). **Table B.3** depicts predicted employment at various build-out levels for each site.

Table B.3. Additional Industrial Park Employment

2030 Build-Out	# of Employees		
	LogistiCenter	Research Forest	SR 21 @ Ebenezer Rd
100%	4,570	5,957	600
90%	4,113	5,361	-
80%	3,656	4,765	-
75%	3,428	4,468	-
70%	3,199	4,170	-
60%	2,742	3,574	-
50%	2,285	2,978	-
40%	1,828	2,383	-
25%	1,143	1,489	-
10%	457	596	-



2030 EMPLOYMENT CONTROL TOTAL

Overall, 7,692 new jobs, on top of the shift-share forecast of 16,159 are expected in the county by the horizon of this plan. The 2030 control total for county employment is thus 23,851 jobs, giving a more balanced population to employment ratio of 3.35.

Using Population and Employment Forecasts in a Travel Demand Model

To utilize population and employment in a travel demand model, the county control totals must be disaggregated to smaller traffic analysis zones (TAZ), which attract and generate trips based on underlying socioeconomic data. For this study, Effingham was divided into 52 TAZes which were drawn along various census area boundaries and major infrastructure (rail and roadways). Each TAZ is given a number and assigned a certain number of residents and jobs.

While it is possible that small geographic areas will continue to steadily accumulate population and employment at their historic rates, it is unlikely that future growth is distributed so evenly. Proximity to transportation corridors, employment, cultural and shopping opportunities, sewer lines, schools, and future land use policy are among the many factors that play a role in attracting people to different areas of the county. Thus, these factors were used to weight future growth towards particular areas. **Table B.4** lists population growth factors and the number of weighting points a TAZ could receive, while **Table B.5** shows employment growth factors. Since different industries and land uses generate differing travel demand, overall employment was divided into four sectors: manufacturing, wholesale, retail, and other/services for use in the travel demand model. “Other/services” encompasses all types of service, as well as government and jobs in industries such as construction. The previous table describing the shift-share projection method steps lists the employment category of each sector in the leftmost column.

To provide input for travel demand model, population and employment were estimated, weighted, normalized (by maximum points), and assigned to the appropriate TAZ geography. Some TAZ’s were further fine-tuned in 2015 and 2030 to account for the geography-specific industrial employment adjustments previously described. **Figures B.5 through B.9** display the TAZ level population and employment distribution in 2006 and 2030.

