

Comprehensive Transportation Plan **BARROW COUNTY**

2015



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1 INTRODUCTION

The Atlanta Regional Commission (ARC) developed the Comprehensive Transportation Planning (CTP) program to encourage counties and municipalities to practice long range transportation planning in support of regional planning efforts. Barrow County, Georgia, completed its initial CTP under this program in 2007. Barrow County, with the municipalities of Auburn, Bethlehem, Braselton, Carl, Statham, and Winder, is now updating its CTP through the 2040 horizon year. This CTP Update builds upon the 2007 CTP to develop short-term and long-term transportation projects based on the level of need and stakeholder and community input.

Transportation projects must be included in an adopted plan, vetted through public involvement, in order to be considered for incorporation into the Regional Transportation Plan (RTP) for the Atlanta region. The ARC's Transportation Improvement Program (TIP), which allocates federal funds for the implementation of transportation projects over the short-term, is contained within the continually updated RTP. Recommended projects that will require federal funding for engineering, right-of-way, or construction will be forwarded to the ARC for potential inclusion in the RTP and TIP.

This Final Report is the culmination of a process initiated in August of 2014. It provides an overview the existing conditions analysis and needs assessment, including public outreach, which informed the recommendations contained in this document. In addition to recommended projects, this report includes the final recommendations for road and bridge maintenance, travel demand management, access management, freight transportation and bicycle and pedestrian facilities.

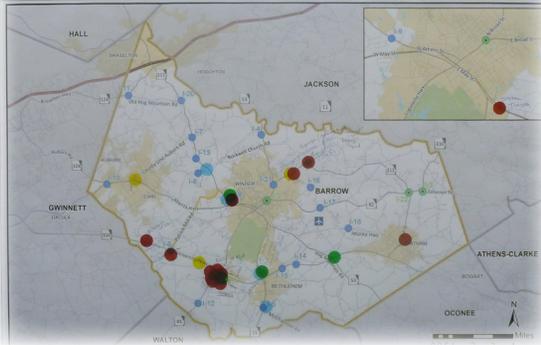


*This, the Final Report of the Barrow County CTP update, is intended as a tool for **decision-making regarding strategic investments in the transportation network** that will improve the safety of travel, increase the efficiency by which goods and people are transported along the network, and support economic development and continued growth.*

2 PUBLIC OUTREACH



Intersection Improvements



An understanding of the County's most pressing transportation needs is essential to the assessment of Barrow County's transportation network. This understanding is rooted in the information gathered from Barrow County residents, employees, business owners, and other stakeholders. Over the course of this planning process, the Technical Committee, Stakeholder Committee, and the general public reviewed study findings, identified transportation needs, and aided in the prioritization of projects. Summaries of committee and public meetings are available in the Stakeholder and Public Outreach Summary in Appendix A.

The Technical Committee is an advisory group to the CTP responsible for contributing to the plan from a technical and professional perspective. The committee is comprised of representatives from state and regional agencies and neighboring jurisdictions. The Stakeholder Committee is responsible for identifying needs from the perspective of a local transportation user and is comprised of community and business leaders in the county.

The Technical and Stakeholder Committees held their first meetings separately on December 1, 2014, at the Historic Barrow County Courthouse in Winder, GA. At these meetings, members of each committee discussed and identified critical transportation needs in the County.

The first public meeting, an open house, was held on December 8, 2014, at the Historic Barrow County Courthouse. The purpose of this meeting was to give an overview of the CTP process and to gather input for the transportation needs in the county. Unimplemented and unfunded transportation improvements recom-

mended by the previous CTP were mapped and presented to the committees and the public, who were asked if there was an ongoing need for these improvements, or if other improvements now seemed more pressing.

The Technical and Stakeholder Committees met again in a joint meeting on May 4, 2015 in the Historic Barrow County Courthouse. At this meeting, they reviewed and validated the draft project recommendations of the CTP update. They also participated in two activities designed to assist in the prioritization of projects in the final recommendations phase.

At the second public meeting, held on May 4 at the Historic Barrow County Courthouse, attendees were provided with a review of the study's progress and findings from the needs assessment. Members of the public were then asked to prioritize projects by category and individually within each category. The results from this meeting were used in the prioritization of projects.

3 PLANNING THEMES

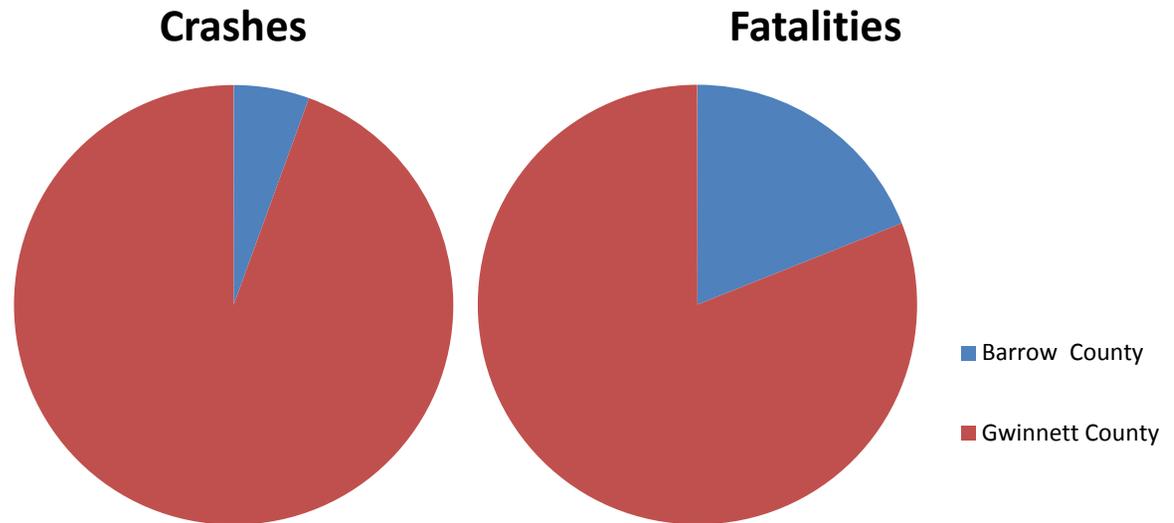
Every transportation plan must identify and integrate the key characteristics of a study area's transportation network. Barrow County is distant from the density and urbanization of the Atlanta core, yet it experiences congestion due to accelerating development that is not accommodated by existing systems. Many places throughout the County are served primarily by legacy infrastructure that is unable to safely and efficiently accommodate growing traffic, heavy trucks, and railways which cut through busy activity centers. The transportation planning process identified several themes that characterize Barrow County and help to define its future vision and goals.

3.1 RURAL TRAFFIC DELAY

Traffic problems in Barrow County are defined by delay events caused by a variety of factors. While the County does not experience the volume of vehicles necessary to create severe congestion on most roadways, it does experience significant delay at many intersections. This is the result of intersection designs incapable of accommodating the number of turning and through movements generated by Barrow's growing commercial and residential developments.

Rural delay in Barrow County is also caused by frequent trains which block a large number of intersections in major activity centers such as downtown Winder. Furthermore, the presence of significant heavy truck traffic exerts greater pressure on limited turning lanes at intersections throughout the County and creates delay events

Figure 3.1: Average Annual Accident Fatality Rates in Barrow and Gwinnett Counties, 2011-2013



Source: GDOT

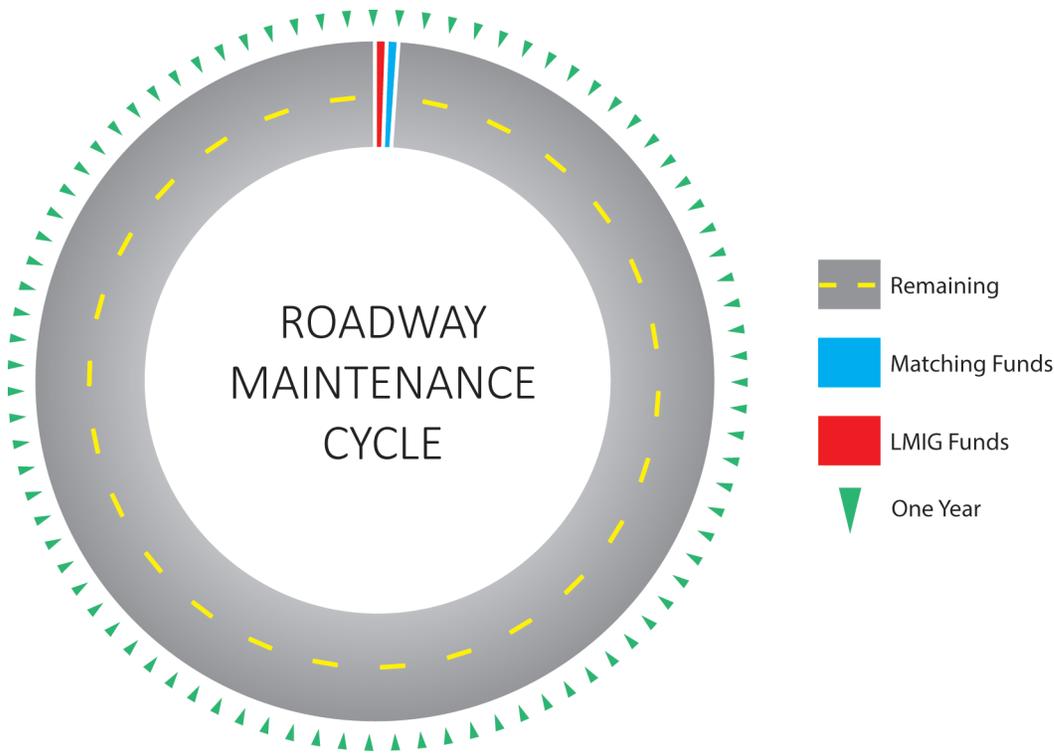
on two lane roadways where passing lanes are not available.

3.2 ROADWAY AND RAILWAY SAFETY CONCERNS

While traffic delay may inconvenience Barrow Residents and hinder economic development, unsafe roadway conditions may have tragic consequences. The large number of at-grade railway crossings in Barrow County creates many opportunities for dangerous and fatal crashes between road vehicles and trains. As Georgia is already ranked among the top ten states for highway-railway crashes, these crossings must be closely monitored for unsafe conditions.

Other safety concerns add to the danger created by rail crossings. High speed traffic on SR 316 has the potential to conflict with Barrow County residents crossing the roadway at unsignalized and signalized intersections. High crash rates at many intersections along this corridor indicate a need for greater awareness of the dangers posed by high speed traffic to surrounding roadway users. The presence of truck traffic on these corridors further exacerbates the safety problem, as crash between trucks and smaller vehicles are much more likely to result in fatalities. As a result, Barrow County's fatal crash rate is significantly higher than rates seen in nearby counties.

Figure 3.2: Barrow County Maintenance Cycle based on Average Annual Payments, 2011-2013



Source: Barrow County

3.3 FREIGHT INFRASTRUCTURE

Freight plays a vital role in the infrastructure and economy of Barrow County. The County's freight stakeholders are employers who provide Barrow County residents with jobs that they need. The presence of these freight generators, however, demands adequate infrastructure support so that truck and rail traffic can pass

safely and efficiently through the County. Barrow County's CSX rail line and major State and US Routes are valuable transportation assets that must be maintained and integrated safely into the County-wide transportation network.

While total freight tonnage shipped through Barrow County does not rival that seen in a major

freight center such as Atlanta, the County's rail line serves a large number of trains daily. These trains serve local stakeholders but also pose safety risks and diminish roadway network efficiency. This conflict between freight and passenger transportation modes is present in much of Barrow County.

3.4 BRIDGE AND ROADWAY MAINTENANCE NEEDS

Georgia's transportation networks are aging and, in many places, current maintenance efforts cannot match needs. Barrow County, with its legacy infrastructure, requires significant pavement maintenance, rail crossing safety upgrades, and general operational improvements to roadways designed and built at a time before these improvements were standard.

Given information provided by Barrow County, current funding levels allow a complete roadway maintenance cycle of the County's 430 paved miles of roadway to be completed every 87 years. This figure assumes 2015 dollars and does not account for inflation or increasing costs over time, indicating that the real maintenance cycle is even longer. Innovative funding strategies and prioritization of the most critical or most damaged roadways is necessary to provide Barrow County residents with the transportation network that they deserve.

4 INVENTORY OF EXISTING CONDITIONS

The first major component of this CTP update was an inventory of existing conditions in Barrow County, which was used to update the data used in the previous CTP to account for any changes that may have occurred since 2007. A number of conditions were examined, including transportation, environmental, demographic, and land use characteristics, as detailed in the *Inventory of Existing Conditions Report* (Appendix B).

4.1 FINDINGS FROM THE EXISTING CONDITIONS REPORT

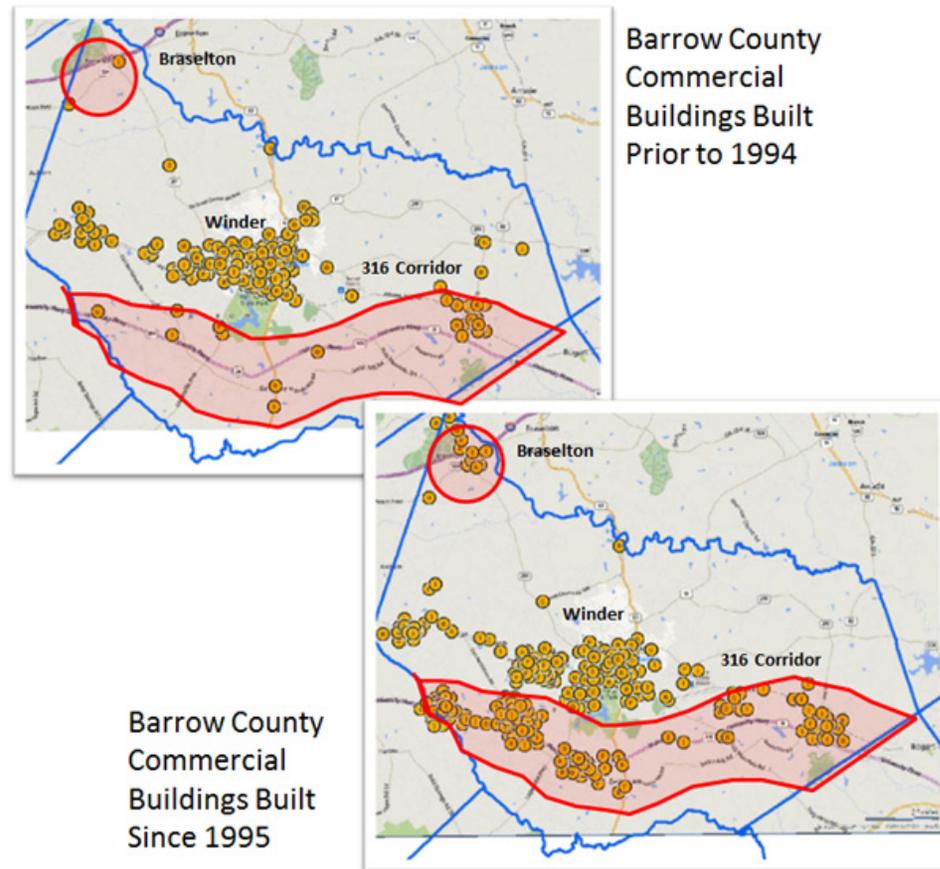
SHIFTS IN COMMERCIAL DEVELOPMENT

In the past twenty years, Barrow County's economic center of gravity has shifted from Winder to the SR 316 corridor (**Figure 4.1**). Since 1994, 48 percent of the County's total commercial development has occurred inside this corridor. Simultaneously, a strong growth hub has emerged along I-85 corridor in Braselton, where 1.5 million SF of industrial and logistics space has been built since 2001.

EMPLOYMENT AND RETAIL

Employment centers include the Barrow Industrial Cluster at SR 316 at Patrick Mill Road, Harrison Poultry in Bethlehem, Braselton Employment Cluster at I-85 and SR 211, the Barrow County Airport and the Bankhead Industrial Cluster on Atlanta Highway, and a Future Industrial Cluster at SR 316 at SR 53/Hog Mountain Road. Major retail centers are located in downtown Winder, and at the intersection of SR 316 at SR 81.

Figure 4.1: Commercial Development Distribution (Retail, Office & Industrial) Pre- and Post-1994



Source: Barrow County

LAND USES

Existing land uses found in Barrow County reflect its rural and suburban character. The most prevalent land use in Barrow County, Agriculture-Forestry, accounts for 64.4 percent of land uses, and the second most prevalent use, Single-Family Residential, accounts for another 23.0 percent of land uses.

COMMUTING PATTERNS

10,365 people commute to Barrow for work. 27,360 Barrow County residents leave the county for work. That's 85 percent of the county's working population. 5,168 people both live and work in the county (**Figure 4.2**).

ROAD NETWORK

Barrow County is characterized by a radial network of arterial roadways which converge primarily in downtown Winder. The majority of these roadways are two-lane, rural arterials which expand to include turn lanes and shoulders within the City of Winder.

CONGESTED AREAS

The most congested facilities during PM peak hours are state routes in Winder. In the eastern portion of the county, these roadways include SR 211 and Dee Kennedy Road, which provide connections to I-85 and heavily populated Gwinnett and Hall Counties, and Atlanta Highway and SR 324, which connect to Gwinnett County. To the south, these roadways include segments of SR 81 and SR 11 south of SR 316.

HIGH CRASH CORRIDORS

Atlanta Highway experienced the highest number of crashes in 2013, including one fatality and 93 injuries. SR 316 experienced the second highest number of crashes within Barrow County, representing 13 percent of the total accidents for the year 2013. In addition, SR 211, SR 11, and SR 81 corridors also had a high number of crashes.

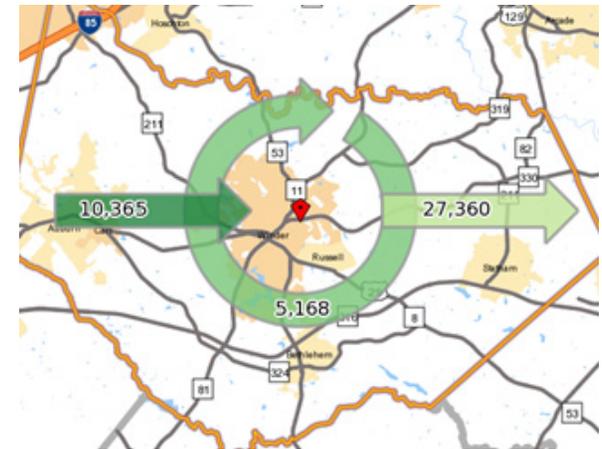
BRIDGE CONDITIONS

Two of the 35 on-system bridges in Barrow County have a sufficiency rating below 50. There are 44 off-system bridges that currently require an estimated \$1,359,000 in repairs from the County.

PROJECTS IN THE ARC TIP

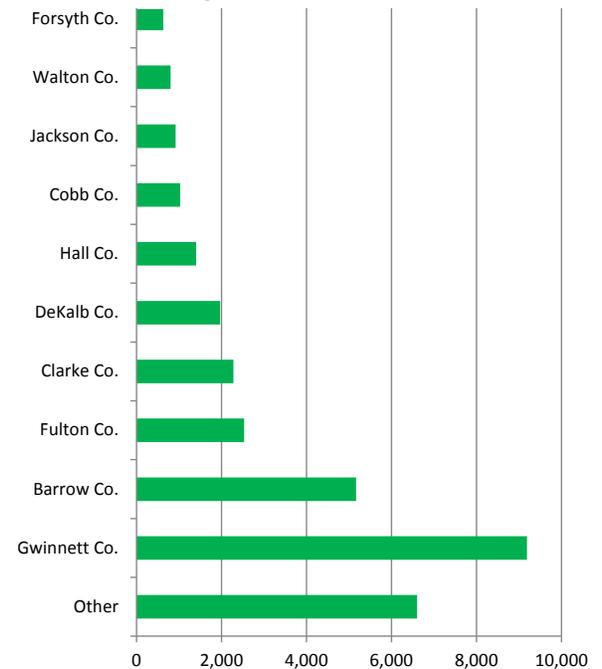
The largest of the projects in Barrow County in the current ARC TIP consists of the first three phases of the West Winder Bypass (BA-005A, BA-005B, and BA-005C), which is proposed to facilitate north-south movement through the county. Also significant are the three intersection-to-interchange conversion projects along SR 316, at SR 81 (BA-026), SR 11 (BA-027), and SR 53 (BA-028). There are also programmed projects for a grade-separated rail crossing at Ed Hogan Road (BA-001) and a bridge upgrade on SR 211 at Beech Creek (BA-023). The addition of a High-Occupancy/Toll (HOT) lane on I-85 through Barrow County is also programmed (GW-386, BA-008).

Figure 4.2: Commuting Patterns



Source: US Census OnTheMap

Barrow County residents commute to...



Source: US Census OnTheMap

INVENTORY OF EXISTING CONDITIONS

TRUCK TRAFFIC

The ARC's Atlanta Strategic Truck Route Master Plan (ASTRoMaP)-designated routes include SR 316, Jefferson Highway/SR 11, Monroe Highway/SR 11, and portions of May Street/SR 8 in Winder. All of these routes come together in Winder.

Daily commercial vehicle traffic in Barrow County is concentrated near I-85, near the airport (Picklesimon Road), and along various roadways within downtown Winder. Carl-Cedar Hill Road, Pearl Pentecost Road, Bankhead Highway, Patrick Mill Road, and Barrow Industrial Parkway are all roads located near industrial and large commercial uses.

RAIL IMPACTS

Barrow County is bisected by an active CSX railway that serves as an obstacle to through traffic. The majority of crossings along this railway are at grade crossings. The largest roadway to cross the CSX line within Winder is Broad Street, which is highly congested during peak hours and crosses the rail line at grade, creating the potential for dangerous situations as vehicles within traffic queue across the at grade rail crossing.

SIGNALIZATION

The high number of traffic signals within Winder likely contributes to delay and increased accidents, and the concentration of signals around the major intersections of Broad Street at Athens Street and Broad Street at May Street creates a bottleneck effect for traffic.

PUBLIC TRANSPORTATION

Barrow County uses federal and state funds to purchase, maintain, and operate a transit van pool for senior citizens. The county's density, land development, and population do not currently justify investment in premium, fixed route, public transportation. Demand response and human services transit, however, may be applicable.

BICYCLE AND PEDESTRIAN FACILITIES

Pedestrian facilities are limited within Barrow County and are found predominately in the historic urban centers. Most of Barrow County's State Routes, highways and rural roads do not have sidewalks. There are two state-designated bike routes in Barrow County, SR 81 from SR 53 in Winder south to the county line, and SR BUS 29 from SR 81 in Winder south to the Atlanta Highway, but neither have bicycle facilities.



The Barrow County Airport (WDR) is the public airport in Barrow County. The 350-acre airport is owned by the citizens and operated by the Barrow County Airport Authority Class III facility, which means that scheduled small aircraft with 10 to 30 seats may use this facility. The airport is surrounded by over 300 acres of industrial property including approximately 80 acres adjacent to 13/31 with potential inside-the-gate access.



5 ASSESSMENT OF CURRENT AND FUTURE NEEDS

After the inventory of existing conditions, the next phase of this update identified transportation needs for intersection improvements, roadway capacity improvements, new roadway connections, transit and travel demand management options, bicycle and pedestrian improvements and bridges. A detailed review of these needs is provided in the *Assessment of Current and Future Needs Report* (Appendix C). A summary of the key findings in this report are detailed in this section.

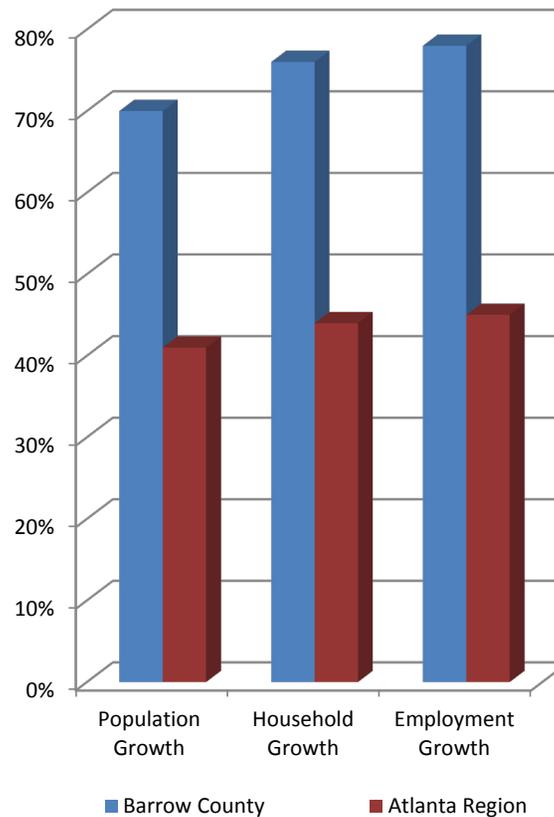
5.1 DEMOGRAPHIC & DEVELOPMENT FINDINGS

The growth projected for Barrow county will have a tremendous impact on its transportation needs.

FORECAST POPULATION GROWTH

Barrow County is projected to experience 70 percent population growth from 2015 to 2040, which will place additional demands on the local and regional transportation system (**Figure 5.1**). Congestion already present in downtown Winder and along arterial roadways will increase without implementation of transportation improvements designed to increase roadway capacity and improve network operations. As Barrow County's low density residential development style is likely to continue over the coming decades, there will be additional needs for new roadways and additional capacity on the existing network, as well as general maintenance to address vehicle volumes.

Figure 5.1: Projected Growth by 2040



Source: ARC

FORECAST EMPLOYMENT GROWTH

Barrow County is projected to experience 78 percent employment growth from 2015 to 2040. Employment growth is likely to be strongest in Winder, along SR 316, and at I-85 in Braselton. All of these areas currently face issues with



congestion, delay and safety under current conditions. There is a need to prioritize improvements that make travel through Winder, along SR 316, and to Braselton safer and more efficient to support employment growth projected for these areas.

PROJECTED COMMERCIAL DEVELOPMENT

Many major commercial development initiatives are planned or proposed in Barrow County and neighboring Gwinnett and Oconee Counties. If implemented as planned, these projects have the potential to dramatically change SR 316 and I-85 corridors, adding millions of square feet of commercial space and thousands of housing units, many of them in master-planned mixed-use developments.

LAND USE POLICY NEEDS

With the construction of the new West Winder Bypass, there is the opportunity to support quality, nodal development along this new facility, just as it has been successfully implemented along SR 316. An overlay district in this area would limit access to the main facility and create developable areas at intervals, ensuring the ongoing efficiency and safety of the new facility.

DEMOGRAPHIC IMPACTS

Winder is located in the portion of Barrow County with a lower than average Equitable Target Area (ETA) index, with relatively high levels rates of households without cars, as well as low-income and minority persons. The presence of these populations may correlate with a need for transit or HST services in and to and from Winder, particularly to support access to jobs in nearby counties.



TRAVEL PATTERNS

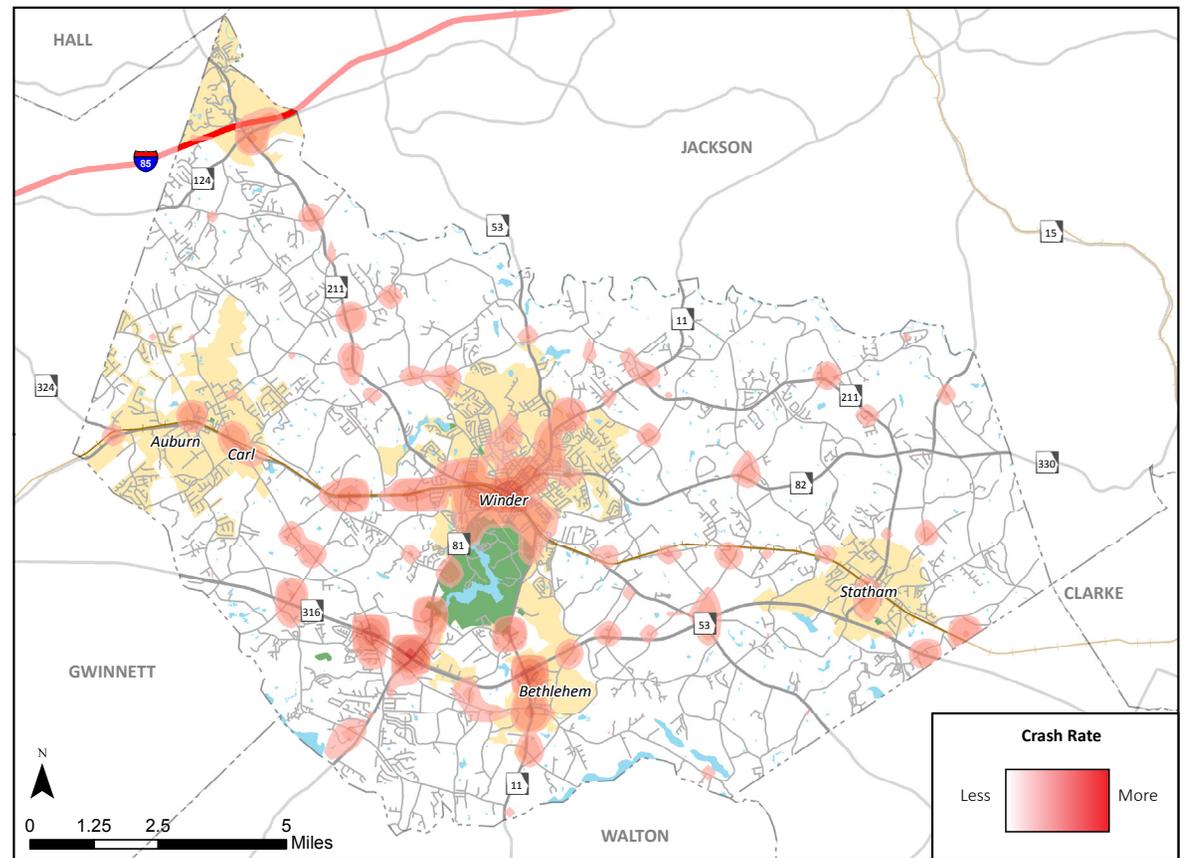
64.3 percent of trips that originate in Barrow County also have their destination in Barrow County. 27.0 percent go to destinations within the Atlanta region, and 8.7 percent go to destinations outside the region, such as Oconee County. Barrow County commuters in 2015 are primarily driving to Gwinnett County for work. By 2040, more commuters are projected to drive to Cobb, Fulton, and DeKalb Counties for work. The average commute for Barrow County residents will get longer over time, as more Atlanta region employees choose to make their homes in Barrow County. There is a need for transportation investments that support increased mobility to and from the Atlanta region, particularly Gwinnett County.

CRASH ANALYSIS

This CTP update confirms the need for operational improvements along Atlanta Highway in Auburn identified by the 2007 CTP, as well as along other high crash corridors and at high crash-severity intersections. **Figure 5.2** illustrates the crash history from this three year period.

From 2011 to 2013, Atlanta Highway experienced the most crashes in the county and SR 81 had the highest crashes per mile, while the intersection with the most crashes over the three year time period was SR 316 at SR 81, with 221 crashes. The interchange conversions programmed at three locations along SR 316 are likely to reduce the number and severity of crashes at intersections on SR 316. Similarly, the construction of the West Winder Bypass should reduce the number of crashes in Winder as it reduces overall traffic in the city.

Figure 5.2 Barrow County Crash Hot Spots, 2011 - 2013



The ARC's 2012 County Crash Profile Analysis in the Metropolitan Atlanta Region for Barrow County found that Barrow County had the highest crash fatality rate in the Atlanta region.

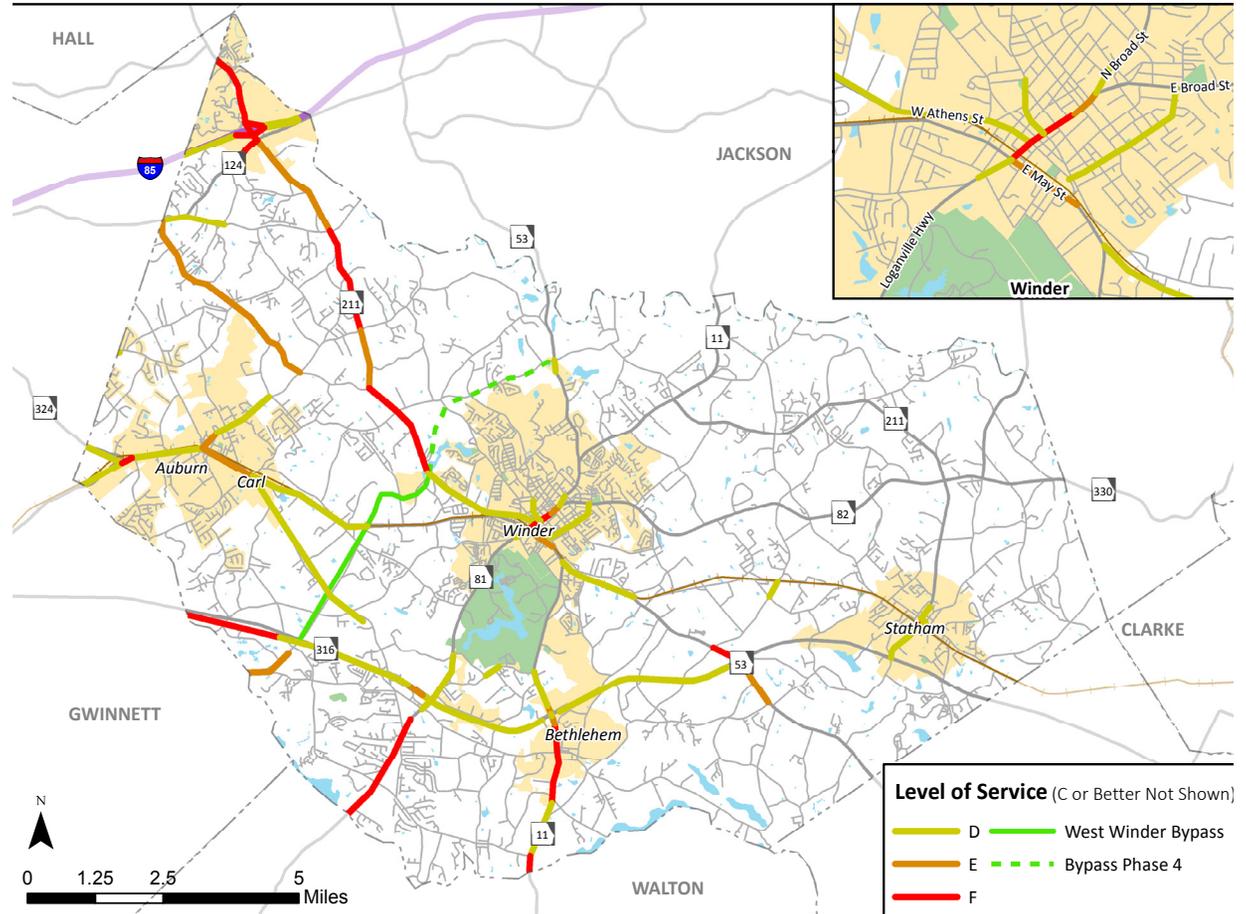
TRAFFIC VOLUMES

Analysis of average annual daily traffic projections reveals significant changes in Barrow County traffic patterns between 2015 and 2040. The West Winder Bypass appears as a critical means of lessening traffic through central Winder, but it is unable to completely alleviate the high traffic levels along downtown Winder streets. SR 316/ University Parkway, SR 11, SR 81, and Atlanta Highway continue to serve as critical arterials for travel through and within Barrow County to 2040.

LEVEL OF SERVICE

Level of service is a standard measurement of congestion or delay along roadway segments (**Figure 5.4**). Analysis indicates that there is a need for additional capacity projects, as well as travel demand reduction, alternative route availability, or operational improvements, to address increasing vehicle volumes through 2040. Under current conditions, all major roadways in downtown Winder operate at LOS D or worse during PM peak, and the segments in the heart of the city operate at LOS F. The degree of delay in this location has wide repercussions because Atlanta Highway, SR 211, SR 53, SR 11, SR 82 and SR 81 all converge here. This analysis confirms the need identified by the 2007 CTP for the West Winder Bypass. Delay at SR 81, SR 11, and SR 53 should reduce by 2030 with the implementation of the intersection to interchange conversions at these locations. All the same, SR 316 is projected to operate at D, E, and F by 2040 (**Figure 5.**).

Figure 5.3 Barrow County Projected Level of Service, 2040



ASSESSMENT OF CURRENT AND FUTURE NEEDS

5.2 IDENTIFIED NEEDS

Based on the findings from the Existing Conditions Report and Needs Assessment, the CTP update identified needs across the Barrow county transportation network. Those needs are presented by type below.

CORRIDOR NEEDS

Safety analysis performed for this CTP update supports the 2007 CTP’s stipulation that maintaining acceptable LOS along the entire SR 316 corridor would require the conversion of intersections into interchanges along the corridor to increase safety. SR 316 experienced the second highest number of accidents of all facilities in Barrow County from 2011 to 2013, and had high-frequency and high-severity crashes at intersections.

Roadway	Supports primary travel patterns	Primary Facility	Safety Need	Capacity Need	Publicly-Identified Need
SR 211	X	X	X	All in Barrow County - esp. between West Winder Bypass and I-85 and north of I-85	X
Atlanta Highway	X	X	X		
SR 81	X	X	X	From Walton County Line to Carter Hill Church Road	X
SR 11	X	X	X	From Walton County Line to SR 316	
SR 82			X		
SR 53		X	X		
Patrick Mill Road			X		
North Broad Street	X		X		
May Street/Atlanta Highway	X		X		
SR 124				Gwinnett County Line to Jackson County Line	
SR 324				From Gwinnett County Line to Atlanta Highway	X
Carl Bethlehem Road			X	SR 316 to SR 11	X
West Winder Bypass Extension	X		X		X

Source: ARC Travel Demand Model, GDOT crash data, Jacobs

LOS analysis determined that there is a need to support the efficient movement of people and goods across the Barrow County roadway network by adding capacity or addressing safety along the corridors in Barrow County found in **Table 5.1**.

INTERSECTION NEEDS

LOS analysis determined that there is a need to support the efficient movement of people and goods across the Barrow County roadway network by addressing areas of delay safety issues with intersection operational improvements. **Table 5.2** summarizes these needs by intersection.

Corridor	Intersection	Top Crash Location	Crash Hot Spot	Deficient LOS in 2012	Publicly-Identified Need	
Downtown Winder	Intersections on May and Broad Street		X	X	X	
Atlanta Highway	SR 324		X	X		
	Downtown Auburn (Mount Moriah Road, County Line Auburn Road/6th Street)		X	X		
	Downtown Carl (Carl-Cedar Hill Road, Carl-Bethlehem Road, Carl-Midway Church Road)		X	X		
	Patrick Mill Road		X	X		
	SR 11	X	X	X		
SR 211	Bowman Mill Road / Jackson Trail Road		X	X		
	I-85	X	X	X		
	Liberty Church Road		X			
	Old Hog Mountain Road		X			
	County Line-Auburn Road		X			
	Dee Kennedy Road		X			
	Pleasant Hill Church Road		X			
	Downtown Statham (Atlanta Highway/Broad Street)		X	X		
	SR 81	Carl-Bethlehem Road		X	X	
	Tanners Bridge Road		X			
SR 11	Punkin Junction Road		X			
	Downtown Bethlehem (Star Street)		X	X		
	McElhannon Road		X			
SR 53/Hog Mountain	Rockwell Church Road		X	X		
	Cedar Valley Trail Road		X			
	Jackson Trail Road		X		X	
SR 82	Holsenbeck School Road		X			
	Bowman Mill Road		X			
Dunahoo Road	Holsenbeck School Road		X			
Carl Bethlehem Road	Tucker Road		X			
Brown Bridge Road	Governor’s Ridge Road		X			

Source: GDOT crash data, ARC Travel Demand Model, Jacobs

TRUCK NEEDS

Improvements to the Winder and Statham primary roadways and intersections or implementation of alternative truck routes are needed to provide significant safety and efficiency improvements in terms of Barrow County's freight transportation. Needs associated areas that represent the greatest opportunities for improved safety, efficiency, and freight access conducive to economic development are listed in **Table 5.3**.

Table 5.3: Truck Traffic Accommodation Needs		
Roadway	Segment	Need
SR 211	from Gwinnett County Line to Broad Street in Winder	Additional Capacity
Dee Kennedy Road	SR 124 to SR 211	Add shoulders; bring roadway to design standard
May Street	Broad Street in Winder to Hog Mountain Road	Operational Improvements
Atlanta Highway	Gwinnett County Line to Pearl Pentecost Road	Operational Improvements
Pearl Pentecost Road	Atlanta Highway to Carl Cedar-Hill Road	Add shoulders; bring roadway to design standard
Carl-Cedar Hill Road	Atlanta Highway to SR 211	Add shoulders; bring roadway to design standard
SR 81	Walton County Line to SR 316	Add shoulders; bring roadway to design standard

Source: Jacobs

RAIL NEEDS

Barrow County is traversed by an active CSX railway that passes directly through the urban centers of Winder and Statham. Key intersections and rail crossings that need improvement to safely accommodate rail traffic can be found in **Table 5.4**.

Table 5.4: Needs for the Accommodation of Rail Traffic	
Crossing Location	Segment
Carl-Midway Church Road	Maintenance, pavement improvements
Deer Run Trail	Maintenance and improvements to ground clearance for trucks, or closure
Bankhead Highway	Maintenance and improvements to ground clearance for trucks
Horton Street	Signal Timing / Pre-Emption to prevent traffic queueing across rail
Broad Street	Pre-Signal and Pre-Emption to prevent queueing across rail, sidewalks
Harold Day Road	Maintenance, barrier and flashing light installation
Jefferson Street	Pre-Signal, Pre-Emption to prevent queueing across rail

Source: Jacobs

MAINTENANCE NEEDS

Barrow County is responsible for the paving, leveling and resurfacing of county roadways, including subdivisions and dead-ends. In 2015, Barrow County will use Local Maintenance and Improvement Grant (LMIG) funds to patch level and resurface three County roadway segments and three dead-end roads for a total estimated cost of \$727,744, which will address approximately 7.8 percent of the county's resurfacing needs as listed in their annual Road Improvement Plan.

BRIDGE NEEDS

There are 35 bridges in Barrow County maintained by GDOT and another 44 bridges maintained by the county. Bridges with replacement, rehabilitation, or repair needs for which the County is responsible are listed in **Table 5.5**.

Table 5.5: County and Federal Aid Secondary Bridge Needs					
Map ID	Structure ID	Description	Sufficiency Rating	Structurally Deficient/ Functionally Obsolete	Bridge Needs
74	013-5017-0	Patrick Mill Road at Apalachee River*	29.3	Structurally Deficient	Bridge replacement to remove posting; bridge repair and maintenance
1	013-5039-0	Old Thompson Mill Rd at Little Mulberry River	30.1	Structurally Deficient, Functionally Obsolete	Bridge replacement to remove posting; bridge repair and maintenance
3	013-5006-0	Boss Hardy Road at Little Mulberry River	45.7		Bridge repair to remove posting; bridge maintenance
76	013-5009-0	Liberty Church Road at Mulberry Creek	52.5		Bridge repair to remove posting; bridge maintenance
9	013-5025-0	Robertson BR Road at Barber Creek	56.1	Functionally Obsolete	Bridge replacement to remove posting; bridge repair and maintenance
32	013-5021-0	Manning Gin Road at Marbury Creek	87.7		Bridge replacement to remove posting; bridge repair and maintenance
72	013-0026-0	CSX Railroad at M-5406 Center Street	Not rated	None	Post vertical clearance

Source: GDOT Bridge Inventory 2014, GDOT Bridge Re-Inspection Letter 2014. * shared with Jackson County

ASSESSMENT OF CURRENT AND FUTURE NEEDS

BICYCLE AND PEDESTRIAN NEEDS

Bicycle facilities are extremely limited across the County. For recreational and economic development purposes, the 2007 CTP identified the need for special attention for bicycles in the area around Fort Yargo State Park. This CTP update supports this need.

The CTP update identified pedestrian priority areas surround schools, and the Barrow Regional Medical Center. Sidewalk segment needs in these areas are listed in **Table 5.6**.