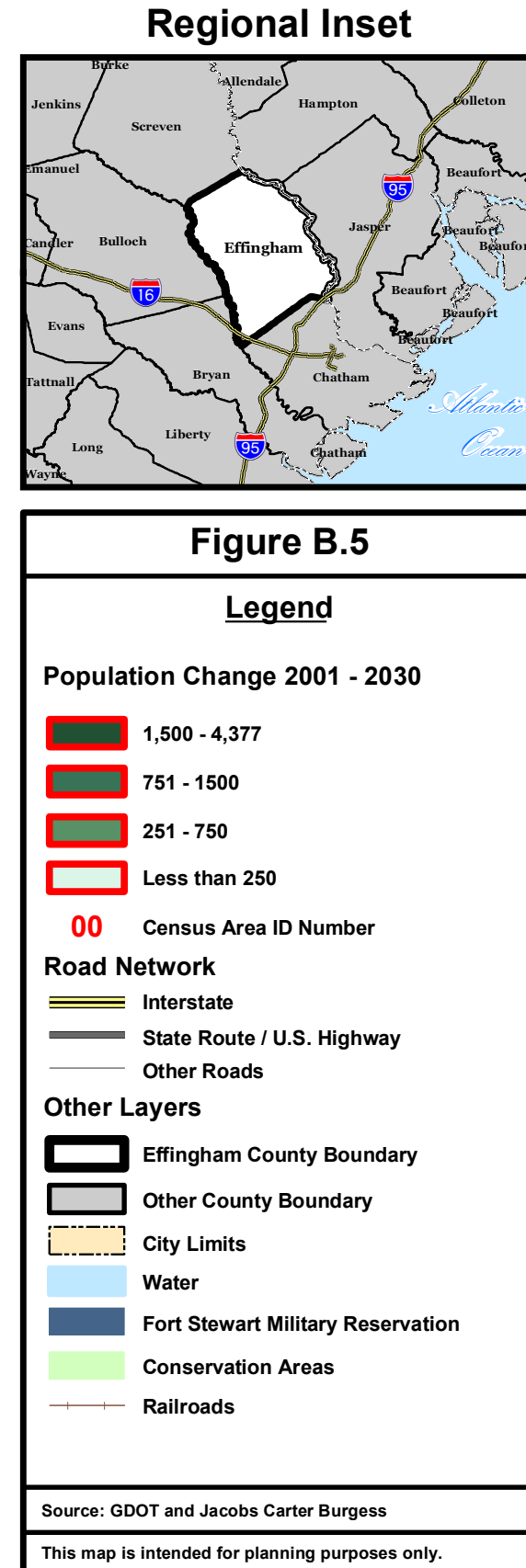


Table B.4 Population Growth Factors

Growth Factor	Point Allocation	Maximum Points
City	2 = contains most of city, 1 = contains piece of city. 0 = no city	2.0
Community	1.5 = contains most of community, .75 = contains piece, 0 = no community	1.5
Development Node	# of dev nodes touching borders / 2, max = 1.5	1.5
Zoning	2 = suburban (water/sewer), 1 = mid, 0 = rural residential	2.0
Prox. to Corridors	1 x major primary corridors, .5 x secondary corridors	3.0
Prox. to Savannah, ports, mil. Base, water/sewer	3 = south of Blandford Rd, borders Chatham 2 = S of Blandford Rd 1 = S of 119	3.0
Industrial Park	1 = < 3 miles away	1.0
Maximum Points for seven population factors:		14.0

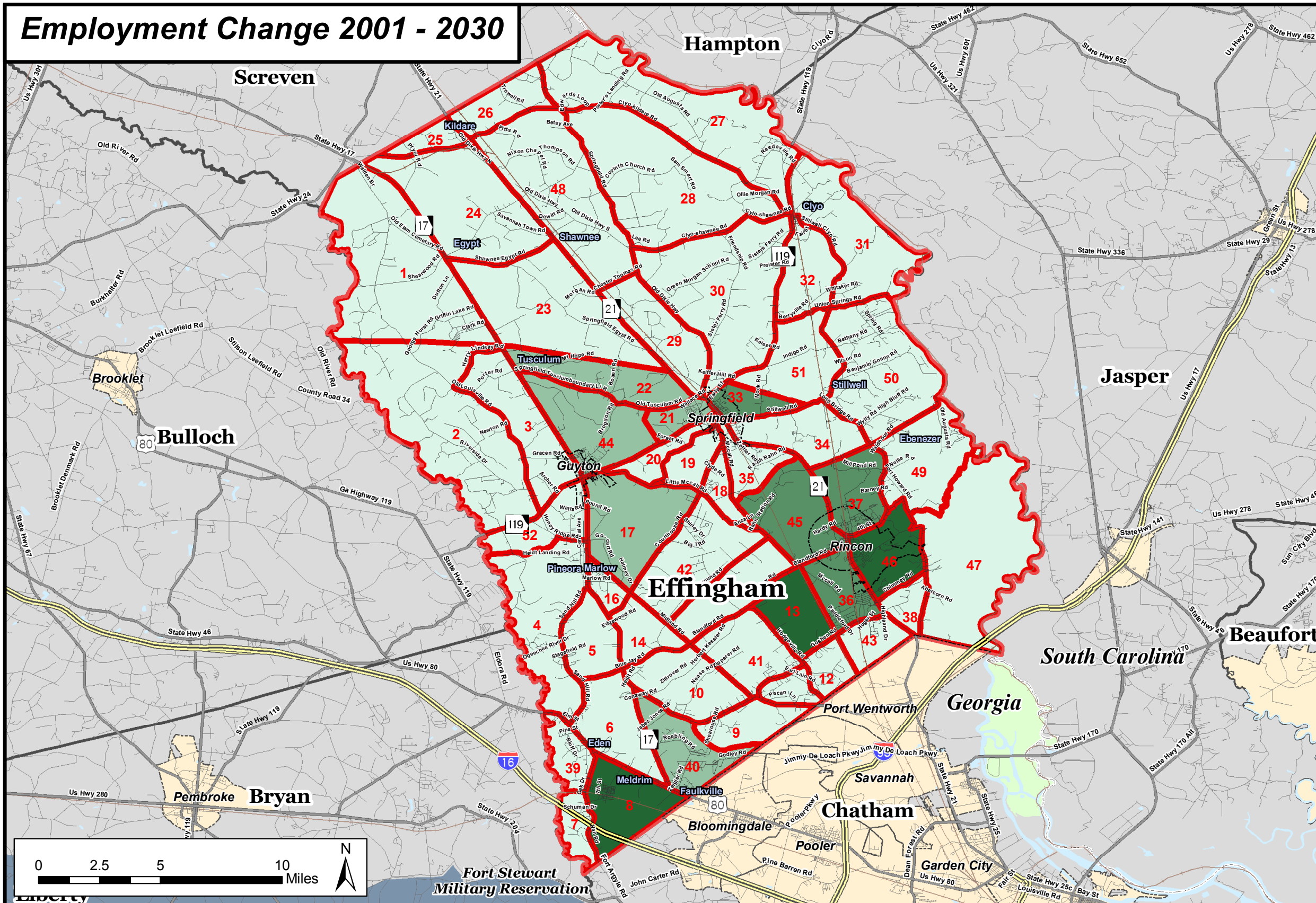
Table B.5 Employment Growth Factors

Growth Factor and Industry Sector	Point Allocation	Maximum Points
Industrial Park (Manufacturing)	0 to 2, % in TAZ * 2	2.0
RR lines (Manufacturing)	# of lines / 2	1.0
Prox. to Savannah, ports, mil. Base (Manufacturing)	1.5= south of Blandford Rd, borders Chatham 1 = S of Blandford Rd, .5 = S of 119	3.0
Prox. to Corridors (All sectors)	1 x major primary corridors, .5 x secondary corridors	3.0
City (Services, Retail)	2 = contains most of city, 1 = contains piece of city, 0 = no city	2.0
Community (Services, Retail)	1.5 = contains most of community, .75 = contains piece, 0 = no community	1.5
Development Node (Retail, Services x 50%)	# of dev nodes touching borders / 2, max = 1.5	1.5
Comp Plan Adjustment (Services)	add points for specific references w/ explanation	0.8
Population Concentration (Retail, Services)	Pop/3500	2.0
Maximum points for manufacturing: 7.5, services: 10, retail: 10, wholesale: N/A		



Effingham County Transportation Plan

Employment Change 2001 - 2030



Regional Inset

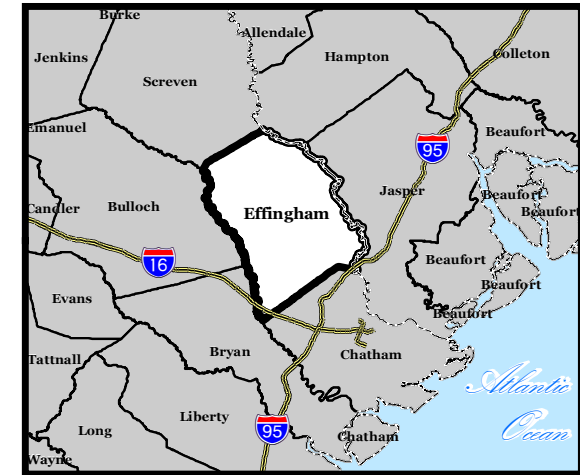


Figure B.6

Legend

Employment Change 2001 - 2030

- 1,500 - 4,467
- 751 - 1500
- 251 - 750
- Less than 250
- 00 Census Area ID Number