Table 5.6: Pedestrian Needs Summary		
Location	Pedestrian Priority Area	Needs
Winder	Holsenbeck Elementary School	Sidewalks along Holsenbeck School Road between Holsenbeck Elementary and Magnolia Drive.
	Winder Barrow High School	Sidewalks along 5th Street north of the school to connect to residential areas to the north.
	County Line Elementary School	Sidewalks along Rockwell Church Road between the school and Baskins Circle, and along Miles Patrick Road between Ashwood Drive and Rockwell Church Road.
	Barrow Medical Center	Sidewalks along Jefferson Highway from Wisteria Drive to Shenandoah Drive.
Staham	Bear Creek Middle and Staham Elementary	Sidewalks along 3rd Street from Jefferson Street to Broad Street to link Bear Creek Middle to the central residential areas of Staham; Sidewalks along Jefferson Street from Bear Creek Middle to the existing sidewalk just north of Hillcrest Drive
Bethlehem	Snodon Preparatory School	A short sidewalk segment along West Star Street between Snodon School and Bishop Woods Road.
Unincorporated Barrow County	Haymon Morris School Cluster	Sidewalks along Hoyt King Road from SR 81 to Haymon Morris Road Sidewalks along Haymon Morris Road/Roxy Maxey Road from Hoyt King Road to Roxywood Drive Sidewalks along SR 81 from Otis Drive to Hoyt King Road Sidewalks along Tom Miller Road from Blakewood Street to Evergreen Way
	Matthews School Road School Cluster	Sidewalks along Matthews School Road from Patrick Mill Road to SR 81 Sidewalks along SR 81 from Township Avenue to Matthews School Road Sidewalks along Flat Rock Road from Township Avenue to Southridge Road
	Fort Yargo State Park	Bicycle connection from the park entrance to downtown Winder Sidewalk along SR 81 to connect to South Center Street

Source: Jacobs

AVIATION NEEDS

The roadway network immediately surrounding the Barrow County Airport (WDR) currently operates at LOS C or better and is projected to operate at LOS C or better for the most part through 2040. From 2011 to 2013, there were a high number of crashes on Atlanta Highway south of the airport near the airport’s entrance. There may be a need for improvements at and approaching the airport entrance off Atlanta Highway/US Bus 29.

ACCESS MANAGEMENT

There is the need in Barrow County to manage access on new roadways, in order to enhance their efficiency and safety. By managing roadway access, Barrow County can increase public safety, extend the life of major roadways, reduce traffic congestion, support alternative transportation modes, and even improve the appearance and quality of the built environment. Access management guidelines are developed to maintain traffic flow on the network so each roadway can provide its functional duties while providing adequate access for private properties to the transportation network. This harmonization of access and mobility is the keystone to effective access management.

Barrow County is home to a network of high speed, rural arterials which were not designed to accommodate the increasingly dense, urban land use patterns that they now serve. Access management strategies can help ensure the safe and efficient operation of major arteries where varied land uses interact with the roadway. By managing roadway access, Barrow County can increase public safety, extend the life of major roadways, reduce traffic congestion, support alternative transportation modes, and even improve the appearance and quality of the built environment.

INTELLIGENT TRANSPORTATION SYSTEMS

In Barrow County, Intelligent Transportation Systems (ITS) specifically applies to communications among signalized intersections and between roadway and railway modes. As capacity improvements become less feasible due to funding limitations, greater focus on maintaining and improving the sound operation of existing transportation networks develops. ITS improves transportation safety and mobility through the integration of advanced communications into transportation infrastructure and vehicles.

The Stakeholder Committee for this update identified the need for signal timing in Winder and across the county, and analysis in the Existing Conditions Report determined that the numerous and closely-spaced traffic lights in central Winder cause delay. Furthermore, intermodal conflicts between trains and roadway traffic may be reduced through ITS strategies such as signal pre-emption and synchronization. Given the limited funds available for transportation improvements, ITS improvements may be an effective strategy for improving operations where delay and intermodal conflicts exist.

TRANSIT AND HUMAN SERVICES TRANSPORTATION

The 2007 CTP did not find sufficient demand to recommend transit service for Barrow County. The low population and employment density identified in the existing conditions section of this report confirm this conclusion. However, the 2007 CTP noted that, with strong, continued growth, population densities could reach levels where some commuter transit services would be beneficial, such as an expansion of the GRTA Xpress Bus service along SR 316, or the introduction of demand-response transit service in the county. This analysis indicates that there is not an immediate need for full service, premium transit in Barrow County, but that these services should be monitored for inclusion in planning as population grows in Barrow County and coordinated at the regional level.

Barrow County currently operates a van to serve the needs of area seniors. Barrow County's senior population accounts for approximately the same share of the population (8.6 percent) as across the region (8.5 percent). At this time, it appears that current service is adequate to meet existing demand for these users.

The previous CTP identified a potential future need for County coordination with the Northeast Georgia Regional Commission (NEGRC) to offer human services transit. Representatives from local human services organizations reported that low-income persons in the county were in need of access to transit to reach jobs in the Athens area. Many of these persons want to or are able to work in the Athens area but lack a vehicle for attending work regularly. Therefore, there may be a need to study the implementation of new HST services in Winder, where levels of low-income persons and zero-car households are highest. These services may overlap or operate jointly with Transportation Demand Management services.

TRANSPORTATION DEMAND MANAGEMENT TECHNIQUES

Existing conditions analysis indicates that a greater percentage of the Barrow population carpools to work than is typical for the region (12.2 percent of Barrow County vs. 10.8 percent for the region). Carpooling is one example of a Transportation Demand Management (TDM) technique. In addition to carpooling, TDM strategies include telecommuting and van pool programs. These programs can serve as primary strategies for rural and developing counties to alleviate the demand on their increasingly congested highways without making costly capacity improvements. Given Barrow County's elevated commuter flow to neighboring counties, TDM strategies may prove critical tools in coming decades.

FUNDING

Analysis of Local Maintenance and Improvement Grant (LMIG) funding and maintenance needs indicates that current LMIG funds are not enough to properly maintain county roads. Given current funding levels, allocation above the 30 percent local match is necessary to meet current maintenance needs. This allocation may come from an increase in LMIG funds resulting from the recently signed HB 170. With no change to current funding levels, a theoretical cycle of 87 years is required to perform maintenance on all 430 miles of Barrow County paved roadways, assuming 2015 dollars. In reality, the cycle may be much longer due to inflation and other cost adjustments.

Analysis of Barrow County SPLOST funding indicates that the 2012 Barrow County SPLOST is primarily allocated to debt repayment. The current bond repayment schedule runs through 2027, making it likely that bond payments will be included in SPLOST future programs. The 2012 SPLOST largely ignores transportation needs. Other counties spend a greater percentage of SPLOST revenue on transportation than Barrow. Greater allocation to transportation will be needed to meet safety, maintenance, and capacity needs.

Analysis of federal funding sources for Barrow County projects indicates that Barrow County has been successful in securing federal and state funding for large capacity improvements. The West Winder Bypass and the SR 316 interchange projects are 80% federally and 20% state funded. However, future capacity improvements will likely need local matching.

6 POLICY RECOMMENDATIONS

6.1 ASSET MANAGEMENT

Rapidly growing areas such as Barrow County are challenged to plan for their ongoing growth and the provision of new infrastructure that will allow for increased regional mobility. Maintaining a state of good repair on the transportation network that already exists increases the functional life of assets and decreases the overall burden of supporting a growing transportation network. This maintenance involves the repaving and resurfacing of existing roadways, repairing bridges before they require severe rehabilitation, and optimizing the network of traffic signals to limit the need for major capacity improvements.

ROADWAY MAINTENANCE

The LMIG program is funded by GDOT for improvements that include engineering, utility adjustments, resurfacing, adding turn lanes, bridge projects and maintenance, and other things. A 30 percent local match is required for these funds. Barrow County is responsible for the paving, leveling and resurfacing of county roadways, including subdivisions and dead-ends. Through the Road Improvement Plan, Barrow County specifies those road segments that will be paved during the year using Local Maintenance and Improvement Grant (LMIG) funds.

Based on data collected for the last three years, on average the County has contributed local matching funds of \$200,032 annually for a total of \$713,654 per year in LMIG funds (**Table 6.1**). According to the 2015 Road Improvement Plan, there are at least \$7.74 million in pavement surface needs, \$1.61 million in needs on County subdivision and dead-end roads, and \$2.685 million in dirt road paving needs (**Table 6.2**).

Table 6.1: Three-Year LMIG Funding History, 2013 to 2015

Funding Source	2013	2014	2015	Average
LMIG Funds	\$489,689	\$525,687	\$525,487	\$513,621
Matching funds (30 %)	\$158,994	\$256,472	\$184,631	\$200,032
Total Maintenance Funding from LMIG	\$648,684	\$782,159	\$710,118	\$713,654

Source: GDOT, Barrow County

Table 6.2: Maintenance Needs in the Barrow County Road Improvement Plan

Maintenance Project Type	Mileage	Estimated Cost
Patching and Leveling & Resurfacing of existing paved rural County roads	54.93	\$7,742,478
Patching and Leveling & Resurfacing of existing paved county subdivision streets and dead end roads	14.96	\$1,609,166
Grading, Drainage, Base and Paving (Dirt Roads)	5.09	\$2,685,000
Total	74.98	\$12,036,644

Source: GDOT

Table 6.3: Potential Increase in LMIG funds

	Average, 2013 to 2015	With 80% increase in LMIG funds
LMIG Funds	\$570,745	\$1,027,341
Matching funds	\$171,223	\$308,201
Total Maintenance Funding from LMIG	\$741,969	\$1,335,544

Source: Jacobs

The average annual LMIG funding put toward roadway maintenance from 2013 to 2015 in Barrow County represents approximately six percent of the identified maintenance needs. At the current funding rate, the currently identified maintenance needs will be addressed in 17 years, assuming that costs do not go up and no new needs arise. It should be noted that the approximately 75 miles of roadway identified for maintenance represent a small portion – 17 percent – of the 430.69 miles of paved roads in Barrow County, all of which will eventually require maintenance.

The County should continue to prioritize the 30 percent local match needed to utilize these funds with a goal of full utilization of LMIG funds every year. There are promising indications that the newly signed HB 170 will increase LMIG funds

by up to 80 percent. In that case, bringing the approximate level of matching funds to \$308,200 could result in an approximate total \$1.34 million for maintenance (**Table 6.3**). Full utilization of LMIG funds would then allow the county to complete its list of current needs in nine years.

With the maintenance backlog as it is, it is recommended that, as new projects are constructed in Barrow County, the County should plan for the additional maintenance funding that will be required by the expanded roadway network. The County must also prepare for the potential 80% increase in available LMIG funds by dedicating the necessary 30 percent local match, thereby shortening the timeframe for existing maintenance project implementation.

BRIDGE MAINTENANCE

In addition to the major bridge projects needed in the county, bridges, like roads, require regular maintenance. The Barrow County Road Improvement Plan identifies 42 bridges and culverts totaling \$1,427,000 in maintenance projects. In 2014, the County completed one bridge maintenance project at a cost of \$7,800.

With an increase of LMIG funds, there should be more opportunities to address bridge maintenance projects. Competent bridge and culvert maintenance reduces the need for bridge repair and replacement projects later on at a fraction of the cost of those larger projects. While the County does not currently use LMIG funds for bridge repair, these funds should be considered for use in the future.

In many cases, bridge replacement and repair can be forestalled by a number of years with proper maintenance. The FHWA warns, “Delaying or forgoing warranted preservation treatments will result in worsening condition and can escalate the feasible treatment from preservation to replacement. The latter will result in extensive work and higher cost.”

FUTURE ASSET MANAGEMENT PLAN

Given the large scale of asset management needs in Barrow County, the County should create a dedicated asset management plan when possible. This plan will apply the strategies developed here to the full range of short and long term roadway and bridge maintenance needs found throughout the County. The Asset Management Plan should provide a constrained maintenance agenda that prioritizes the most critical needs.



This bridge is located on Old Thompson Mill Road over the Little Mulberry River was built in 1966 and is functionally obsolete. A replacement structure is required to upgrade this structure to a point where a posted weight-limit is no longer required. Maintenance recommendations have been identified that will allow the continued use of this local bridge until such time as replacement or repair is possible.

POLICY RECOMMENDATIONS

6.2 FREIGHT AND AIR

Barrow County features an active freight railway that serves upwards of 19 trains per day and provides valuable freight access to a range of Barrow County industries. Barrow County is also served by major regional truck routes and an Interstate Highway, and experiences a significant amount of truck traffic along major roadways and near freight-generating industries.

Due to the importance of freight transportation in Barrow County, this study proposes policies and guidelines to ensure that Barrow County's infrastructure remains freight-supportive for years to come. In addition to economic benefits, safety for all travel modes may be significantly improved when freight modes are adequately served.

TRUCK RECOMMENDATIONS

If Barrow County is interested in improving freight movement on its transportation network, it should follow these guidelines:

- Prioritize operational and safety improvements along major truck corridors (SR 211, Atlanta Highway, SR 316)
- The construction of the West Winder Bypass will divert freight travel away from central Winder. Improvements to intersections near and along this project should be prioritized, as should operational improvements to corridors which feed the bypass (SR 211, Atlanta Highway).
- Maintain communication between the County and freight-generating and –operating stakeholders to identify problems as they arise.

According to the National Highway Traffic Safety Administration, crashes with large trucks resulted in 3,964 fatalities in 2013. Of those deaths, 71 percent were occupants of other vehicles. It is in the interest of the travelling public that routes serve high volumes of truck traffic or near truck-generating land uses be brought up to freight design standards to minimize the conflicts between truck and the roadway network as well as other traffic. The GDOT design policy manual provides the following guidelines regarding design standards for freight serving routes:

- Where there is a high percentage of truck traffic, a 90-degree intersection should be provided.
- Pavement widening on curves where truck traffic is significant.
- Ten foot overall shoulders for collector and arterial roadways which serve trucks.
- Install signage that indicates the presence of heavy trucks to alert drivers and prevent intermodal conflicts.



RAIL RECOMMENDATIONS

Rail lines are a significant economic asset to Barrow County. The CSX rail line here serves important industries. However, these points of access, as well as many other at-grade crossings, create numerous conflict points with other travel modes. The cost and complexity of constructing grade-separated rail crossings make them impractical for most locations. Therefore Barrow County should follow these guidelines for continued railway safety and efficiency:

- Prioritize safety improvements at rail crossings.
- Install clear signage, flashing lights, and barriers at all active rail crossings.
- Use signal pre-emption and pre-signals at major roadway rail crossings to alleviate congestion and prevent vehicles, particularly lengthy heavy trucks, from queuing across railways.
- Ensure that safe ground clearance, turning visibility, early warning systems, and signage are available at rail crossings that serve heavy volumes of truck traffic.
- Close inadequate and underused rail crossings to promote safety, with financial incentives provided by CSX.
- Continue ongoing communications between CSX, local freight stakeholders, and the County to seek innovative funding strategies for potential rail improvements.

Railway capacity does not require expansion at this time, and conflicts between railway and other modes should take priority when limited funding is distributed. CSX may prove a valuable ally in the implementation of railway improve-

ments, as they often provide partial cost matching for safety improvements at rail crossings. Simple, operational enhancements such as barriers, flashing lights, closure of inadequate crossings, and pre-signals should be prioritized above more costly enhancements.

Strategies for Long Range Improvements

Short range improvements for rail line crossings are presented in Section 7. However, long term rail crossing planning should include:

Feasibility and scoping study for an additional grade separated crossing in the eastern half of Barrow County, near Statham, to provide a safer and truck-friendly alternative to the inadequate crossing at Jefferson Street.

Storm water drainage improvements are needed at the Center Street crossing, which currently floods during heavy rains. Inadequate drainage within the underpass should be expanded to prevent regular flooding. As the only grade-separated crossing in Winder, this crossing will ideally provide a higher level of service in the future.

Implementation Strategies

Stakeholders in the rail and freight industries are critical partners in any plan to improve rail crossing safety and efficiency. CSX, the operator of Barrow County's rail line, should serve as the primary partner for Barrow County as crossing improvements are developed. CSX offers a partial funding match for crossing safety improvements. It also offers financial incentives for the closure of rail crossings. Communication between Barrow County, GDOT, and CSX must be maintained to seek efficient funding and implementation strategies for all Barrow rail crossing improvements.

Federal funding assistance for rail crossing improvements is made available through the Federal Grade Crossings Fund, or Section 130 fund. These funds are dedicated to rail crossing safety improvements, and should be sought through coordination between Barrow County and GDOT. Given that Georgia is ranked among the top ten states for the highest number of average annual grade crossing collisions, these funds should be sought for safety improvements through GDOT, which maintains the State Grade Crossing Action Plan as required by the Federal Government due to high rail crossing crash rates statewide.

GDOT's Statewide Rail Plan provides long term intercity passenger railway recommendations. These include a proposed intercity route between Atlanta and Athens that makes use of the existing CSX rail line through Barrow County. If this service is implemented, significant upgrades will be needed to Barrow County's rail crossings. Initial preparation of an Environmental Impact Statement for this route is underway and scheduled for completion in the summer of 2016. Further impact mitigation strategies for Barrow County regarding this intercity route may be developed upon the release of this information.

AIRPORT

The Barrow County Airport (WDR) is located east of Winder, between Picklesimon Road and Giles Road with its main entrance on Atlanta Highway. From 2011 to 2013, there were a high number of crashes on Atlanta Highway south of the airport near the airport entrance. Any eventual expansion of the airport or its services should address the safety issues at the airport's entrance.

POLICY RECOMMENDATIONS

6.3 LAND USE STRATEGIES FOR TRANSPORTATION

Transportation facilities are impacted by the land uses they serve. This section provides recommendations for how to best manage land uses to optimize movement across the transportation network.

ACCESS MANAGEMENT

The 2007 CTP recommended the development of an access management plan to reduce congestion and improve safety through the management of curb cuts as development occurs along primary corridors. At this time, Barrow County does not have formally adopted access management policies in place, but it has supported further limitations on access to SR 316 in order to reduce congestion and improve safety on the county's most major transportation facility. If the County wishes to better manage access along its roadways, it may be necessary to craft and adopt access management regulations for use in development and land use review.

The smooth flow of traffic can be encouraged along new routes through the reduction of roadway access through the following means:

- Adopt a corridor overlay district that requires adherence to access management guidelines when developments make substantial improvements or expansions, have significant changes in trip generation, or when new connection permits are requested.
- Add center medians at appropriate locations to channelize traffic and reduce conflict points from turning maneuvers. This will improve traffic flow through the elimination of weave movements. The separation of left-turn median breaks from travel lanes would provide space for deceleration, thus improving traffic operations and reducing crash potential.
- Develop a supportive street network that could relieve traffic pressures on the main arterial. This could be achieved through frontage roads, service roads and other interconnecting corridors.
- Prohibit single-lot driveways along thoroughfares and require access points to be public through streets that also serve adjacent development.
- Implement zoning regulations that encourage new commercial developments to cluster together in locations set back from major roadways, preferably along access roads. This would permit businesses within the development the ability to share a consolidated access point. The cluster concept can be applied successfully to shopping centers, mini-malls, and multiple-use facilities.
- Require inter-parcel access between developments and stub-streets to link to future development when it occurs.
- Require traffic impact analyses for businesses that generate high traffic volumes along designated access management corridors. Traffic studies can be used to identify remedial measures to lessen the traffic impacts of new developments.

WEST WINDER BYPASS CORRIDOR

The 2007 Barrow County *Comprehensive Plan's* West Winder Bypass Corridor character area is intended to direct land uses and development styles along the bypass once it is constructed. This character area calls for “large tracts of land, campus or unified development with high degree of access by vehicular traffic, onsite parking, low degree of open space” with “light manufacturing, wholesale trade, distribution, assembly and processing activities.” As this character area develops, it is likely to attract new develop-

ment. The comprehensive plan rightly recognizes that traffic impacts and circulation should be addressed in site design for new development in this area. Development should incorporate access management strategies described above, particularly the limitation of driveways and provision for interparcel access. An overlay district on West Winder Bypass that prescribed specific limits on access and encouraged nodal development would help in making this area attractive to new and continued development and preserving the efficiency of the new roadway.

SR 316

Improvements along SR 316 are likely to induce additional commercial development along this corridor. Where large contiguous developments are proposed, site plans should include access roads to maximize the traffic access to the development and to remove local traffic from the main facility. Plans for access roadways to the north or south of the main SR 316 facility should be made in coordination with the recommended SR 316 Intersection Project Engineering Scoping Study.



POLICY RECOMMENDATIONS

6.4 HUMAN SERVICES TRANSPORTATION & TRANSPORTATION DEMAND MANAGEMENT

Barrow County's rural nature favors travel by automobile, but there are opportunities to provide mobility and reduce the demand placed on the roadway network through a Human Services Transportation (HST) program and Travel Demand Management (TDM) strategies.

HUMAN SERVICES TRANSPORTATION

The Needs Assessment for this CTP Update identified the need for additional HST in Barrow County, concentrated in Winder. There should be additional study of how these services could be provided using federal funds. The ARC's Regional Transit Committee (RTC) addresses policy issues associated with regional transit planning, funding and governance. As part of its 2014 to 2016 Work Program, the RTC is charged with undertaking a major update to the ARC's Coordinated Human Services Transportation Plan that will consider the appropriateness of a regional paratransit service delivery model. Barrow County should coordinate with ARC in this regional effort to determine if there are cost advantages to applying a regional delivery model in the CTP update study area.

TRANSPORTATION DEMAND MANAGEMENT

TDM represents a series of strategies designed to reduce commuter reliance on single occupancy vehicle and automobile travel. TDM includes initiatives designed to foster and support alternative transportation modes, including transit, biking, and walking. It also supports carpooling

and vanpooling operations which allow flexible, widely applicable alternatives to driving alone. TDM can also include teleworking and alternative work schedule initiatives which allow commuters to avoid traveling as often or during peak hours. These strategies grow increasingly important as congestion and population grow in the outlying areas of the Atlanta region where traditional non-automobile modes such as mass transit are not widely applicable.

The Atlanta region, although reliant on automobile travel, is home to a variety of effective Transportation Demand Management strategies and operations applicable at the regional and local levels. Barrow County should look towards the region's existing and successful TDM programs for support and guidance in both the implementation of its own programs and cooperation with existing ones. The recommendations that follow provide a summary of ongoing regional TDM strategies, how these may best be applied to Barrow County, and how the County may implement its own, local TDM operations in coming decades.

Regional Initiatives

While no contractually defined leadership organization exists for TDM programming in the Atlanta region, the ARC serves as the primary planning source for the range of TDM strategies at work in the area. In 2013, the ARC Transportation Demand Management Plan established a framework for the delivery of TDM strategies across the region. The plan provided critical information regarding the region-wide structure of existing and proposed TDM services. Figure 5.1 displays the organizational structure of such services as determined by the ARC.

Georgia Commute Options, a GDOT sponsored, statewide TDM initiative, provides critical information and support to individual commuters and organizations regarding travel alternatives and ridesharing incentives. Georgiacommuteoptions.org provides comprehensive information for private individuals and employers who seek to promote or take advantage of TDM strategies such as ridesharing, vanpooling, and transit through financial and other incentives. Furthermore, Georgia Commute Options provides a Guaranteed Ride Home service to commuters within the Atlanta region. This service provides a free ride home to any commuter unable to use their normal alternative commute mode (vanpool, carpool, transit, or other alternative mode) due to emergent or unexpected circumstances.

The Clean Air Campaign, a non-profit organization dedicated to the reduction of transportation demand, operates similarly to Georgia Commute Options in the Atlanta region. The organization works directly with employers in an advisory capacity to establish, incentivize, and raise awareness of TDM programs including shuttles, vanpools, and other ride-sharing opportunities.

Many dedicated TDM initiatives are operated and partially funded by local entities, including Transportation Management Associations (TMA), and County and City governments. Private entities with significant employee populations also contribute to and operate their own TDM initiatives ranging from private shuttle services to free transit passes for employees. While Barrow County is not currently home to a TMA, it meets the criteria necessary for the implementation of dedicated TDM operations. Local government-operated or regional services are the most likely TDM platforms for implementation in Barrow

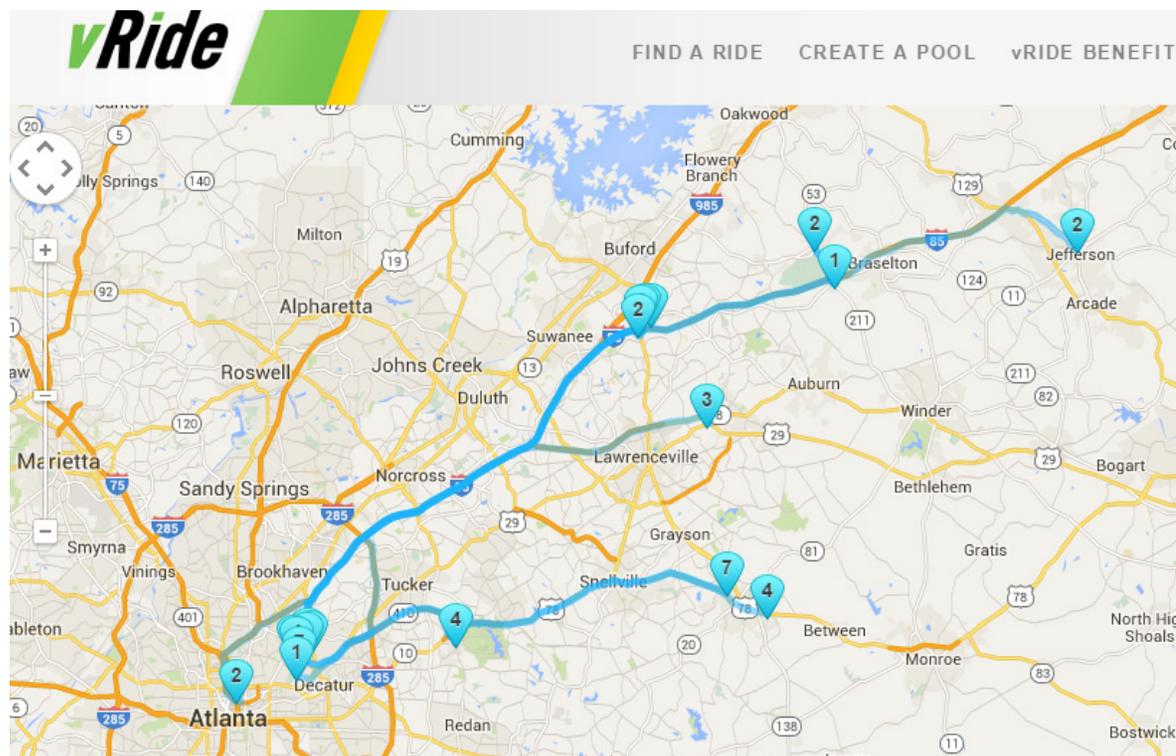
County given the lack of TMA organizations. The County's large number of long range commuters to both Athens-Clarke County and the central Atlanta region stand to benefit greatly from dedicated, locally-operated TDM initiatives as well as regional operations such as those provided by Georgia Commute Options.

Vanpooling

Vanpooling is a broadly defined collection of ride sharing services which allows a number of long range commuters to share a vehicle and reduce the personal and environmental cost of their transportation. Vanpools may be organized by individuals, by employers, or by County governments and other local agencies to provide commuter services in either a fixed or flexible route format. Vanpool programs may either employ dedicated drivers or make use of passenger-drivers who may ride for free or receive some other incentive for their service. Vanpool services may be contracted to major service providers such as VPSI and vRide or operated via direct vehicle ownership. Commuters may meet at designated ride share points or, in the case of individually operated ride shares, leave directly from their homes.

The Douglas County Rideshare is the largest local government operated vanpool provider in the Atlanta region. The service operates on a platform that may also prove applicable to Barrow County due to similarities in commute patterns and density between the two regions.

Douglas County Rideshare offers vanpool services from central Douglas County locations to major employment centers across the Atlanta region. Users purchase a seat on a dedicated route that fits their needs. Monthly fares range from \$195 for routes that travel as far as Anniston,



Source: vRide

Alabama, to as little as \$82 for vans that run to Hartsfield-Jackson Atlanta International Airport. In addition to a variety of vanpool routes, Douglas County also provides a free ride-matching service for individuals interested in arranging personal carpools. Douglas County rideshare is funded through County funding, fare recovery, and ARC regional TDM funds.

Barrow County is positioned to take advantage of a similar funding strategy and organizational structure to establish its own Rideshare service. Further dedicated vanpool studies should be completed in order to fully evaluate demand for such a service and to propose an operational structure that matches the County's needs.

Other Demand Management Strategies

Barrow County may use other TDM strategies to supplement any future rideshare service. Coordination with local employers and education of residents through public meetings and other platforms can raise awareness of the free services provided by Georgia Commute Options and the Clean Air Campaign. Teleworking and alternative work schedules, as well as a free, County-sponsored ride matching list provide short term solutions to TDM needs until a more dedicated ride sharing service can be studied and implemented.

7 PROJECT RECOMMENDATIONS

This CTP update presents projects in a financially-constrained Five Year Work Program and in an unconstrained list of projects without current funding sources. Unconstrained projects are prioritized by type for the county's use in decision-making regarding transportation investments as funds are available. Projects have been prioritized into short-, mid- and long-range programs as a guide. These categories reflect the County's current needs, although projects may shift from one category to another over time based on changing conditions and availability of funding.

7.1 CONSTRAINED FIVE YEAR WORK PROGRAM

As outlined in the Needs Assessment, for the immediate future Barrow County's debt obligations

take precedence over identifying funds for transportation improvements. The Constrained Five Year Work Program for this CTP update thus consists of projects currently in the ARC TIP (**Table 7.1** and **Figure 7.1**). Projects in the Short Term Work Program reflect an emphasis on large projects that support regional mobility, as well as address issues of safety and delay in Barrow County.

Ed Hogan Road Intersection Improvement

would create a new crossing of the rail line in west Winder. It is intended to create a safe and convenient crossing for both trucks and passenger vehicles.

West Winder Bypass is intended to address issues of congestion and delay associated with high volumes of traffic, particularly truck traffic,

in downtown Winder. Phases 1 through 3 are in the ARC TIP, with Phase 4 in the RTP long range plan. Right-of-way acquisition is scheduled to commence in 2016 for Phase 1, with construction programmed for the long range.

I-85 North Widening would add a new HOT lane on I-85 from Hamilton Mill Road to SR 53. Its construction is planned for 2019.

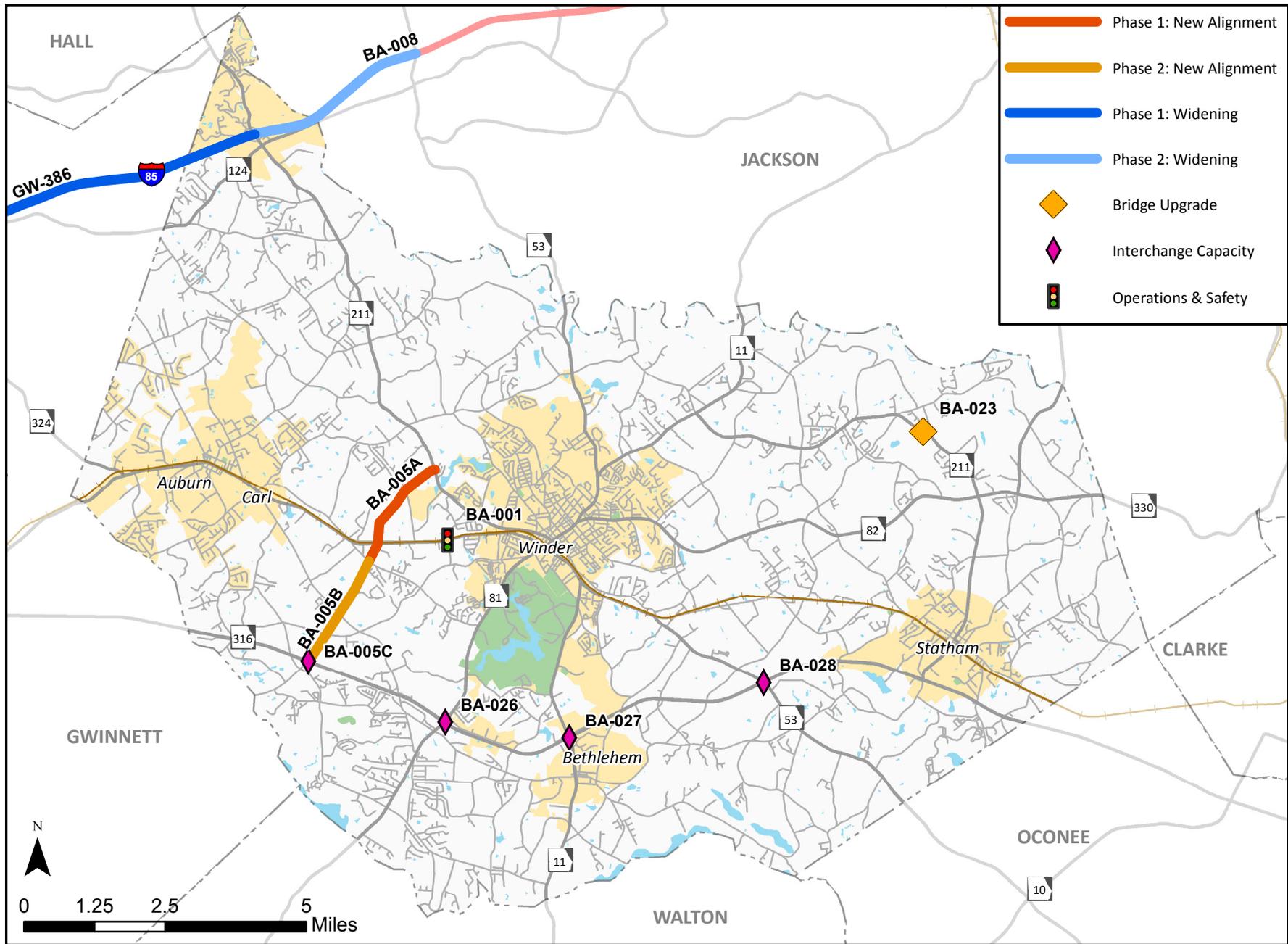
Interchange Conversions on SR 316 at SR 81, SR 11, and SR 53 will address safety and access issues associated with SR 316. These interchanges will provide for more efficient through-movement both east-west and north-south in Barrow County.

Table 7.1: Projects in the Constrained Five Year Work Program

ARC ID	Description	Limits	Total Project Cost	Phase	Fiscal Year	Fund Source
BA-001	Ed Hogan Road Intersection Improvement	at SR 8 and Bankhead Highway	\$2,231,119	UTL	2016	Local Funds
				CST	2016	STP – Urban (>200K) (ARC)
				ROW	2016	STP – Statewide Flexible (GDOT)
BA-005A	West Winder Bypass: Phase 1 – New Alignment	From SR 211 near Cedar Creek to Matthews School Road	\$37,723,853	UTL	2018	STP – Statewide Flexible (GDOT)
				CST	2018	STP – Statewide Flexible (GDOT)
				ROW	2019	STP – Statewide Flexible (GDOT)
BA-005B	West Winder Bypass: Phase 2 – New Alignment	From Matthews School Road to SR 316	\$18,355,737	UTL	LR 2020-2030	General Federal Aid (2020-2040)
				CST	LR 2020-2030	General Federal Aid (2020-2040)
				ROW	2019	STP – Statewide Flexible (GDOT)
BA-005C	West Winder Bypass: Phase 3 – New Interchange	At SR 316	\$17,776,456	UTL	LR 2020-2030	General Federal Aid (2020-2040)
				CST	LR 2020-2030	General Federal Aid (2020-2040)
				ROW	2019	STP – Statewide Flexible (GDOT)
BA-008/ GW-386	I-85 North Widening	From Hamilton Mill Road to SR 53	\$14,435,000	CST	2019	National Highway Performance Program (NHPP)
BA-023	SR 211 Bridge Replacement	at Beech Creek	\$2,005,178	CST	2016	STP – Statewide Flexible (GDOT)
				ROW	2015	National Highway Performance Program (NHPP)
				UTL	2019	
BA-026	SR 316 – New interchange	at SR 81	\$20,905,875	CST	2019	
				ROW	2016	National Highway Performance Program (NHPP)
				UTL	2019	
BA-027	SR 316 – New interchange	at SR 11	\$15,976,015	CST	2019	
				ROW	2018	National Highway Performance Program (NHPP)
				UTL	LR 2020-2030	General Federal Aid (2020-2040)
BA-028	SR 316 – New interchange	at SR 53	\$14,051,993	CST	LR 2020-2030	General Federal Aid (2020-2040)
				ROW	2018	National Highway Performance Program (NHPP)
				UTL	LR 2020-2030	General Federal Aid (2020-2040)

Source: ARC TIP (Revised May 2015).

Figure 7.1: Projects in the Short Term Work Program



PROJECT RECOMMENDATIONS

7.2 IMPACTS OF MAJOR PLANNED PROJECTS

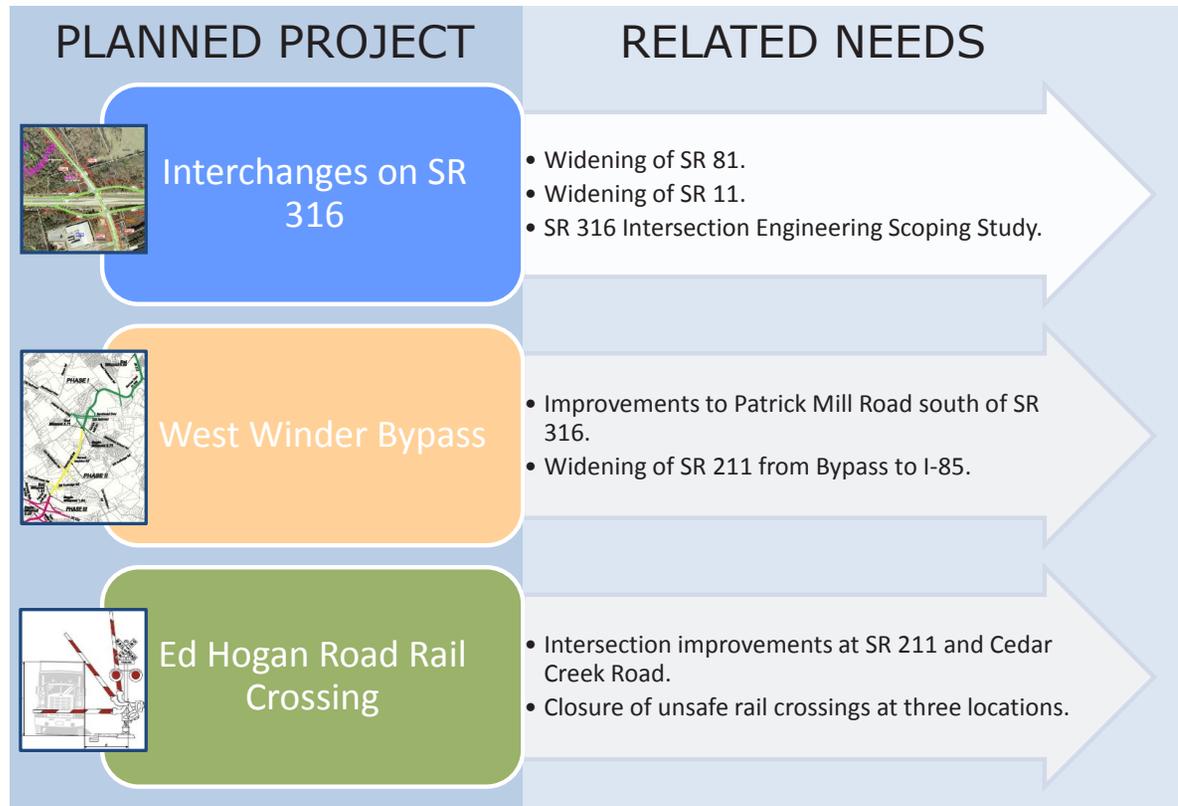
The Constrained Five Year Work Program includes projects that will greatly impact the Barrow County transportation network. For example, the proposed West Winder Bypass is intended to reroute traffic around downtown Winder and in so doing, will influence traffic on connecting facilities.

This CTP update recognizes that these major projects will influence travel in Barrow County, creating new transportation needs in the process. It is beyond the scope of this study to address all of these needs, but future CTP updates will address the impacts of these projects once they have been implemented and their full impact can be assessed. The potential impacts of major projects in the Short Term Work Program can be found in **Figure 7.2**.

SR 316 INTERSECTION PROJECT ENGINEERING SCOPING STUDY

In the *Needs Assessment*, safety issues were identified at several intersections along SR 316. At SR 316, SR 11, SR 53, and with the West Winder Bypass, at Patrick Mill Road, planned the existing intersections are planned for conversion to interchanges, which will address the safety issues at these locations. However, those interchanges will change the nature of this facility even as it continues to operate as a primary rural arterial. An engineering scoping study that will determine the operational improvements necessary at the remaining intersections to support their efficient and safe operation once the interchanges have been constructed is recommended.

Figure 7.2: Impacts of Major Projects in the STIP



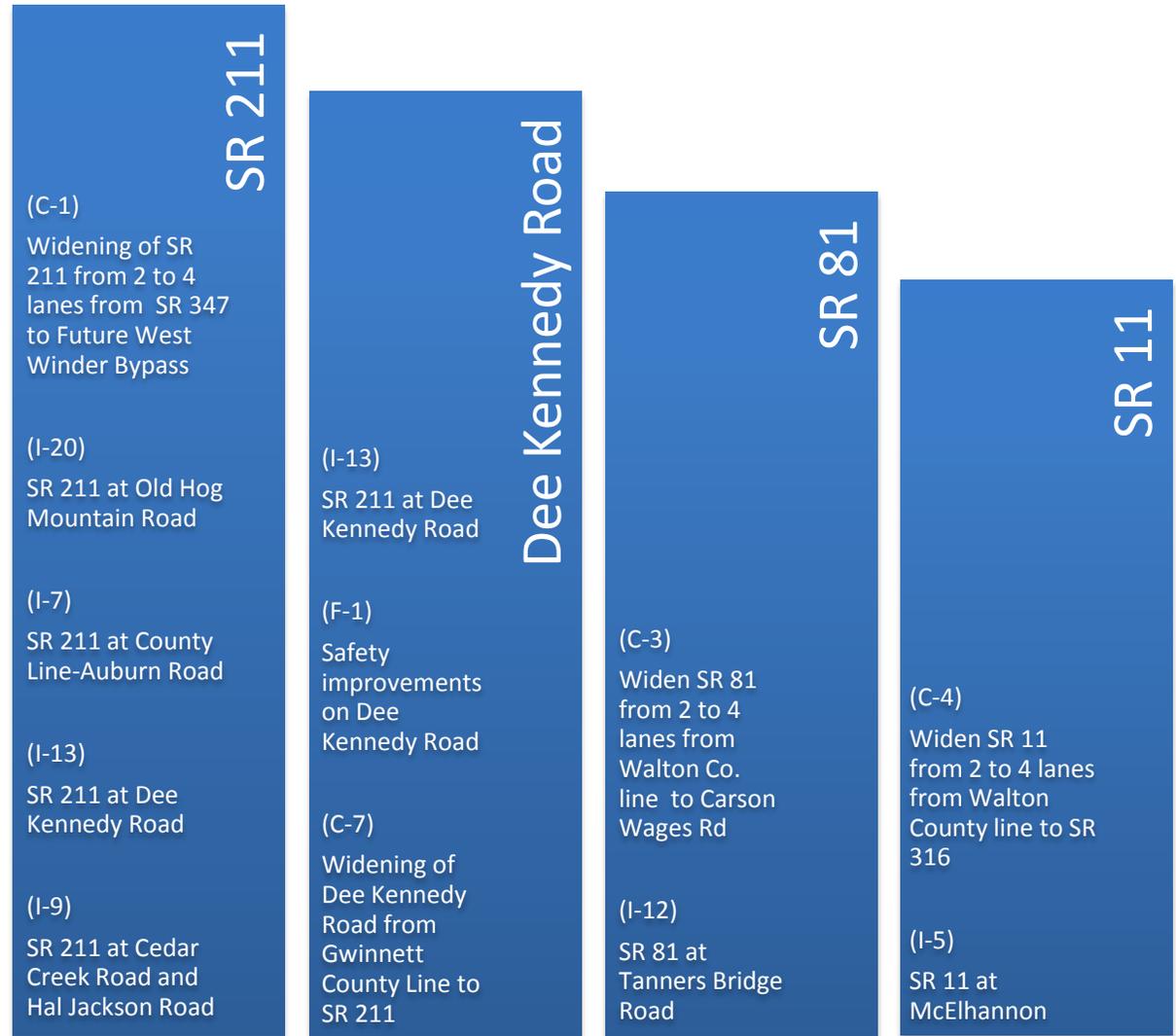
7.3 UNCONSTRAINED PROJECT RECOMMENDATIONS

Recommendations presented as part of the unconstrained program are those that address needs that are projected to remain after these major projects are constructed.

PROJECT RECOMMENDATION OVERLAPS

In some cases, this CTP update recommends several projects along the same corridor. For example, along the SR 211 corridor west of Winder there is a capacity project recommendation, as well as four intersection improvements. Any widening project along this corridor would also address intersection issues in engineering. In addition, if a safety project is being undertaken, the intersection improvement may be incorporated to the construction to save time and money. In the case that the county wishes to avoid the expense of a capacity project, though, one or more intersection projects would improve safety and efficiency along the corridor for the time being. Overlapping projects are listed in **Table 7.3**.

Figure 7.3: Project Recommendation Overlaps



PROJECT RECOMMENDATIONS

7.4 INTERSECTION IMPROVEMENT RECOMMENDATIONS

Intersection improvement projects lie at the opposite end of the transportation improvement spectrum from the major regional investments that are found in the Short Term Work Program. Intersection improvement projects locally address issues of safety and delay at a fraction of the investment of a widening or new roadway.

Intersection improvement projects are recommended at several locations around the county on both state routes and County roads (**Table 7.2**

and **Figure 7.4**) Intersection improvements can be funded locally or bundled together for potential federal or state funding.

Two improvements that should be considered for implementation in the short range are located on SR 316 near Barrow Industrial Parkway, at Kilcrease Road and Patrick Mill Road. The addition of northbound right turn lanes at these intersections should reduce queuing and increase safety during the PM peak period.

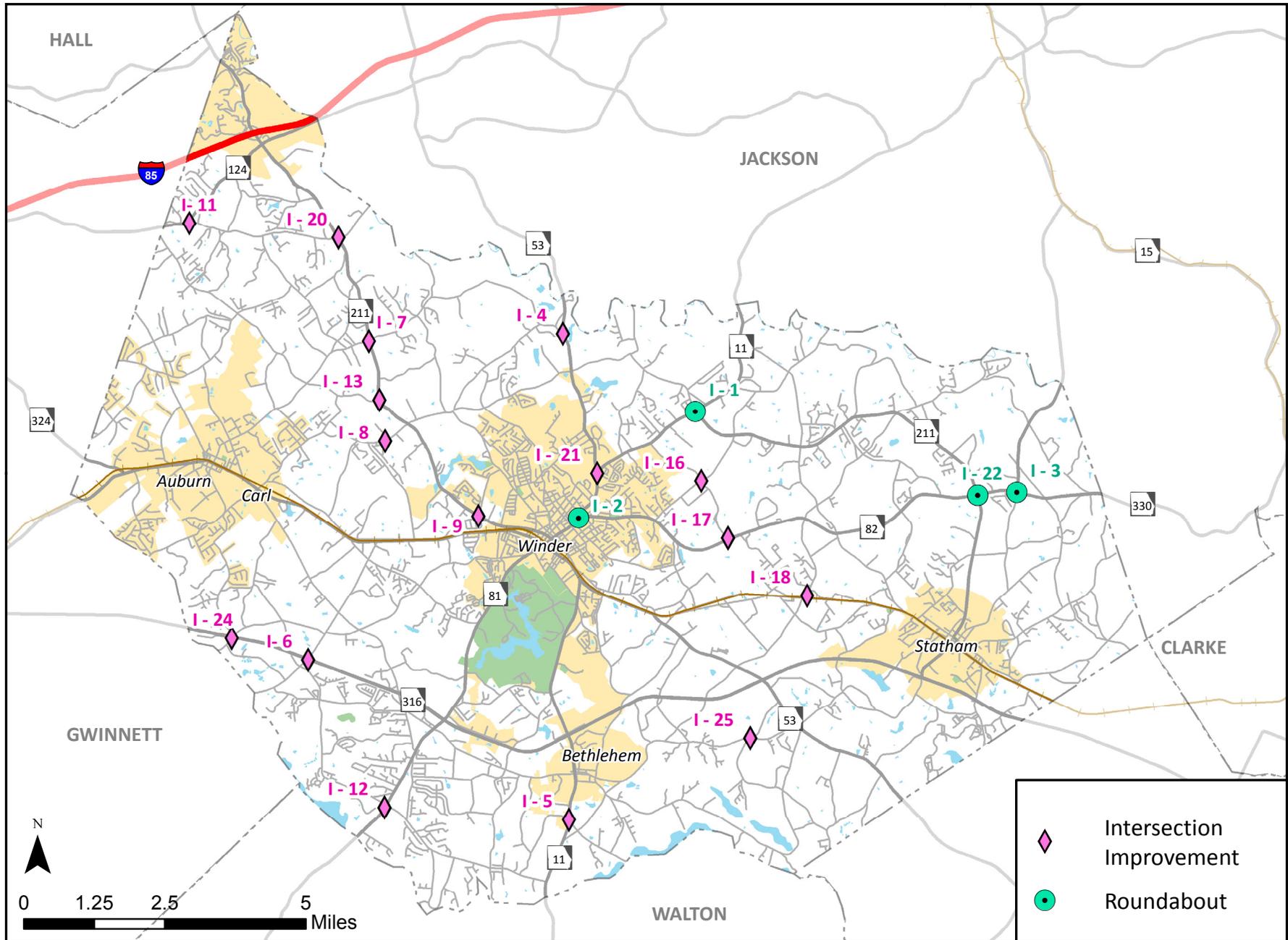
This CTP update also recommends signal timing and coordination, as one of the most cost-effective and quickly-implementable ways to reduce congestion and improve traffic flow. With delay an issue at nearly all of Barrow County’s major intersections during the PM peak, synchronization of the county’s traffic signals is a low-cost high-impact option for maximizing the efficiency of the existing transportation network.

Table 7.2: Prioritized Intersection Improvement Project Recommendations

ID	Project Name	Description	Total Cost, Base Year	Total Cost, Year of Expenditure	Lead Agency
Short-Range Projects: 2016 - 2029					
NA	Signal synchronization across Barrow County	Retime and synchronize signals on state routes and local roads countywide	\$235,000	\$235,000	GDOT/Barrow County
I-17	SR 211 at Holsenbeck School Road	Right turn and left turn lanes on SR 211; left turn lane on Holsenbeck School Road.	\$1,595,500	\$1,686,000	GDOT/Barrow County
I-6	SR 316 at Patrick Mill Road	Extend right turn lane northbound to reduce intersection queuing during PM peak hour.	\$765,700	\$807,000	Barrow County
I-12	SR 81 at Tanners Bridge Road	Left turns added to SR 81.	\$1,090,600	\$1,153,000	GDOT/Barrow County
I-5	SR 11 at McElhannon	Realign McElhannon to correct for sight distance and skew, extend left and right turn lanes on SR 11, add left turn lanes on McElhannon Rd.	\$4,106,460	\$4,336,000	GDOT/Barrow County
I-7	SR 211 at County Line-Auburn Road	Add left turn lanes to County Line-Auburn Road	\$1,103,100	\$1,166,000	GDOT/Barrow County
I-20	SR 211 at Old Hog Mountain Road	Add left turn lanes to Hog Mountain Road	\$2,203,700	\$2,329,000	GDOT/Barrow County
I-9	SR 211 at Cedar Creek Road and Hal Jackson Road	Realign Cedar Creek Road approach to correct skew; add left turn lanes on all approaches.	\$2,551,440	\$2,683,000	GDOT/Barrow County
I-18	Atlanta Highway at Bowman Mill Road SE	Realign Bowman Mill Road in both directions to fix skew, keep RR crossing same location-correct to 90 degrees through road crossing.	\$1,567,250	\$1,653,000	Barrow County
I-13	SR 211 at Dee Kennedy Road	Left turn lanes added to SR 211	\$550,300	\$581,000	GDOT/Barrow County
I-2	SR 211 at SR 82	Roundabout	\$1,189,900	\$1,258,000	GDOT/Barrow County
I-24	Kilcrease Road at SR 316	Channelized northbound right turn lane on Kilcrease Road	\$765,700	\$807,000	Barrow County
Mid-Range Projects: 2030 - 2039					
I-8	Pearl Pentecost Road at Carl-Cedar Hill Road	Correct skew to allow sufficient truck turning movement.	\$1,269,600	\$1,806,000	Barrow County
I-21	SR 53 at SR 11	Realignment to a “T” intersection	\$6,208,320	\$11,751,000	GDOT/Barrow County
I-4	SR 53 N at Mulberry Road	Realign Mulberry Road to form a “T” intersection with SR 53, add left turn lanes to all approaches. Addresses skew and sight distance issues.	\$2,020,164	\$2,873,000	GDOT/Barrow County
I-16	Dunahoo Road at Holsenbeck School Road	Left turns lanes added to Dunahoo Road.	\$1,169,500	\$1,665,000	Barrow County
I-22	SR 211 at SR 53	Roundabout to address three leg skew	\$2,434,400	\$3,460,000	GDOT/Barrow County
I-3	SR 82 at SR 330	Roundabout	\$1,202,400	\$1,709,000	GDOT/Barrow County
I-11	Old Hog Mountain Road at SR 124	Add left turn lane on SR 124	\$2,203,700	\$3,136,000	Barrow County
I-1	SR 211 at SR 11	Roundabout	\$3,732,400	\$6,400,000	GDOT/Barrow County
Long-Range Projects: 2040 and Beyond					
I-25	Austin Road at Smith Mill Road	Intersection realignment, signage for sight distance issues	\$800,000	N/A	Barrow County

Source: Jacobs

Figure 7.4: Intersection Improvement Project Recommendations



7.5 RAIL CROSSING IMPROVEMENT RECOMMENDATIONS

Seven rail crossing improvements are recommended. These projects prioritize improvements that affect highly traveled areas, areas with crash histories, and areas that serve large truck traffic (Table 7.3 and Figure 7.5). Broad Street and Jefferson Street both have high traffic volumes and the potential for vehicles to queue across active rail lines. Bankhead Highway and Carl-Midway Church Road both present ground clearance and pavement quality issues, particularly for heavy trucks. Harold Day Road lacks of barriers and flashing light warning systems, both of which significantly increase safety for at-grade rail crossings.

Pre-Signals prevent vehicles from queueing across railways at locations where rail crossings are adjacent to signalized intersections. They operate in sync with the intersection signal to stop approaching vehicles before they can block the active railway.

Signal pre-emption allows vehicles to avoid queueing across rail lines and alleviates congestion induced by trains at crossings adjacent to intersections. Pre-emption causes all signal phases to go red prior to a train crossing, except for the signal immediately after the crossing, which turns green to clear traffic prior to the train’s arrival.

Signal pre-emption and pre-signals offer the greatest safety at crossings where traffic may queue across rail lines at signalized intersections. These improvements prevent all law-abiding drivers from queueing across rail lines when implemented properly. The lack of these systems creates the potential for drivers with low visibility and increased lengths to unknowingly queue across rail lines and create the potential for crashes. Like barrier installations, pre-signals are non-invasive and operate in sync with existing signals to improve safety and efficiency for the entire network.

Barrier and Flashing Light Installation upgrades static signage to flashing red lights which warn drivers of approaching trains. It also installs barriers which prevent vehicles from crossing during a train’s approach. Barriers and flashing lights were shown to increase rail crossing safety by a factor of 83% upon installation at previously passively controlled crossings in a 1980 United States Department of Transportation study. These relatively non-invasive improvements can protect the lives of Barrow County residents without undue financial or environmental impacts. Reliance on passive warning systems creates the potential for crashes when driver awareness fails.

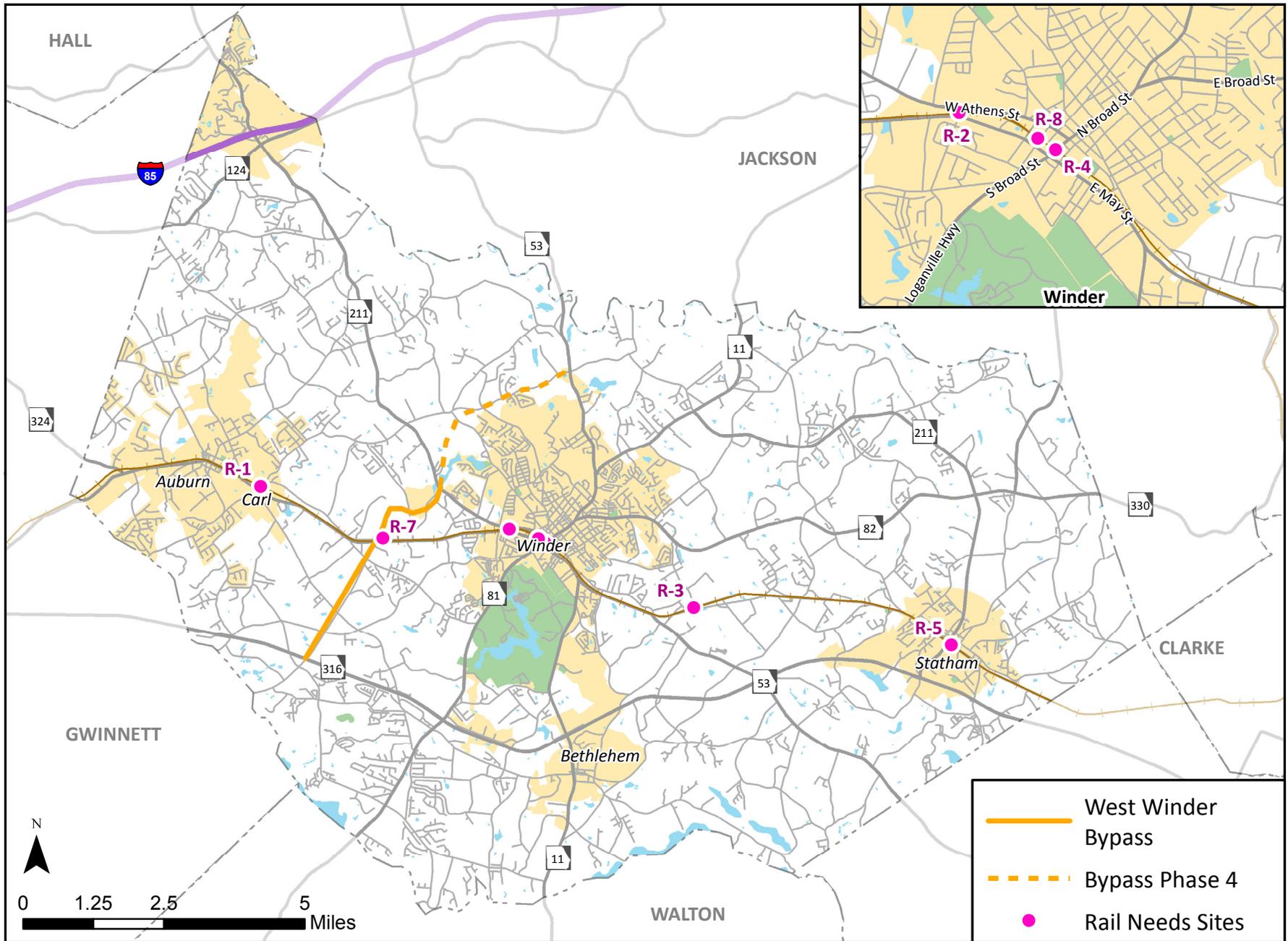
Maintenance, Pavement Improvements involve the rehabilitation of pavement at crossings with difficult pavement conditions. Heavy trucks, in particular, are sensitive to rough pavement and ground clearance issues created by elevated tracks at crossings.

Table 7.3: Prioritized Rail Crossing Project Recommendations

ID	Project Name	Description	Total Cost, Base Year	Total Cost , Year of Expenditure	Lead Agency
Short-Range Projects: 2020 - 2029					
R-4	Broad Street	Pre-Signal and Pre-Emption to prevent queueing across rail, sidewalks	\$70,000	\$70,000	Barrow County with CSX Assistance
R-5	Jefferson Street	Pre-Signal, Pre-Emption to prevent queueing across rail	\$70,000	\$70,000	Barrow County with CSX Assistance
R-8	CSX Railroad at M-5406 Center Street	Low Bridge Clearance Signage	\$2,000	\$2,000	Barrow County with CSX Assistance
Mid-Range Projects: 2030 - 2039					
R-2	Horton Street	Pre-signal to prevent traffic queueing across rail	\$70,000	\$101,000	Barrow County with CSX Assistance
R-7	Bankhead Highway	Maintenance and improvements to ground clearance for trucks	\$147,000	\$209,000	Barrow County with CSX Assistance
R-1	Carl-Midway Church Road	Maintenance, pavement improvements	\$170,000	\$240,000	Barrow County with CSX Assistance
Long Range: 2040 and Beyond					
R-3	Harold Day Road	Maintenance, barrier and flashing light installation	\$250,000	\$435,000	Barrow County with CSX Assistance

Source: Jacobs

Figure 7.5: Rail Crossing Project Recommendations



PROJECT RECOMMENDATIONS

7.6 ROADWAY SAFETY PROJECT RECOMMENDATIONS

There are ten roadway safety project recommendations that address design standard and operational issues. As Barrow County slowly transitions into a more suburban, rather than rural, place, its roadways experience an increasing amount of traffic. In many cases, the level of travel on these roadways is not high enough to warrant the expense and impact associated with capacity projects. There is the opportunity to bring older roadways up to current design standard to create a safer roadway network for trucks and passenger vehicles alike. In some cases, this means that the roadway should be widened slightly to today's greater design standard widths, or that a shoulder should be added to the road. In other cases,

it means that there is a need for operational improvements such as improved signage or restriping. Roadway safety projects recommended by this CTP update address these opportunities (Table 7.4 and Figure 7.6).

Many of these projects are on Atlanta Highway, which was ceded to the County with the construction of SR 316. This roadway remains popular for Barrow County residents as well as large trucks, and experiences a high rate of accidents. Operational improvements on the three recommended segments are intended to create a more driver-friendly environment to address safety issues and the friction between trucks and passenger vehicles.

Projects proposed on roads in more residential portions of the county, such as Old Hog Moun-

tain Road, would widen and repave the roadway, as well as improve the intersections with SR 211 and SR 124. Old Hog Mountain Road serves as a "cut-through" route for local traffic between these two larger facilities.

Pearl Pentecost Road and Bankhead Highway both face issues due to their high volumes of truck traffic. Roadway improvements on Pearl Pentecost Road would address rutting and surface issues from truck traffic. The project proposed for Bankhead Highway would add shoulders for safety.

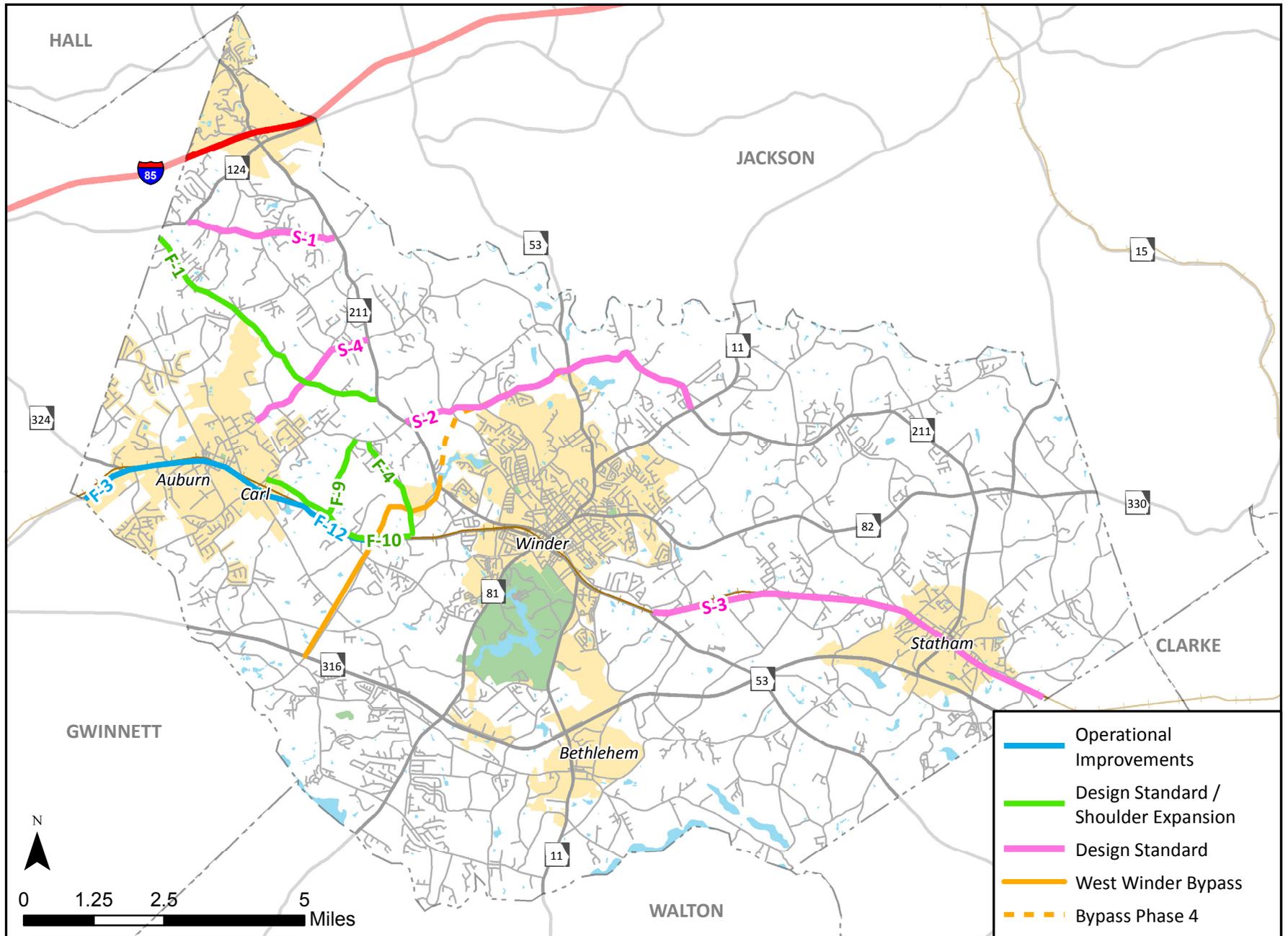
These projects are on County-owned roads and require some degree of local funding. They can be bundled together in a package in seeking federal or state assistance as well.

Table 7.4: Prioritized Roadway Safety Project Recommendations

ID	Project Name	Description	Total Cost, Base Year	Total Cost, Year of Expenditure	Lead Agency
Short-Range Projects: 2020 - 2029					
F-12	Atlanta Highway from Carl Midway Church Road to Patrick Mill Road	Operational Improvements including improved signage, restriping for safety, tree removal for improved sight lines, and turning radius enhancements	\$1,491,450	\$1,569,000	Barrow County
F-3	Atlanta Highway from Gwinnett County Line to Carl Midway Church Road	Operational Improvements including improved signage, restriping for safety, tree removal for improved sight lines, and turning radius enhancements	\$2,376,300	\$2,499,000	Barrow County
S-3	Atlanta Highway from SR 53 to Oconee County Line	Mill, patch, resurface and pavement markings, and eliminate the transverse bumps in the road caused by expansion of concrete joints under the existing asphalt.	\$4,298,940	\$4,465,000	Barrow County
S-1	Old Hog Mountain Road	SR 124 to SR 211. Widen roadway and improve the roadside clear zone, with improvements to SR 124 and SR 211 intersections.	\$10,351,444	\$10,943,000	Barrow County
F-4	Pearl Pentecost Road	Add shoulders; bring roadway to design standard from Highway to Carl Cedar-Hill Road	\$8,861,284	\$9,359,000	Barrow County
S-4	County-Line Auburn Road	SR 211 to Auburn City Limits -re-striping, repaving, new signage, and widening.	\$4,200,432	\$4,440,000	Barrow County
Mid-Range Projects: 2030 - 2039					
F-9	Carl-Cedar Hill Road	Add shoulders; bring roadway to design standard from Atlanta Highway to SR 211	\$14,617,952	\$20,785,000	Barrow County
F-10	Bankhead Highway	Add shoulders to improve to design standard from Carl-Cedar Hill Road to Pearl Pentecost Road.	\$18,713,244	\$26,572,000	Barrow County
Long Range: 2040 and Beyond					
F-1	Dee Kennedy Road	Add shoulders; bring roadway to design standard from SR 124 to SR 211	\$24,666,544	\$42,756,000	Barrow County
S-2	Rockwell Church Road	Add paved shoulder widening to both sides of road, mill, patch, resurface, mark pavement, from SR 11 to SR 53	\$5,298,444	\$9,156,000	Barrow County

Source: Jacobs

Figure 7.6: Roadway Safety Project Recommendations



PROJECT RECOMMENDATIONS

7.7 BRIDGE PROJECT RECOMMENDATIONS

This CTP update recommends repairing or replacing seven bridges in Barrow County (Table 7.5 and Figure 7.7). The first three are the highest priority.

Patrick Mill Road at Apalachee River (Walton County) Patrick Mill Road south of SR 316 will take on new importance once the West Winder Bypass, to which it connects, is constructed. This structure requires weight-limit posting due to insufficient flexural capacity of the steel superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.

SR 81 at Apalachee River (joint with Walton County) SR 81 is a state route of growing importance with the new interchange planned for SR 316. This bridge on the atate route system was built in 1955 and now requires widening with deck for rehabilitation.

Liberty Church Road at Mulberry Creek This

bridge is located in a fast growing portion of the county on a road that connects directly to SR 211 at Chateau Elan. This structure requires weight-limit posting due to insufficient shear capacity of the concrete intermediate bent caps. Upgrading of the load carrying capacity would require post-tensioning of the caps at bents #2 and #4. This bridge structure is in fair condition. Maintenance recommendations have been identified to maintain current rating.

Old Thompson Mill Rd at Little Mulberry River This bridge was built in 1966 and is functionally obsolete. This structure requires weight-limit posting due to the condition of the floor beams. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.

Boss Hardy Road at Little Mulberry River This structure requires weight-limit posting due to insufficient shear capacity of the concrete intermediate bent caps. Post-tensioning of the

intermediate concrete bent caps is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.

Statham Road at Beech Creek This bridge was built in 1965 and is functionally obsolete. It now requires widening with deck for rehabilitation.

FT Yargo Park Road at Marbury Creek - This on-system bridge was built in 1965 and is considered Structurally Deficient. It requires replacement to remove posting.

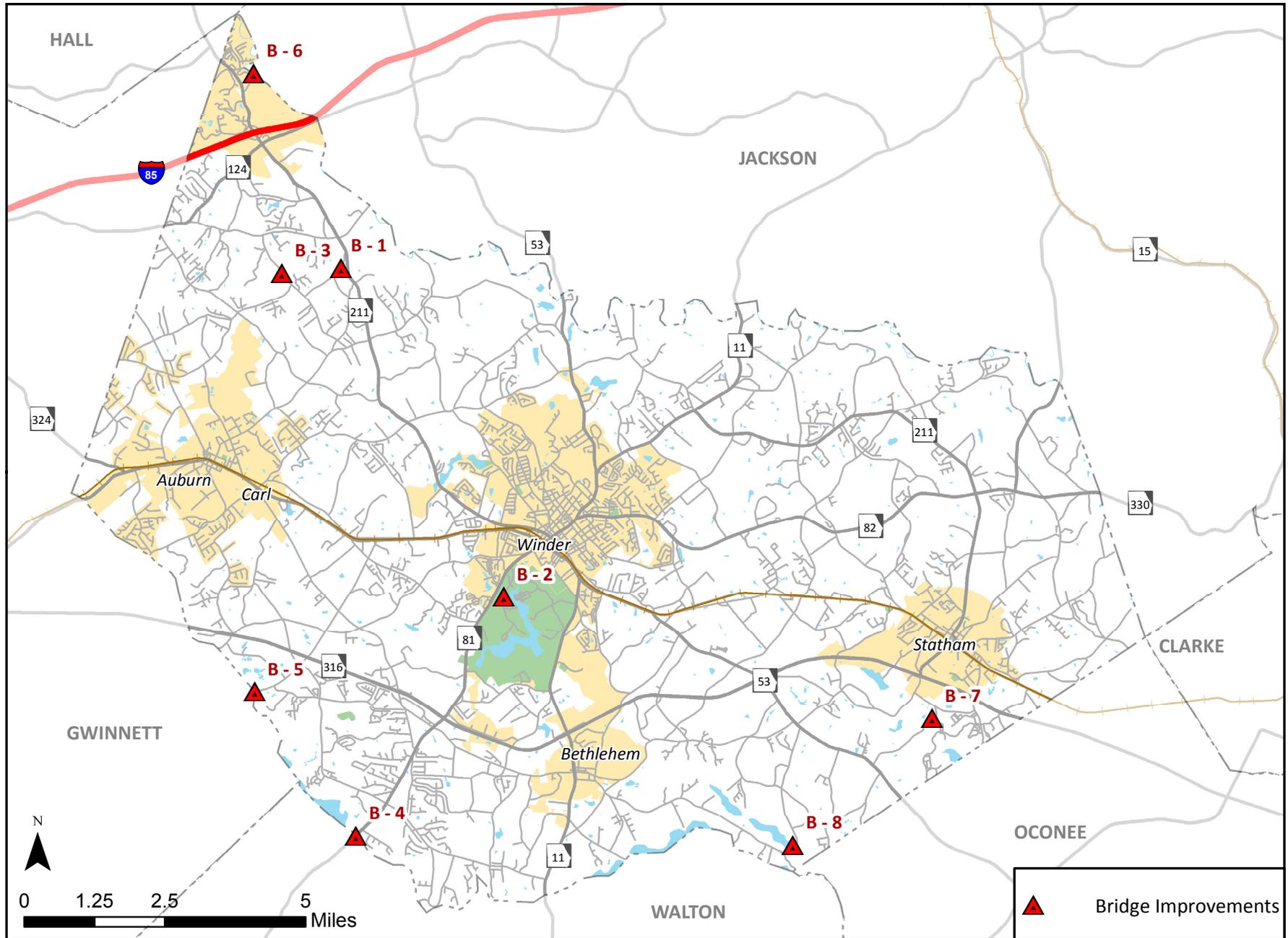
Robertson Bridge Road at Barber Creek This bridge is functionally obsolete and requires replacement to remove reporting. At this time, however, there is little demand for the replacement and it is assumed by this study that the replacement will occur with paving and improvements of Robertson Bridge Road.

Table 7.5: Prioritized Bridge Project Recommendations

ID	Project Name	Description	Structure ID and Sufficiency Rating	Total Cost, Base Year	Total Cost , Year of Expenditure	Lead Agency
Short-Range Projects: 2020 - 2029						
B-5	Patrick Mill Rd at Apalachee River	Bridge Replacement	Structure ID 013-5017-0; Sufficiency rating 29.3	\$773,500	\$864,000	Barrow/Gwinnett Counties
B-4	SR 81 at Apalachee River	Bridge Replacement	Structure ID 297-0023-0; Sufficiency rating 46	\$924,700	\$1,032,000	GDOT
B-6	Liberty Church Road at Mulberry Creek	Bridge Repair	Structure ID 013-5009-0; Sufficiency rating 52.5	\$360,000	\$401,000	Barrow County
Long Range: 2030 - 2039						
B-1	Thompson Mill Rd at Little Mulberry River	Bridge Replacement	Structure ID-013-5039-0; Sufficiency rating 30.1	\$924,700	\$2,752,000	Barrow County
B-2	Fort Yargo Park Rd at Marbury Creek	Bridge Replacement	Structure ID 013-5014-0; Sufficiency rating 42.1	\$861,000	\$2,554,000	GDOT
B-3	Boss Hardy Rd at Little Mulberry River	Bridge Repair	Structure ID 013-5006-0; Sufficiency rating 45.7	\$924,000	\$1,031,000	Barrow County
B-8	Manning Gin Road at Marbury Creek	Bridge Replacement	Structure ID 013-5021-0; Sufficiency rating 87.7	\$827,500	\$2,462,000	Barrow County

Source: Jacobs

Figure 7.7: Bridge Project Recommendations



PROJECT RECOMMENDATIONS

7.8 CAPACITY AND NEW ROAD PROJECT RECOMMENDATIONS

There are nine roadway capacity project and two new roads projects recommendations. In general, these projects are intended for implementation in the long range (Table 7.6 and Figure 7.8). These types of projects typically require the greatest investment and have the largest impacts on their human and natural environments, so they are usually the most difficult to implement. While these types of projects are sometimes necessary, transportation planners should, when they are able, address issues with mobility and capacity through the optimization of the current system.

The roadway widening projects recommended for implementation in the mid-range are all expected to be prompted by the implementation of other major projects. The widening of SR 81 and SR 11 from two to four lanes, for example, would complement the intersection to interchange

conversions planned for several locations along SR 316, including at SR 81 and SR 11. The widening of SR 211 from two to four lanes from I-85 to the planned West Winder Bypass is projected to be necessary to carry additional traffic attracted by the bypass. These widening projects will be addressed by additional updates of this CTP.

However, there are two new capacity projects recommended for implementation in the short range, because each responds to existing needs. The first project, the widening of SR 211 north of I-85 from two to four lanes, responds to additional development in the activity center at the I-85 interchange in Braselton.

The second project, the widening of SR 324 from the Gwinnett County Line to Atlanta Highway, responds to Gwinnett County’s plans to widen SR 324. When Gwinnett County moves forward

with their project, Barrow County should be prepared to coordinate with them to create one continuous project.

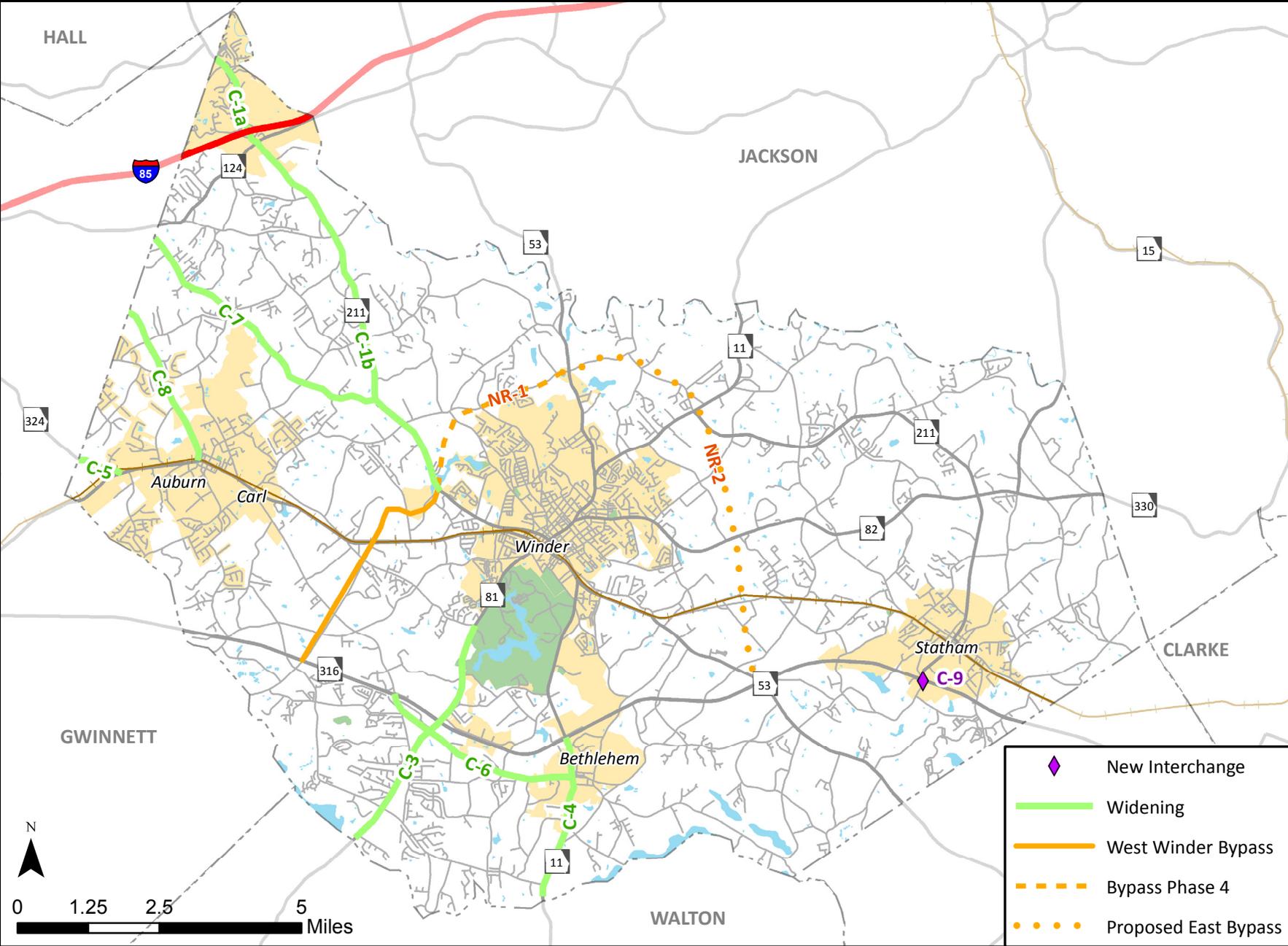
The two new road projects recommended by this CTP update are both considered contingent on the construction of the West Winder Bypass. The fourth phase of that bypass, extending from SR 211 to SR 53 north of Winder, would decrease congestion and delay in Winder and should be considered for implementation once the bypass is constructed. Once the bypass has reached full build-out, its extension east should be considered by future updates of this CTP.

Table 7.6: Prioritized Capacity and New Road Project Recommendations

ID	Project Name	Description	Total Cost, Base Year	Total Cost, Year of Expenditure	Lead Agency
Short-Range Projects: 2020 - 2029					
C-1a	SR 211	Widen from two to four lanes from SR 347 in Hall Co. to north of I-85 (8.5 MI.) (BA-013)	\$27,668,240	\$29,160,000	GDOT
C-5	SR 324	Widen SR 324 from Gwinnett County project terminus to Atlanta Highway, including improvements to intersection at Atlanta Highway.	\$16,274,860	\$48,377,000	GDOT
Mid-Range Projects: 2030 - 2039					
C-3	SR 81	Widen from 2 to 4 lanes from Walton Co. line/Apalachee R to Winder City Limit line at Carson Wages Rd (3.6 MI.)	\$20,733,340	\$29,459,000	GDOT
C-1b	SR 211	Widen from two to four lanes from north of I-85 to Winder/WWBP (8.5 MI.) (BA-013)	\$133,192,948	\$189,159,000	GDOT
C-4	SR 11	Widen from 2 to 4 lanes from Walton County line to SR 316 (BA-016)	\$17,671,200	\$25,125,000	GDOT
C-9	SR 316 Interchange*	at SR 211/Bethlehem Road	\$19,200,000	\$19,200,000	GDOT
Long Range: 2040 and Beyond					
C-6	Carl Bethlehem Road	Widen from 2 to 4 lanes from US 29 Business to SR 316 (BA-015)	\$71,012,400	\$123,092,000	Barrow County
C-7	Dee Kennedy Road	Widen from 2 to 4 lanes from Gwinnett County to SR 211 (BA-017)	\$75,677,560	\$131,181,000	Barrow County
C-8	Mount Moriah Road	Widen from 2 to 4 lanes from Gwinnett County to Atlanta Highway	\$49,645,820	\$86,032,000	Barrow County
NR-1	Phase 4 of the West Winder Bypass	New location roadway from SR 211 to SR 53	\$79,946,300	\$138,219,000	Barrow County
NR-2	East Winder Bypass	New alignment extension east around Winder from SR 53	\$123,808,300	\$214,075,000	Barrow County

Source: Jacobs

Figure 7.8: Capacity and New Road Project Recommendations



PROJECT RECOMMENDATIONS

7.9 PEDESTRIAN AND BICYCLE RECOMMENDATIONS

There are two primary bicycle and pedestrian recommendations (**Table 7.7** and **Figure 7.9**) and a long term prioritization recommendation. The first of the bicycle and pedestrian projects would construct a sidewalk along Haymon Morris Road near Apalachee High School. This project would create a valuable safe pedestrian connection to the school from nearby residential areas.

The second recommendation is to construct a new multi-use plan from Fort Yargo State Park to downtown Winder. According to its business plan, Fort Yargo had a total of 417,307 visitors in FY2014 -- more than five times the population of Barrow County. Downtown Winder, with its recent streetscape upgrades and traditional urban environment, is a great pedestrian destination with shops and restaurants not available within the park itself. This project affords the opportunity to leverage the popularity of this natural resource by providing a 0.65 mile-long bicycle and pedestrian connection from the park to downtown Winder.

The final recommendation is the establishment of a dedicated funding source for the expansion of sidewalk networks adjacent to schools and other public facilities. This Sidewalk Priority Area Program would ensure that pedestrian access to facilities is made safer and more comfortable for all Barrow County residents, including children, the elderly, and disabled individuals.

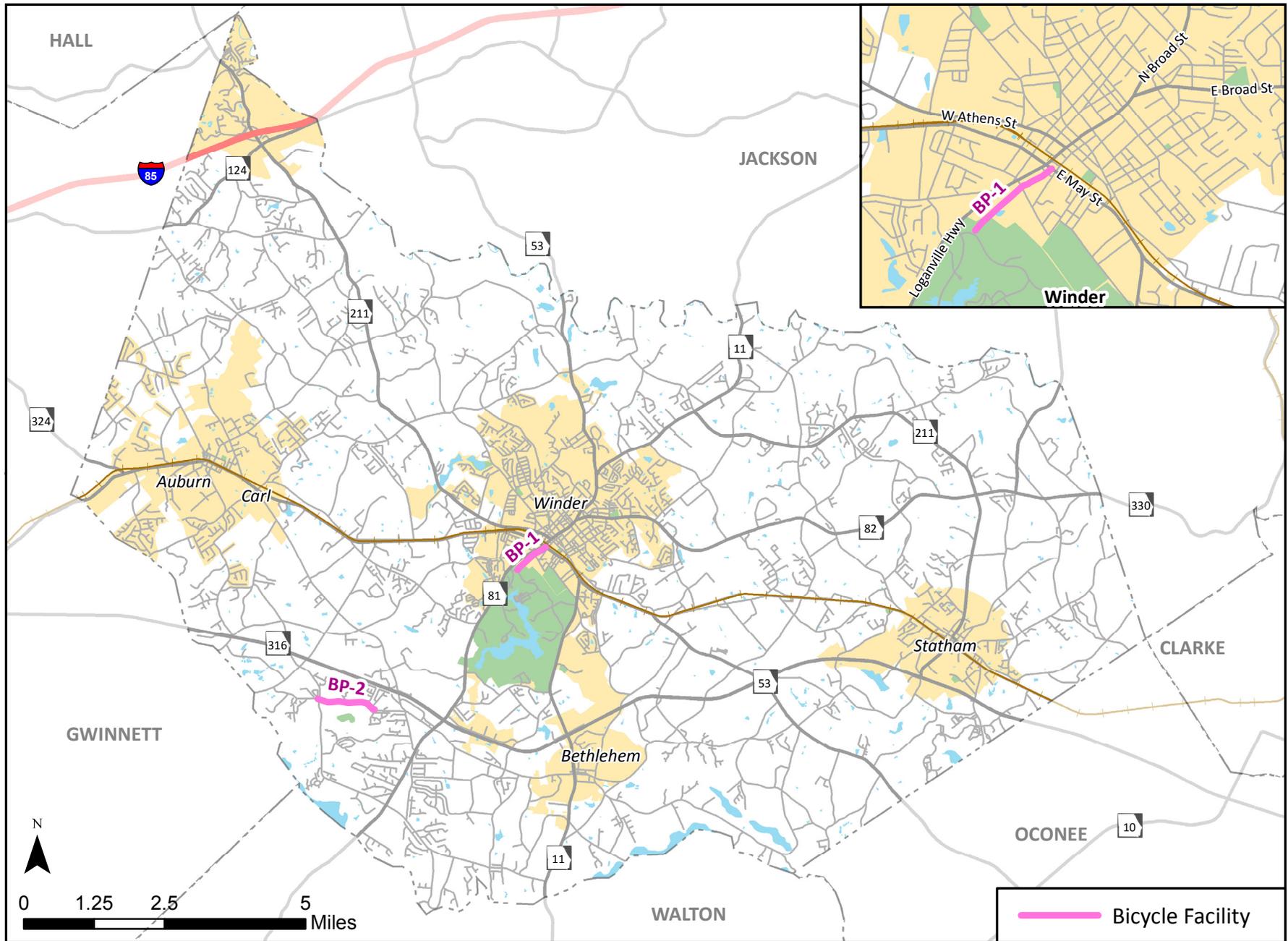


Table 7.7: Prioritized Bicycle and Pedestrian Project Recommendations

ID	Project Name	Description	Total Cost, Base Year	Total Cost, Year of Expenditure	Lead Agency
Short-Range Projects: 2020 - 2029					
BP-2	Sidewalk near Apalachee HS	Sidewalk on Haymon Morris Road near Apalachee High School	\$336,960	\$357,000	Barrow County
BP-1	Fort Yargo Connection Multi-Use Trail	Multi-Use Trail from Fort Yargo State Park to Winder	\$976,660	\$1,021,000	Barrow County
Mid-Range Projects: 2030 - 2039					
BP-3	Sidewalk Priority Area Program	Allocate sidewalk expansion funds for priority areas (near schools and public facilities)	N/A	N/A	Barrow County

Source: Jacobs

Figure 7.9: Bicycle and Pedestrian Recommendations



8 PROJECT IDENTIFICATION AND PRIORITIZATION PROCESS

Project recommendations resulting from this CTP update are intended to address the transportation needs identified in the Needs Assessment (May 2015). Some of these projects were originally recommended by the 2007 CTP or locally identified during the call for projects for the 2010 Regional Transportation-SPLOST.