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

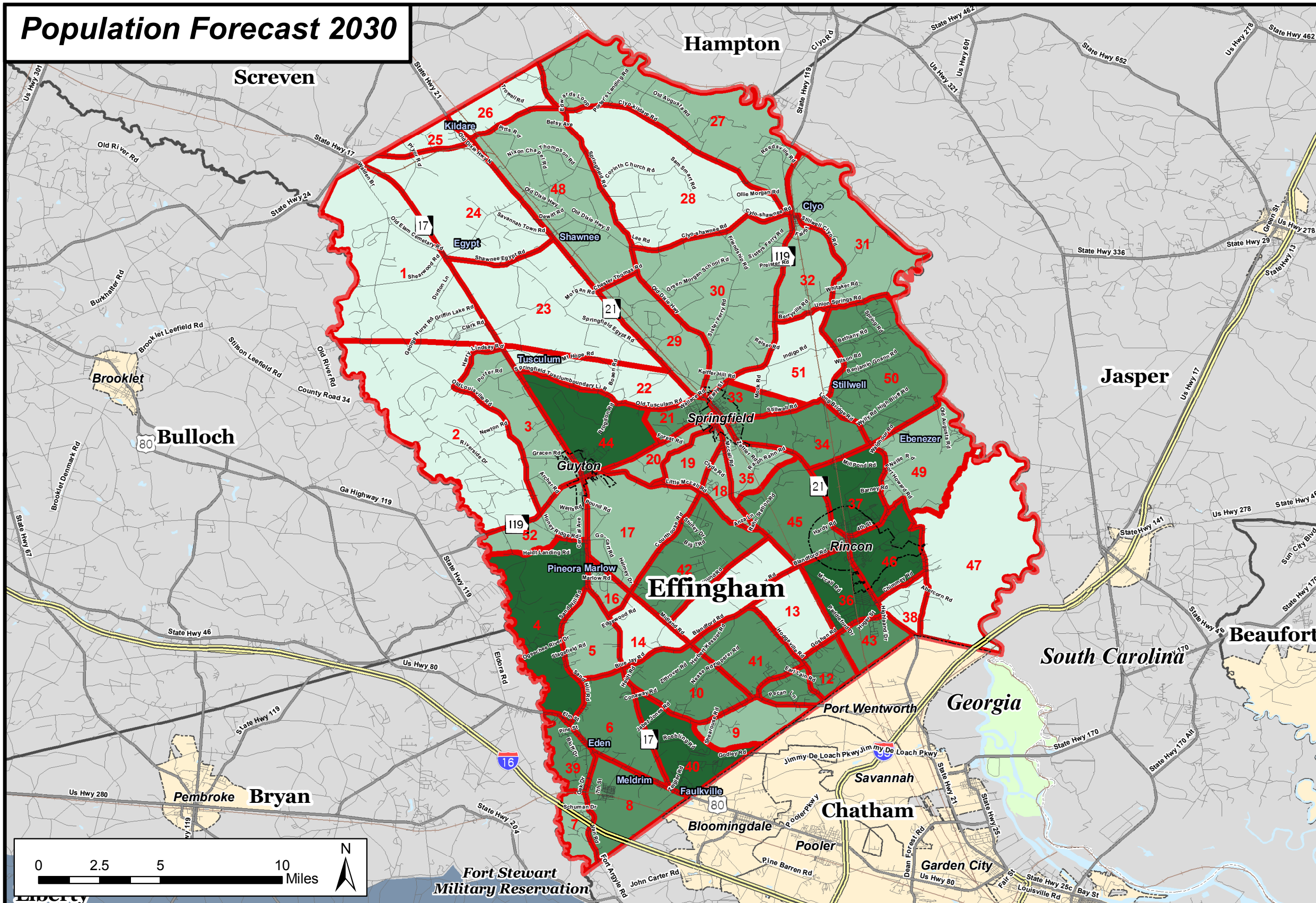
- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT and Jacobs Carter Burgess

This map is intended for planning purposes only.

Effingham County Transportation Plan

Population Forecast 2030



Regional Inset

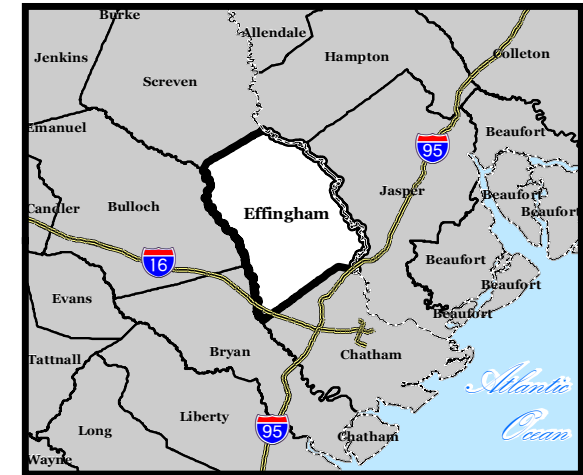


Figure B.7

Legend

Population Forecast 2030

- 2,501 - 7,503
- 1,501 - 2,500
- 501 - 1,500
- Less than 500
- 00 Census Area ID Number