8.1 GOALS

The proposed goals for this CTP Update include updated versions of the 2007 CTP goals and several new goals that are based on new emphasis areas in recent transportation legislation (**Table 8.1**). These goals were used in the prioritization of projects.

8.2 EVALUATION AND PRIORITIZATION

Project recommendations were evaluated in terms of their ability to meet the CTP update's goals. During this process, projects that were intended to address the same needs as projects currently in the ARC's TIP were dropped from consideration. A detailed review of the evaluation process is provided in Appendix D.

The prioritization process takes into account planning and engineering expertise, local knowledge, and project costs in addition to these evaluation ratings. It should also be noted that, because each mode is evaluated by a separate set of criteria, ratings are useful within project type but not conducive to comparisons among project types.

8.3 PROJECT COST ESTIMATES

To assist with project prioritization and development, phased project implementation plan

Table 8.1: Goals of the CTP Update

Emphasis Area	Revised Goal
Multimodal Transportation	Promote and support a multimodal transportation system
Mobility and Efficiency	Reduce travel time and congestion
Safety	Promote improved safety for all modes of travel
Public Participation/ Equity	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process
Environmental Preservation	Preserve and protect the natural and human environment
Land Use / Transportation Connectivity	Ensure connectivity between transportation and land use policy
Intergovernmental Coordination	Ensure coordination with all relevant government agencies that can promote a cohesive transportation network and an efficient project delivery across jurisdictional boundaries
Infrastructure Condition (State of Good Repair)	Preserve and maintain the transportation infrastructure
Major Corridor Prioritization	Prioritize mobility along existing and future major corridors
System Reliability	Focus on operational improvements to improve system reliability
Freight Mobility	Enhance the transportation network to promote goods movement
Economic Development	Prioritize enhancements to serve existing and/or planned industrial and commercial areas
Innovative Financing/Project Delivery	Explore innovative financing options to facilitate project delivery

Source: Jacobs

planning-level cost estimates were developed for potential projects. Detailed cost estimates for each proposed transportation improvement can be found in Appendix E.

The ARC's Planning Level Cost Estimation Tool was used to develop the cost estimates for new road, capacity, intersection, bridge replacement, safety and operational improvements. As explained in its user manual, the ARC tool uses the following "standard and customary" elements to ascertain planning-level, long-range cost estimates:

- Freeway widening
- Managed lanes (HOV, HOT, TOT)
- General purpose roadway capacity
- Interchanges and grade separations
- Intersection improvements
- Bridges

- Non-motorized elements (sidewalks, trails, bike lanes)
- Walls (sound barrier, retaining)
- Intelligent Transportation Systems (ITS)
- Right-of-Way (ROW) acquisition

The ARC tool bases its costs in similar projects that have gone to let. Additional costs or cost savings may be determined during later phases of project development.

Bridge repair cost estimates were based on similar projects performed for GDOT. Rail crossing project cost estimates were based on similar roadway signalization projects, but may be subject to additional costs due to the needs of the railroad.

All estimated costs presented in this document have been inflated to Year of Expenditure based on the projected preliminary engineering, right-of-way and construction phasing.

9 TRANSPORTATION FUNDING SOURCES

This section presents funding sources by type for project recommendations in the unconstrained mid- to long-range programs of this CTP update.

9.1 FUNDS FOR ROAD AND BRIDGE MAINTENANCE

National Highway Performance Program (NHPP) provides support for the condition and performance of the National Highway System (NHS). It is a primary funding source for all new roadway construction, improvements, and maintenance for the roads on the NHS. It is funded by contract authority from the Highway Account of the Highway Trust Fund.

Local Maintenance and Improvement Grant (LMIG) Program is a grant program funded by GDOT for maintenance and other improvements including engineering, utility adjustments, resurfacing, adding turn lanes, and more. A 30% local match is typically required for these funds.

Quick Response Program is state-funded and designed to address quick maintenance, safety,

or operational concerns. Each Quick Response project has a \$200,000 individual cap.

Surface Transportation Program (STP) – Statewide Flexible provides flexible funding that may be used for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge or tunnel on any public road. The statewide flexible funds are allowed for use in any area of the state, and consist of 50% of total STP funds.

Surface Transportation Program (STP) – Urban provides flexible funding that may be used for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road. The Urban funds are allowed only for use in areas with a population greater than 5,000 but no more than 200,000 for 25% of STP funds, and for areas with a population greater than 200,000 for another 25% of STP funds.

Special Purpose Local Option Sales Tax (SPLOST), a one-cent sales tax for capital improvements, is

the primary local source of transportation funding. Nearly all revenues from the County’s current SPLOST program are already dedicated. Beginning in 2017, the recently signed HB 170 would allow Barrow County to call for a local transportation referendum for up to a 1% sales tax in .05% increments for a term of five years. Of the revenue generated from such a TSPLOST, 30% must be used for projects listed on the state TIP.

Capital Improvements Fund is a locally designated fund primarily used for maintenance, to match the GDOT LMIG program, and bridge repairs.

Local Bonds represent borrowing by state or local governments to pay for special projects.

Braselton CID funds might also be used for maintenance projects in the Braselton Area through coordination between the CID and Barrow County.

The matrix of maintenance funding options is in **Table 9.1**.

Table 9.1: Funds for Road and Bridge Maintenance

Ownership	State/Federal Funds					Local Funds			
	NHPP (NHS Facilities Only)	LMIG	Quick Response	STP - Statewide Flexible	STP - Urban	SPLOST	Capital Fund	Local Bonds	Braselton CID
Resurfacing/ Restriping									
Federal/State Road	●	●	●	●	●	●	●	●	●
Local Road		●	●			●	●	●	●
Bridge Replacement/Repair									
Federal/State Road	●	●		●	●	●	●	●	●
Local Road		●				●	●	●	●

9.2 FUNDS FOR INTERSECTION, OPERATIONAL, AND SAFETY PROJECTS, INCLUDING RAIL ROAD CROSSINGS

Surface Transportation Program (STP) – State-wide Flexible provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. The statewide flexible funds are allowed for use in any area of the state, and consist of 50% of total STP funds.

Surface Transportation Program (STP) – Urban provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. The Urban funds are allowed only for use in areas with a population greater than 5,000 but no more than 200,000 for 25% of STP funds, and for areas with a population greater than 200,000 for another 25% of STP funds.

Local Maintenance and Improvement Grant (LMIG) Program is funded by GDOT for maintenance and other improvements including engineering, utility adjustments, resurfacing, adding turn lanes, and more. A 30% local match is typically required for these funds.

Highway Safety Improvement Program (HSIP) is a core federal aid program designed to achieve a

significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads. It has a performance-driven focus that demands fatality reduction on all funded projects.

Quick Response Program is state-funded and designed to address quick maintenance, safety, or operational concerns. Each Quick Response project has a \$200,000 individual cap.

Operational Improvement Program (GDOT State Traffic Operations Office) This program is a federally funded program that focuses on projects that provide operational improvements for State routes with minimal environmental and right-of-way impacts.

Off-System Safety Improvements Program is a federally-funded program designed to focus improvements on County and local streets. Eligible improvements include signals, raised medians, rumble strips and other safety improvements.

Railway-Highways Crossing (Section 130) Program is Federal program provides funding for projects at all public crossings including roadways, bike trails, and pedestrian paths. It is administered by GDOT. Fifty percent of the state's funding is dedicated to the installation of protective devices at crossings, while the remainder can be used for any hazard elimination project. Section 130 projects are funded at a 90% Federal share.

Special Purpose Local Option Sales Tax (SPLOST) is the primary local source of transportation funding, a one-cent sales tax for capital improvements. Nearly all revenues from Barrow County's current SPLOST program are already dedicated. Beginning in 2017, the recently signed HB 170 would allow Barrow County to call for a local transportation referendum. The bill would allow up to a 1% sales tax in .05% increments for a term of five years. HB 170 would require 30% of the revenue generated from a TSPLOST to be used for projects listed on the state transportation improvement plan.

Capital Improvements Fund This fund is a locally designated fund primarily used for maintenance, to match the GDOT LMIG program, and bridge repairs.

Braselton CID primarily funds the LifePath initiative, a project designed to create a multi-use path network in the Braselton area. Braselton CID funds might also be used for other maintenance, safety, and bicycle and pedestrian projects in the Braselton Area through coordination between the CID and Barrow County.

Local Bonds represent borrowing by state or local governments to pay for special projects.

The matrix of funding options for safety and operational projects can be found in **Table 9.2**.

Table 9.2: Funds for Safety and Operational Improvements

Ownership	Federal/State Funding							Local Funding				
	STP - State-wide Flexible	STP - Urban	LMIG	HSIP	Quick Response	GDOT Operational Improvement	GDOT Off-System Safety	Federal Section 130 Program	SPLOST	Capital Fund	Local Bonds	Braselton CID
Intersection Improvements, including turn lanes												
Federal/State Road	•	•	•	•	•	•			•	•	•	•
Local Road			•				•		•	•	•	•
Roundabout Conversion												
Federal/State Road	•	•				•			•	•	•	•
Local Road							•		•	•	•	•
Signalization Improvements												
Federal/State Road	•		•	•	•	•			•	•	•	•
Local Road			•	•			•		•	•	•	•
Signage Improvements												
Federal/State Road	•	•	•	•	•	•			•	•	•	•
Local Road			•	•			•		•	•	•	•
Shoulder Modifications												
Federal/State Road	•		•	•	•	•			•	•	•	•
Local Road			•	•			•		•	•	•	•
Rail Road Crossing Improvements												
Federal/State Road	•	•	•	•	•	•		•	•	•	•	•
Local Road			•	•			•	•	•	•	•	•

TRANSPORTATION FUNDING SOURCES

9.3 FUNDS FOR CAPACITY AND NEW ROADS PROJECTS

National Highway Performance Program (NHPP) provides support for the condition and performance of the National Highway System (NHS). It is a primary funding source for all new roadway construction, improvements, and maintenance for the roads on the NHS. It is funded by contract authority from the Highway Account of the Highway Trust Fund.

Georgia Transportation Infrastructure Bank (GTIB) provides loans to state, regional, and local authorities for the completion of motor-fuel tax eligible transportation projects. The State Road and Tollway Authority (SRTA)-administered program also distributes grants through an application based program.

Surface Transportation Program (STP) – Statewide Flexible provides flexible funding that may be used

by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, and bridge and tunnel projects on any public road. The statewide flexible funds are allowed for use in any area of the state, and consist of 50% of total STP funds.

Surface Transportation Program (STP) – Urban provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. The Urban funds are allowed only for use in areas with a population greater than 5,000 but no more than 200,000 for 25% of STP funds, and for areas with a population greater than 200,000 for another 25% of STP funds.

Special Purpose Local Option Sales Tax (SPLOST), a one-cent sales tax for capital improvements, is the primary local source of transportation funding. Nearly all revenues from the County’s current SPLOST program are already dedicated. Beginning in 2017, the recently signed HB 170 would allow Barrow County to call for a local transportation referendum for up to a 1% sales tax in .05% increments for a term of five years. Of the revenue generated from such a TSPLOST, 30% must be used for projects listed on the state TIP.

Capital Improvements Fund is a locally designated fund primarily used for maintenance, to match the GDOT LMIG program, and bridge repairs.

The matrix of capacity funding options can be found in **Table 9.3**.

Table 9.3: Funds for Capacity and New Roads Projects

Ownership	Federal/State Funding			Local Funding		
	NHPP (NHS Facilities Only)	GTIB	STP - Statewide Flexible	STP - Urban	SPLOST	Capital Fund
New Roadways						
Federal/State Road	●	●	●		●	●
Local Road					●	●
Adding Capacity to Existing Roadways						
Federal/State Road	●	●			●	●
Local Road					●	●
New Interchanges						
Federal/State Road	●	●	●	●	●	●

9.4 FUNDS FOR BICYCLE AND PEDESTRIAN PROJECTS AND TRANSIT

Transportation Alternatives Program (TAP)

ARC administers this Federal program through a competitive selection process. It focuses on providing safe routes for non-motorized travel, combining the former Transportation Enhancements (TE), Safe Routes to School (SRTS), and Recreational Trails efforts into one comprehensive program.

Federal Transit Authority (FTA) Section 5307/5340 Funds

provide grants for public transportation capital investments, and operating expenses in areas with populations less than 200,000. They are drawn from the Mass Transit Account of the Highway Trust Fund. Should transit service be introduced to Barrow County, these FTA funds would be a viable source to fund 80% of the associated cost.

Congestion Mitigation and Air Quality (CMAQ) Program

funds are allocated for projects designed to significantly reduce emissions or congestion in the region. ARC distributes these funds according to FHWA guidelines. All projects funded through this program must demonstrate a measureable contribution to increased air quality in the region.

Special Purpose Local Option Sales Tax (SPLOST),

a one-cent sales tax for capital improvements, is the primary local source of transportation funding. Nearly all revenues from the County's current SPLOST program are already dedicated. Beginning in 2017, the recently signed HB 170 would allow Barrow County to call for a local transportation referendum for up to a 1% sales tax in .05% increments for a term of five years. Of the revenue

generated from such a TSPLOST, 30% must be used for projects listed on the state TIP.

Capital Improvements Fund is a locally designated fund primarily used for maintenance, to match the GDOT LMIG program, and bridge repairs.

Private Grants provided by organizations such as the PATH foundation can provide funding opportunities for local bicycle and pedestrian projects.

Local Bonds represent borrowing by state or local governments to pay for special projects.

The matrix of bicycle, pedestrian and transit funding options can be found in **Table 9.4**.

Table 9.4: Funds for Bicycle, Pedestrian and Transit Projects

Ownership	Federal/State Funding				Local Funding			
	TAP	FTA Section 5307/5340 Funds	CMAQ	All Fed/State Roadway Capacity Funds	SPLOST	Capital Fund	Private Grants	Local Bonds
Multi-Use Trails								
Federal/State Road	●		●	●	●	●	●	●
Local/Off Road	●		●		●	●	●	
Sidewalks								
Federal/State Road	●			●	●	●		
Local Road					●	●		
Transit								
Locally Operated HST		●	●		●	●		
Locally Operated Vanpools		●	●		●	●		

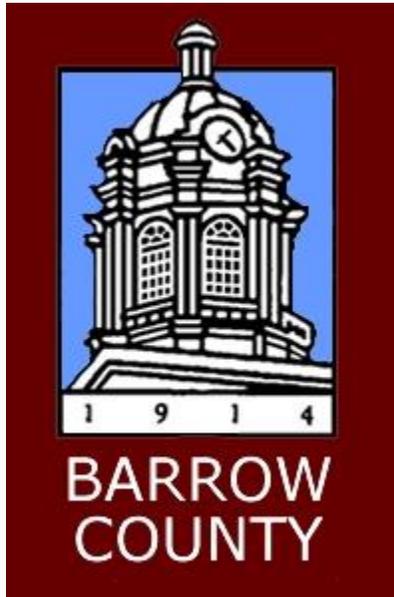
10 PROJECT IMPLEMENTATION

This CTP update consists of two programs. The Short Term Work Program includes projects with phases designated for implementation over the next five years and is constrained by available funds. Barrow County's work program consists of projects found in ARC's TIP. This allows Barrow County to focus on major transportation investments that will affect regional mobility as well as improve the county transportation network.

The second program is unconstrained by available resources, and includes projects that have been prioritized by type into three phases, short-, mid-, and long-range for the County's convenience in understanding the projects' relative importance and urgency. The County has not committed to constructing any of these projects, but can, as funds are available, choose projects for implementation.

Ongoing coordination with other governing bodies and agencies is essential to the successful implementation of both constrained and unconstrained programs. Barrow County should continue to work with ARC on delivering projects in the Short Term Work Program. To address bridge and widening projects in their mutual interests, the County should coordinate with Gwinnett and Walton Counties and GDOT.





COMPREHENSIVE TRANSPORTATION PLAN UPDATE

PUBLIC AND STAKEHOLDER OUTREACH

APPENDIX A

Prepared by:

JACOBS™

May 2015



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Attachment A Presentation from the Needs Assessment Meeting

Attachment B Presentation from the Prioritization Meeting

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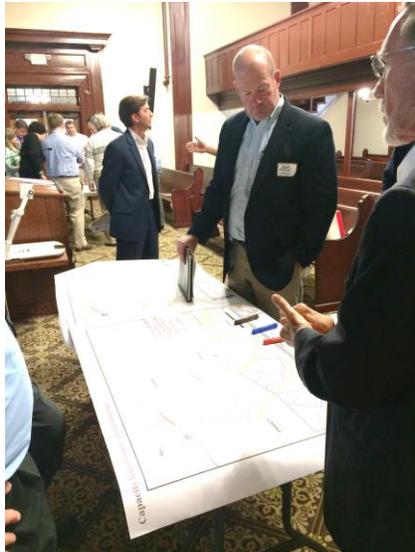
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1. OUTREACH DURING THE NEEDS ASSESSMENT

An understanding of the County's most pressing transportation needs is essential to the assessment of Barrow County's transportation network. This understanding is rooted in the information gathered from Barrow County residents, employees, business owners, and other stakeholders at meetings for the discussion of transportation needs. This section describes how this information was obtained and lists identified needs.

1.1. Public Outreach Methods



Input was gathered from the Technical Committee, Stakeholder Committee, and the general public to determine critical transportation needs in the county. The Technical Committee is an advisory group to the CTP responsible for contributing to the plan from a technical and professional perspective. The committee is comprised of representatives from state and regional agencies and neighboring jurisdictions. The Stakeholder Committee is responsible for identifying needs from the perspective of a local transportation user and is comprised of community and business leaders in the county.

On December 1, 2014, at the Historic Barrow County Courthouse in Winder, GA, two separate small-group meetings were held for the Technical Committee and the Stakeholder Committee where each committee was asked to discuss and identify critical transportation needs.

An open-house public meeting was held on December 8, 2014, at the Historic Barrow County Courthouse in Winder, GA, with the purpose of giving an overview of the CTP and to gather input for the transportation needs in the county. The five participants were asked to identify transportation needs in the county within the following categories:

- New roadways
- Intersection improvements
- Roadway capacity
- Access management corridors
- Transit and Human Services Transportation (HST)
- Bicycle and pedestrian

To do this, unimplemented and unfunded transportation improvements recommended by the previous CTP were mapped and presented to the committees and the public, who were asked if there was an ongoing need for these improvements, or if other improvements now seemed more pressing. Committee members participating in these meetings are listed in **Table 3.1**.

Table 3.1: Participating Technical and Stakeholder Committee Members

Committee	Name	Agency
Technical Committee	David Clark, PE	Athens-Clarke County Representatives
	Jennifer Dees	Town of Braselton
	Lewis Cooksey	Gwinnett County Representatives
	Ron Griffith	City of Auburn
	Guy Herring	Barrow County Economic & Community Development
	Brian Jehle	Georgia Commute Options
	Kaycee Mertz	Georgia Department of Transportation, Office of Planning
	Scott Miller	Barrow County Airport Representatives
	Quinton Spann	Georgia Department of Transportation, Office of Planning
	Scott Snedecor	Braselton Community Improvement District (CID)
	Burke Walker	Northeast Georgia Regional Commission
	Srikanth Yamala	Hall County Representative
	Bill Cooper	Resident
	Alex Hill	Hill's Ace Hardware
	Tommy Jennings	Chamber of Commerce
	Andy Keith	Republic Services
	Stakeholder Committee	Chris Maddox
Boyd McLocklin		Resident
Rick Shmurak PE		Walton International
John Stell		Joint Development Authority
Mark Still		Joint Development Authority
Keith Tipton		Chico's
Mike Welch		Harrison Poultry
	Rebecca Whidden	Barrow County Planning Department

Source: Jacobs

1.2. Presentation

The meeting opened with a presentation from Audra Rojek, the consultant’s project manager. She reviewed the findings from the existing conditions report and explained that the meeting was intended to provide local insight regarding the transportation needs of Barrow County. A copy of the presentation can be found as Attachment A.

1.3. Publicly-Identified Transportation Needs

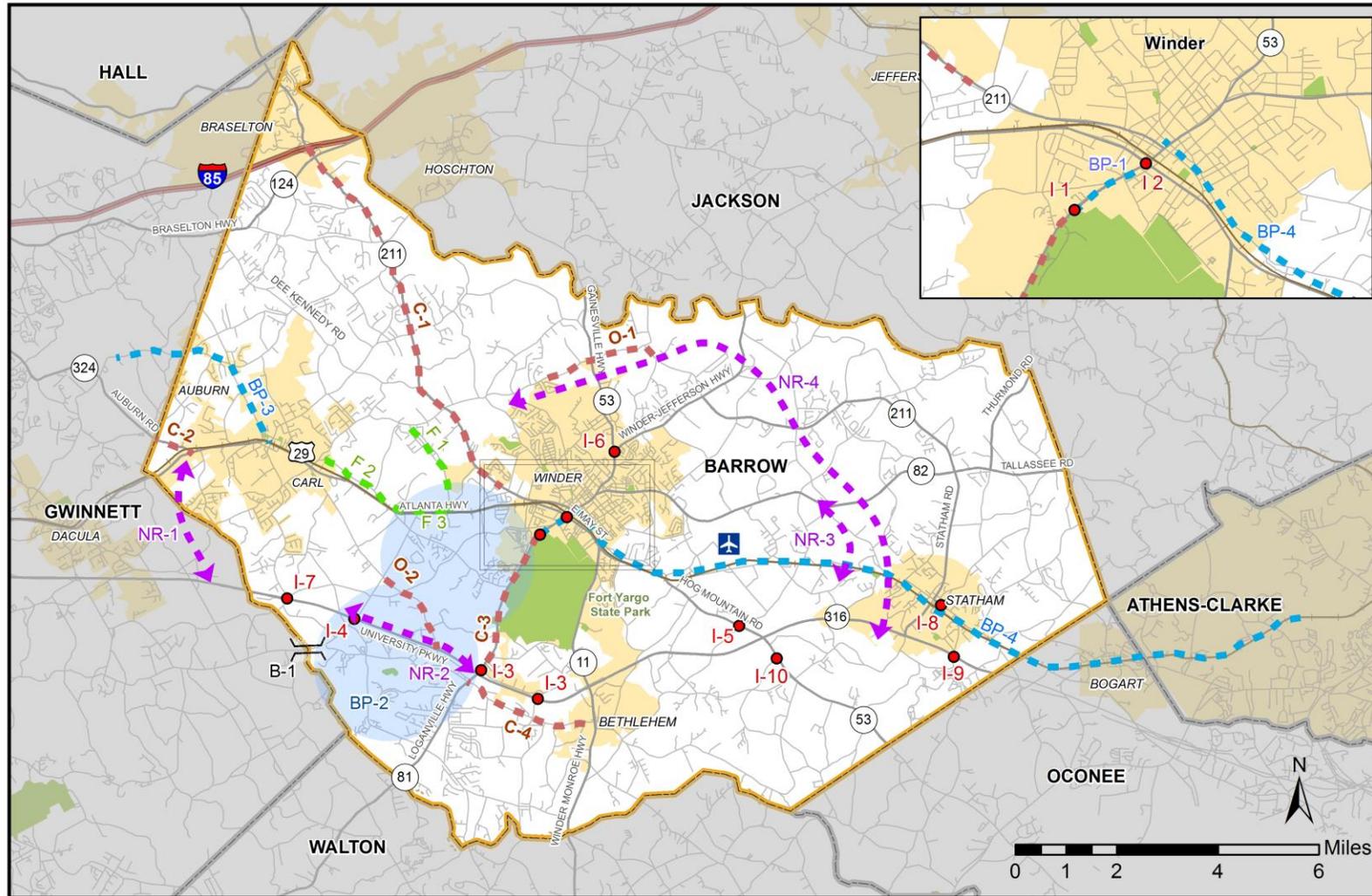
Through the methods described above, a series of transportation needs were identified by the public. These are summarized in the sections that follow and illustrated in **Figure 3.1**.

1.3.1. New Roadway Needs



As discussed in the Existing Conditions Report, the need for a bypass around Winder was identified by the previous CTP. At this time, GDOT is planning for the phased construction of the West Winder Bypass. The committees and public confirmed the need for the bypass. They were asked if there was a need for other new roadways to serve mobility needs elsewhere in the county. Their responses can be found in **Table 3.2**. These and other publicly identified needs are mapped in Figure 3.1.

Figure 3.1: Publicly Identified Transportation Needs



BARROW COUNTY CTP
Publicly Identified
Transportation Needs

Identified Needs		
	Capacity / Operational	
	Freight	
	Bicycle / Pedestrian	
	New Roads	
	Intersections	
	Bridge Improvement	
	Pedestrian Improvements	

Source: ARC, Barrow County

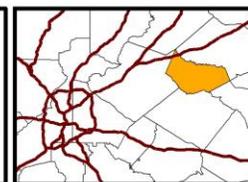


Table 3.2: Publicly-Identified Mobility Needs that may Require New Roadways

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
NR-1	Need for additional access to SR 316 from Carl and Auburn	New road from the junction of Atlanta Highway and SR 324 to SR 316	Public	No
NR-2	Need for improved access to adjacent properties once SR 316 is converted to a limited-access facility.	New collector-distributor road along the north side of SR 316 from SR 81 to Carl-Bethlehem Road.	Public	No
NR-3	Need to encourage economic development by improving access to the Barrow county airport.	New roadway from SR 82 to Atlanta Highway.	Stakeholder Committee	No
NR-4	Need to facilitate freight movement from the south and east that will not be served by the planned West Winder Bypass and so will still pass through Winder.	New roadway, an East Winder Bypass, from SR 316 to SR 211, along with a Cedar Creek Road realignment project.	Technical Committee	No

1.3.2. Capacity Needs

The previous CTP recommended the widening of several roadways, as described in the Existing Conditions Report. Meeting attendees supported the previously identified projects on SR 211, SR 81, and SR 324, and identified a new need for additional capacity along Harry McCarty Road that has been caused by recent development in that area (**Table 3.3**).

Table 3.3: Publicly-Identified Existing Roadways in Need of Increased Capacity

	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
C-1	SR 211 carries a high volume of truck traffic to I-85.	Widen SR 211 approaching I-85	Stakeholder and Technical Committees	Yes
C-2	Need to anticipate bottleneck that will be created by Gwinnett County's plans for a new interchange at SR 324 at I-85 and widening of SR 324 from the interchange to the Barrow County line.	Widen SR 324 from Gwinnett County to US Business 29 in Auburn.	Technical Committee	Yes
C-3	Need to accommodate high volumes of traffic along SR 81 from SR 316 to Fort Yargo.	Widen SR 81 from SR 316 to Fort Yargo	Technical Committee	Yes
C-4	Need to accommodate high volumes of traffic along Carl Bethlehem Road from SR 316 to SR 11.	Widen Carl Bethlehem Road from SR 316 to SR 11.	Technical Committee	No

1.3.3. Intersection Improvement Needs

The previous CTP identified the need for operations and safety improvements at 10 intersections, as described in the Existing Conditions Report. Meeting attendees identified the need for improvements at 10 additional intersections (**Table 3.4**).

Table 3.4: Publicly-Identified Intersections in Need of Improvement

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
I-1	Needs to address sight issues and lack of turn lanes on SR 81 at the existing entrance to Fort Yargo State Park.	Coordinate with the ongoing Fort Yargo Master Plan, which is re-envisioning the park entrance, to ensure the new entrance would address these safety issues and improve bicycle and pedestrian connections to downtown Winder.	Stakeholder Committee	Yes
I-2	Need to correct the delay caused by the light at the intersection of May Street/US Business 29 at South Broad Street/SR 81.	Adjust signal timing.	Public	Yes
I-3	Short term need to address safety issues entering SR 316 from Exchange Boulevard. The congested SR 81/SR 316 intersection has a spillover effect on the access road that runs in front of the commercial properties on Exchange Boulevard. Traffic returning to SR 81 from Exchange Boulevard cannot turn left due to the traffic queuing for the light. The intersection of Harry McCarty Road at SR 316, which is unsignalized and has poor visibility, is being used to avoid queuing congestion at the SR 81/SR 316 intersection at the other end of Exchange Boulevard.	Safety improvements to the intersection of SR 316 and Harry McCarty until the interchange projects can be constructed. Consideration of the frontage road in design of the interchange at SR 81 and SR316.	Stakeholder and Technical Committees	Yes
I-4	Need for safety improvements on SR 316 at Patrick Mill Road. At this location, a hill shortens the sight distance so that approaching traffic may not see cars overflowing the left turn lane on SR 316.	Additional turn lane storage and improved signal synchronization on SR 316.	Stakeholder Committee	Yes
I-5	Need for improvements on Jackson Trail Road at Hog Mountain Road to attract trucks off of Rockwell Church Road.	Addition of a turn lane and potential signalization on Jackson Trail Road at Hog Mountain Road	Technical Committee	No
I-6	There is a need for safety improvements at the intersection of Gainesville Highway/SR 53 at SR 11/SR 211/Jefferson Highway. The state routes come together in a Y intersection by the Barrow Regional Medical Center that has sight distance and turning issues.	Safety improvements to the intersection of Gainesville Highway/SR 53 at SR 11/SR 211/Jefferson Highway.	Technical Committee	No
I-7	There is a need for better access to SR 316, which is the major transportation corridor in the county. A major employment center utilizes the intersections at Kilcrease Road and Patrick Mill Road at SR 316 and both experience queuing during PM peak hours.	Add right turn lane to each intersection to allow for more traffic to move through the intersection during green light phase of signal.	Stakeholder Committee	No
I-8	Traffic on Broad Street delayed by turning traffic accessing Statham Elementary and Bear Creek Middle School at 3 rd Street.	Add turn lane on Broad Street at 3 rd Street.	Stakeholder Committee	No
I-9	There is turning traffic coming from Georgia Club at the intersection of SR 316 at Barber Creek Road.	Signalization of intersection of SR 316 at Barber Creek Road.	Stakeholder Committee	No
I-10	Traffic on Austin Road at Hog Mountain Road slowed by turning traffic accessing Sims Academy	Add turn lanes to Austin Road at Hog Mountain Road.	Stakeholder Committee	No

1.3.4. Operational Improvement Needs

The previous CTP identified the need for operational improvements on 18 roadway segments. In addition, meeting attendees identified two roadway segments that were in need of improvements to separate turning traffic from through traffic (**Table 3.5**).

Table 3.5: Publicly-Identified Needs for Operational Improvements

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
O-1	Need for operational improvements on Rockwell Church Road at Baskin Circle to SR 53 and at Moon Bridge Road where there is a very sharp curve in the road.	Address geometry of intersection of Rockwell Church Road at SR 53 and of segment of Moon Bridge Road.	Technical Committee	No
O-2	Lots of turning traffic along Carl-Bethlehem Road from Tucker Road to Patrick Mill Road	Add a center turn lane on Carl-Bethlehem Road from Tucker Road to Patrick Mill Road.	Stakeholder Committee	No

1.3.5. Transit, Bicycle, Pedestrian, and Other Needs

The previous CTP identified four bicycle improvements and supported the proposed commuter rail line through Barrow County. Meeting attendees supported the previously identified bicycle improvements, but only if funding those projects would not take money away from roadway funds. They also identified the need for additional bicycle projects, pedestrian projects, a bridge improvement, and transit support for impoverished persons (**Table 3.6**).

Table 3.6: Publicly-Identified Needs for Other Modes of Travel

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
Not on map	There is a need for better access to jobs and services for low-income and zero-car households in the county.	Study potential for human services transit in Barrow County.	Public	No
BP-1	There is a need to attract mountain bikers from Fort Yargo to downtown Winder's restaurants, shops, and services. There is also a need to support a more pedestrian-friendly, economically viable downtown. There is also an opportunity to attract bicyclists from Athens to downtown Winder.	A bike path from Fort Yargo to downtown Winder and a bike path from Athens to Fort Yargo/Downtown Winder.	Public	No
BP-2	There is the need for safe pedestrian and bicycle travel between residential areas and school clusters.	Sidewalks and multi-use trail connections to nearby residential areas from school clusters.	Stakeholder Committee	Yes
B-1	The bridge on Patrick Mill Road SW at the Gwinnett/Barrow County line needs improvement.	Improve bridge on Patrick Mill Road SW at the Gwinnett/Barrow County line.	Technical Committee	No
BP-3	There is a need for safe bicycle and pedestrian travel to Little Mulberry Park in Gwinnett, which is a popular destination.	A new bike/pedestrian connection to Little Mulberry Park in Gwinnett	Technical Committee	Yes
BP-4	There is a need to accommodate short trips via golf cart in the City of Statham.	Study golf cart trail system in Statham.	Technical Committee	No



1.3.6. Stakeholder-Identified Freight Needs

Stakeholders were interviewed regarding the specific needs related to the movement of freight, both rail and trucks. The interviewees represented chemical plants and steel cutting plants on Atlanta Highway in western Barrow County. These plants use the regional and local roadway networks, as well as the rail line, to receive raw materials and to ship out finished goods. In general interviewees supported the programmed improvements to SR 316 and SR 211 to support freight traffic. Additional specific freight needs identified in this discussion are listed in **Table 3.7**.

Table 3.7: Stakeholder-Identified Freight Needs

Map ID	Need	Proposed Potential Action	Identified in Previous CTP?
F-1	Pearl Pentecost Road needs pavement improvements to correct for the heavy truck traffic it carries and design improvements to carry truck traffic safely.	Resurface Pearl Pentecost Road	No
F-2	There is a need for improvements along Bankhead Highway to accommodate high volumes of truck traffic, particularly turning truck traffic.	Safety and operational improvements along Bankhead Highway to allow for separation of through traffic and turning traffic.	Yes
F-3	Maintenance needs and design needs at the rail crossing on Bankhead Highway and Atlanta highway near Industry Lane	Close rail crossing or redesign it with a longer approach appropriate for trucks.	No



2. OUTREACH DURING PROJECT PRIORITIZATION

This study sought to involve the public and area stakeholders in the planning process to gain a better understanding of the relative importance of potential transportation improvements in Barrow County. This section describes how that involvement was achieved as well as the project support it identified.

2.1. Barrow County Board of Commissioners Briefing

On Tuesday, April 28, 2015, the Barrow County Board of Commissioners was briefed on the findings from the concluding Needs Assessment, and asked for their input on the upcoming prioritization of projects. Audra Rojek of Jacobs answered questions about the study’s data sources and whether lower-cost options such as signal timing would be included in its recommendations.

2.2. Public Outreach Methods

On May 4, 2015, a joint meeting of the Stakeholder and Technical Committees was held from 5:00 pm to 6:30 pm in the Barrow County Historic Courthouse in Winder. Following that meeting, from 7:00 pm to 8:30 pm, a public meeting was held. The purpose of this second round of meetings was to provide a presentational overview of the CTP progress and gather public and stakeholder input for the prioritization of transportation recommendations in the county. Each meeting began with a presentation of findings from the Needs Assessment, featured discussion stations organized by potential recommendation type, and ended with a “Barrow Bucks” project prioritization activity. Meeting attendees are listed in **Table 3.1**.

Table 3.1: Meeting Attendees

Meeting	Attendees
Joint Committee Meeting	David Bleth, Harrison Poultry
	Boyd Bond, Chico’s
	Bill Cooper, Team Elite Realty
	Barry Edgar, City of Winder
	Guy Herring, Barrow County
	Alex Hill, Hill’s Ace Hardware
	Tommy Jennings, Barrow Chamber
	Boyd McLocklin, Barrow County
	Doug Rollins, Chateau Elan
	Dan Schultz, Barrow County
	Rick Shmurak, Walton County
	John Stell, Barrow County
	Public Meeting
John H. Blakley	
Beth Buchanan	
Bobby Chancey	
John Chaney	
Mihel J. Gerke	
Pam McClure	
Sam Sanders	
Mark Staley	



2.3. Presentation

The meeting began with a presentation that summarized the findings of the needs assessment. Attendees were made aware that the study had drafted project recommendations to address the transportation needs it had identified in Barrow County, and that the purpose of the meeting was to prioritize those draft recommendations. A copy of the presentation can be found in Attachment B.

2.4. Prioritization Stations

The next phase of the meeting was organized around gathering input from attendees at a series of three stations, organized by project type. Attendees were asked to place dots on maps for their preferred improvements or give input on where other improvements were needed. Input was gathered for projects in the following improvement areas:

- Roadway Safety Improvements
- Widening and New Roads
- Intersection Improvements
- Rail Crossing Improvements

Attendees were asked to place dots on the map displays next to the projects within each category that they most supported. Consultant team members were available at each station to assist and write down additional comments. Additional projects nominated by the committees and the public will be compared to the findings from the Needs Assessment. Projects supported by those findings will be that brought forward as recommendations from this study. Results from the joint committee meeting were carried over for use in the public meeting later that same day. The collected findings of both meeting are reported in the public meeting summary.

Attendees were asked to place dots on the map displays next to the projects within each category that they most supported. Consultant team members were available at each station to assist and write down additional comments. Additional projects nominated by the committees and the public will be compared to the findings from the Needs Assessment. Projects supported by those findings will be that brought forward as recommendations from this study.

2.4.1. Proposed Widenings and New Roadway Recommendations

Draft capacity project recommendations were reviewed by the public meeting attendees. Attendees placed dots next to the projects that they felt were important. The same maps were used at the joint committee and public meetings, and results are cumulative. Committee members and the public showed the most support for widening SR 211 and SR 81. The results of this exercise are presented in **Table 3.2.**



Table 3.2: Capacity Projects Results

Map ID	Corridor	Proposed Project	Dots
West Winder bypass Phase 4	Phase 4 of the West Winder Bypass	New location roadway from SR 211 to SR 53	0
C-1	SR 211	Widen from 2 to 4 lanes from SR 347 in Hall County to Proposed West Winder Bypass in Barrow County including improvements at intersections	12
C-2	SR 124	Widen from 2 to 4 lanes from Gwinnett County Line to Jackson County Line	0
C-3	SR 81	Widen from 2 to 4 lanes from Walton County line to Tucker Road/Carson Wages Road	11
C-4	SR 11	Widen from 2 to 4 lanes from Walton County line to SR 316	4
C-5	SR 324	Widen SR 324 from Gwinnett County project terminus to Atlanta Highway, including improvements to intersection at Atlanta Highway	0
Other	Patrick Mill Road	Patrick Mill Road south of SR 316 will need to accommodate traffic from the new West Winder Bypass.	1
Other	Barrow Industrial Parkway	Barrow Industrial Parkway has high truck traffic and will experience an increase in traffic with the construction of the bypass.	1
Other	Mt. Moriah Road	Mt. Moriah Road is used as an alternative to SR 211. It currently is two-lanes with minimum shoulders	1
Other	Carl-Bethlehem Road	There is a lot of development concentrated along Carl-Bethlehem road to the south of SR 316. This road may need widening from two to four lanes.	1
Other	East Winder Bypass	The West Winder Bypass will remove some trucks from downtown Winder, but a longer bypass would have a bigger impact.	1

2.4.2. Intersection Improvements

A major finding of the intersection improvements station was that the interchange conversion project on SR 316 at SR 81 is eagerly anticipated in Barrow County, primarily for its positive impact on safety at that location supported (**Table 3.3**). That project is currently in right-of-way acquisition phase with construction programmed for 2019. There was also support for proposed improvement projects at SR 211 at Hal Jackson Road, at SR 11 at McElhannon Road, and the synchronization of traffic signals countywide.



Table 3.3: Proposed Intersection Improvements

Map ID	Location	Description	Dots
I-1	SR 211 at SR 11	Roundabout	
I-2	SR 211 at SR 82	Roundabout	
I-3	SR 82 at SR 330	Roundabout	
I-4	SR 53 N at Mulberry Road	Improve sight distance and correct intersection skew; add turn lane on SR 53 northbound.	
I-5	SR 11 at McElhannon	Improve sight distance and correct intersection skew.	2
I-6	SR 316 at Kilcrease Road	Add right turn lane northbound	2
I-7	SR 211 at County Line-Auburn Road	Correct skew and offset, allow for truck turning movements.	
I-8	Pearl Pentecost Road at Carl-Cedar Hill Road	Correct skew to allow sufficient truck turning movement.	
I-9	SR 211 at Cedar Creek Road and Hal Jackson Road	Correct skew and alignment of intersection	3
I-10	Atlanta Highway at SR 324	Safety improvements	
I-11	Old Hog Mountain Road at SR 124	Safety improvements	
I-12	SR 81 at Tanners Bridge Road	Safety improvements	
I-13	SR 211 at Dee Kennedy Road	Safety improvements	
I-14	SR 316 at Smith Cemetery Road	Safety improvements	
I-15	SR 316 at Harrison Mill Road	Safety improvements	
I-16	Dunahoo Road at Holsenbeck School Road	Safety improvements	
I-17	SR 211 at Holsenbeck School Road	Safety improvements	
I-18	Atlanta Highway at Bowman Mill Road SE	Safety improvements	
I-19	Winder, Barrow County	Signal synchronization	2
I-20	SR 211 at Old Hog Mountain Road	Safety improvements	
I-21	SR 53 at SR 11	Realignment	
I-22	SR 211 at SR 53	Roundabout	
Other	SR 81 at SR 316 - Programmed intersection-to-interchange conversion.	Improvements should include Exchange Boulevard and Carl-Bethlehem Road. Participants felt there was urgency to this project's implementation.	14
Other	SR 316 at SR 11 – programmed intersection to interchange conversion	Needed due to truck traffic backing up	2
Other	SR 53 at SR 316 – programmed intersection to interchange conversion	Additionally, this intersection needs an added turn lane on SR 53 northbound.	1
Other	SR 211 at Rockwell Church Road	Needs a northbound left turn lane.	1
Other	Mt. Moriah Road at Atlanta Hwy	Needs intersection improvements.	1
Other	SR 211 at Holsenbeck School Road	In this area, there is turning traffic but traffic coming into town isn't aware of it – may need signage.	2
Other	SR 211 at SR 11	Needs improvements to accommodate turning traffic. Ruts/ditches are observed from turns.	1

2.4.3. Roadway Safety Improvements

Support was strongest for improvements along SR 211 and in the industrial area along Duncan Road south of SR 316 supported (**Table 3.4**). Projects in Winder along North Broad Street and East May Street were also supported.



Table 3.4: Roadway Safety Projects

Map ID	Location	Improvements	Dots
S-1	Old Hog Mountain Road	SR 124 to SR 211. Widen roadway and improve the roadside clear zone, with improvements to SR 124 and SR 211 intersections.	1
S-2	Rockwell Church Road	Add paved shoulder widening to both sides of road, mill, patch, resurface, mark pavement.	0
S-3	Atlanta Highway	Mill, patch, resurface and pavement markings, and eliminate the transverse bumps in the road caused by expansion of concrete joints under the existing asphalt.	1
F-1	Dee Kennedy Road	Add shoulders; bring roadway to design standard from SR 124 to SR 211	1
F-3	Atlanta Highway	Operational Improvements from Gwinnett County Line to Pearl Pentecost Road	0
F-4	Pearl Pentecost Road	Add shoulders; bring roadway to design standard from Highway to Carl Cedar-Hill Road	
F-6	North Broad Street	Operational	4
F-8	E. May Street	Operational	2
F-9	Carl-Cedar Hill Road	Add shoulders; bring roadway to design standard from Atlanta Highway to SR 211	0
F-10	Bankhead Highway	Shoulders	0
Other	SR 211	Safety improvements on roadway and at intersections	5
Other	Duncan Lane	Safety improvements on access road	4

2.4.4. Rail Crossing Improvements:

Of the seven proposed rail crossing projects, improvements to the crossing on Broad Street in Winder were most supported (**Table 3.5**). Improvements to the crossing at Horton Street, Jefferson street, and Bankhead Highway also were supported.

Table 3.5: Railroad Crossing Projects

Map ID	Location	Improvements	Dots
R-1	Carl-Midway Church Road	Maintenance, pavement improvements	0
R-2	Horton Street	Signal Timing / Pre-Emption to prevent traffic queueing across rail	3
R-3	Harold Day Road	Maintenance, barrier and flashing light installation	0
R-4	Broad Street	Pre-Signal and Pre-Emption to prevent queueing across rail, sidewalks	5
R-5	Jefferson Street	Pre-Signal, Pre-Emption to prevent queueing across rail, address height difference at rail line	2
R-6	Deer Run Trail	Maintenance and improvements to ground clearance for trucks	0
R-7	Bankhead Highway	Maintenance and improvements to ground clearance for trucks	1

2.5. Barrow Bucks Activity

For the Barrow Bucks prioritization activity, participants were given five “Barrow Bucks” to spend across eight categories of transportation improvements. The results of this exercise indicate support for widening and new road projects and intersection improvements more than other projects (**Table 3.6**). It also indicates that safety improvements and maintenance are second in importance to the public and stakeholders.

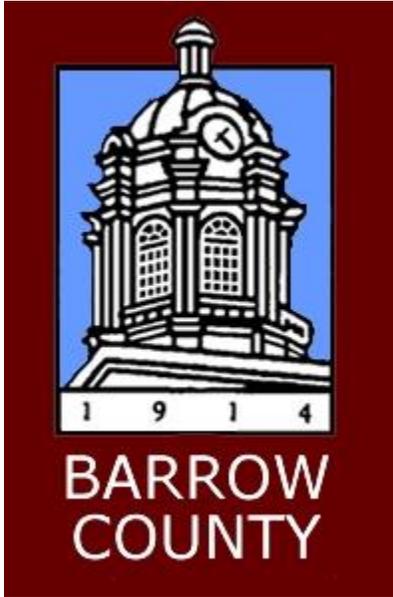


Table 3.6: Barrow Bucks Results

Project Category	Committee Results	Public Meeting Results	Total
Bicycle and Pedestrian	2	3	5
Widenings and New Roads	12	9	21
Safety	6	3	9
Bridge Replacements	2	0	2
Maintenance	3	7	9
Intersections	9	12	21
Railroad Crossings	3	3	6
Freight-Supportive	1	3	4



Attachments A and B



COMPREHENSIVE TRANSPORTATION PLAN UPDATE

INVENTORY OF EXISTING CONDITIONS REPORT

APPENDIX B

Version 2.0

Prepared by:

JACOBS™

March 2015



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1. INTRODUCTION AND BACKGROUND

The Atlanta Regional Commission (ARC) developed the Comprehensive Transportation Planning program to encourage counties and municipalities to practice long range transportation planning in support of regional planning efforts. Barrow County, Georgia, completed its initial Comprehensive Transportation Plan (CTP) under this program in 2007. Barrow County, with the municipalities of Auburn, Bethlehem, Carl, Statham, Winder, and Braselton, is now updating its existing CTP through the 2040 horizon year. This CTP Update builds upon the 2007 CTP and develops short-term and long-term transportation projects based on the level of need, available funding, and stakeholder and community input. This Update will be fully coordinated with, and will in part, continue to serve as the transportation element of Barrow County Comprehensive Plans and the local Cities.

The results of this CTP Update will be incorporated into PLAN 2040, the ARC's overall long range transportation plan for the Atlanta region. The ARC's Transportation Improvement Program, which allocates federal funds for the implementation of transportation projects over the short-term, is contained within the continually updated PLAN 2040. Recommended projects that will require federal funding for engineering, right-of-way, or construction will be forwarded to the ARC for potential inclusion in PLAN 2040.

1.1. Study Area

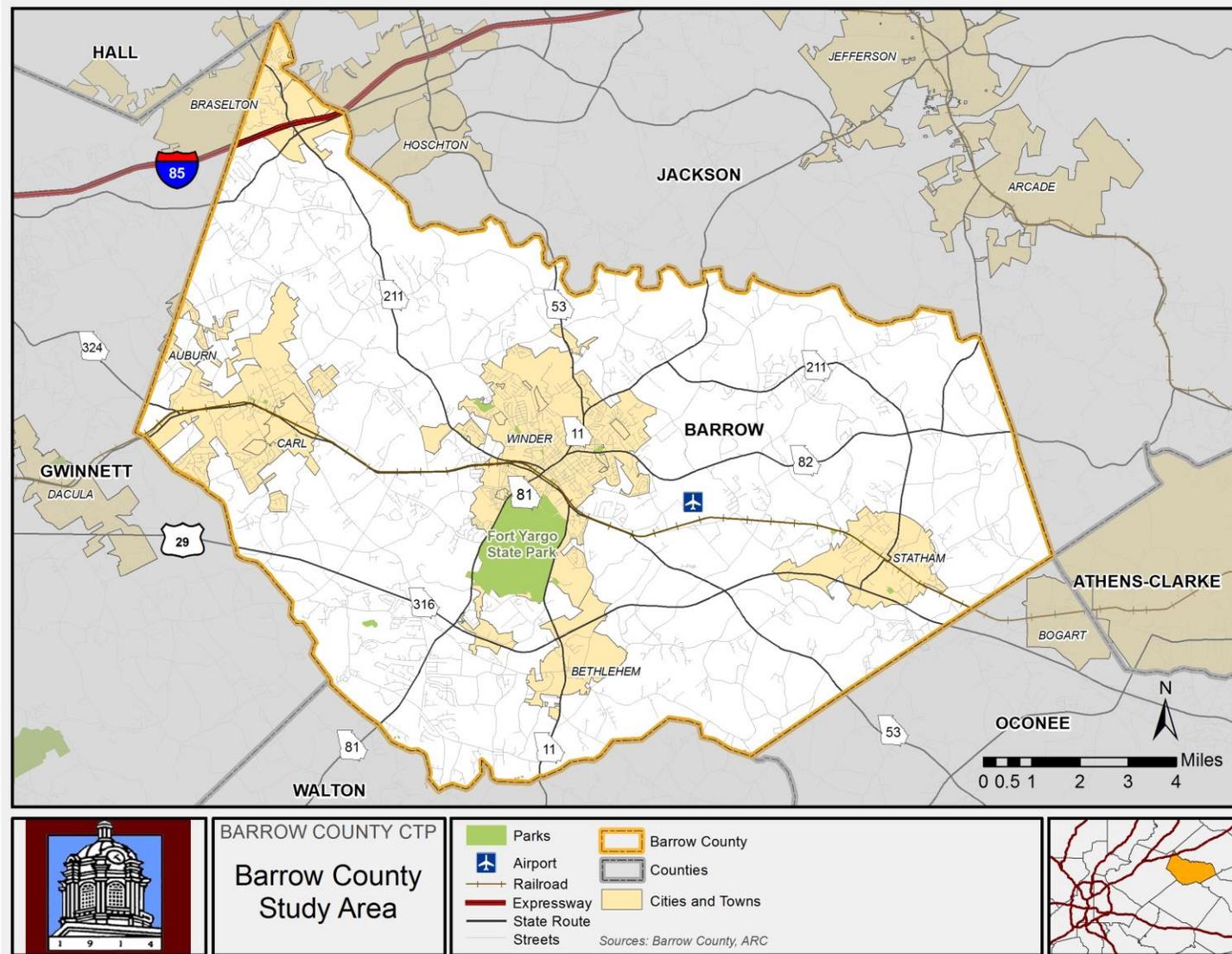
This report presents an inventory of the existing condition and characteristics of the transportation network in Barrow County and associated municipalities (**Figure 1.1**). Counties that share a border with Barrow are also taken into account in this study. Surrounding Barrow County, clockwise from the northwest, are Hall, Jackson, Clarke, Oconee, Walton, and Gwinnett Counties. The Town of Braselton occupies portions of Barrow, Gwinnett, Hall, and Jackson Counties. This plan also addresses the portion of Braselton within Barrow County.

1.2. Review of Previous Studies

This section provides a brief review of previously completed studies that influence this CTP Update. This includes local initiatives such as the previous Barrow County CTP, which was completed in 2007, the 2007 Barrow Comprehensive Plan, ARC PLAN 2040, Strategic Regional Thoroughfare Plan (SRTP), the Georgia Statewide Freight and Logistics Plan, the Atlanta Regional Freight Mobility Plan, the State Route 211 Report, Atlanta Strategic Truck Route Master Plan (ASTRoMAP), the Georgia Department of Transportation (GDOT) SR 316 Implementation Plan, the Northeast Georgia Plan for Bicycling and Walking, and the Fort Yargo Business Plan.



Figure 1.1: Study Area





1.2.1. 2007 Barrow Comprehensive Transportation Plan

The 2007 Barrow County CTP outlined cost-effective solutions to address the short and long term multimodal transportation needs for Barrow County and the municipalities of Auburn, Bethlehem, Carl, Statham and Winder. The CTP was funded through a combination of resources from Barrow County and the ARC's planning funds. It identified projects and strategies to provide for current and future mobility needs of Barrow County by evaluating the existing transportation conditions, demographics, system efficiency and/or maintenance, and future demand on all modes of travel. Additionally, the CTP developed a list of policies, programs, and projects to be prioritized in the County's capital improvement process.

Impacts to the natural and built environment and environmental justice communities were considered during the 2007 CTP development. This comprehensive study developed a prioritized program of projects and strategies to address safety, congestion mitigation, traffic flow enhancement, and improved land use to sustain economic development and quality of life in for the next twenty years. It also included an evaluation of potential funding sources to implement these projects and strategies. The 2007 CTP serves as the framework for the 2014 CTP Update by building upon the findings and recommendations and verifying previously recommended projects within the context of the county.

1.2.2. 2007 Barrow Comprehensive Plan

The Barrow County Comprehensive Plan (2007-2027), adopted in 2008, includes the municipalities of Auburn, Bethlehem, Carl, Statham and Winder. It represents the community's vision and goals for future development throughout the county. This plan was consulted to ensure proposed transportation projects developed through the CTP process are in keeping the County's development goals.

The Comprehensive Plan details numerous transportation issues and opportunities relevant to this CTP Update. It also details recommended implementation measures to address these issues. A major issue identified in the plan is the suburban development pattern throughout large portions of the county, which offers few opportunities for walking and bicycling. The plan therefore recommends the implementation of pedestrian, bicycle, and multi-modal improvements from the previous CTP. The plan also supports the 2007 CTP's recommendation of participation in regional efforts to promote the Atlanta to Athens commuter rail route.

The plan identifies significant traffic congestion on major roadways as an issue within the county. It suggests following the recommendations of the previous CTP to ensure adequate levels of service are maintained on county roadways. The plan also recommends examination of the connectivity between new and existing subdivisions and connector streets.

Specific road improvements are recommended in the plan, including operational improvements to Haymon-Morris Road, Hoyt King Road, and Carl-Bethlehem Road, where traffic conditions are projected to worsen as the Home Depot commercial area continued to develop. Additional traffic safety planning was recommended to address the sharp curves along Kilcrease Road. The plan also identified the lack of an arterial connection between SR 211 and SR 53 as an issue in northern Barrow County.



The Plan addressed truck traffic in the county. The plan promotes coordinated land uses and transportation planning to avoid conflicts between residential traffic and heavy truck traffic on local roads. The design standards on many county roads are not suitable for heavy truck traffic and industrial development should be prohibited on these roadways. Because many local county roads do not meet arterial standards, larger trucks and traffic are routed through downtown Winder.

1.2.3. ARC PLAN 2040

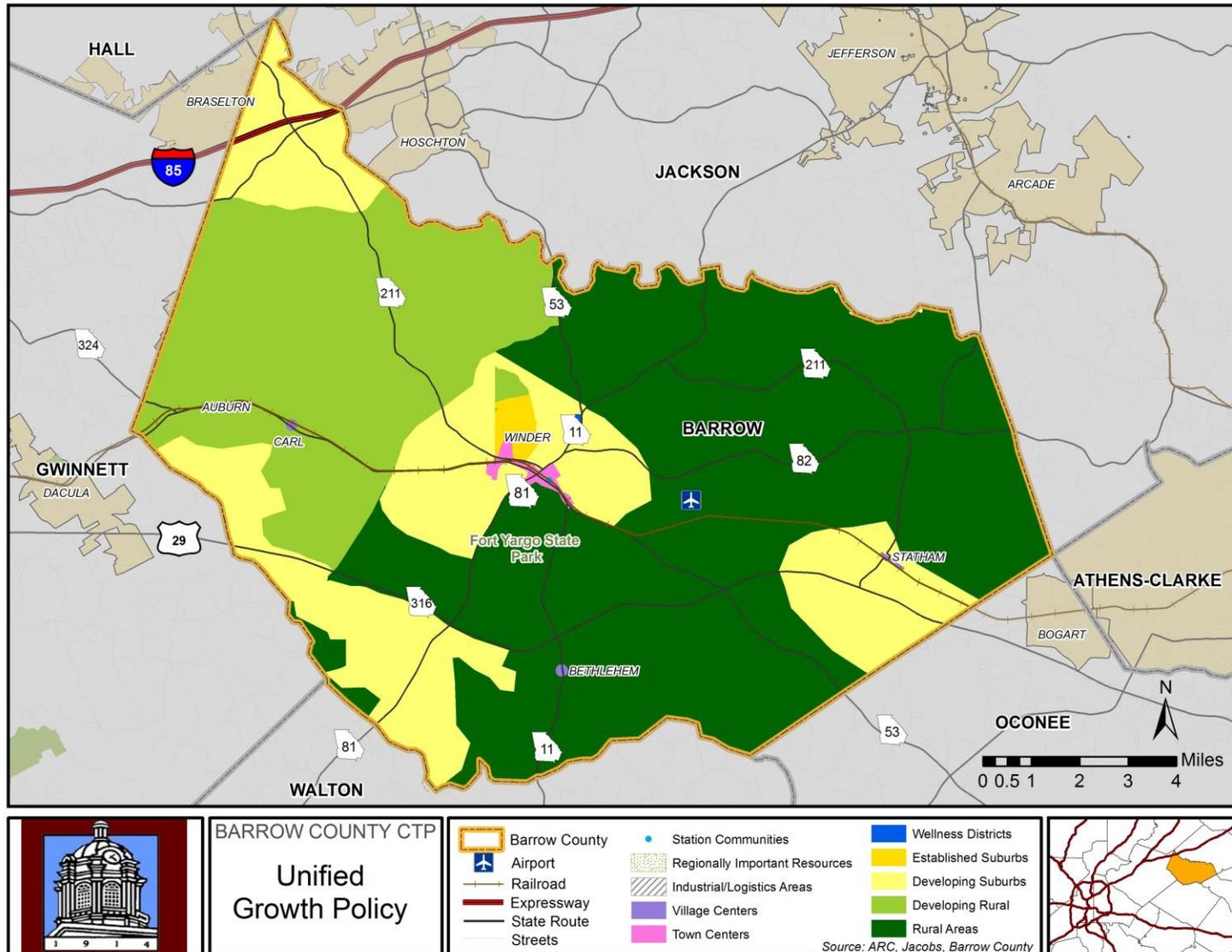
PLAN 2040 is a comprehensive, holistic policy document produced by the ARC to guide the growth of the Atlanta region in a sustainable manner. There are two components of PLAN 2040 that specifically tie into this Barrow County CTP update, the Regional Transportation Plan (RTP), which was adopted in 2014, and the Unified Growth Policy Map (UGPM).

The RTP is a \$61 billion financially constrained plan of transportation improvements that is meant to support the overall vision for the region. Projects in the RTP primarily include those that are to receive federal funding for implementation. Given that the ARC encompasses 18 counties, the CTP process was established to gain consensus and provide local input into the overall RTP. Therefore, the recommendations and findings that result from this CTP Update will be incorporated during the next update of the RTP. The planned and programmed improvements for Barrow County currently in PLAN 2040 are based on the previous 2007 Barrow County CTP.

The UGPM represents local comprehensive plans in addition to the policies and forecasts from PLAN 2040. Its purpose is to serve as an ARC-adopted and locally-supported representation of how to accommodate future regional growth. The Unified Growth Policy Map was first adopted in 2006 and underwent a major overhaul in 2010 as part of the PLAN 2040 through coordination with local governments and regional partners. Since local governments in the Atlanta region have the authority to set their own development policies, the map is 'advisory' in nature. It will be used in the next phase of this study, in which transportation needs for the county are forecast through 2040. The UGPM within Barrow County is presented in **Figure 1.2**.



Figure 1.2: Unified Growth Policy Map for Barrow County

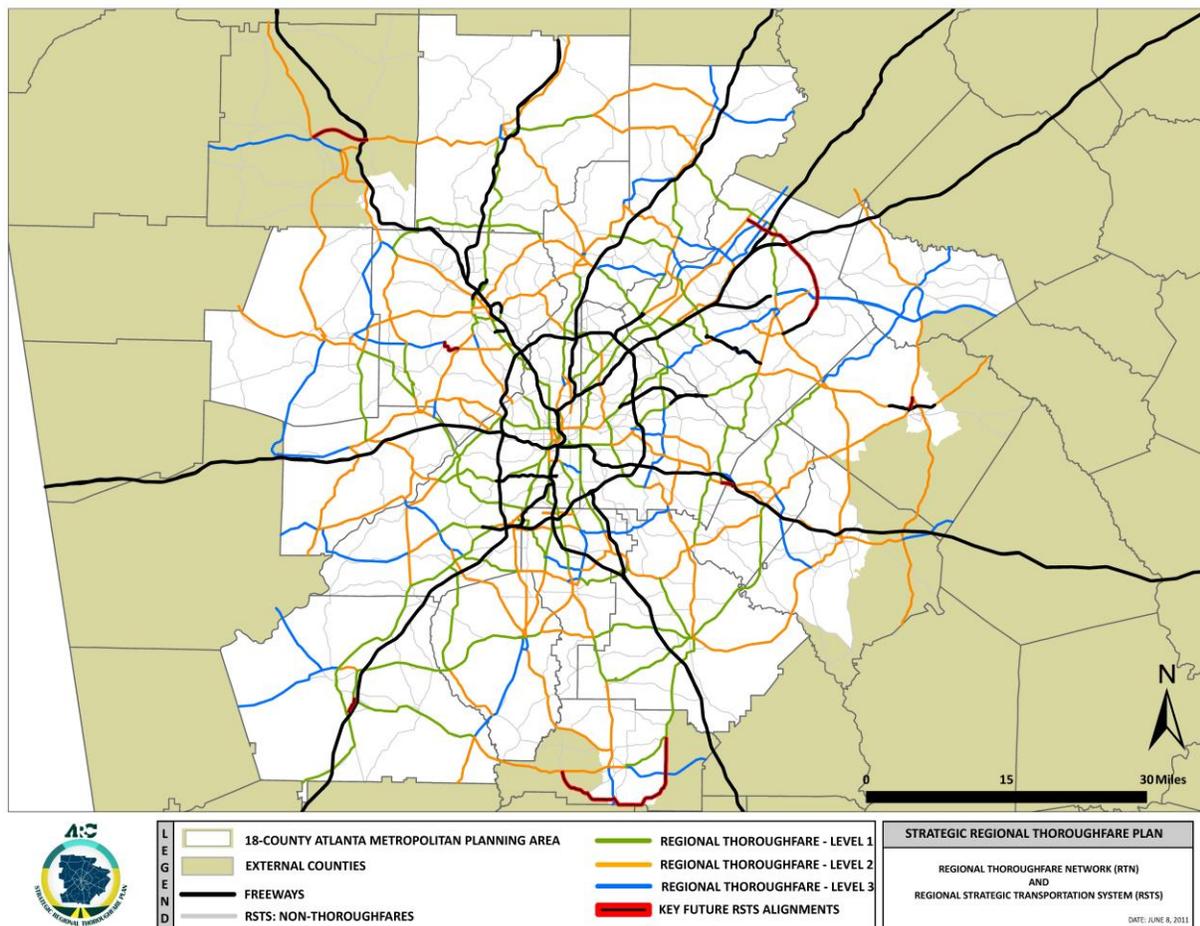




1.2.4. ARC Strategic Regional Thoroughfare Plan

In 2012, the ARC undertook the Strategic Regional Thoroughfare Plan (SRTP) to address the emerging need to efficiently and effectively manage and/or improve roadways to best serve their specific users. The plan identified the most critical roadways in the region and compiled them into a network called the Regional Thoroughfare Network (RTN), which identifies congested corridors based on pre-defined thresholds from the Travel Time Index (TTI) and the Regional Travel Demand Model (TDM) (**Figure 1.3**). The RTN separates routes on the network into three classifications (**Table 1.1**).

Figure 1.3: Regional Thoroughfare Network



Source: ARC



Table 1.1: RTN Classification Network

Type	Percent of Work Trips and Freight Trips	Number of Regional Attractors, Regional Areas, Town Centers, and/or Industrial/ Logistics Areas (per UGPM)	Type/Extent of Connection	Type of Transit Served on Segment (other modes served as planned)
Level I	“High”	“Primary” – Serves 5 or more UGPM areas	Freeway to Freeway or Interstate Connector Route	“High” – Premium Transit Service on Segment
Level II	“Moderate”	“Intermediate” – Serves 3 - 4 UGPM areas	Freeway to Activity Center/ Town Center Connector	“Moderate” – Local Transit Service on Segment
Level III	“Low”	“Basic” – Serves 0 -2 UGPM areas	Freeway to Other Limited Access or U.S. Route Connector or Other System Connector	“Basic” – Paratransit or No Transit on Segment

Source: ARC

The SRTP coordinated land use and transportation efforts to develop synergy in order to improve corridor planning and improvement on a regional level through the RTN. Local governments can reference the RTN when applying guidelines for design standards for their major arterials.

The following Barrow County roadways are considered RTN facilities:

- SR 211 – From the Barrow County line to downtown Winder
- SR 11 – From the Barrow County/Jackson County line to the Barrow County/Walton County line
- US 29/SR 316 – From the Barrow County/Gwinnett County line to the Barrow County/Clarke County line
- SR 81 – From the Barrow County line to downtown Winder

1.2.5. Georgia Statewide Freight and Logistics Plan

The Georgia Statewide Freight and Logistics Plan, 2010-2050, was completed for GDOT in 2010 and partially updated in 2013. It sets forth the case for the deepening of the Savannah Port, a top freight and economic priority for the state of Georgia supported by elected officials and the private sector alike. The plan notes that the deepening and expansion of the port will require improvements to the rail and roadway system to provide for additional freight movement throughout and beyond Georgia. The CSX rail line through Barrow County was identified by the plan as a line that acts as a bottleneck today and is expected to worsen further with the significant growth expected along the corridor. From \$4 billion to \$6 billion of rail capacity enhancements are thought to be needed in Georgia between 2012 and 2050 to accommodate future demand in the state.

The statewide freight plan also found that “the highest Georgia truck volume on a non-interstate metro Atlanta route is the 6,105 trucks per day on State Route 316 in Gwinnett County, which serves significant retail, warehouse and a Publix supermarket distribution center.” Bypasses around urban areas for truck traffic are supported by this plan.



1.2.6. Atlanta Regional Freight Mobility Plan

The Atlanta Regional Freight Mobility Plan (2008) identified and prioritized improvements and strategies that accommodate and enhance freight mobility while mitigating their negative impacts. The study was undertaken jointly by the ARC and GDOT in support of the region's economic competitiveness via the facilitation of freight transportation. The Regional Priority Freight Network can be found in **Figure 1.4**.

Figure 1.4: Regional Priority Freight Highway Network



Source: ARC

The plan found that congestion and capacity limitation, resulting from roadway congestion, bottlenecks at key interchanges and intersections, lack of a regional truck route system, at-grade train crossings, and deficient rail capacity, were the major issues affecting freight mobility in the Atlanta region. In particular, it recommended the creation of a regional truck route system to reduce truck reliance on I-285, I-75 and I-85, and provide alternative regional crossings, especially east-west crossings, that could be utilized in the event of congestion on the interstates.



For Barrow County, the plan identifies US 29/SR 316, SR 211, SR 53, SR 11, and US 29 (Business Route) within its Regional Freight Priority Highway Network as critical Stem Routes within the region. Stem Routes are defined as major regional trucking routes which connect freight generating land uses and industrial centers to the interstate network. These routes were not selected based on truck supportive aspects of their design, but rather the most direct and practical routes available. Stem Routes are recommended for land use and access management improvements to promote efficient freight movement within the region. The Barrow County roadways identified in the plan may warrant additional analysis or consideration of signal timing, turning radii, and other measures to support safe truck movement.

1.2.7. State Route 211 Analysis

In 2008, GDOT completed a short analysis of the crash locations along State Route 211. It was determined that the most significant number of crashes in the corridor occurred at the intersection with Old Hog Mountain Road, where nine crashes were reported over two years. GDOT reported that the sight line at this intersection was less than current requirements and that the side roads approach this intersection at a skew and at a slight offset from one another (**Figure 1.5**). The following improvements were recommended for the intersection of SR 211 at Old Hog Mountain Road:



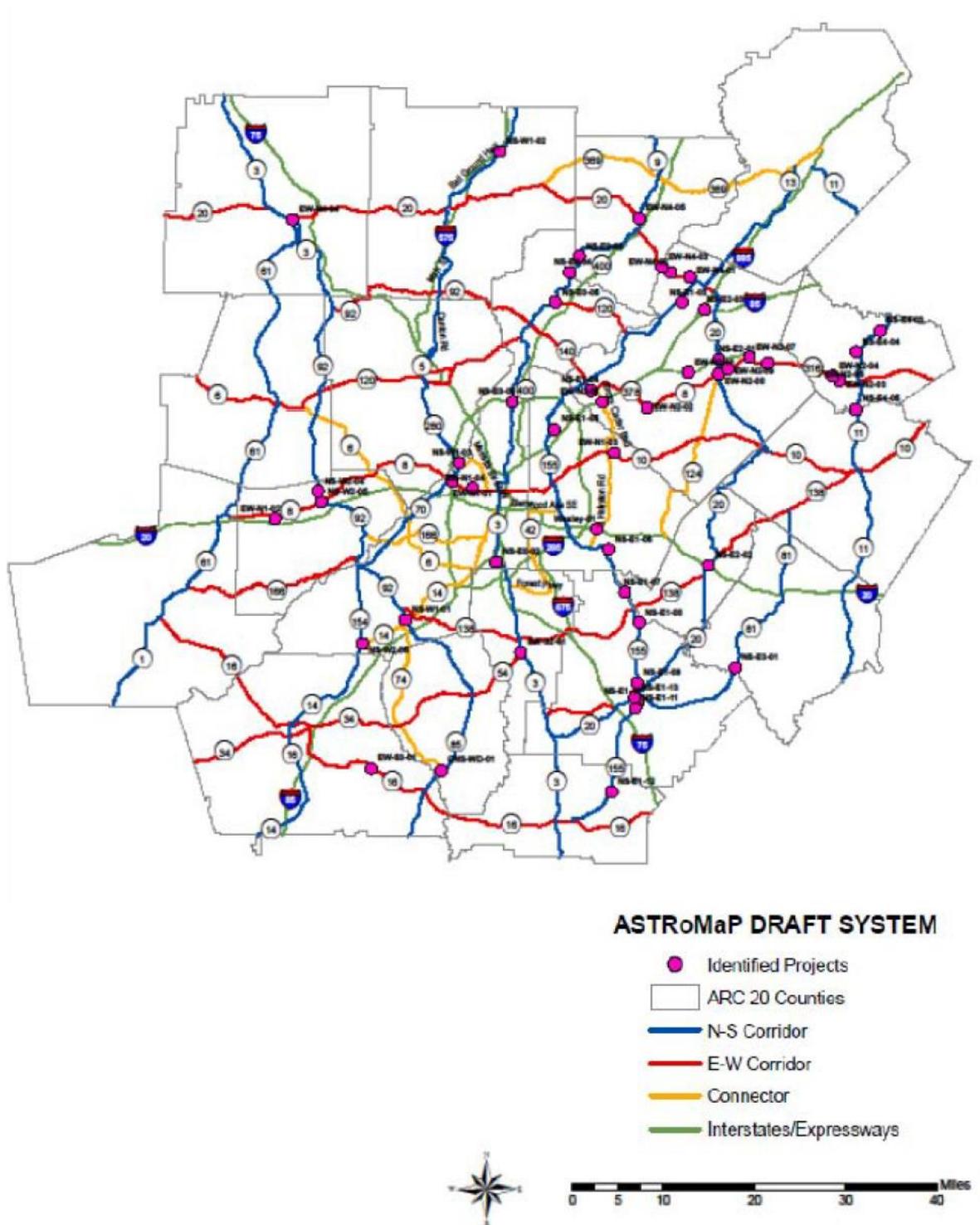
- Upgrade existing intersection warning signs to a larger size with higher reflective sheeting.
- Install special warning sign stating “Watch for Left Turning Vehicles.”
- Reconstruct Old Hog Mountain Road to correct the intersection geometry and improve sight distance, and add left turn lanes to State Route 211 at this location.

1.2.8. Atlanta Strategic Truck Route Master Plan (ASTRoMaP)

The ASTRoMaP was developed by ARC and adopted in 2010 to identify preferred routes and developed strategies to “support the efficient movement of goods without disproportionately impacting existing communities, the environment or the transportation network.” The network developed by this plan focused on cross-town travel and linkages among economic centers (**Figure 1.6**). Roadway facilities in Barrow County identified in the plan’s truck network are SR 11 and SR 316. ARC adopted the ASTRoMaP in 2010.



Figure 1.6: ASTRoMaP



Source: ARC



1.2.9. SR 316 Implementation Plan

GDOT conducted the SR 316 Implementation Plan in 2009 to study the planned and programmed transportation improvements along the SR 316/University Parkway Corridor in Gwinnett, Barrow, and Oconee Counties. GDOT developed tools to evaluate the planned, programmed, and potential highway improvement projects along the SR 316 corridor to come up with an implementation or prioritization plan for projects. Looking at projects in both the Construction Work Program (CWP) and the Long Range (LR) status, the study considered whether the proposed improvements would efficiently meet the needs of the study area.

GDOT used three categories to analyze the programmed and future projects:

- Programmed projects scheduled to be completed prior to 2015
- Programmed General Purpose (GP) projects scheduled between 2015 and 2032
- Eastern expansion of the SR 316 HOV system to SR 10 (Athens Loop)

The plan recommended the eastern expansion of SR 316 as an access-managed facility to Drowning Creek Road in Gwinnett County, and three grade separated interchanges in Barrow County, among other improvements. In addition to proposed HOV lanes along SR 316, these projects included operational/intersection improvements, new interchanges, and grade separations. The following projects are included in the SR 316 Implementation Plan in Barrow County:

- SR 316 at Kilcrease Road (CR 74) – Grade Separation
- SR 316 at Patrick Mill Road (CR 93)/West Winder Bypass – Interchange
- SR 316 at Carl Bethlehem Road – Grade Separation
- SR 316 at SR 81/Charles Floyd Road – Interchange
- SR 316 at Harry McCarty Road/CR 110 – Grade Separation
- SR 316 at SR 11 – Interchange
- SR 316 at Harrison Mill Road/CR 144 – Grade Separation
- SR 316 at SR 53/Hog Mountain Road – Interchange
- SR 316 at SR 211/Bethlehem Street (north) – Interchange
- SR 316 at Barber Creek Road/CR 329 – Grade Separation
- SR 316 at Dial Road/Craft Road/CR 214 – Grade Separation

1.2.10. Northeast Georgia Plan for Bicycling and Walking

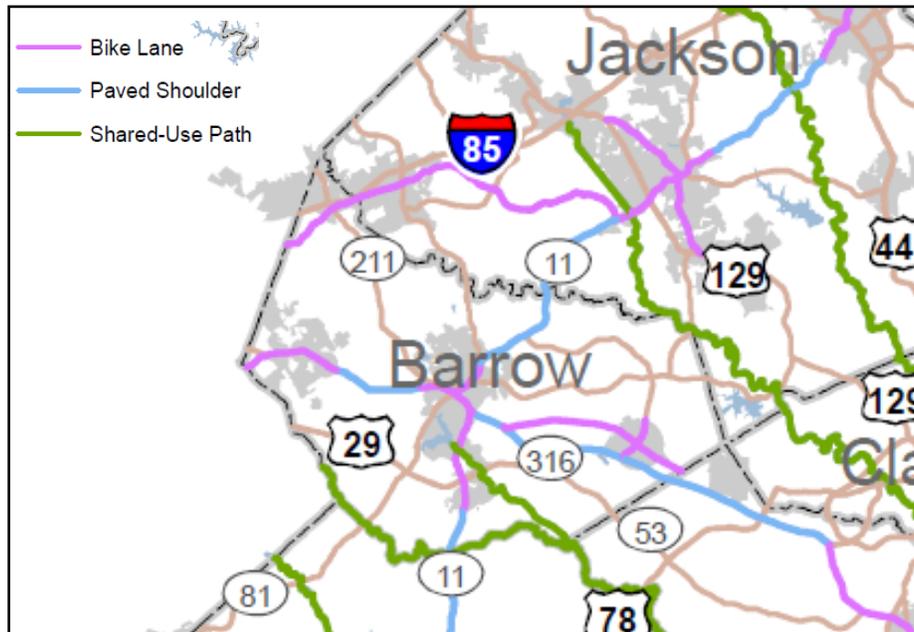
The Northeast Georgia Plan for Bicycling and Walking was developed by the Northeast Georgia Regional Commission (NEGRC) for GDOT in 2009 to propose a network of facilities and a system of planning tools, policies and programs to make the region more conducive to safe walking and bicycling. The proposed Bicycle and Pedestrian Network resulting from the plan is mapped in **Figure 1.7** and includes the following bicycle facilities in Barrow County:

- Bike lanes and paved shoulder along alternating segments of Atlanta Highway from Gwinnett County line to Oconee County line.



- Bike lanes and paved shoulder along alternating segments of SR 11 from Jackson County line to Walton County line.
- Bike lanes on SR 211 in Statham
- Paved shoulder along SR 53 from SR 11 to SR 316
- Paved shoulder along SR 316 from SR 53 to Oconee County line
- Shared use path along US 78 from SR 11 to the Oconee County line

Figure 1.7: Proposed Bicycle Network in Barrow County



Source: NEGRC

1.2.11. Fort Yargo Business Plan

Fort Yargo State Park occupies 1,816 acres between SR 81 and SR 11 in Winder, and has six full time and 15 part time employees. According to its business plan, it attracted 417,307 visitors in FY 2014, which indicates its importance as a traffic and economic generator in the county. The park's primary service markets are in Winder and Barrow County, Gwinnett County, and the Athens and Atlanta areas. Visitors are drawn to the park's overnight camping facilities, day use and picnic areas, and its trails, which are used by hikers and mountain bikers. The plan notes that the park has the opportunity to improve its camper cabins, premium campsites, and improve day use facilities in order to expand its appeal and draw additional visitors. In addition, Fort Yargo is home to the Will-A-Way overnight camp, which is managed by Camp Twin Lakes, provider of camps for kids with serious illnesses and disabilities. Since taking over operations in 2009, Camp Twin Lakes has made investments in the camp's facilities and overall accessibility. In November 2014, the Fort Yargo State Park Master Plan kicked off. The findings and recommendations of that plan will be incorporated into this CTP Update if they are available within the timeline of this study.



2. DEMOGRAPHIC ASSESSMENT

This section provides an overview of the demographics of the study area, including population, households, and employment. This information will aid in the determination of origin and destination needs for now and into the future.

2.1. Methodology

Current population estimates were based on data from a variety of sources, including the ARC; Nielsen, Inc.; Claritas, Inc.; Woods and Poole; and the US Census. Nielsen estimates for current population and household were corroborated with US Census. Employment estimates were derived from the US Census and corroborated with Bureau of Labor Statistics and ARC Estimates.

2.2. Population

At the time the 2007 CTP was undertaken, Barrow County ranked as the 12th fastest growing county in the United States at the peak of the housing boom (only outpaced by Paulding and Forsyth Counties in Georgia). In 2014, Barrow County has an estimated population of 70,620 residents, which represents an increase of 3.1 percent annually since 2000. During that period, Barrow County's growth outstripped that of the Atlanta metropolitan area (MSA), which grew at a rate of nearly 2 percent annually, and that of the State of Georgia, which grew by an average annual rate of 1.5 percent (**Table 2.1**). Growth since the recession has slowed significantly, due to a significant decline in residential development.

Table 2.1: Population, Barrow and Adjacent Counties 1990-2014

Total Population	1990	2000	2010	2014	1990-2010 CAGR	2010-2014 CAGR
Barrow County	30,106	46,146	69,367	70,620	4.3%	0.4%
Jackson County	30,195	41,895	58,347	60,692	3.3%	1.0%
Athens-Clarke County	88,058	101,972	115,070	120,054	1.3%	1.1%
Oconee County	17,820	26,368	31,508	33,602	2.9%	1.6%
Walton County	38,757	61,559	81,491	84,851	3.8%	1.0%
Gwinnett County	356,979	595,296	778,022	841,658	4.0%	2.0%
Hall County	96,215	140,886	175,001	185,229	3.0%	1.4%
Atlanta MSA	3,091,278	4,281,905	5,286,728	5,574,225	2.7%	1.3%
Athens MSA	136,914	188,932	194,743	185,229	1.8%	10.2%
Georgia	6,512,602	8,230,161	9,687,653	10,072,230	2.0%	1.0%

Source: Claritas, Inc., Woods & Poole, US Census. CAGR: Compound Annual Growth Rate

2.2.1. Population Density

At the time of the 2010 US Census, the majority of Barrow County residents, 44,872 people, lived in unincorporated Barrow County, while another 24,495 lived in one of the cities (**Table 2.2**). The population is spread across the county at a very low density (less than one person per acre), with a pocket of higher density (more than two persons per acre) in Winder.



Table 2.2: Study Area Populations, 2010.

Area	Population
Auburn	7,030
Winder	14,139
Carl	199
Bethlehem	616
Statham	2,511
Unincorporated Barrow County	44,872
Barrow County (entire)	69,367

Source: US Census

2.2.2. Race and Ethnicity

An estimated 77 percent of Barrow County’s 2014 population reporting as “white alone,” which is a larger percentage than in the greater Atlanta MSA, 54.6 percent, or in Georgia, 58.6 percent (**Table 2.3**). Another 12 percent of the population is Black or African American, lower than the percentage across the Atlanta MSA (32.4 percent), or across Georgia (30.7 percent).

Table 2.3: 2014 Estimated Population by Single Race

	Barrow County	%	Atlanta MSA	%	Georgia	%
Total Estimated Population	70,620		5,574,225		10,072,230	
White Alone	54,411	77.0%	3,044,951	54.6%	5,897,732	58.6%
Black or African American Alone	8,751	12.4%	1,807,385	32.4%	3,093,182	30.7%
Amer. Indian and Alaska Native Alone	241	0.3%	19,751	0.4%	36,421	0.4%
Asian Alone	2,296	3.3%	278,213	5.0%	348,176	3.5%
Native Hawaiian and Other Pac. Isl. Alone	49	0.1%	3,721	0.1%	8,432	0.1%
Some Other Race Alone	3,043	4.3%	272,292	4.9%	445,742	4.4%
Two or More Races	1,829	2.6%	147,912	2.7%	242,545	2.4%

Source: Nielsen, Inc., Bleakly

Ten percent of Barrow’s population is Hispanic or Latino, which is slightly lower than the share of the Atlanta MSA population (11.3 percent) and slightly higher than the share of the state population (9.8 percent) (**Table 2.4**). The categories “Hispanic” and “Latino” are considered ethnicities rather than races, and these designations are considered separately from racial ones.

Table 2.4: 2014 Estimated Population by Hispanic or Latino

	Barrow County	%	Atlanta MSA	%	Georgia	%
2014 Est. Pop	70,620		5,574,225		10,072,230	
Not Hispanic or Latino	63,498	89.9%	4,946,885	88.7%	9,082,150	90.2%
Hispanic or Latino:	7,122	10.1%	627,340	11.3%	990,080	9.8%

Source: Nielsen, Inc., Bleakly

2.3. Households

The average Barrow County household has 2.9 persons, slightly larger than households across the Atlanta MSA or Georgia (**Table 2.5**). Households in Barrow County are more likely to have children present, as 43 percent of Barrow County households have children, more than in the Atlanta MSA (38



percent) or Georgia (37 percent). Fewer Barrow households, 49 percent, are small households of just one or two people, a lower rate than found in the Atlanta MSA (56 percent) and Georgia (57 percent).

Table 2.5: Barrow County, Household Characteristics, 2014

Est. Households	Barrow County		Atlanta MSA		Georgia	
Estimated Households	24,202		2,056,364		3,734,136	
Small Households (1 or 2 people)	11,881	49%	1,144,949	56%	2,128,112	57%
Large Households (5+)	3,704	15%	252,811	12%	429,290	11%
Households with Children	10,317	43%	782,809	38%	1,374,356	37%
Non Family Households	5,822	24%	659,672	32%	1,180,325	32%
2014 Estimated Average Household Size	2.9		2.7		2.6	

Source: Nielsen, Inc., Bleakly

2.3.1. Income

Barrow County's median household income is \$49,789, slightly lower than the Atlanta MSA median household income of \$52,533, but higher than the state average of \$46,566 (**Table 2.6**). Household incomes in Barrow county tend more toward the middle than their counterparts in the Atlanta MSA or statewide, with fewer households making less than \$35,000 per year and fewer households making more than \$100,000 per year. The majority of Barrow County households, 56%, make between \$35,000 and \$100,000 annually, compared to 43% state-wide.

Table 2.6: Barrow County, Household Income, 2014

Household Income	Barrow County		Atlanta MSA		Georgia	
2014 Estimated Median Household Income	\$49,789		\$52,533		\$46,566	
% of MSA Income	95%		100%		89%	
Households by Income						
HH with income > \$15,000	3,516	15%	266,304	13%	581,822	16%
HH with income \$15,000 - \$35,000	4,656	19%	429,949	21%	869,662	23%
HH with income \$35,000-\$100,000	13,636	56%	915,324	45%	1,622,081	43%
HH with income >\$100,000	2,394	10%	444,787	22%	660,571	18%

Source: Nielsen, Inc., Bleakly

2.3.2. Low-Income Family households

According to estimates for 2014, 10.3 percent of Barrow's family households were earning incomes below the poverty line (**Table 2.7**). The Atlanta MSA and the state have slightly higher instances of families in poverty, with 12.3 and 14.2 percent, respectively.

Table 2.7 Family Households in Poverty

Description	Barrow County	%	Atlanta MSA	%	Georgia	%
2014 Families, Estimated	18,376		1,396,608		2,553,738	
2014 Families at or Above Poverty	16,503	89.8%	1,225,242	87.7%	2,191,619	85.8%
2014 Families at or Above Poverty with Children	8,418	45.9%	623,905	44.7%	1,055,066	41.3%
2014 Families Below Poverty	1,873	10.3%	171,366	12.3%	362,119	14.2%
2014 Families Below Poverty with Children	1,489	8.1%	133,578	9.6%	278,361	10.9%

Employment Source: Nielsen, Inc., Bleakly



2.4. Employment

2.4.1. Employment Growth

Employment in Barrow County has grown at a rapid pace, although not as quickly as population or households. Between 1994 and 2004, Barrow County added over 11,000 working residents, a 70 percent increase, equivalent to an annual compound growth rate of 5 percent, equal to two and a half times the state-wide average rate. Since 2004, employment has grown by just 4,000 jobs, hampered by the recession, although Barrow’s 1.4 percent annual employment growth rate was still more than four times that of Georgia over the same period (**Table 2.8**).

Table 2.8: Barrow County & Georgia, Total Employment, 1994-2014

Total Employment	Barrow County	Georgia
1994	16,194	3,412,606
2004	27,486	4,249,007
2014	31,633	4,362,028
Net Change	Barrow County	Georgia
1994-2014	70%	25%
2004-2014	15%	3%
1994-2014	95%	28%
CAGR	Barrow County	Georgia
1994-2014	5.4%	2.2%
2004-2014	1.4%	0.3%
1994-2014	3.4%	1.2%

CAGR= Compound Annual Growth Rate. Source: BLS., Bkly

2.4.2. Employment Density

Employment in the county is distributed roughly in the same manner as population. In 2010, employment was found at densities of less than one job per acre across most of the county, with a concentration of jobs in Winder at a density greater than one job per acre.

2.4.3. Employment Characteristics

Barrow County is the home to an estimated 15,533 jobs, and 32,528 working residents as of 2011, the most recent year for which data were available. The 15,533 jobs estimated to be located in Barrow County are broadly distributed among a number of employment sectors with the largest sectors represented being manufacturing (13 percent), retail trade (13 percent) and educational services (12 percent) (**Table 2.9**).

Most of the 32,528 working Barrow County residents work in retail (15 percent), health care (10 percent), educational services (10 percent) or manufacturing (10 percent). (Please note that there is a slight discrepancy in the estimates for total employment that is the result of utilizing the Bureau of Labor Statistics for long-term employment growth and the US Census for employment sector characteristics).