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

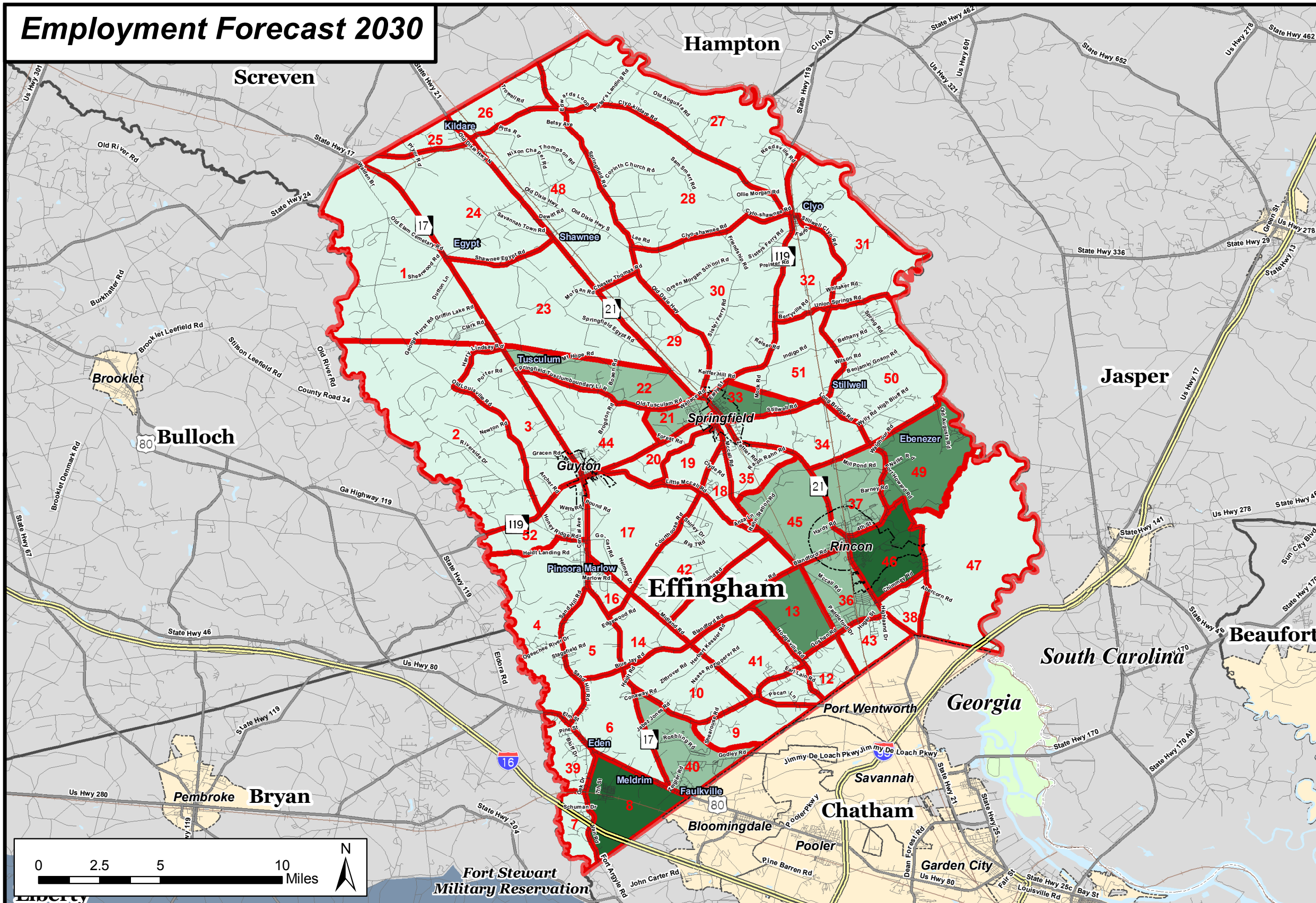
- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT and Jacobs Carter Burgess

This map is intended for planning purposes only.

Effingham County Transportation Plan

Employment Forecast 2030



Regional Inset

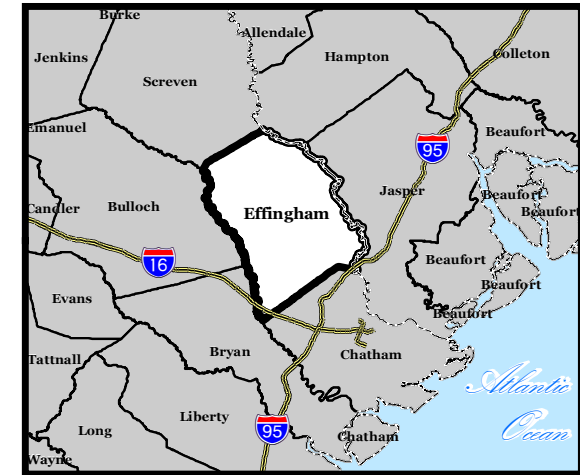


Figure B.8

Legend

Employment Forecast 2030

- 2,501 - 4,644
- 1,501 - 2,500
- 501 - 1,500
- Less than 500
- 00 Census Area ID Number

Road Network

- Interstate
- State Route / U.S. Highway
- Other Roads

Other Layers

- Effingham County Boundary
- Other County Boundary
- City Limits
- Water
- Fort Stewart Military Reservation
- Conservation Areas
- Railroads

Source: GDOT and Jacobs Carter Burgess

This map is intended for planning purposes only.



APPENDIX C. Travel Demand Model Development

A combined Effingham/Chatham travel demand model was used to provide quantitative analysis of current and future travel conditions, and will be used to test transportation project alternatives. Documentation of model development and activities will be provided in the final report.