Table 2.9: Barrow County Employment Profile, 2011

Jobs in Barrow County	Number	%	Jobs Held by Barrow Residents	#	%
Manufacturing	1996	13%	Retail Trade	4938	15%
Retail Trade	1937	13%	Health Case and Social Assistance	3191	10%
Educational Services	1836	12%	Educational Services	3172	10%
Accommodation and Food Services	1629	10%	Manufacturing	3159	10%
Wholesale Trade	1529	10%	Accommodation and Food Services	2801	9%
Health Case and Social Assistance	1294	8%	Wholesale Trade	2633	8%
Administration and Support	1022	7%	Administration and Support	2090	6%
Construction	920	6%	Construction	1887	6%
Public Administration	791	5%	Professional, Scientific and Tech. Services	1736	5%
Professional, Scientific and Tech. Services	502	3%	Public Administration	1606	5%
Other Services	486	3%	Transportation and Warehousing	1193	4%
Finance and Insurance	359	2%	Finance and Insurance	1079	3%
Management of Companies	269	2%	Other Services	904	3%
Transportation and Warehousing	263	2%	Information	629	2%
Other	670	4%	Other	1510	5%
Total	15,533	100%	Total	32,528	100%

Source: US Census Longitudinal Employer-Household Dynamics, 2011

Technology Employment

Barrow County is at the heart of the “Innovation Crescent,” a 13-county bioscience cluster region that stretches from Atlanta to Athens and is home to a reported 95% of Georgia’s life science assets. The cluster region has an established infrastructure of assets, institutions and workforce to support focused economic development within life sciences and technology. The Innovation Crescent Regional Partnership (ICRP), LLC is an economic development entity that encourages job growth in those industries within the region. Within the Innovation Crescent lies the smaller Georgia’s Innovation Corridor Joint Development Authority, which is another umbrella entity focused on promoting life sciences, innovation and technology within Barrow, Gwinnett, Oconee, and Athens-Clarke Counties.

2.4.4. Major Employment and Retail Centers

Major employment and retail centers are traffic destinations. Both are typically located along major transportation routes (arterials) to help facilitate regional economic linkages. With easy accessibility to roadways (and in some instances, railroads), these land uses are key to providing jobs and commercial services. In Barrow County, the major employment centers are located along SR 211, US 29/SR 316, SR 11, and along Atlanta Highway (Barrow County Airport), and the major retail centers are located in downtown Winder, I-85 in Braselton, and at the SR 81 and SR 316 intersection (**Figure 2.3**). The primary uses, and the major employers and retailers, for these locations can be found in **Table 2.10**.



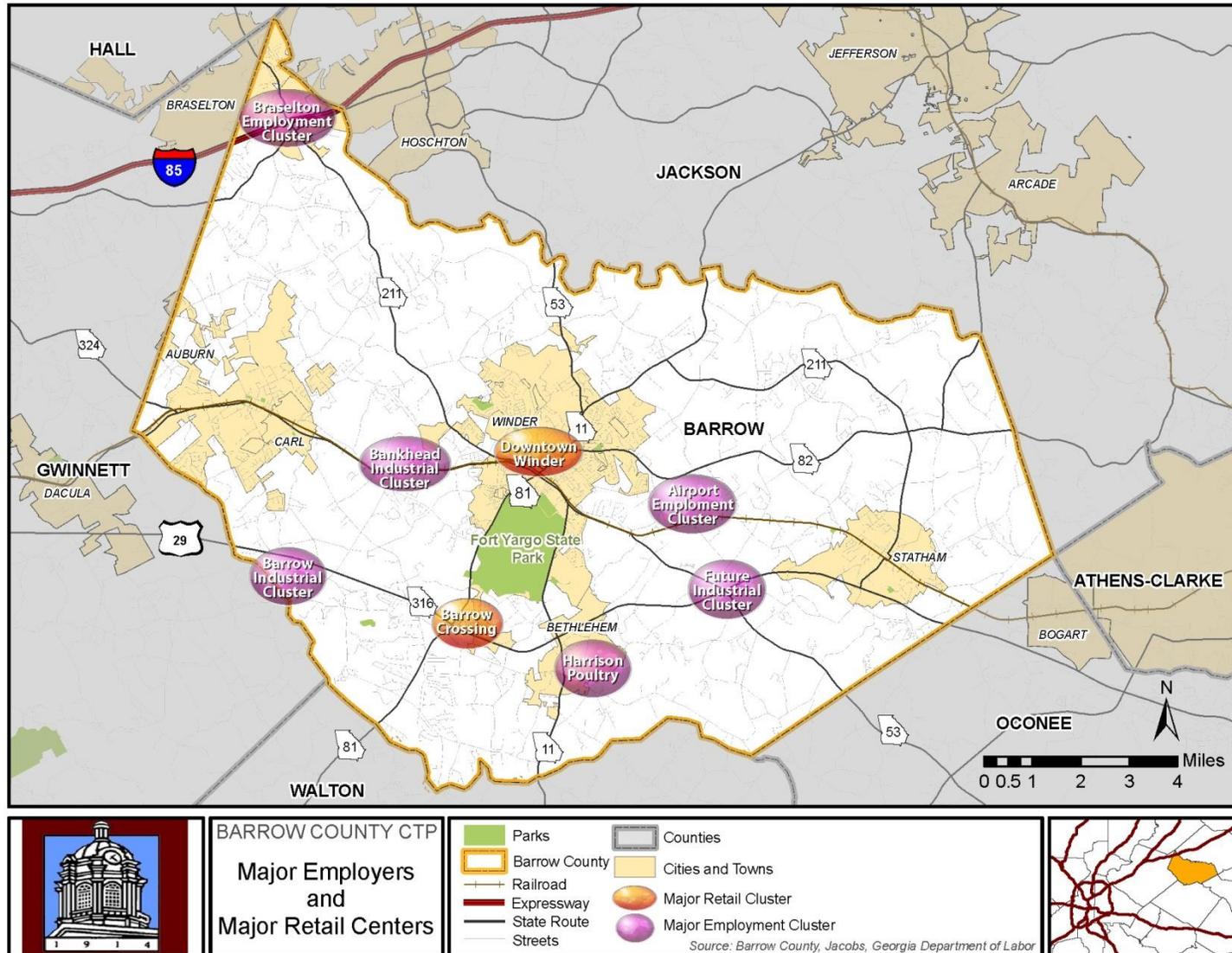
Table 2.10: Major Employers and Retail Centers in Barrow County

Area	Uses	Employers/Retailers
Braselton Employment Cluster	Industrial, Distribution, Retail	Whole Foods, Mayfield Dairy, Kitchler Lighting, Petco Distribution Center, and soon, Hitachi.
Bankhead Industrial Cluster	Industrial, Truck Traffic	Johns Mansville Winder Plant, Olympic Steel, Solvay, Stepan, Magbee, Southeast Culvert, Schutz Container Systems, Drivetime, Del Monte, and 84 Lumber.
Barrow Industrial Cluster	Industrial, Warehousing	Chico's FAS, LLC (Barrow County's largest employer), AM East, Yokohama Tire, Anderson Merchandising, and Progress Container.
Downtown Winder	Retail	Chamber of Commerce, Ann's Flower Shop, Larry's Furniture, Casey's, Greene's Auto Parts, fast food chains (McDonalds, Burger King, Sonic, Dairy Queen, Hardee's, Taco Bell, Papa John's, Little Caesar's, KFC, Church's Chicken, Popeye's, Bojangle's, Zaxby's, Firehouse Subs, Subway, Pizza Hut, Mazzio's, Krystal, Captain D's, Arby's, Waffle House, Huddle House), tire stores, restaurants (Golden Corral, Ruby Tuesday, Joy's, Fatz, El Centenela, El Camino's, Los Vasquez, Hong Kong Buffet, King Buffet, Asia Café, Hibachi Grill, Inoko's Magnolia House, Coach's Corner, Friends, Little Italy, Shane's Rib Shack, Smokin' Po Boys), grocery stores (Publix, Ingles, Quality Foods, Aldi, Save-A-Lot, Wal-Mart), banks, law offices, auto parts stores (O'Reilly's, Advance, Auto Zone, Green's Auto Parts, NAPA, Precision-Performance Plus), Farmer's Furniture, Sander's Furniture, Aaron's, Hill's Ace Hardware, Tractor Supply, Armco Carpet, CVS Pharmacy, Walgreens, Rite-Aid, Anytime Fitness, Goody's, Bell's, Shoe Show, Off The Ropes Boxing Gym, Dollar General, Dollar Tree, pawn shops, Akins Ford, Barrow Medical Center, and doctor's offices.
Barrow Crossing	Retail	Target, Belk, T.J.Maxx, Publix, PetSmart, Staples, Home Depot, McDonald's, Advance Auto, and, at The Gateway/Exchange Blvd. – Carmike Cinema, Longhorns, Top Dawg, Chick-fil-A, Wendy's, Athens Regional First Care, and Dunkin' Donuts.
Airport Employment Cluster	Distribution	Northeast Sales Distributing, Stephens Pipe & Steel, Aircrane, Inc., GA Avionics, Inc.
Future Industrial Cluster	Industrial	Site of a future industrial park supported by the County, Carter's Lumber Supply, Lanier Technical College, Barrow County Sims Academy of Innovation and Technology
Harrison Poultry	Agricultural, Truck Traffic	Harrison Poultry
Fort Yargo	State Park	Fort Yargo State Park is consistently in the top three most visited Georgia State Parks.

Source: Barrow County, Georgia Department of Labor



Figure 2.1: Major Employment and Retail Centers in Barrow County

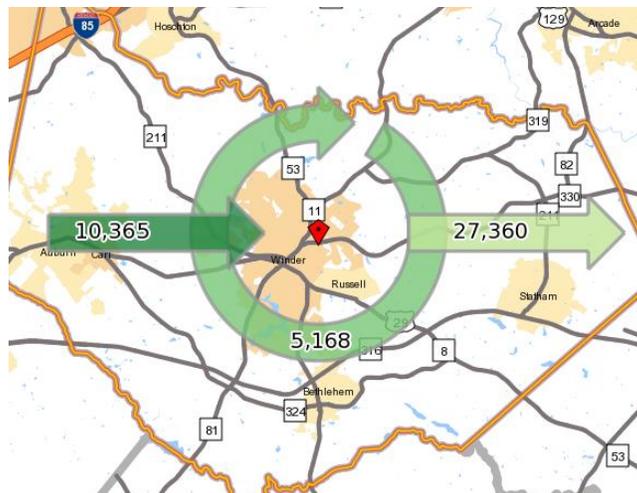




2.4.5. Commuter Flow

Given Barrow County’s relatively small base of employers, most of its working residents commute to jobs outside the County for work. Of an estimated 32,528 working Barrow County residents, 27,360, or 85 percent commute to other counties for work. Conversely, roughly two-thirds of the 15,553 employees who work in Barrow County commute in from outside the County. Approximately 16 percent of working Barrow residents both live and work within the County. **Figure 2.4** depicts the general flow of commuters into, out of, and within the county, but it does not represent the geographic origins or destinations of these trips. For inflow origins and outflow destination, see Table 2.11.

Figure 2.2: Inflow/Outflow Job Counts: Barrow County



Source: US Census Longitudinal Employer-Household Dynamics, 2011

Table 2.11: Barrow County Inflow Origins and Outflow Destinations by County

County of Residence	Jobs in Barrow County		County of Employment	Barrow County Residents Employed	
	Number Jobs	Percent		Number	Percent
Barrow	5,168	33.3%	Gwinnett	9,188	28.2%
Gwinnett	2,242	14.4%	Barrow	5,168	15.9%
Clarke	1,105	7.1%	Fulton	2,533	7.8%
Walton	897	5.8%	Clarke	2,279	7.0%
Jackson	807	5.2%	DeKalb	1,970	6.1%
Hall	675	4.3%	Hall	1,405	4.3%
Oconee	516	3.3%	Cobb	1,028	3.2%
DeKalb	310	2.0%	Jackson	922	2.8%
Fulton	303	2.0%	Walton	802	2.5%
Cobb	219	1.4%	Forsyth	629	1.9%
Other	3,291	21%	Other	6,604	20.3%
Total	15,553	100%		32,528	100%

Source: US Census Longitudinal Employer-Household Dynamics, 2011



3. LAND USE AND DEVELOPMENT

3.1. Existing Land Use

The analysis of existing land use in Barrow County is based upon the ARC’s most recent regional data set, LandPro 2010. This data source is useful because it provides a common data set for the unincorporated county and the cities of Auburn, Braselton, Carl, Bethlehem, Winder and Statham.

The most prevalent existing land uses found in Barrow County reflect its rural and suburban character. The most prevalent land use in Barrow County is Agriculture-Forestry, which accounts for 64.4 percent of the land in the county, and Single-Family Residential is the second most prevalent use, and accounts for another 23.0 percent of the county (**Table 3.1**).

Table 3.1: Existing Land Use Composition

Land Use	Acres	Percentage
Agriculture-Forestry	67,060	64.4%
Park-Recreation	5,123	4.9%
Single-Family Residential	23,957	23.0%
Multi-Family Residential	176	0.2%
Transitional	2,645	2.5%
Commercial	2,359	2.3%
Industrial	1,442	1.4%
Public-Institutional	729	0.7%
TCU	589	0.6%
Total	104,079	100.0%

Source: Barrow County

The Agriculture-Forestry category includes agriculture, including cropland, pasture land, areas dedicated to livestock production and equestrian facilities. It also includes heavily forested undeveloped land. This land use type is found extensively throughout the county, particularly in the unincorporated portions. It is adjacent to both sides of SR 82, SR 316, and SR 53 in the eastern portions of the county. Significant expanses can also be found adjacent to SR 211 in the northwestern portion of the county as well as smaller areas on either side of US 29/SR 316 in the southwestern portions of Barrow County. These uses typically conserve and enhance an area’s natural or scenic resources and provide visual aesthetics along roadway corridors. Additionally, this land use enhances recreational opportunities as it generates very little traffic.

The second most common land use type in the county is Single-Family Residential, which includes single-family homes in a variety of residential development types. This includes planned residential subdivisions, large-lot (1-2 acres) rural residential development, and mobile home parks. These uses are spread throughout the county, but are heavily concentrated around the municipalities in the county. The abundance of this land use type is relevant because these uses typically generate single-occupant vehicle (SOV) trips during peak hours.

The third most common land use type in the county, Park-Recreation-Conservation, comprises 4.92 percent of the land area. This category includes parks, wildlife management areas, wetlands, floodplains



and golf courses. Major land uses in this category include the Fort Yargo State Park. Much like the Agricultural-Forest land use, roadways serving this low-density development type are also characterized by higher speeds due to fewer access points along the roadways. Fort Yargo is a major tourist attraction in the county and generates a significant amount of traffic on SR 81 and SR 11.

Transitional land uses are the fourth most common land use type, comprising 2.54 percent of the county. This category includes land areas that have been cleared for construction, are currently under construction or partially built-out. Many of these land uses are comprised of partially built residential subdivisions with roads and utilities in place but with many vacant lots. This use is dispersed throughout Barrow County with a concentration in the southwest portion of the county close to US 29/SR 316. These areas are typically adjacent to other single-family developments and, therefore, are likely to generate similar travel patterns once developed.

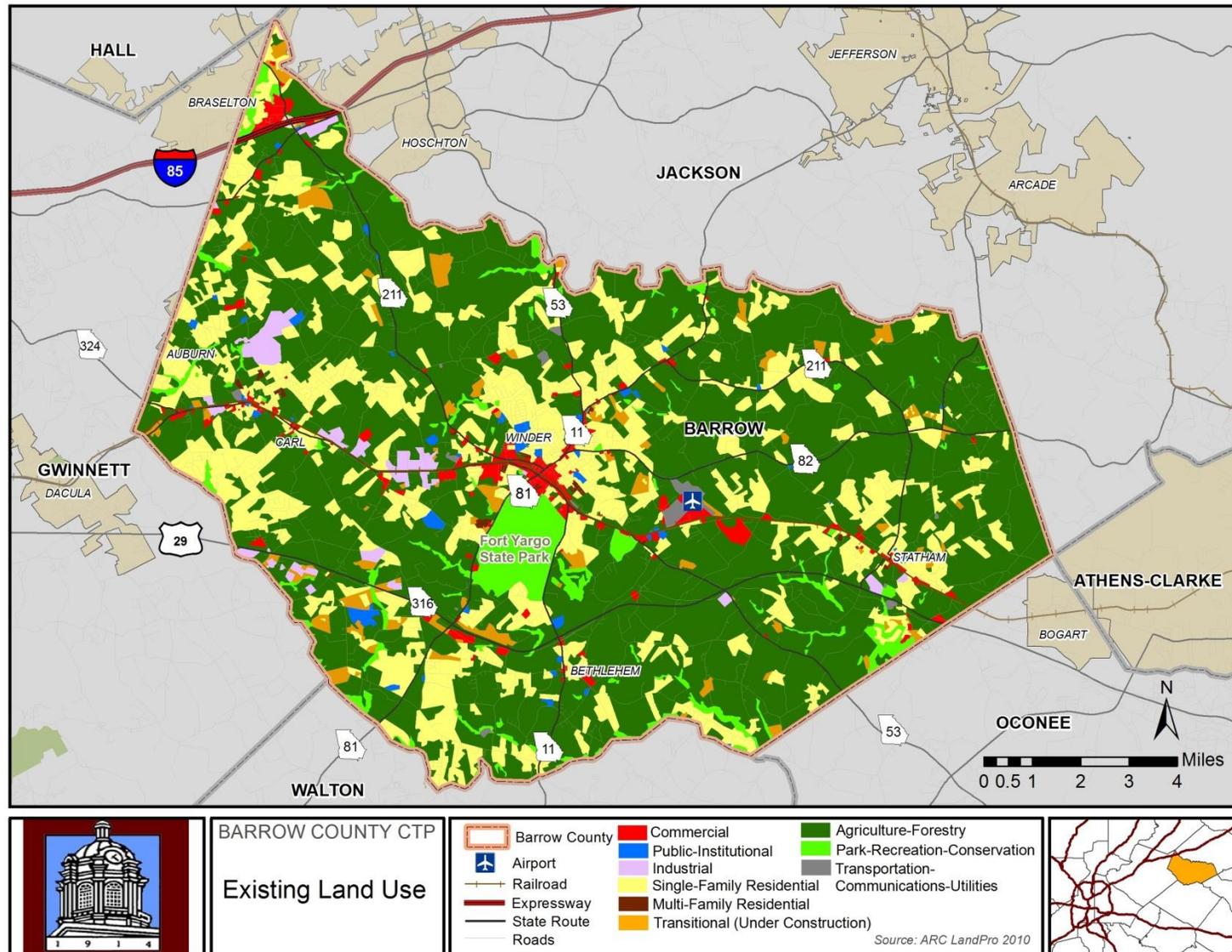
While commercial land uses comprise 2.27 percent of the land area within the county, they have a heavy influence on the transportation network. Since this category consists primarily of strip shopping centers, restaurants, and convenience retail, they generate a large amount of trips for short-term purposes. As shown in **Figure 3.1**, the most prevalent commercial retail corridor is the US 29 Business Route/SR 8 corridor from the Gwinnett County line until it becomes Atlanta Highway and runs through the city of Statham to the Oconee County line. Commercial uses are also located in Braselton, Auburn, Carl, and heavily concentrated in the City of Winder along the US 29 Business Route corridor. There is also limited commercial use along intersections such as SR 81 at SR 316, SR 316 at SR 11, and SR 11 at SR 211. Because of the amount of ingress and egress associated with these uses, access management is usually a priority at these locations to promote safe and efficient travel.

Industrial land uses include warehousing and distribution centers, manufacturing facilities, and quarries. These land uses comprise 1.39 percent of the total land area in the county. Areas with industrial uses also have a much higher share of truck traffic; therefore, operational issues can arise with trucks sharing roads with general traffic – particularly at high speeds – due to their turning and deceleration/acceleration requirements. For Barrow County, the Industrial land uses are mostly located adjacent to I-85 in Braselton, US 29 Business Route/SR 8 in Auburn, Carl, Winder and Statham, and along SR 316 close to the Gwinnett County line.

Public-Institutional land uses constitute 0.70 percent of the total land uses within the county. These land uses include schools, churches, cemeteries, libraries, hospitals, police stations, fire stations and government facilities. They are widely dispersed throughout the county but a heavier concentration is in the City of Winder. These can be significant traffic generators as employment centers and uses with multiple visitors throughout the day for institutional needs. Schools also impact the transportation network due to the fact that most of their trips occur at the same time and during peak hours, particularly the AM peak hour. School zones often present some of the more dangerous traffic conditions as well.



Figure 3.1: Existing Land Use





The Transportation-Communication-Utilities (TCU) land category incorporates a diverse set of land uses. The most significant TCU land use in the county is the Barrow County Airport. The airport facility currently generates a minimal amount of traffic; however, should facilities expand, improvements may be needed at the airport entrance off of Atlanta Highway (US 29 Business Route) – especially given the high travel speeds along that section of the roadway with a posted speed limit of 55 mph. Other TCU uses include large areas dedicated to utility infrastructure (water pumping stations, electrical substations), and communications uses (cell phone towers, antennas, satellite dish). Overall TCU land uses constitute a small fraction of the county land area (.57 percent) and, other than the airport, generate very little traffic.

Multi-Family Residential is the smallest land use component within the county, comprising only .17 percent. This land use category includes apartments, condominiums, and townhouse communities. These land uses are primarily located in the incorporated cities such as Auburn, Winder, and Statham adjacent to major roadways such as US 29 Business Route, SR 81, and Atlanta Highway. From a transportation perspective, multi-family residential development tends to generate a concentrated amount of SOV trips during peak hour travel. However, dependent on their surrounding uses, these areas may also be suitable for transit, pedestrian improvements or ridesharing opportunities.

3.2. Future Land Use

To ensure proposed transportation improvements are in keeping with County's vision for future development an analysis of the County's Future Development Map was conducted. This map is shown in **Figure 3.2**. The map contains several special planning districts and designations that have implications for transportation planning in this CTP Update and these are detailed within this section.

A calculation of the future land use composition within the county was conducted and is detailed below in **Table 3.2**. Future land use designations were grouped based on general land use categories for ease of comparison and comprehension. This is helpful to gauge the types and amounts of anticipated development within the county. A comparison with the County's existing land use composition, detailed in the previous section in Table 3.1, is useful to assess the degree of expected land use change within the CTP's planning horizon to year 2040.



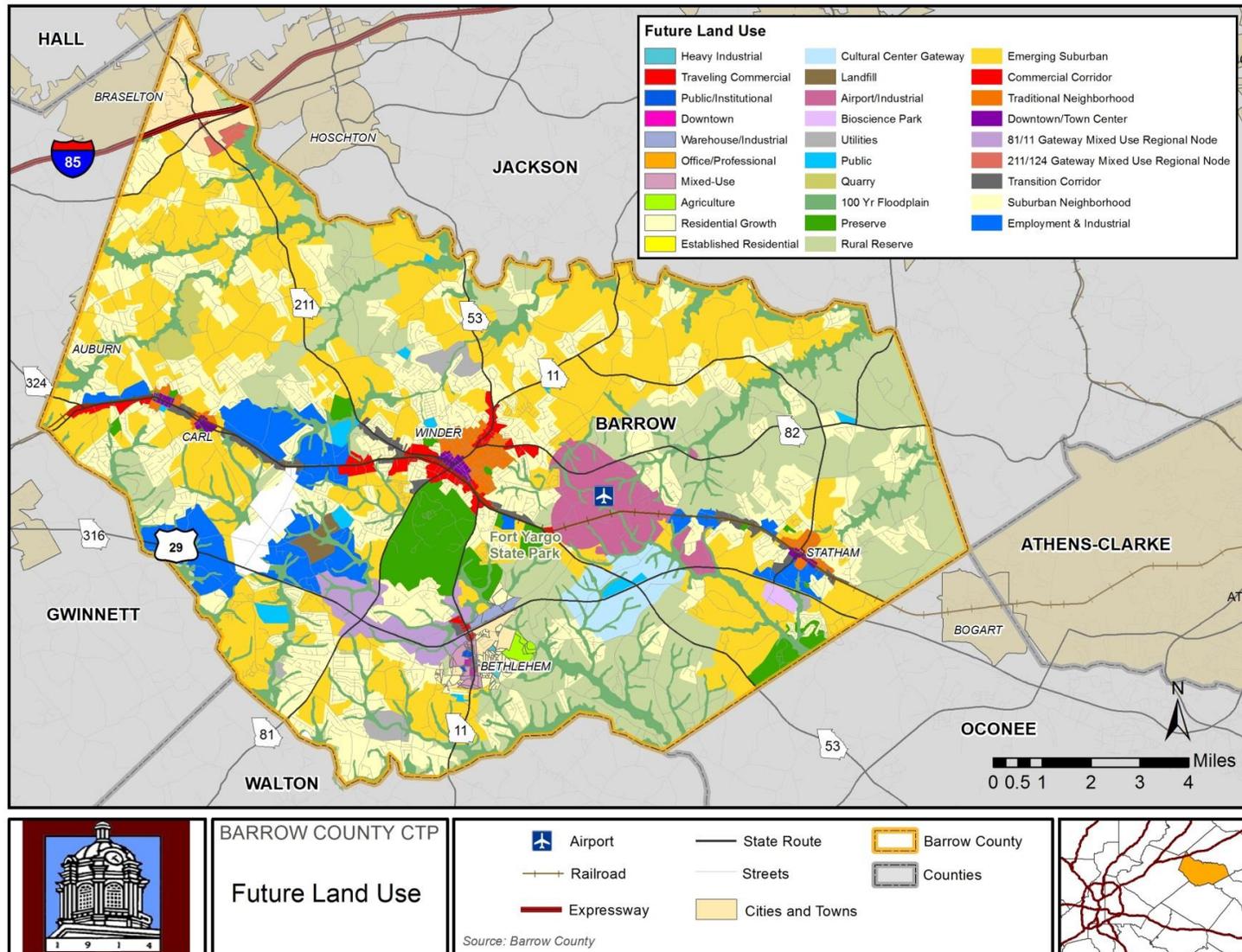
Table 3.2: Future Land Use Composition

Future Land Use	Acres	Percentage
Agriculture	20,001	19.4%
Rural Reserve	19,822	19.2%
Agriculture	179	0.2%
Park, Recreation, Conservation	14,735	14.2%
Golf Preserve	461	0.4%
Preserve	2,626	2.5%
100 Yr Floodplain	11,648	11.3%
Residential	52,834	51.1%
Residential	423	0.4%
Residential Growth Area	735	0.7%
Suburban Neighborhood	22,559	21.8%
Traditional Neighborhood	1,028	1.0%
Emerging Suburban	28,089	27.2%
Mixed Use	1,718	1.7%
211/124 Gateway Mixed Use Regional Node	174	0.2%
81/11 Gateway Mixed Use Regional Node	1,347	1.3%
Mixed-Use	197	0.2%
Commercial	3,151	3.0%
Transition Corridor	820	0.8%
Bioscience Park	160	0.2%
Commercial Corridor	1,084	1.0%
Cultural Center Gateway	1,445	1.4%
Downtown	31	0.0%
Downtown/Town Centre	302	0.3%
Office	63	0.1%
Traveling Commercial	66	0.1%
Industrial	8,596	8.3%
Quarry	530	0.5%
Heavy Industrial	37	0.0%
Industrial	4,110	4.0%
Airport/Industrial	2,577	2.5%
Warehouse/Industrial	140	0.1%
West Winder Bypass Impact Corridor	952	0.9%
Landfill	250	0.2%
Public, Institutional	637	0.6%
Public	613	0.6%
Public/Institutional	24	0.0%
Transportation, Communication, Utilities	878	0.8%
TCU	108	0.1%
Braselton TCU	90	0.1%
Utilities	680	0.7%
Total	103,372	100.00%

Source: Barrow County, Jacobs



Figure 3.2: Barrow County Future Land Use Map





Residential land uses reflect the largest future land use category within the county, comprising just more than half of the total (51.1 percent). This includes existing residential areas within the municipalities and suburban subdivisions found throughout the county. It also includes the Emerging Suburban category (27.2 percent of county total), which represents the most significant change from existing land uses within the county. Large areas of the county currently shown as Agriculture-Forestry are expected to develop into these residential areas by 2027. This includes much of undeveloped northern and western Barrow County and the greater Statham area. These areas have been designated to accommodate the vast majority of new residential growth in the county and this will place extensive demands on the existing transportation network in these areas. The intention is for these areas to develop in an improved manner from a typical suburban pattern with enhanced pedestrian connectivity, a variety of housing types, mixed-use commercial centers at major intersections, and Traditional Neighborhood Development (TND) communities.

The Rural Reserve land use category is a major designation (19.2 percent of county total) found in existing agricultural areas throughout the county, primarily in eastern Barrow County. These areas are designated to maintain agricultural uses and the rural heritage of the county. Limited large-lot residential and conservation subdivisions are permitted if they do not significantly degrade the surrounding rural character. Several major thoroughfares within these areas are designated as Scenic Rural Corridors (SR 211, 82, 11, and 53) which limits suburban development and maintains the scenic rural character of the roadways. Any proposed transportation improvements on these corridors should strive to maintain the rural character of existing roadways through design features and preserving view sheds and natural features.

The Future Development Map includes a variety of commercial and mixed-use land use categories of various intensities. These range from large regional scale mixed-use districts adjacent to SR 316 to small Rural Crossroads at prominent rural intersections. These areas should be priority areas for pedestrian and bicycle improvements to support alternative modes of travel. Pedestrian connections to surrounding residential areas should be examined to support these areas and provide for travel alternatives.

3.3. Development

Trends in Barrow County residential and commercial real estate development indicate the areas that have experienced the most growth and may need additional mobility.

3.3.1. Residential Real Estate

In 2007, when the previous CTP was being undertaken, Barrow County was the scene of rapid growth. During the unprecedented building boom from 2000 to 2007, thousands of single-family homes were developed in numerous subdivisions in the county. Barrow County saw very strong home-building activity, with an average of 1,187 residential permits, all single-family, issued per year from 2004 to 2007.



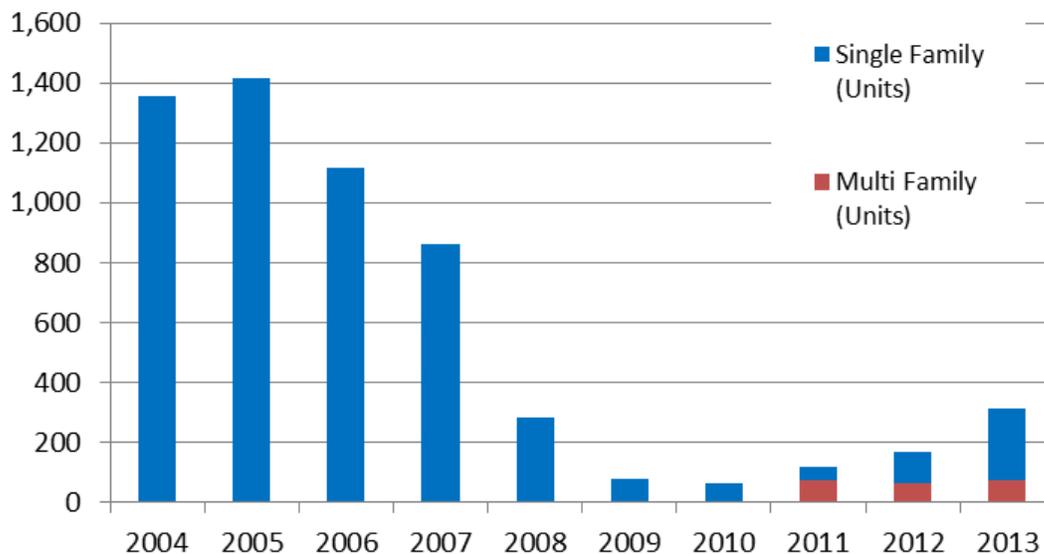
Starting in 2008, building activity dropped sharply, with only 740 residential units permitted over five years, an average of 148 new units annually, although that amount has been gradually increasing over the past two years. An important aspect of this is the introduction of new multi-family buildings: in the seven years prior to 2011, all residential permits issued were for single-family homes. Since 2011 multi-family units have represented 35 percent of all residential permits issued.

Table 3.3: Residential Building Permits: Barrow County and Georgia 2004-2013

Residential Building Permits	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Barrow County										
Single Family	1,358	1,416	1,115	860	283	79	62	47	105	239
Multi-Family	0	0	0	0	0	0	0	72	64	72
Total	1,358	1,416	1,115	860	283	79	62	119	169	311
Georgia										
Single Family	87,731	94,467	86,106	55,210	24,879	14,674	14,779	13,817	17,297	24,810
Multi-Family	21,265	15,359	18,684	18,583	10,828	3,732	2,653	4,907	7,307	11,615
Total	108,996	109,826	104,790	73,793	35,707	18,406	17,432	18,724	24,604	36,425

Source: US Census

Figure 3.3: Residential Building Permit Issuances, Barrow County, 2004-2013



Source: US Census

3.4. Commercial Real Estate

Barrow County's commercial real estate market is characterized by the County's transition, largely since 1990, from a self-contained rural county to an emerging component of a mega-region. Previously, most economic activity within Barrow County was focused on the City of Winder, and the majority of the County's older homes, commercial buildings, and infrastructure tend to be located in or around Winder.



In recent years, most of the County's growth has been a response to Barrow's role in the rapidly expanding exurbs of Atlanta (and, to a lesser extent, growth in the neighboring Athens-Clarke metropolitan region). The result of this has been a concentration of new development, both residential and commercial, along Barrow's two major regional transportation corridors, I-85 and SR 316.

3.4.1. Geographic Shifts in Commercial Development

In the past twenty years, Barrow County's economic center of gravity has shifted from Winder to the SR 316 corridor. Prior to 1994, just 3 percent of Barrow County's commercial real estate inventory was found within what is now the SR 316 Corridor (**Table 3.4**). Since 1994, 48 percent of the County's total commercial development has occurred inside of this corridor. This trend appears to be increasing: 96 percent of the GA 316 corridor's total existing retail development has been built in just the past ten years.

Simultaneously, a strong growth hub has emerged along I-85 corridor at the north end of the county, where 1.5 million SF of industrial and logistics space has been built since 2001. Braselton is also emerging as a retail location serving both interstate travelers and residents of new housing in and around Chateau Elan. Pre- and post- 1994 development is mapped in **Figure 3.4**.

Table 3.4: Barrow County Commercial Development, Before and After 1994.

All Commercial Development	1994 and before		Last 20 Years		Total
	SF	%	SF	%	SF
GG -316 Corridor	168,871	3%	3,272,609	48%	3,441,480
Rest of Barrow County	5,393,285	97%	3,603,133	52%	8,996,418
Barrow County Total	5,562,156	100%	6,875,742	100%	12,437,898

Office Development	1994 and before		Last 20 Years		Total
	SF	%	SF	%	SF
GG -316 Corridor	6,703	1%	16,920	11%	23,623
Rest of Barrow County	607,438	99%	133,107	89%	740,545
Barrow County Total	614,141	100%	150,027	100%	764,168

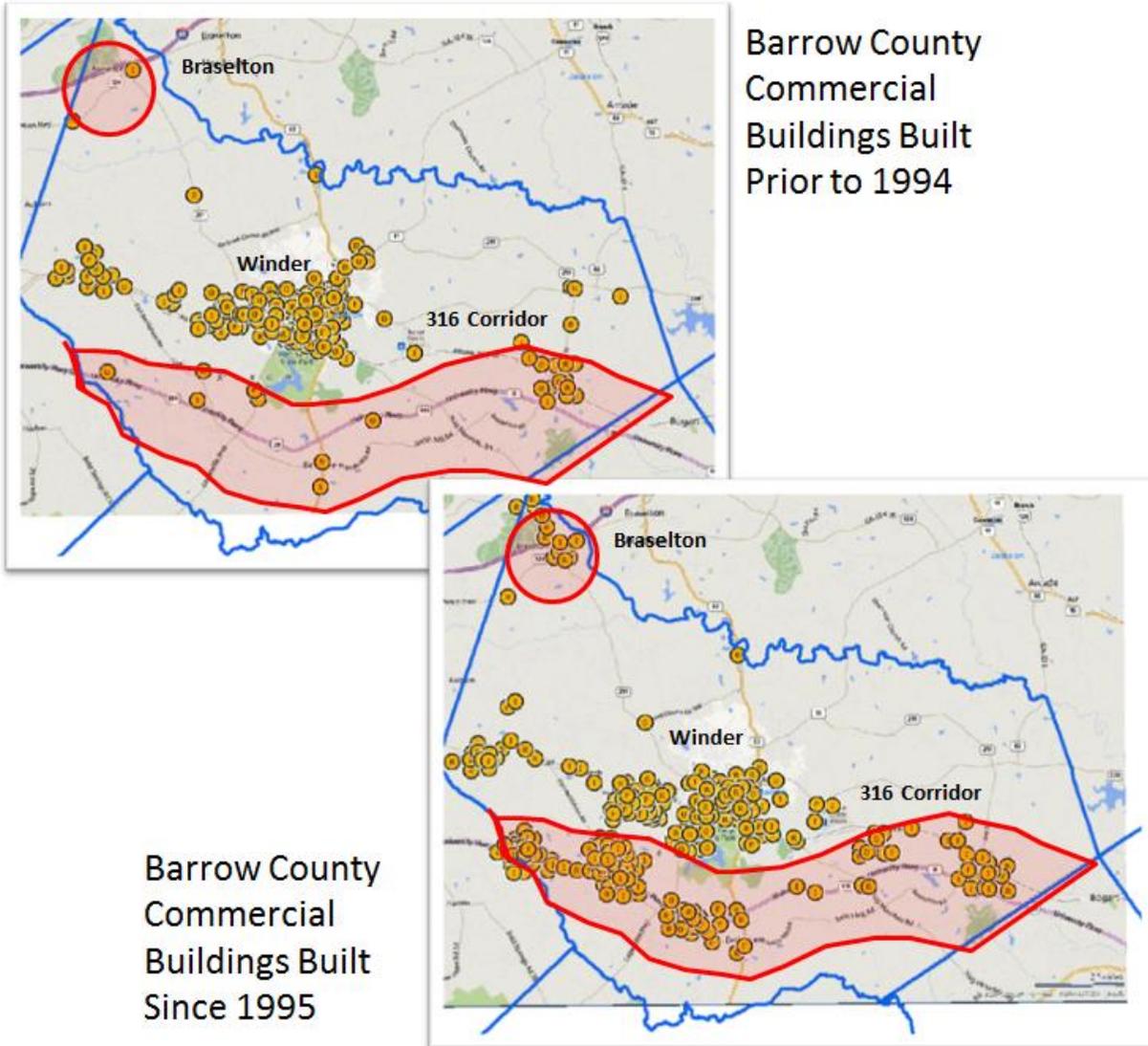
Retail Development	1994 and before		Last 20 Years		Total
	SF	%	SF	%	SF
GG -316 Corridor	67,773	5%	570,122	36%	637,895
Rest of Barrow County	1,415,262	95%	1,011,223	64%	2,426,485
Barrow County Total	1,483,035	100%	1,581,345	100%	3,064,380

Industrial Development	1994 and before		Last 20 Years		Total
	SF	%	SF	%	SF
GG -316 Corridor	94,395	3%	2,685,567	52%	2,779,962
Rest of Barrow County	3,370,585	97%	2,458,803	48%	5,829,388
Barrow County Total	3,464,980	100%	5,144,370	100%	8,609,350

Source: CoStar, Bleakly



Figure 3.4: Commercial Development Distribution (Retail, Office & Industrial) Pre- and Post-1994



Source: CoStar, Bleakly, ESRI



4. TRANSPORTATION NETWORK CHARACTERISTICS

This section contains a comprehensive review of transportation network characteristics that creates the framework for the assessment of future needs. It describes the County's existing roadway facilities, congestion, transit service, pedestrian and bicycle facilities, and bridge sufficiency.

4.1. Streets, Roads, and Highways

This section provides an inventory of major facilities and their operational characteristics.

4.1.1. Functional Classifications and the Roadway Network

Functional classification is the process by which street and highway facilities are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. They consist of the following:

- Interstates – Roadways that are part of the federal system of major roads. These facilities have tightly managed access with entry and exit only available at intervals.
- Arterials – Roads that typically carry higher volumes at higher speeds that are characterized with more traffic and/or access devices that are intended for longer trips.
- Collectors – Roads that typically connect local roads with arterials that operate at intermediate speeds with shorter trips than those on arterials.
- Local Roads – All other roads not classified as an arterial or collector that provide access to specific properties with little or no through movement.

GDOT is currently in the process of revising functional classifications to better reflect the true utility of Georgia's roadways. The functional classification information presented in this document takes into account the revisions planned for Barrow County. The functional classification of major roadway facilities within Barrow County is mapped in **Figure 4.1** and listed, along with posted speeds, number of lanes, and 2013 Average Annual Daily Traffic (AADT), in **Table 4.1**.

Barrow County is characterized by a radial network of arterial roadways which converge primarily in downtown Winder. The majority of these roadways are two-lane, rural arterials which expand to include turn lanes and shoulders within the City of Winder. Barrow County's rural areas are served by two-lane rural connectors that have little to no shoulder.

Outside of Winder, there are two major facilities, SR 316 and I-85, which serve high speed travel across or within Barrow County. SR 316 extends east-west across the southern portion of the county. Just a short segment of I-85 is located within Barrow County, where it serves an interchange with SR 211 in Braselton. Access points along both facilities are developing locations that act as local destinations and traffic generators.



Figure 4.1: Roadway Functional Classification

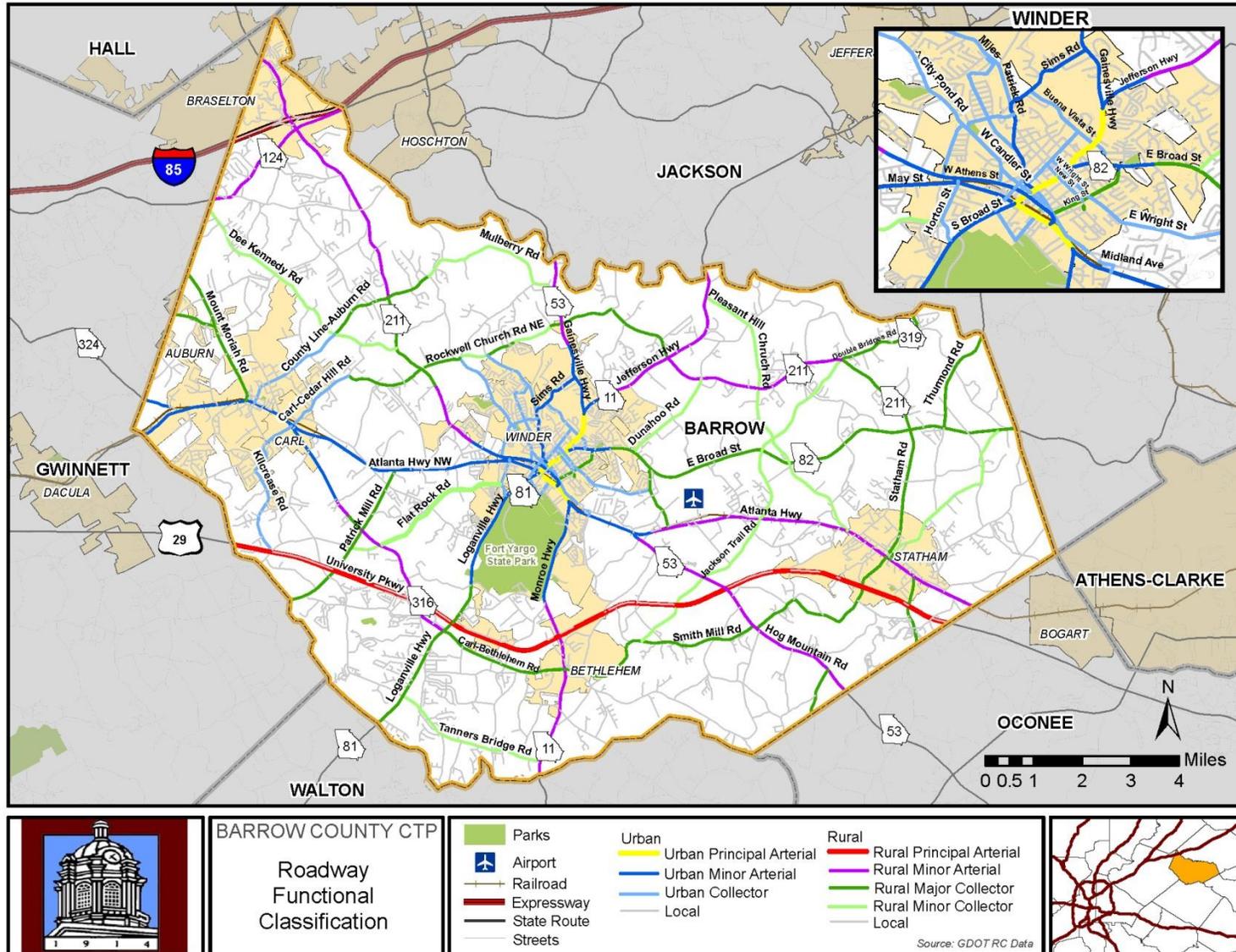




Table 4.1: Roadway Characteristics

Road Name	Functional Class	Lanes	2013 AADT	Posted Speed
SR 11/N Broad Street	Principal Arterial	2	14,040-19,390	35
SR 316/University Pkwy/US 29	Principal Arterial	4	20,100-29,080	65
Sims Road	Minor Arterial	2	130-440	35
SR 11/Jefferson Hwy	Minor Arterial	2	4,960-8,110	55
SR 11/Monroe Hwy	Minor Arterial	2	8,470-13,180	55
SR 211/Athens Street	Minor Arterial	2	5,140-13,030	45
SR 53/Gainesville Hwy	Minor Arterial	2	7,010 -7,400	55
SR 81/S Broad Street	Minor Arterial	2	11,380	45
SR Business 29/Atlanta Hwy	Minor Arterial	2	7,660-14,860	45
SR 124	Minor Arterial	2	4,790-5,560	55
Midland Ave/Miles Patrick Road				
/Maddox	Minor Arterial/Collector	2	2,570	35
SR 211/Statham Road	Minor Arterial	2	2,240-4,460	45/55
Hog Mountain Road	Minor Arterial	2	5,330	55
Carl Bethlehem Road	Minor Arterial	2	3,790-5,920	50
SR 319/Double Bridges Road	Major Collector	2	1,030	45
SR 81 / Loganville Hwy	Major Collector	2	12,340-13,610	45
SR 82/E Broad Street	Major Collector	2	2,020-5,290	35/55
Thurmond Road	Major Collector	2	1,900	55
Union Grove Church Road	Major Collector	2	-	35
Picklesimon Road	Major Collector	2	-	45
Rockwell Church Road	Major Collector	2	5,890	50
Mount Moriah Road	Major Collector	2	2,670	35
King St	Major Collector	2	4,380	25
Buena Vista St	Collector	2	2,570	35
City Pond Road/Candler Street	Collector	2	1,930-3,900	35
Horton St	Collector	2	1,620	25
Kilcrease Road	Collector	2	2,450	40
New St	Collector	2	360	25
Woodlawn Ave	Collector	2	760	25
Wright Street	Collector	2	370	45
County Line - Auburn Road/Mulberry Road	Major Collector	2	1,820	45
Bowman Mill Road/Jackson Trail Road	Minor Collector	2	1,340	50
Dee Kennedy Road	Minor Collector	2	-	45
Dunahoo Road	Minor Collector	2	1,380	45
Flat Rock Road/Bill Rutledge Road	Minor/Major Collector	2	-	50
Pleasant Hill Church Road	Minor Collector	2	-	50
Carl-Cedar Hill Road/Rockwell Church Road	Major Collector	2	5,890	45
Tanners Bridge Road	Minor Collector	2	1,280	50

Source: ARC TDM, GDOT/ARC Functional Classification Survey 2014, GDOT Traffic Counts from Geocounts

4.1.2. Average Annual Daily Traffic

In addition to the functional classification and character of Barrow County roadways, 2013 average annual daily traffic (AADT) counts were considered. AADT refers to the number of vehicles that will travel along a given segment of road each day, on average, during a given year. AADT counts allow the degree of usage of various roadways to be compared and evaluated.

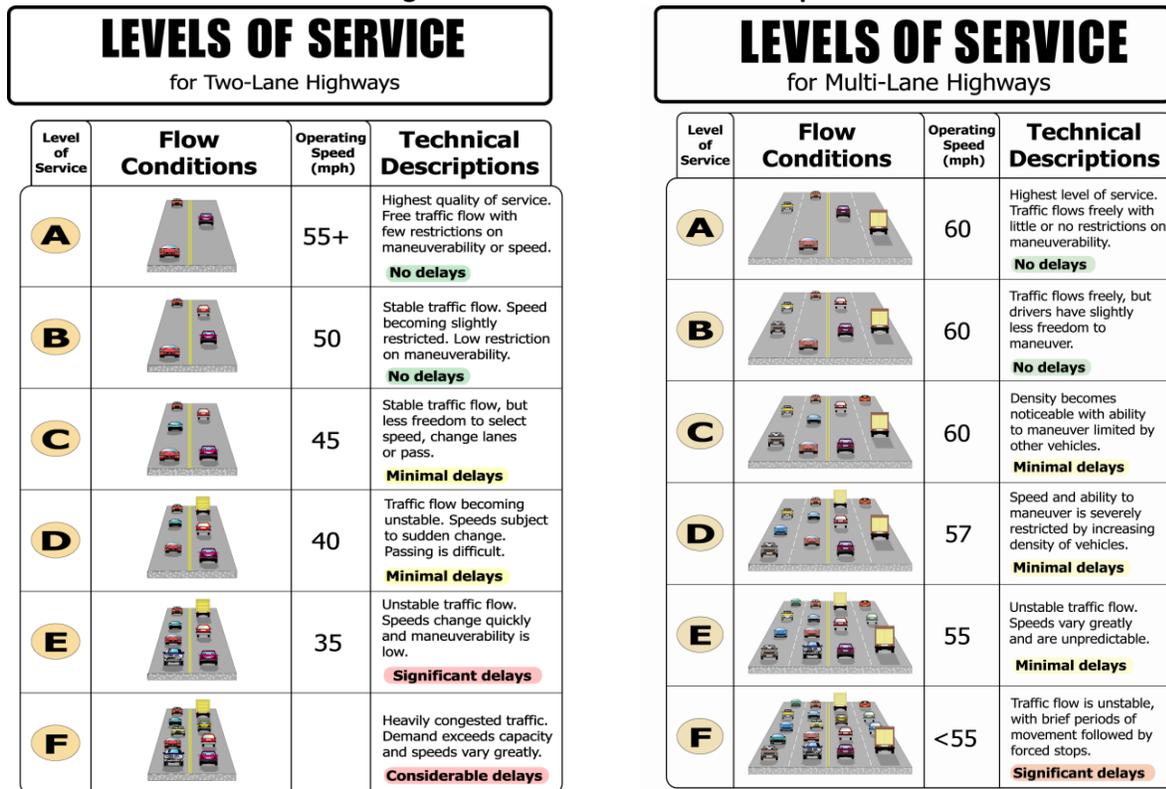


AADT counts for Barrow County roadways, presented in Table 4.1, indicate that University Parkway/US 29/SR 316, a major arterial experienced the highest traffic volumes of all Barrow County roadways with nearly 30,000 vehicles per day. A large amount of Barrow County traffic also passes through Winder. North Broad Street/SR 11 experienced the second highest traffic volumes in the county at nearly 20,000 vehicles per day. SR 11 runs directly through downtown Winder where it converges with several other roadways with similarly elevated traffic counts.

4.1.3. Congested Areas

Level of Service (LOS) ratings are generally regarded as a standard measure of traffic congestion. LOS is a qualitative measure of traffic flow describing operational conditions and driver perceptions within a traffic stream. Six levels of service have been defined by the Federal Highway Administration within the Highway Capacity Manual. These range from A to F, with a LOS A representing free-flow conditions and LOS F representing severe congestion with long vehicle delays (Figure 4.2).

Figure 4.2: Level of Service Description



Source: 2000 HCM, Exhibit 20-2, LOS Criteria for Two-Lane Highways in Class 1

Source: 2000 HCM, Exhibit 21-3, Speed-Flow Curves with LOS Criteria for Multi-Lane Highways

LOS F or worse is generally considered deficient by GDOT in rural areas. In urban areas, GDOT considers LOS D or worse to be deficient. In general, facilities operating at LOS D or worse are considered to be emerging areas of concern.

One method for determining the level of service across a roadway network is the use of the regional travel demand model, which approximates traffic volumes during a specific time period – in this case,



PM peak hour – and compares those volumes with the roadway network’s capacity. This process allows for an assessment of the overall system to determine those areas in which it is deficient. There are limitations to the usefulness of model outputs, which are discussed later in this section, so it is important that these outputs be confirmed by field observation, stakeholder input, or other means.

Based on 2015 data from the ARC TDM, the most congested facilities during PM peak hours are state routes in Winder and to its south and east. In the eastern portion of the county, these roadways include SR 211 and Dee Kennedy Road, which provide connections to I-85 and heavily populated Gwinnett and Hall Counties, as well as Atlanta Highway/US Business 29 and Auburn Road/SR 324 in Carl and Auburn, which connect to Gwinnett County. To the south, these roadways include segments of SR 81 and SR 11 south of University Parkway/US 29/SR 316, which connect to Walton County to the south. Road segments that operate at LOS D or worse are listed in **Table 4.2**. LOS for all major roadways in Barrow County is mapped in **Figure 4.3**. Data from the ARCTDM was used to determine LOS for 2015 to ensure consistency with the projected LOS that will be used in the Needs Assessment portion of this study.

Table 4.2: Roadway Segments Projected by the ARC Travel Demand Model to Operate at LOS D or Worse during 2015 PM Peak

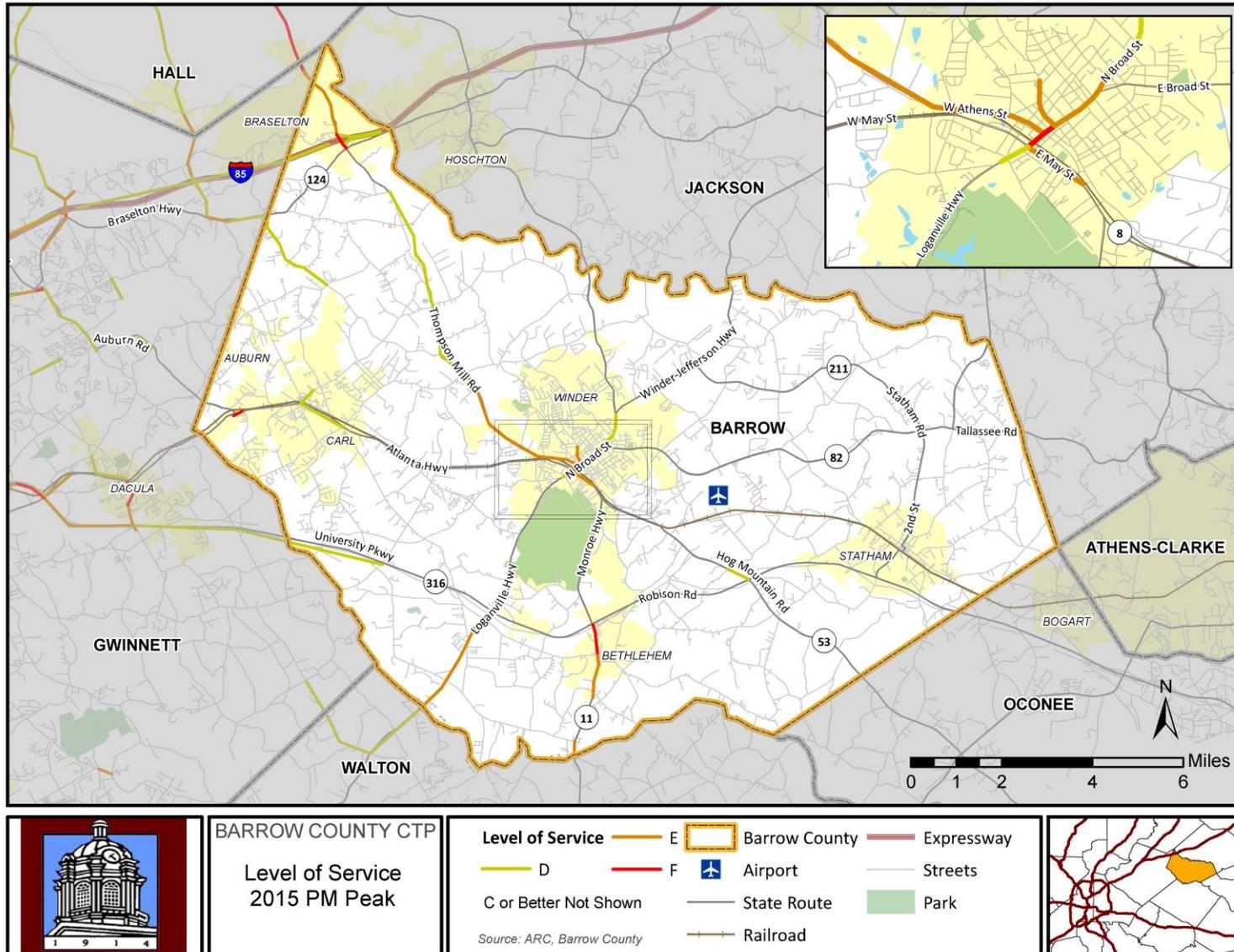
Roadway	Segment	LOS
Broad Street/SR 11	May Street to Midland Avenue in Winder	F
SR 211	At I-85 interchange in Braselton*	F
SR Business 29/Atlanta Highway	Auburn Road/SR 324 to Apalachee Church Road	F
SR 11	Star Street to University Parkway/US 29/SR 316 in Bethlehem*	F
SR 11	Walton County Line to Tanner's Bridge Road	E
SR 11	McElhannon Road to Star Street	E
SR 11/Broad Street	Midland Avenue to Buena Vista	E
Midland Avenue	Broad Street to St. Anthony Drive/Sims Road	E
Athens Street/SR 211	Carl-Cedar Hill Road/Rockwell Church Road to SR 81/SR 11	E
Broad Street/SR 81	Patrick Mill Road to SR Business 29/Atlanta Highway ,	E
Loganville Highway/SR 81	Walton County Line to Hoyt King Road	E
E May Street/US Bus 29	Broad Street/SR 81/SR 53 to E Athens Street	E
SR 211	Lanier Islands Parkway to I-85 Interchange	E
Dee Kennedy Rd	SR 124/Braselton Highway to Harmony Grove Church Road/Flanagan Mill Rd	D
Broad Street/SR 11	Buena Vista to SR 53 split	D
University Parkway/SR 316	Gwinnett County Line to Patrick Mill Road	D
SR 211	Freeman Johnson Road to Carl-Cedar Hill Road/Rockwell Church Road	D
Atlanta Highway/SR Bus 29	6th Street to Carl Midway Church Road	D
County Line-Auburn Road	Lake View Drive to Atlanta Highway/US Bus 29	D
Hog Mountain Road/SR 53	University Parkway/SR 316 to Jackson Trail Road	D

Source: ARC Travel Demand Model *Not supported by field observation.

•



Figure 4.3: PM Peak Hour 2015 Level of Service on Barrow County Roadways





There are portions of the Barrow County transportation system that are not depicted accurately in the output from the ARC's travel demand model. First, there are two roadway segments for which the model data is overstating current congestion. SR 11 from Joseph Street to University Parkway/US 29/SR 316 in Bethlehem and SR 211 at I-85 interchange in Braselton are shown as operating at LOS F during PM peak hours. Roadway improvement projects along these segments and at their associated intersections and interchanges have been completed recently. These projects have not yet been captured in the ARC model. In both cases, the issues previously causing the congestion have been addressed and operations have improved. Neither of these roadway segments should be assumed to be a priority of this CTP Update.

Second, there are segments of roadway that operate under more severely congested conditions than indicated by the ARC's travel demand model. The approaches to Loganville Highway/SR 81 at SR 316 register in the model as LOS C or better. However, given this intersection's proximity to new, dense commercial development as well as warehousing and other large employers, the level of service in this area should reflect greater congestion and delay, particularly during PM peak hour traffic. The travel demand model may fail to capture the poor level of service at this location for one or more reasons. For one thing, level of service outputs from the model are based on a volume-to-capacity ratio, in which increased congestion – and a concordant degradation in the level of service – are the result of increased volumes of traffic on a static supply of roadway. The model does not capture other sources of delay, which in Barrow County may include rail line crossings or truck traffic. For another, the travel demand model may also not yet reflect in its 2015 projections very brisk recent commercial growth, such as that occurring along SR 316.

Based on data from the ARC travel demand model, stakeholder input, and field observation, the segments of roadway in Barrow County that experience the most congestion during peak hours are:

- SR 81 from Hoyt King Road to Bill Rutledge Road
- Atlanta Highway/SR Business 29 from Auburn Road/SR 324 to Apalachee Church Road
- SR 11 from May Street to Midland Avenue in Winder

These segments are in urbanized areas and near major intersections. It is likely that these small segments operate as bottlenecks to the greater transportation system, or small areas that slow the entire network when they fail. Of these segments, SR 81 from Hoyt King Road to Tucker Road, because it is located on SR 316, the primary transportation facility in Barrow County, is of primary importance.

4.1.4. High-Crash Corridor Analysis

For this study, the GDOT crash data set for 2013 was analyzed to locate corridors within the county with the highest number of crashes in that year. In order to accomplish this, the data was first normalized to remove extraneous roadway names along the same roadway. Then, all corridors with high numbers of crashes were reviewed and tabulated, and the top ten corridors were then isolated and reviewed further. The results are shown below in **Table 4.3**.



Table 4.3: The Five Corridors with the Highest Number of Crashes in Barrow County, 2013.

Corridor	Accidents	Injuries	Fatality	Percent of Annual Total Crashes
Atlanta Highway	234	93	1	14%
SR 316	217	99	0	13%
SR 11	177	57	0	11%
SR 211	174	48	1	10%
SR 81	165	73	1	10%
TOTAL	967	370	3	58%

Source: GDOT

Atlanta highway experienced the highest number of crashes in 2013, including one fatality and 93 injuries. SR 316 experienced the second highest number of crashes within Barrow County, representing 13 percent of the total accidents for the year 2013. In addition, SR 211, SR 11, and SR 81 corridors also had a high number of crashes. **Figure 4.4** shows the crash and fatality locations across the county.

4.2. Bridge Inventory and Conditions

Current bridge inventory and conditions within Barrow County were analyzed using data collected from the Bridge Maintenance Unit of the GDOT Office of Bridges and Structures. Existing bridge data was taken from GDOT Structure Inventory and Appraisal Sheet (SI&A) and GeoTRAQS. Sufficiency rating, year constructed, historical significance, descriptions, and longitude/latitude coordinates were collected for mapping and analysis. All bridges were included, whether on or off the GDOT system.

Bridge sufficiency ratings are determined during biennial GDOT inspections and intended to measure the ability of a bridge to remain in service. Sufficiency ratings utilize a formula that includes various factors: essentiality for public use including vertical clearance and width of roadway insufficiency, serviceability and functional obsolescence, structural adequacy and safety, and special reduction that considers detour length and structure type reductions.

The standardized rating formula is a scale of zero to 100, in which an entirely deficient bridge would receive a rating of zero and an entirely sufficient bridge, usually new, would be given a rating of 100. Ratings are only given to bridges that carry vehicular traffic. Sufficiency ratings do not necessarily indicate a bridge's ability to safely carry traffic loads. A low rating could be due to structural defects, narrow lanes, low vertical clearance, or other key factors used to calculate sufficiency ratings. Bridges given a rating of 50 or below are considered for rehabilitation or replacement. There are five bridges identified with sufficiency ratings below 50 (**Table 4.4**). There were no findings of historical significance. The locations of all bridges in Barrow County are mapped in **Figure 4.5**.

Table 4.4: Summary of Bridge Conditions, both On- and Off-System

Sufficiency Rating	Below 50	Below 60	Below 70	Below 80	Below 90	Below 100	All Ratings
Number of Bridges	5	14	18	24	40	75	79

Source: GDOT Bridge Inventory 2012, GDOT Bridge Re-Inspection Letter 2014



Figure 4.4: Number of Crashes on Major Corridors in Barrow County, 2013

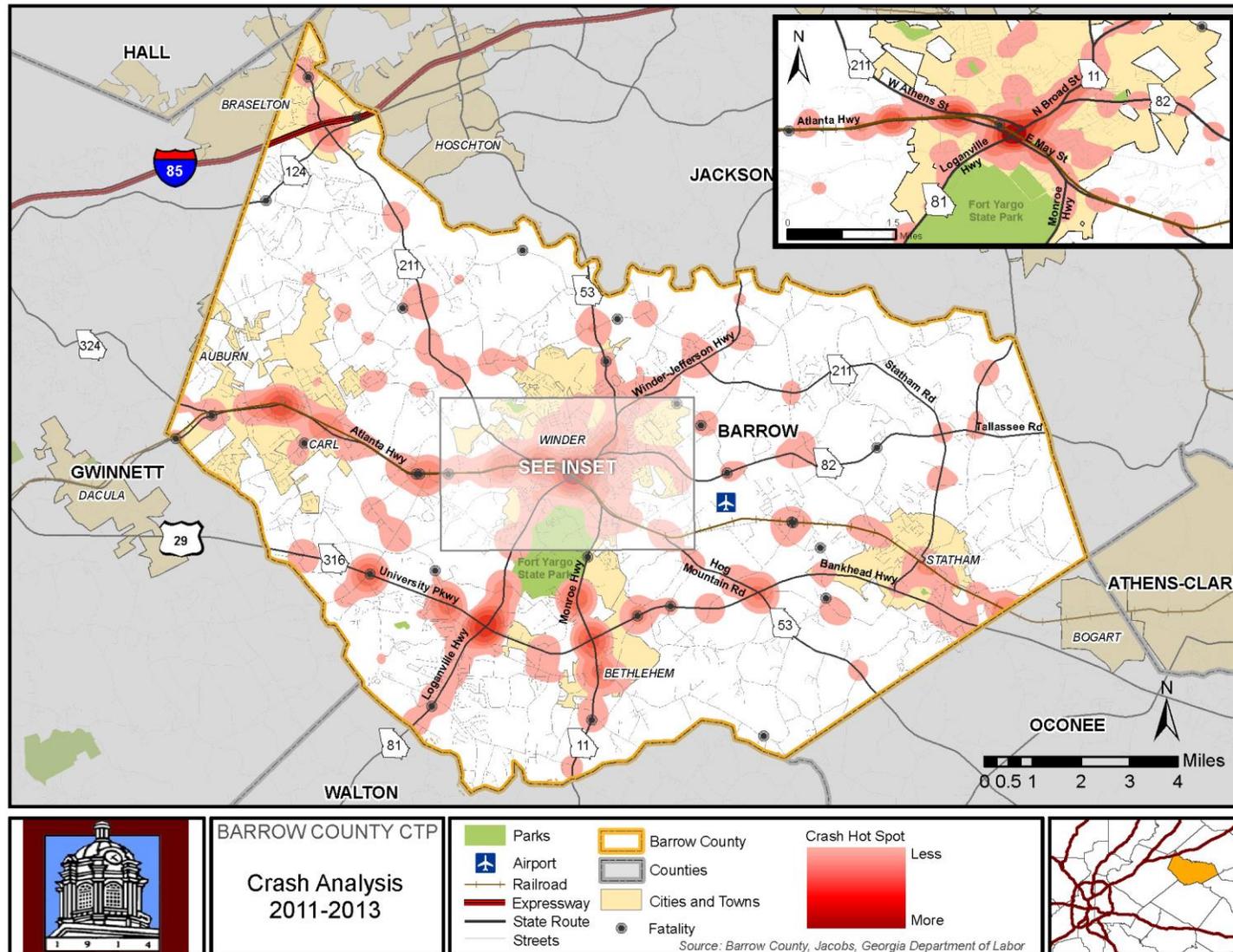
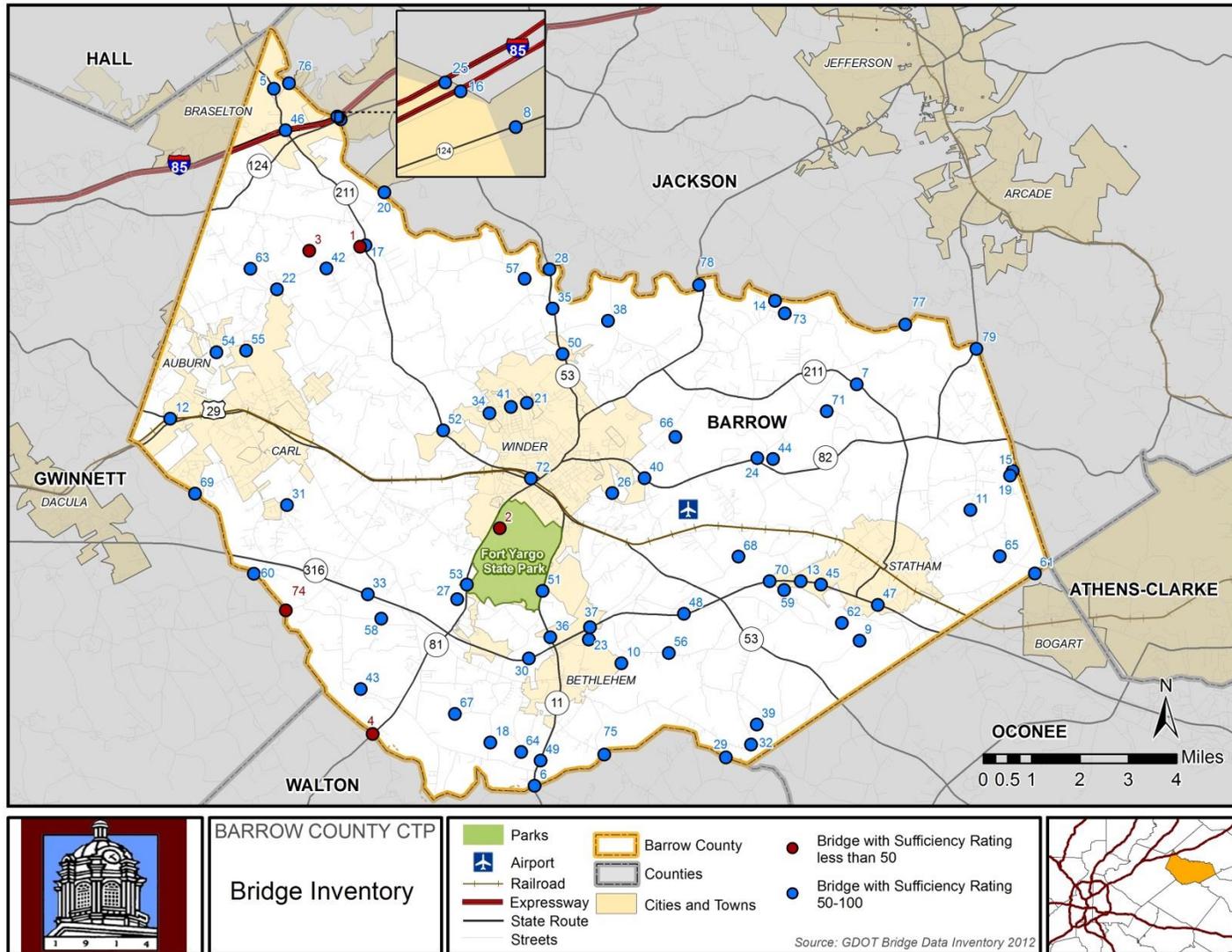




Figure 4.5: Bridge Inventory





4.2.1. Bridges on the GDOT State Route System

There are 35 bridges in Barrow County that are on the GDOT state route system and maintained by GDOT. Of these 35 bridges, two have a sufficiency rating below 50. On-system bridges are listed individually in **Table 4.5**.

Table 4.5: On-System Bridges in Barrow County

Map ID	Structure ID	Description	Sufficiency Rating	Year Constructed
2	013-5014-0	FT Yargo Park Road at Marbury Creek	42.1	1965
4	297-0023-0	SR 81 at Apalachee River	46	1955
5	013-0012-0	Farm Market Road at Duncan Creek	50.1	1969
6	297-0019-0	SR 11 at Apalachee River	50.6	1942
7	013-0016-0	Satham Road at Beech Creek	50.7	1965
76	013-5009-0	Liberty Church Road at Mulberry Creek	52.5	1963
8	013-0028-0	SR 124 at Mulberry River	52.7	1990
79	013-0010-0	Satham Road at Middle Oconee River	61.3	1967
12	013-0018-0	Hills Shop Road at CSX Railroad	62.2	1973
16	013-0022-0	I-85 (NBL) at Mulberry River	70.2	1964
17	013-0014-0	Thompson Mill Rd at Little Mulberry River	73.4	1971
25	013-0023-0	I-85 (SBL) at Mulberry River	82.4	1964
28	013-0007-0	Gainesville HWY at Mulberry River	85.4	1981
29	297-5040-0	Perry Smith Road at Apalachee River	86	1984
30	013-0030-0	US 29 - SR 316 at Marbury Creek Trib	87	1991
33	013-0029-0	US 29 - SR 316 at Williamson Creek	88.1	1991
35	013-0006-0	Gainesville HWY at Hawk Creek	89	1935
36	013-0002-0	Winder-Monroe HWY- US29/SR11 at Marbury Creek Trib	89.8	1942
37	013-0031-0	US 29 – SR 316 at Marbury creek	90.5	1993
40	013-0009-0	Pentecost Church Road at Beech Creek	91.9	1942
41	013-5003-0	5TH Avenue at Cedar Creek	92.3	1976
45	013-0035-0	US 29 – SR 316 at Barber Creek Trib	93.7	1993
46	013-5051-0	Farm Market Road at I-85	93.7	2001
47	013-0036-0	US 29 – SR 316 at Barber Creek Trib	94	1993
48	013-0032-0	US 29 – SR 316 at Marbury Creek Trib	94.3	1993
49	013-5056-0	Winder Monroe Highway at Apalachee River	96.5	2009
50	013-5053-0	Gainesville HWY at Cedar Creek	97.4	2003
51	013-5054-0	Winder-Monroe HWY US29/SR11 at Marbury Creek	97.5	2006
52	013-0015-0	Thompson Mill Road at Cedar Creek	98	1970
53	013-0008-0	Charles Floyd Road at Marbury Creek	98.1	1968
57	013-5001-0	Mulberry Road at Rocky Creek	99.8	1984
61	219-5007-0	Jefferson Avenue at Little Bear Creek	99.8	1984
62	013-0027-0	Satham Road at Barber Creek	99.9	1998
70	013-0033-0	Ross Road at Beech Creek	100	1993
72	013-0026-0	CSX Railroad at M-5406 Center Street	Not rated	

Source: GDOT Bridge Inventory 2012 *Gwinnett County-owned

4.2.2. Off-System Bridges

According to Barrow County's *Road Improvement Plan*, there are 44 off-system bridges that currently require an estimated \$1,359,000 in repairs from the County (**Table 4.6**). Total cost of repairs is higher than Barrow County's portion, because the County shares costs for some locally-owned bridges with neighboring counties. Additional information about the top five County bridge repair priorities from the



GDOT Locally-Owned Federal Aid Bridge Report is provided on the following pages. It should be noted that Barrow County repaired the Lois Kinney Road Bridge (013-5055-0) in 2014.

Table 4.6: Off-System Bridges in Barrow County

Map ID	Structure ID	Description	Sufficiency Rating	Year Constructed	Local Priority	Projected County Cost
3	013-5006-0	Boss Hardy Road at Little Mulberry River	45.7	1963	1	\$20,000
1	013-5039-0	Old Thompson Mill Rd at Little Mulberry River	30.1	1966	2	\$50,000
32	013-5021-0	Manning Gin Road at Marbury Creek	87.7	1958	3	\$30,000
9	013-5025-0	Robertson BR Road at Barber Creek	56.1	1986	4	\$25,000
20	013-5008-0	Covered Bridge Road at Mulberry River	77.7	1980	5	\$20,000*
22	013-5004-0	Dee Kennedy Road at Rock Creek	81.3	1965	6	\$30,000
23	013-5022-0	Harrison Mill Road at Marbury Creek	81.3	1969	7	\$20,000
54	013-0024-0	Mt. Moriah Road at Rock Creek	98.9	1970	8	\$20,000
77	013-0017-0	Double Bridges Road over Mulberry River*	63.7	1967	9	\$15,000 *
10	013-0019-0	Smith Mill Road at Marbury Creek	56.2	1965	10	\$15,000
34	013-0025-0	City Pond Road at Cedar Creek	88.5	1960	11	\$20,000
68	013-5046-0	Jackson Trail Road at Barber Creek	88.90	1969	12	\$20,000
13	013-5035-0	Hancock Bridge Road at Mulberry River	76.5	1980	13	\$20,000 *
55	013-5010-0	Parks Mill Road at Rock Creek	99.4	1972	14	\$15,000
11	013-5031-0	Arnold Road at Bear Creek	61.6	1986	15	\$20,000
26	013-5044-0	Lays Drive at Beech Creek Trib	82.5	1990	16	\$15,000
58	013-5016-0	Haymon Morris Road Williamson Creek	99.8	1984	17	\$20,000
38	013-5037-0	Rockwell Church Road at Cedar Creek	91.3	1957	18	\$20,000
42	013-5007-0	Boss Hardy Road at Rock Creek	92.3	1968	19	\$20,000
24	013-5038-0	Bowman Road at Beech Creek	81.5	1966	20	\$25,000
59	013-5026-0	Elder Road at Barber Creek	99.8	1989	21	\$25,000
14	013-5034-0	Hancock Bridge Road at Mulberry River	66.7	1980	22	\$20,000
63	013-5005-0	Dee Kennedy Rd at Little Mulberry River	99.9	1986	23	\$15,000
44	013-5041-0	Pleasant Hill Church Road at Beech Creek	92.4	1952	24	\$10,000
60	013-5050-0	Kilcrease Road at Apalachee River	99.8	1995	25	\$10,000 **
27	013-5043-0	Tucker Road at Marbury Creek Trib	83.8	1990	26	\$15,000
19	013-5028-0	Lois Kinney Road at Bear Creek	76.7	1958	27	\$20,000
21	013-5002-0	Miles Patrick Road at Cedar Creek	80.2	1969	29	\$15,000
43	013-5015-0	Tom Miller Road at Williamson Creek	92.3	1968	30	\$15,000
18	013-5018-0	Briscoe Mill Road at Apalachee River Trib	76	1985	31	\$25,000
56	013-0020-0	Smith Mill Road at Marbury Creek Trib	99.8	1975	32	\$10,000
75	013-5052-0	McElhannon Road at Apalachee River	99.1	2000	33	\$10,000 ***
69	013-5049-0	Browns Bridge Road at Apalachee River	99.9	1997	34	\$8,000 **
31	013-5045-0	Kennedy Sells Road at Williamson Creek	87.6	1993	35	\$17,000
64	013-5019-0	Arch Tanner Road at Apalachee River Trib	99.9	1990	36	\$10,000
66	013-5036-0	Holsenbeck SC Road at Beech Creek	99.9	1977	37	\$15,000
67	013-5042-0	J.B. Owens Road at Apalachee River Trib	99.9	1985	38	\$12,000
65	013-5029-0	Bogart Road at Beak Creek Trib	99.9	1989	39	\$15,000
73	013-5047-0	Finch Drive at Barbers Creek	n/a	1995	40	\$15,000
71	013-5033-0	Ross Road at Beech Creek	100	1994	41	\$15,000
39	013-5048-0	Smith Sisters Road at Apalachee River Trib	91.5	1996	42	\$15,000
74	013-5017-0	Patrick Mill Road at Apalachee River*	29.3	1956		\$675,000*
15	013-5055-0	Lois Kinney Road at Bear Creek	97	1997		\$15,000
Total Needed Repairs						\$1,359,000

Source: GDOT Bridge Inventory 2014, Barrow County Road Improvement Program 2014, GDOT Bridge Re-Inspection Letter 2014. *shared with Jackson County, **shared with Gwinnett County *** shared with Walton County



Priority 1: # 013-5006-0

This bridge on Boss Hardy Road over Little Mulberry Creek has a sufficiency rating of 45.7 and was built in 1963. The structure is in fair condition. The deck joints throughout the structure have failed and should be cleaned and sealed. Concrete spalls should be repaired, cleaned, or patched. The North end approach roadway needs to be leveled. These maintenance recommendations are provided to maintain this structure at the current rating. This structure requires posting due to insufficient capacity of the concrete intermediate bent caps. Post-tensioning of the intermediate concrete bent caps is required to upgrade this structure to a point where posting is no longer required.



Priority 2: # 013-5039-0

The bridge on Old Thompson Mill Road over Little Mulberry River was built in 1966. This structure requires posting due to the condition of the floor beams. A replacement structure is required to upgrade this structure so that posting is no longer required. The following maintenance recommendations are to maintain this structure at the current rating of 30.1. The bearings are buried in dirt causing section loss. The paint has failed throughout the structure causing minor deterioration. Several cotter pins and hanger locks are missing or broken off and should be replaced. Clean and seal abutment 2 left cracking. The timber deck has several areas of traffic damage, several areas of splitting and cracking members. Replace rotted decking and runners as well as missing steel curb.



Priority 3: # 013-5021-0

This bridge on Manning Gin Road over Marbury Creek requires posting due to insufficient shear capacity of the concrete superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations are to maintain this 1958 constructed structure at the current rating of 87.7. The deck joints throughout the structure have failed and should be cleaned and sealed. The northern approach has settled and should be leveled with the deck. The southern approach needs to be leveled. All piles need to be cleaned and painted.



Priority 4: # 013-5025-0

This bridge is located on Robertson Bridge Road over Barber Creek and has a sufficiency rating of 56.1. It was constructed in 1986. Currently, post for this structure is 16 Tons H-Truck; 16 Tons Type 3 Truck; and 22 Tons Timber Truck due to insufficient flexural capacity of the steel superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. The beam ends and bearings need to be cleaned and painted.



Priority 5: #013-5008-0

This bridge on Covered Bridge Road over Mulberry River has a sufficiency rating of 77.7. It was built in 1980 and is in fair condition with extensive cracks and spalls throughout. The end wall of the eastern abutment is cracked and should be sealed. The deck joints throughout the structure have failed and should be cleaned and sealed. The steel piles throughout the structure are corroded and should be cleaned and painted.



4.3. Freight Corridors

Barrow County is listed among the top fifty counties in Georgia for truck trip endings in GDOT’s Georgia Statewide Freight and Logistics Plan. The Statewide Freight Plan notes that Georgia as a whole experiences a higher rate of truck related accident fatalities than the national average, highlighting the importance of diligent freight planning and the need for increased accommodations for heavy trucks in densely traveled areas.

The Atlanta area is a major commercial and freight hub zone for the southeastern United States. As an outlying county in this region, Barrow County is crossed by several major highways, including I-85 and US 29/SR 316, both of which serve as primary freight corridors for the region. The county is also home to a CSX rail line which passes through downtown Winder, interacting with major arterial roadways and intersections. Freight activity in Barrow County was analyzed to determine the extent to which these interactions take place safely, efficiently, and without excessive impact on the character of surrounding areas. According to the Statewide Freight Plan, rural areas such as Barrow are more likely to experience fatal truck crashes due to the lack of shoulders along truck routes.

The ARC TDM was used to evaluate the percentage of commercial and heavy truck traffic along Barrow County’s major roadways. Mapping analysis was used to locate roadway rail crossings and determine their configuration. Freight routes and non-truck routes were also mapped to identify discrepancies between formally designated freight routes and those routes with the most truck traffic according to the ARC TDM. Field work was conducted along major freight routes and rail crossings to further evaluate the character of roadways and intersections that interact with freight traffic.

4.3.1. Commercial and Truck Routes

ARC’s ASTRoMaP designates a regional freight network with associated guidelines meant to facilitate the safe and efficient transportation of freight through the Atlanta region. ASTRoMaP-designated routes within Barrow County include University Parkway/US 29/SR 316, Jefferson Highway/SR 11, Monroe Highway/SR 11, and portions of May Street/SR 8 in Winder. These routes all converge at or near the intersection of Broad Street and May Street in downtown Winder, where the intersection experiences heavy truck traffic. County-designated non-truck routes exist throughout the area, primarily along quieter, residential roadways. Along these routes, signage forbidding truck traffic is posted. **Figure 4.6** displays the overall freight network present in Barrow County. Roadways designated as either truck routes or non-truck routes are listed in **Table 4.7**.

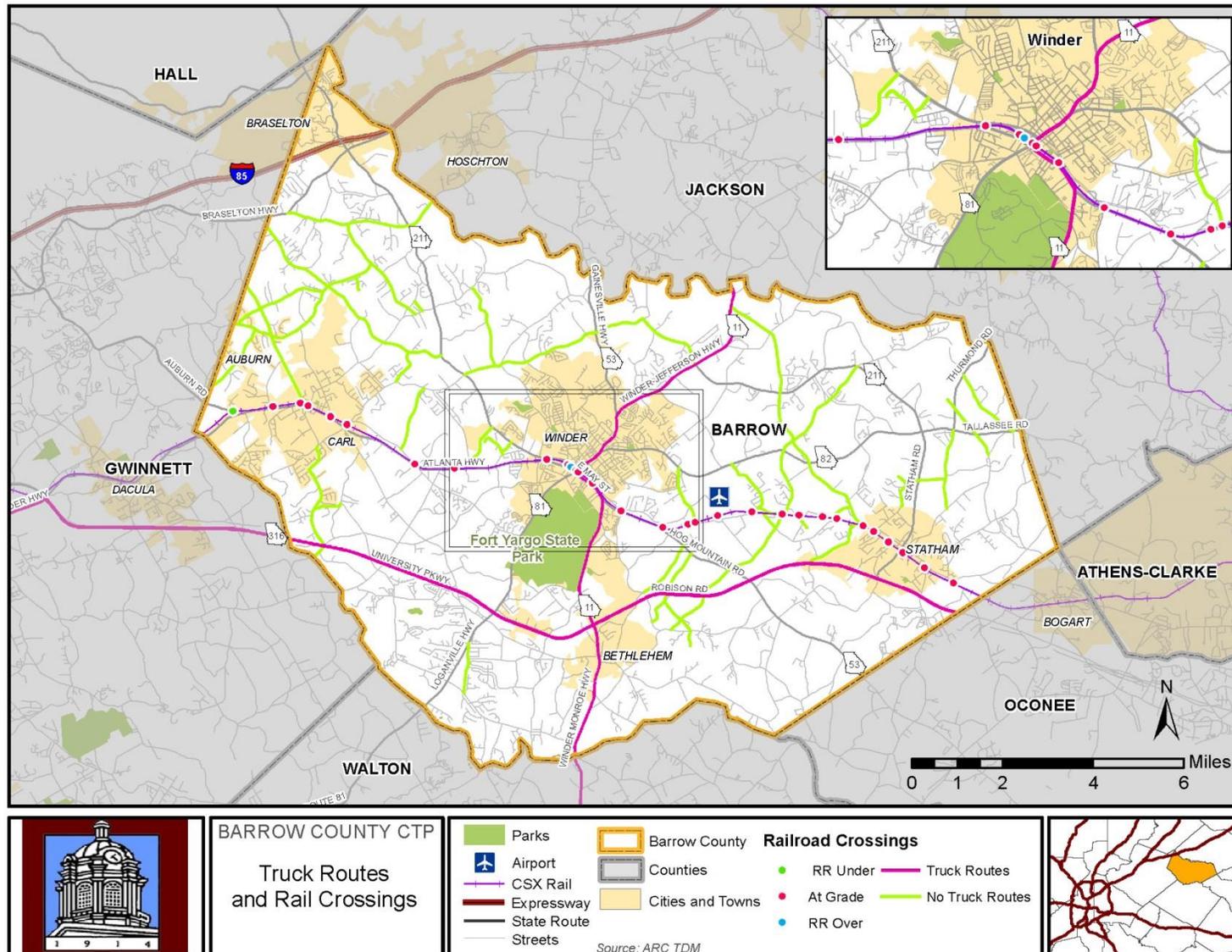
Table 4.7: Roadways with Special Truck Designations

Truck Routes	Non Truck Routes
SR 316	Dee Kennedy Rd
SR 11	Jackson Trail Rd
Jefferson Hwy	Pleasant Hill Church Rd
SR 53/211	Old Hog Mountain Rd
SR 11/211	Pickle Simon Rd
	Rockwell Church Rd
	Bowman Mill Road

Source: GDOT, Barrow County



Figure 4.6: Freight Routes and Rail Crossings





Heavy trucks are defined as single or multiple trailer combinations and are also included in the commercial vehicle designation. These heavy trucks require wider lanes and turning radii in order to operate safely. Medium trucks include multiple axle single unit vehicles and six tire two axle trucks, as well as buses. These vehicles do not require as extensive accommodations, but they still exert greater pressure on roadway capacity and the roadway itself than personal vehicles. The commercial vehicle designation includes all of these vehicles as well as any other vehicles used explicitly for commercial purposes.

According to the outputs from the ARC travel demand model, daily commercial vehicle traffic in Barrow County is concentrated near I-85, near the airport (Pickle Simon Road), and along various roadways within downtown Winder. For example, there are nearly 5,000 commercial vehicles daily on the 890' segment of Broad Street between May Street and Athens Street in downtown Winder. This intersection is one of the most congested in the county (experiencing LOS F at peak hours), in no small part due to the presence of so many commercial vehicles on a limited roadway. In addition to those routes listed here, Carl-Cedar Hill Road and Pearl Pentecost Road, Bankhead Highway, Patrick Mill Road, and Barrow Industrial Parkway are located near industrial and large commercial uses, and are known to carry a large amount of commercial traffic. The twenty roads with the greatest amount of truck traffic in terms of volumes and percent of total traffic are presented in **Table 4.7** and **Table 4.8**, respectively.

Table 4.7: Top 20 Commercial Vehicle Volumes

Roadway	Location	Commercial Vehicle Volume
I-85	SR 211	10,585
Thompson Mill Rd	SR 124	5,994
Broad St	May St	4,922
Old Winder Hwy	Gwinnett County Line	4,383
Winder Monroe Hwy	University Pkwy	4,112
Atlanta Hwy	Auburn Rd	3,708
Loganville Hwy	Hoyt King Rd	3,171
University Pkwy	Gwinnett County Line	2,923
Dee Kennedy Rd	SR 124	2,898
Hog Mountain Rd	University Pkwy	2,881
County Line Auburn Rd	Atlanta Hwy	2,743
SR 124	SR 211	2,507
Winder Jefferson Hwy	Gainesville Hwy	2,130
Jefferson St	Atlanta Hwy	1,965
Carl Bethlehem Rd	Atlanta Hwy	1,881
Barber Creek Rd	Atlanta Hwy	1,576
Jackson Trail Rd	Atlanta Hwy	1,389
E Broad St	N Broad St	1,327
Tallassee Rd	Statham Rd	1,306
Patrick Mill Rd	Atlanta Hwy	1,264

Source: ARC TDM



Table 4.8: Top 20 Commercial Vehicle Percentages

Roadway	Location	Commercial Vehicle Volume	Commercial Vehicle Percentage
Rockwell Church Rd	Gainesville Hwy	604	31.60%
Pickle Simon Rd	Atlanta Hwy	777	31%
I-85 East	SR 211	10,585	30.50%
Atlanta Hwy	Carl Bethlehem Rd	2,049	28.50%
Tallassee Rd	Statham Rd	1,306	23.70%
County Line Auburn Rd	Atlanta Hwy	2,743	23.40%
Jefferson St	Atlanta Hwy	1,965	22.60%
Patrick Mill Rd	Atlanta Hwy	1,264	22.50%
Bowman Mill Rd	SR 82	1,041	22.30%
Winder Jefferson Hwy	Gainesville Hwy	2,130	21.80%
Old Winder Hwy	Gwinnett County Line	4,383	21.70%
Thompson Mill Rd	SR 124	5,994	21.20%
Pleasant Hill Church Rd	SR 211	761	21%
Matthews School Rd	Patrick Mill Rd	1,182	20.80%
Winder Monroe Hwy	Walton County	3,484	20.30%
Loganville Hwy	Hoyt King Rd	3,171	19.80%
E Broad St	N Broad St	1,327	19.50%
SR 124	SR 211	2,507	19.40%
Carl Bethlehem Rd	Atlanta Hwy	1,881	18.80%
Dee Kennedy Rd	SR 124	2,898	18.60%

Source: ARC TDM

4.3.2. Roadway and Railway Interaction

Barrow County is bisected by an active CSX railway that crosses a significant number of Barrow County arterial roadways and serves as an obstacle to through traffic at key intersections. Stakeholder input indicates that trains traverse this segment of rail line approximately 26 times a day. The majority of crossings along this railway are at grade crossings, even at major intersections in downtown Winder. The presence of the railway divides the city of Winder and forces a large number of vehicles to make repeated rail crossings in order to traverse the city. The major roadways of May Street and Athens Street both run parallel to the CSX railway through Winder, while cross streets which connect these roadways are primarily small and poorly equipped to support significant traffic. The largest roadway to cross the CSX line within Winder is Broad Street, which is highly congested during peak hours and crosses the rail line at grade, creating the potential for dangerous situations as vehicles within traffic queue across the at grade rail crossing. The only grade-separated rail crossing within Winder is at Center Street, a narrow two lane roadway with limited capacity, which must be closed to traffic during heavy rain due to flooding. Furthermore, this crossing is prone to flooding during heavy rain and at times requires closure. The full extent of the CSX railway and all rail crossings and their configurations are shown in Figure 4.5.

4.4. Traffic Signalization

Traffic signals are intended to reduce travel delay, maintain mobility, and promote safety along heavily-traveled corridors. There are currently 35 signals within Barrow County, 16 of which are located within the Winder city limits. Due to the reported and observed travel delays within the city of Winder,



reduction of signals within the city limits may also benefit the urban roadways of Athens Street, May Street, and SR 81 and Broad Street/SR 11.

The Federal Highway Administration (FHWA) estimates that each new signal per mile increases travel time and the risk of crashes along a roadway segment (**Table 4.9**). The delay associated with signalized intersections may be desired, in that it results from the break in traffic that allows traffic from approaching roads to access the main facility. In addition, the additional crashes that result from signalize intersections are generally rear-end collisions, which tend to be less severe than angle collisions that result from unsignalized intersections. Nevertheless, an abundance of traffic lights along a short stretch can result in increases in delay and crashes.

Table 4.9 Average Increase in Travel Time and Average Crash Rate by Signals per Mile

Signals	Percent Increase in Travel Time	Crashes per Million VMT
>2	-	3.53
2	-	6.89
3	9	6.89
4	16	6.89 to 7.49
5	23	7.49
6	29	7.49
7	34	9.11
8	39	9.11

Source: Federal Highway Administration

Within the City of Winder, there are four signals on West Athens Street, five signals on May Street, and eight signals on Broad Street/SR 81/SR 11. Athens Street is likely experiencing 12.5 percent more delay and an additional 3.36 crashes per million vehicle miles travelled than it would with one or no signals. Furthermore, the concentration of signals around the major intersections of Broad Street at Athens Street and Broad Street at May Street creates a bottleneck effect for traffic. Corresponding increases in travel time and risk of crashes for West Athens, May Street, and SR 81/SR 11 can be found in **Table 4.10**. Locations of traffic signals throughout county are mapped in **Figure 4.7**.

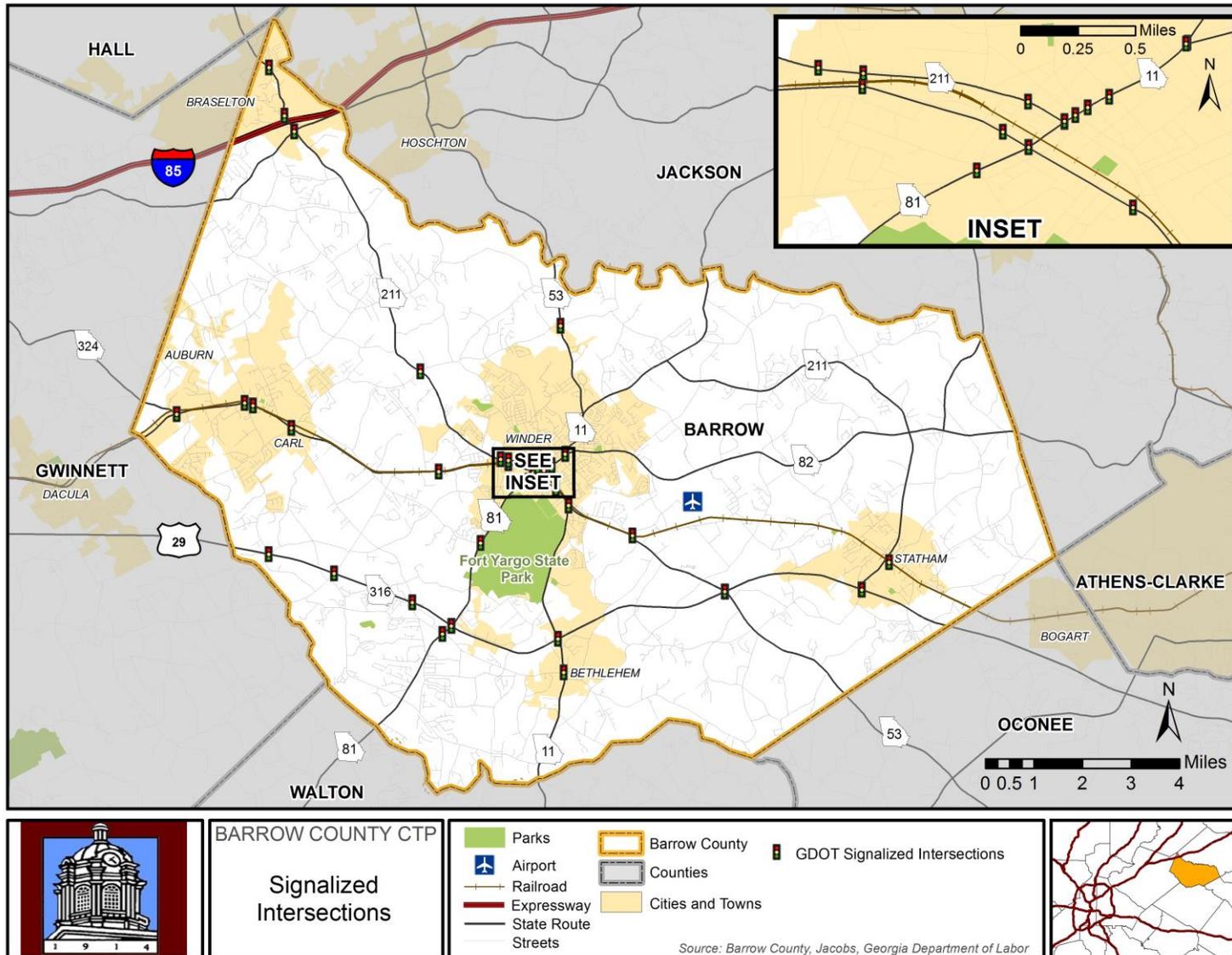
Table 4.10: Barrow County Major Signalized Routes

Roadway	Extent	Length	Signals	Signals / Mile	Estimated % Increase in Travel Time	Estimated Crashes per Million VMT
Athens Street	Winder	1.20	4	3.34	12.5	6.89
May Street	Winder	2.23	5	2.25	4.5	6.89
SR 81 and SR 11	Winder	5.57	8	1.44	0	3.53
SR 316	Barrow County	15.79	7	0.44	0	3.53

Source: FHWA and Jacobs



Figure 4.7: Signalized Intersections





4.1. Bicycle and Pedestrian Facilities

The section provides a summary of the bicycle and pedestrian facilities in Barrow County.

4.1.1. Pedestrian Facilities and Priority Areas

Pedestrian facilities are limited within Barrow County and are found predominately in the historic urban centers. Most State Routes, highways and rural roads within the county do not feature sidewalks.

Sidewalks are primarily found in downtown Winder, Bethlehem and Statham. Winder has the most extensive and complete sidewalk network in the county linking most of the city's commercial core with surrounding residential neighborhoods. Several missing sidewalk connections could be added however, to further link adjacent residential areas to downtown Winder. This includes sidewalk expansion along North 5th Avenue and West Candler Street.

The sidewalk network is more limited in the Auburn and Carl incorporated areas. However, an extensive sidewalk segment (approximately 1.5 miles) is found along Atlanta Highway/SR Bus 29 linking Auburn and Carl, between Autry Road and Carl-Midway Church Road. The expansion of sidewalks in these municipalities would help facilitate land use goals, which call for pedestrian-friendly, town center style, and future development.

The areas around schools are priority sidewalk areas for the County. There are no sidewalks at the Apalachee School Cluster, Kennedy Elementary School, Westside Middle School, Bramlett Elementary, County Line Elementary, or Bethlehem Elementary. Bear Creek Middle is in the process of getting sidewalks.

Given the fiscally constrained environment surrounding transportation improvements there is a need to prioritize potential pedestrian improvements. To achieve this end, a detailed analysis of pedestrian needs around major pedestrian trip generators will be conducted as part of the Needs Assessment Report for this CTP Update.

4.1.2. Bicycle Facilities

There are two state-designated bike routes in Barrow County, SR 81 from SR 53 in Winder south to the county line, and SR BUS 29 from SR 81 in Winder south to the Atlanta Highway. At this time, there are no bicycle facilities along SR 81 or SR 53. These two facilities also compose the western and northern borders of Fort Yargo State Park. According to its business plan, the 12.5 miles of mountain biking trails at Fort Yargo State Park are one of its main attractions. Fort Yargo State Park, as well as the area between it and Winder to the north, where services are available, will be considered a bicycle priority area for further analysis in the upcoming Needs Assessment.

4.2. Parking Facilities

Rural Barrow County is reliant on automobile travel, which demands a large amount of parking. Major employment, commercial, institutional, and other activity centers must maintain an adequate parking supply in order to accommodate resident lifestyles and promote a healthy economy. Oversupply of



parking, however, can feel uncomfortable for non-automobile travelers and prevents the growth of higher density uses in a town center.

There is adequate parking at commercial locations throughout the County outside the City of Winder, where commercial uses have been developed with adjacent parking. Parking availability at the major employment centers along I-85 and SR 316 were also analyzed. Barrow Crossing, the county’s most recent large commercial development, located along SR 316, currently provides adequate parking for employees and shoppers. Ample undeveloped space nearby will allow for the expansion of Barrow Crossing’s parking facilities in the future if more capacity is needed. The employment cluster along I-85 in northwestern Barrow County, like Barrow Crossing, is bordered by undeveloped land that allows for future expansion of parking facilities. Current parking facilities appear adequate to support the local businesses.

Analysis of availability of parking interior to the city of Winder was conducted. Parking facilities at major employment and retail centers in Barrow County identified in the employment center analysis were surveyed through field observation, Google Earth, and aerial imagery. The parking analysis study area was defined by the City of Winder boundary and the presence of clustered commercial and institutional uses. **Figure 4.8**, below, provides an aerial display of surveyed off-street parking facilities in downtown Winder. **Table 4.11** displays the percentage of the study area that is covered, respectively, by commercial uses, institutional uses, and parking facilities. Parking in downtown Winder is well distributed among commercial and institutional uses that may require significant off-street parking facilities. Because they represent a small percentage of the overall supply of parking in the city, on-street parking facilities were not included in the analysis.

Table 4.11: Acres of Parking in Downtown Winder

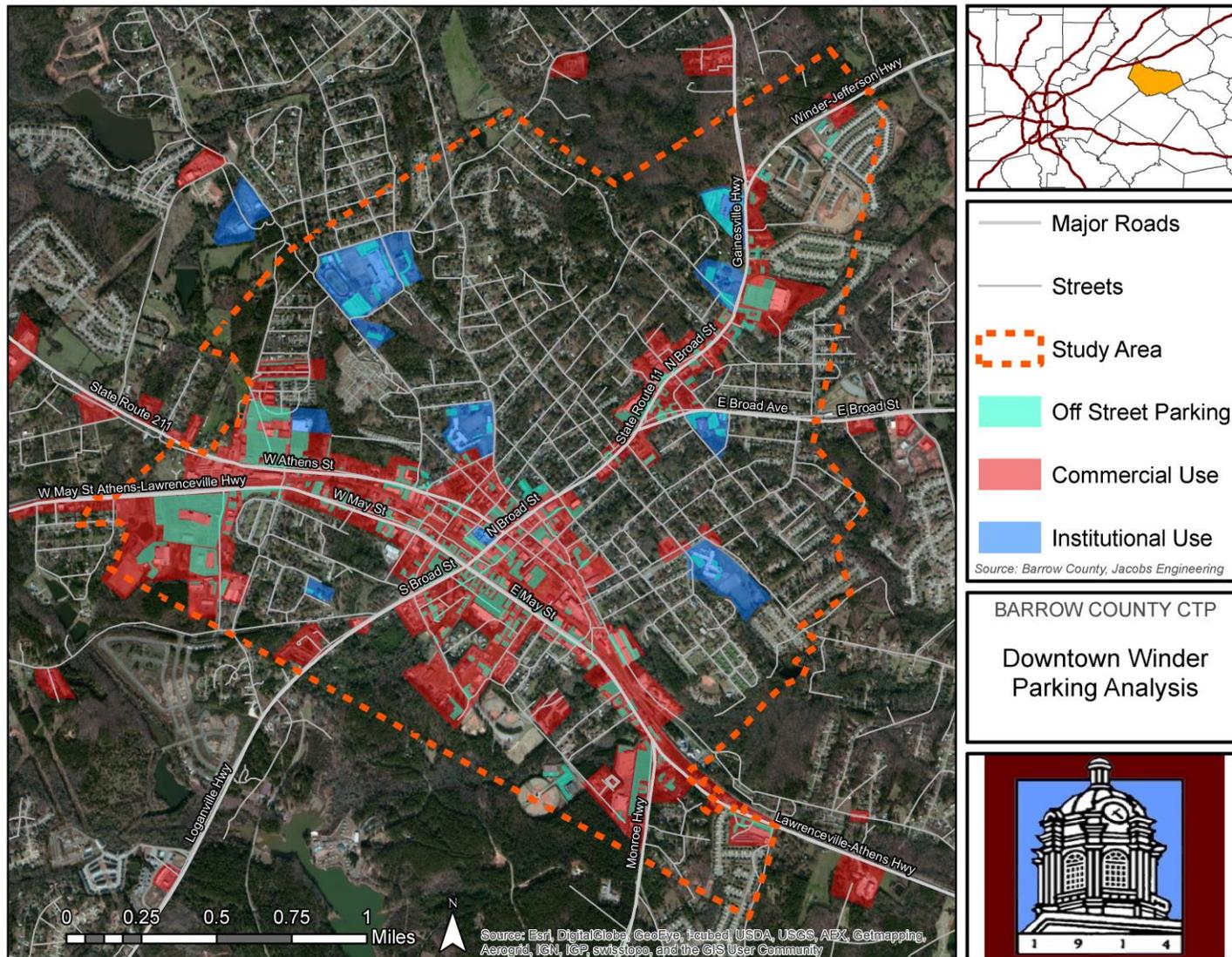
Land Use	Acres	Percent of Study Area
Commercial Use	692	25.4%
Institutional Use	120	4.4%
Off Street Parking	167	6.1%
Study Area	2727	100.0%

Source: ESRI, Digital Globe, GeoEye, 1-cubed, USDA, USCS, AEX, Getmapping, Aerogrid, IGN, IGP, Barrow County, Jacobs

The data in Table 4.9 indicate that a relatively large percentage of downtown Winder is covered by off street parking facilities. On-site observation of the study area during peak hours reveals that, while some parking facilities are mostly filled, others at under-occupied commercial developments remain largely empty. Free, on-street parking facilities in downtown Winder, primarily along Broad Street, were observed as mostly empty. Current City of Winder zoning regulations do not demand or prohibit a certain amount of parking spaces for different development types. At this time, The City of Winder has adequate parking for its commercial and institutional uses. As Winder continues to grow, ordinance changes may be considered to establish parking requirements to prevent the over or under supply of parking facilities in the town center.



Figure 4.8: Downtown Winder Parking Facilities Aerial Survey





4.3. Public Transportation and Human Services Transportation

There is currently no public transportation service in Barrow County. The county's density, land development, and population do not currently justify the investment in public transportation. Barrow County residents choosing to commute by express bus into Downtown Atlanta can catch the GRTA Xpress Bus Route 416 in Dacula on US 29 Business, just southwest of the county line. Barrow County offers a transit van pool for senior citizens, and uses federal and state funds to purchase, maintain, and operate it. Human service or healthcare agencies may offer transportation services for people in their networks.

4.4. Transportation Demand Management (TDM) Programs

Pursuant to the *ARC Regional TDM Inventory Baseline Report*, transportation demand management is defined as a means to assist people "to change their travel behavior to meet their travel needs by using different modes, traveling at different times, making fewer or shorter trips, or taking different routes." In other words, it is a means to reduce the number of automobile trips in order to promote efficient use of the transportation network. Traditional transportation demand management techniques include employee-based rideshares, vanpools, and telecommuting. However, the ARC is working to expand the practice, known as TDM+, to include other means of reducing travel demand such as promoting walking and transit use. Promoting Transit Oriented Development (TOD) and mixed-use development can also be seen as a transportation demand management strategy. The service area for the Georgia Commute Options ridematching program includes Barrow County. To participate in this program, commuters register online with general information about the location of their residence and workplace. The program then matches them with others who share similar commutes. Participation is free.

In the absence of transit services, the County may consider TDM measures to consolidate trips. Since the majority of county residents commute to work outside Barrow County, the implementation of TDM initiatives may help to reduce the demand on local roadways and alleviate congestion along major corridors in the county such as SR 316, SR 81, and US 29 Business.

4.5. Airports

This section focuses on the Barrow County Airport, Gwinnett County Airport (Briscoe Field), Athens-Ben Epps Airport, and Hartsfield-Jackson Atlanta International Airport (H-JAIA). H-JAIA has been included in this analysis due to its proximity and importance to Barrow County because it is the region's most used passenger and cargo airport.

4.5.1. Barrow County Airport

The Barrow County Airport (WDR) is the only public airport in Barrow County. Previously known as the Northeast Georgia Regional Airport, the 350-acre airport is owned by the citizens and operated by the Barrow County Airport Authority. It is located just off of US 29 and has two cross runways, the 5,500 foot long by 100 foot wide 13/31 runway (the primary runway) and the 3,610 foot long by 100 foot wide runway, both of which are paved and capable of servicing most light general aviation and corporate aircraft. Both runways have parallel taxiways. The 13/31 runway has an Instrument Landing System (ILS) Romanair WDR, Inc. is the single, full-service fixed base operator (FBO), with a 12,000 square-foot



facility for the fueling, hangaring, service and repair of small engine and large business aircraft. WDR broadcasts weather updates to pilots in its vicinity via an Automated Weather Observing System (AWOS). GDOT has classified the airport as a Class III facility, which means that scheduled small aircraft with 10 to 30 seats may use this facility. According to Airport IQ5010, the airport has 99 aircraft based on-field, including 90 single engines, 9 multi-engine and 5 military aircraft. The airport has 28,400 operations annually, or 78 per day, of which 51 percent are transient general aviation, 32 percent are local general aviation, and 18 percent are military. The airport is surrounded by over 300 acres of industrial property including approximately 80 acres adjacent to 13/31 with potential inside-the-gate access.

4.5.2. Gwinnett County Airport (Briscoe Field)

Gwinnett County Airport (LZU) is located on approximately 500 acres just one mile northeast of the city of Lawrenceville, approximately eight miles west of Barrow County via University Parkway/US 29/SR 316. It is surrounded by industrial areas to the south and west, the Gwinnett Progress Center to the north, and the Alcovy River to the east. The airport consists of a single 6,021-foot long by 100-foot wide runway capable of handling all light general aviation and most corporate jet aircraft in operation today. The airport last completed major improvements about twenty-four years ago as \$25 million worth of upgrades were done, namely the expansion of the airport property to its current size of 500 acres, the construction of the current runway and parallel taxiway, and installation of an Instrument Landing System (ILS) on Runway 25. Other improvements included a Level III Automated Weather Observing System (AWOS) and an air traffic control tower. Governed by the Gwinnett County Airport Authority, the airport is served by two Fixed Base Operators, Landmark Aviation and Aircraft Specialists, who both operate onsite.

4.5.3. Athens-Ben Epps Airport

Athens-Ben Epps Airport (AHN) is named after Georgia's first aviator, who started building and flying planes in 1907 and opened the Ben Epps Airport in 1917. It is located in Clarke County, seventeen miles from the Barrow County Airport and approximately sixty miles from Atlanta right off of the SR 10 (GA 10 Loop) on Winterville Road. There are two runways at the airport, 2/20 and 9/27. Runway 2/20 is 3,995 feet long while runway 9/27 is 5,522 feet. The airport is served by SeaPort Airlines, which offers daily shuttle service while the passenger terminal at the airport offers basic services and amenities.

4.5.4. Hartsfield-Jackson Atlanta International Airport

H-JAIA is the major airport for passenger travel within the metropolitan Atlanta region and is the primary passenger airport terminal for Barrow County residents. Since 1998, Hartsfield-Jackson has claimed the title of the world's busiest passenger airport, averaging more than 250,000 passengers a day. It is located approximately 62 miles from Barrow County in Clayton County. The airport also houses three main air cargo complexes, and has a total of 2 million square feet of cargo handling space.



5. PLANNED AND PROGRAMMED IMPROVEMENTS

This section provides an overview of transportation improvements that are either programmed for short-term implementation or planned for long-term implementation. In the Needs Assessment phase, this CTP Update will re-evaluate the programming of improvements based on current and projected future conditions and public support.

The primary sources for planned and programmed improvements in Barrow County are:

- 2007 Barrow County CTP
- ARC PLAN 2040 – This contains a complete list of projects for which federal funds are to be expended for their implementation.
- Barrow County SPLOST Work Program – Projects either fully funded or partially funded through the SPLOST funds. Many of the projects within the ARC PLAN 2040 are partially funded through the SPLOST (in most cases as a local match to federal funds).

5.1. Improvements Constructed Since the 2007 CTP

The 2007 Barrow County CTP proposed projects in three tiers. The first was a five-year constrained project list of “Committed” projects, all of which were listed in the ARC Transportation Improvement Plan (TIP) 2008-2013. The second was a constrained long-range project list, which presented projects for inclusion in the 2008 TIP and the 2030 RTP Long-Range project list. The third tier, of “other potential improvements” both on and off the GDOT network, constituted an unconstrained long-range project list for inclusion in the GDOT Long-Range program or local construction by a city or Barrow County.

All four projects included in the first tier of the projects, the five-year work program, have been constructed. In addition, local municipalities have constructed two projects from the third tier of unconstrained project recommendations, as well as a project addressing locally-identified needs that did not originate in the previous CTP. Projects from the 2007 CTP’s five year work plan that have been constructed are listed in **Table 5.1**, and mapped in **Figure 5.1**. Other projects constructed since the 2007 CTP are listed in **Table 5.2**.

Table 5.1: Five-Year Work Program Improvements Constructed in Barrow County

Project ID	Corridor	Extents	Project Type	Source
BA-025	Carl Bethlehem Road	at Hoyt King Road/ Haymon Morris Road	Operational	2007 CTP Five Year Constrained Project List
BA-024	Loganville Highway (SR 81)	at Hoyt King Road	Intersection Relocation	2007 CTP Five Year Constrained Project List
BA-002	SR 124	at SR 211	Operational	2007 CTP Five Year Constrained Project List
BA-012	SR 11 (Winder- Monroe Highway)	at Scott Creek	Bridge Upgrade	2007 CTP Five Year Constrained Project List

Source: GDOT, Barrow County.



Table 5.2: Other Improvements Constructed in Barrow County since the 2007 CTP

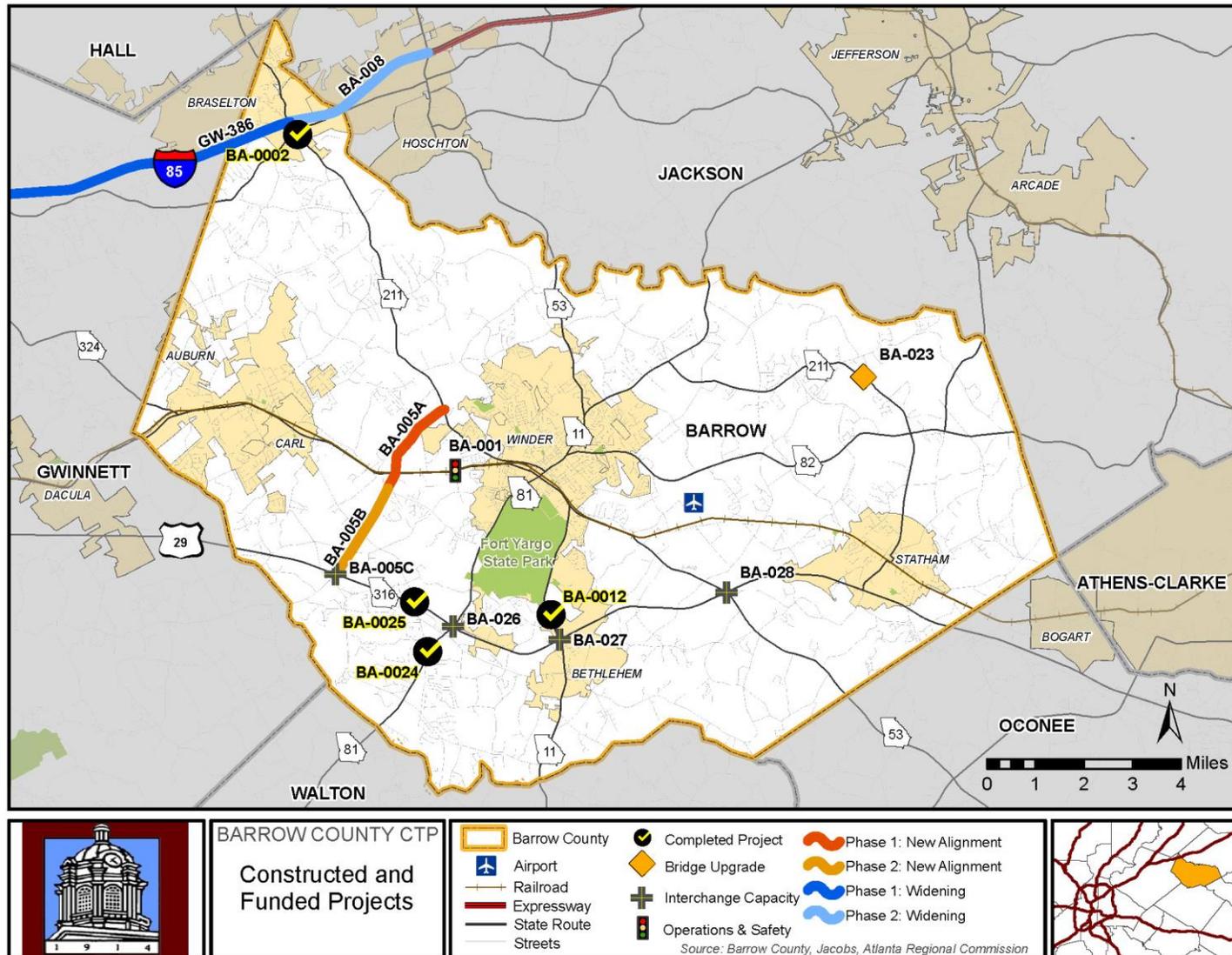
Project ID	Corridor	Extents	Project Type	Source
GDOT	Broad Street/SR 11	Atlanta Highway to East Broad Street	Reconstruction	2007 CTP Unconstrained Project List
Locally Constructed	Mimosa Street	Broad Avenue to SR 11	Operational	2007 CTP Unconstrained Project List
Locally Constructed	SR 11	at Star Street	Operational	Locally Determined Need
Locally Constructed	Christmas Ave./SR 11 south	at Star Street/Carl-Bethlehem/Smith Mill Road.	Stop & go signal with turn lanes	Locally Determined Need
Locally Constructed	Athens Street/SR 211	at McNeil & Horton Streets	Intersection improvements.	Locally Determined Need
Locally Constructed	SR 81	at Carl-Bethlehem Road	Stop & Go Signal with turn lanes	Locally Determined Need
Locally Constructed	Barrow Park Drive extension		new road	Locally Determined Need
Locally Constructed	Barrow Park Drive	at SR 211	Intersection improvement with left turn lane.	Locally Determined Need
Locally Constructed	Bankhead Highway		rebuild and resurface	Locally Determined Need

Source: GDOT, Barrow County.

In addition to the locally-constructed projects listed in Table 5.1, Barrow County carries out resurfacing and bridge repair projects on an annual basis using GDOT LMIG funds. The 2015 Barrow County Public Works Department Road Improvement Program includes resurfacing projects but no bridge repairs. Additional bridge repairs will be undertaken as funds become available.



Figure 5.1: Constructed and Funded Improvements from the 2007 CTP





5.2. Projects Programmed for Construction in Barrow County

Eight projects are planned for construction and are included in the constrained project lists in the ARC's recent update of the current RTP, PLAN 2040 (**Table 5.2**). Six of these projects are from the 2007 CTP's second tier list of projects intended primarily for the 2030 RTP Long-Range project list.

Table 5.3: Projects Programmed for Construction

Project ID	Corridor	Extents	Project Type	Status	Source
BA-001	Ed Hogan Intersection Improvement	at SR 8 and Bankhead Highway	Operations and Safety	ROW AUTH, CST 2019 (Admin. Modification through ARC before Feb. 20, 2015 for April 2016 construction let)	
BA-005	West Winder Bypass	South of SR 316 to SR 211	Capacity/ New Location	Phase 1: BA-005A, ROW 2016, CST 2018 Phase 2: BA-005B, ROW 2018, CST LR2020-2030 Phase 3: BA-005C, ROW 2018, CST LR2020-2030	2007 CTP Long Range
BA-008	I-85 North Widening	SR 211 to SR 53 in Jackson County	Capacity	CST 2019	2007 CTP Long Range
BA-023	SR 211	at Beech Creek	Bridge Upgrade	ROW AUTH, CST 2016	2007 CTP Long Range
BA-026	SR 316	at SR 81	Interchange	ROW 2015, CST 2018	2007 CTP Long Range
BA-027	SR 316	as SR 11	Interchange	ROW 2016, CST 2018*	2007 CTP Long Range
BA-028	SR 316	at SR 53	Interchange	ROW 2018, CST LR 2020-2030*	2007 CTP Long Range
GW-386	I-85 North Widening	Hamilton Mill Road in Gwinnett County to SR 211	Capacity	CST 2019	

*Barrow County has requested that GDOT reverse the order of construction of BA-027 and BA-028.

CST – Construction; LR=Long Range; Network Year=Year in which the ARC Travel Demand Model integrates the project into its operations. Source: 2007 Barrow County CTP

As shown in Figure 5.1, there are a total of eight improvements within Barrow County in the ARC PLAN 2040. One of these projects, the West Winder Bypass, has been broken into three phases, which are listed as separate projects in the TIP (BA-005A, BA-005B, and BA-005C). The West Winder Bypass project is significant in that it is a new roadway alignment from SR 211 to SR 316 that is proposed to allow vehicles another option for north-south movement without going through the City of Winder. The series of interchange capacity projects along SR 316, which will aid in that facility's transition to a limited-access roadway, are also significant projects in terms of total investment in transportation infrastructure as well as in terms of impact on the County's transportation network.

5.3. Unconstructed, Unprogrammed Recommendations from the 2007 CTP

The 2007 CTP also proposed several long-term transportation improvements outside of the constrained list. These projects were not supported by committed funding and not placed into the financially constrained RTP; however, each addresses a transportation need identified by the 2007 CTP. The next phase of this study, the Needs Assessment, will determine if the proposed projects that have not been funded for construction are still needed and should remain recommendations of this CTP. Projects from



the Constrained and Unconstrained Project Lists that have not been constructed or funded are presented in Table 5.3.

Table 5.4: Unprogrammed Recommendations from the 2007 CTP.

Project ID	Corridor	Extents	Project Type	Source
BA-004	6th Street Grade Separation	at CSX Rail Line	Capacity	2030 RTP Long-Range Project List
BA-015	Carl Bethlehem Road	US 29 Business to SR 316	Capacity	2030 RTP Long-Range Project List
BA-017	Dee Kennedy Road	Gwinnett County to SR 211	Capacity	2030 RTP Long-Range Project List
BA-016	SR 11	SR 316 to Walton County	Capacity	2030 RTP Long-Range Project List
BA-013	SR 211	Gwinnett County to Proposed West Winder Bypass	Capacity	2030 RTP Long-Range Project List
BA-010	SR 316	at SR 324/SR 11	Interchange	2030 RTP Long-Range Project List
	Atlanta Highway	Hog Mountain Road to Russell Cemetery Road	Capacity	Unconstrained List – On GDOT Network
	May Street	South Broad Street to Russell Cemetery Road	Capacity	Unconstrained List – On GDOT Network
	SR 124	Gwinnett County to Jackson County	Capacity	Unconstrained List – On GDOT Network
	SR 324	Gwinnett County to SR 8	Capacity	Unconstrained List – On GDOT Network
	SR 8	Mount Moriah Road to Carl-Midway Church Road	Capacity	Unconstrained List – On GDOT Network
	SR 81	Walton County to Carson Wages Road	Capacity	Unconstrained List – On GDOT Network
	Rockwell Church Road	SR 211 to Michael Drive	Capacity	Unconstrained List – On GDOT Network
	Atlanta Highway	Dooly Town Road to Bethlehem Road	Operational	Unconstrained List – On GDOT Network
	Atlanta Highway	Bethlehem Road to Jefferson Street	Operational	Unconstrained List – On GDOT Network
	Atlanta Highway	8th Street to Oconee County	Operational	Unconstrained List – On GDOT Network
	Atlanta Highway	Patrick Mill Road to Horton Street	Operational	Unconstrained List – On GDOT Network
	Bethlehem Road	SR 316 to Atlanta Highway	Operational	Unconstrained List – On GDOT Network
	Hog Mountain Road	Jackson Trail Road to SR 316	Operational	Unconstrained List – On GDOT Network
	Hog Mountain Road	Bethlehem Road to Lacky Road	Operational	Unconstrained List – On GDOT Network
	SR 316	Gwinnett County to SR 11	Operational	Unconstrained List – On GDOT Network
	SR 316	Hog Mountain Road to Bethlehem Road	Operational	Unconstrained List – On GDOT Network
	SR 53	Rockwell Church Road to Bell Road	Operational	Unconstrained List – On GDOT Network
	SR 211	CSX Railroad near Statham Square	Bridge Upgrade	Unconstrained List – On GDOT Network
	SR 124	Jackson County line to SR 211	Bicycle Improvements	Unconstrained List – On GDOT Network
	SR 211	SR 124 to Mulberry Road	Bicycle Improvements	Unconstrained List – On GDOT Network



Project ID	Corridor	Extents	Project Type	Source
	SR 53	Mulberry Road to Jackson County line	Bicycle Improvements	Unconstrained List – On GDOT Network
	Mount Moriah Road	Gwinnett County to Atlanta Highway	Capacity	Unconstrained List – Off GDOT Network
	Horton Street	SR 8 to SR 81	Capacity	Unconstrained List – Off GDOT Network
	Midland Avenue	SR 53 to King Street	Capacity/ Operational	Unconstrained List – Off GDOT Network
	Mulberry Road	Bell Road to SR 211	Capacity	Unconstrained List – Off GDOT Network
	Rockwell Church Road	SR 11 to SR 53	Capacity	Unconstrained List – Off GDOT Network
	Tanners Bridge Road	SR 81 to SR 11	Capacity	Unconstrained List – Off GDOT Network
	Tom Miller/Kennedy Sells Road	SR 316 to SR 81	Capacity	Unconstrained List – Off GDOT Network
	8th Street	Atlanta Highway to SR 316	Operational	Unconstrained List – Off GDOT Network
	Brown Bridge Road	Gwinnett County to Clover Drive	Operational	Unconstrained List – Off GDOT Network
	Carson Wages Road	SR 81 to Punkin Junction Road	Operational	Unconstrained List – Off GDOT Network
	Jackson Trail Road	Hog Mountain Road to Cosby Road	Operational	Unconstrained List – Off GDOT Network
	Jefferson Street	Atlanta Highway to Statham City Limit	Operational	Unconstrained List – Off GDOT Network
	Kilcrease Road	SR 316 to Cabot's Drive	Operational	Unconstrained List – Off GDOT Network
	Union-Grove Church Road	Gwinnett County to Mount Moriah Road	Operational	Unconstrained List – Off GDOT Network
	West Chandler Street/City Pond Road	Betts Street to Rockwell Church Road	Operational/ Safety	Unconstrained List – Off GDOT Network
	Commuter Rail	Dacula to Athens	Rail Project	Unconstrained List – Off GDOT Network
	Mulberry Road	SR 211 to SR 53	Bicycle Improvements	Unconstrained List – Off GDOT Network

Source: 2007 Barrow County CTP



6. FUNDING OVERVIEW

Funding for transportation improvements typically includes a mix of federal, state, and local sources. This section provides an overview of existing funding mechanisms, as well as potential new sources, to fund transportation improvements within Barrow County. As this section demonstrates, most transportation funding in Barrow County comes from federal funds that are passed through the ARC and GDOT.

6.1. Overview of Federal and State Funding Mechanisms

6.1.1. ARC Programs

The ARC is responsible for the distribution of federal and state funds programmed in PLAN 2040 for all counties within ARC's MPO planning area, which includes Barrow County.

The latest transportation bill, known as MAP-21, was passed in 2012 and created three distinct programs for federal funding:

- Surface Transportation Program (STP) – Of the three programs, the STP program has the greatest amount of funding. As with all federally funded programs, a 20 percent local match is required. Most of these funds are directed to GDOT for improvements. However, the ARC receives some discretionary STP funds to distribute to local governments, including funding for the National Highway Performance Program (NHPP) and the ARC Livable Centers Initiative (LCI) program.
- Congestion Mitigation and Air Quality (CMAQ) - The purpose of CMAQ funds is to significantly reduce emissions and congestion in the region. Projects must be able to demonstrate a measureable emissions or congestion benefit immediately upon completion. The ARC distributes these funds through a “call for projects” process, which requires the competitive evaluation of applications.
- Transportation Alternatives Program (TAP) – The TAP program is focused primarily on expanding mobility options for transit, pedestrian and bicycle travel that are of regional significance. This is also the funding source for the Safe Routes to School program. Like the CMAQ program, the TAP program solicits applications and awards funding on a competitive basis.

6.1.2. Georgia Department of Transportation

GDOT also offers programs that could potentially fund recommended improvements. Some of these programs are federally funded and, as such, may not be eligible for a local match for ARC programs.

- Local Maintenance and Improvement Grant (LMIG) – Local Maintenance and Improvement Grant (LMIG) – LMIG is a program funded by GDOT for improvements that include engineering, utility adjustments, resurfacing, and adding turn lanes, among many. A 30 percent local match is typically required for these funds.



- Operational Improvement Program (GDOT State Traffic Operations Office) – This program is a federally funded program that focuses on projects that provide operational improvements for State routes with minimal environmental and right-of-way impacts.
- Off-System Safety Improvements Program – This program is a federally-funded program designed to focus improvements on County and local streets. Eligible improvements include signals, raised medians, rumble strips and other safety improvements.
- Quick Response Program – This program is state-funded and designed to address quick maintenance, safety, or operational concerns. Each quick response project has a \$200,000 individual cap.
- GATEway Grant Program – GATE, an acronym for Georgia Transportation Enhancements, is a GDOT program targeted for roadside enhancements and beautification improvements that meet specific landscaping requirements. The maximum funding amount an applicant can seek under this program is \$50,000; therefore, this funding source may not be as reliable a source as desired for implementation purposes.

GDOT also administers Section 5340 for urban transit services and Section 5307 for rural transit services from the Federal Transit Administration (FTA). While Barrow County provides human services transportation for senior citizens, they do not draw down upon these funding sources.

6.1.3. Current PLAN 2040 Funding Levels

A breakdown of the current funding levels in PLAN 2040 for Barrow County is provided in **Table 6.1**.

Table 6.1: PLAN 2040 Funding for Barrow County Projects

TOTAL PLAN 2040 UPDATE	Federal	State	Local	Total
Barrow County	\$157,789,138	\$39,177,060	\$770,224	\$197,736,422
Barrow County, Gwinnett County*	\$91,453,837	\$22,863,459	\$0	\$114,317,296
Barrow County, Jackson County**	\$10,188,000	\$2,547,000	\$0	\$12,735,000
FY 2014-2019 TIP	Federal	State	Local	Total
Barrow County	\$64,763,458	\$15,920,641	\$770,224	\$81,454,323
Barrow County, Gwinnett County*	\$91,453,837	\$22,863,459	\$0	\$114,317,296
Barrow County, Jackson County**	\$10,188,000	\$2,547,000	\$0	\$12,735,000
PLAN 2040 UPDATE LONG RANGE	Federal	State	Local	Total
Barrow County	\$93,025,680	\$23,256,419	\$0	\$116,282,099

Source: PLAN 2040. *Funding for GW-386: I-85 widening from Hamilton Mill to SR 211. **Funding for BA-008: I-85 widening from SR 211 to SR 53.

Significant highlights from the funding in PLAN 2040 include:

- Of the approximately \$208.5 million within the ARCTIP for short-term projects, approximately \$127 million are for two capacity projects along I-85 that traverse portions of Gwinnett, Barrow and Jackson counties.



- Of the approximately \$81 million remaining in the TIP allocated to Barrow County (minus the I-85 projects), nearly all (99 percent) of the funding is from federal and state sources. Much of this funding is associated with the West Winder Bypass from Matthews School Road to SR 211 and SR 316 interchanges at SR 81 and SR 11. Collectively, these improvements total approximately \$76.3 million.
- All of the local funds reflected in PLAN 2040 are to provide the local match for the Ed Hogan Road improvements over the CSX railroad.
- All of the \$116.2 million allocated to Barrow County for long range improvements within PLAN 2040 will fund several major projects: extensions of the West Winder Bypass from SR 211 to SR 53 (to the north) and to SR 316 (to the south), and interchanges along SR 316 at the West Winder Bypass, Bethlehem Road, and SR 53.

While not reflected in Table 5.1, there is also \$287,250 of Section 5307/5340 funds and local matching funds reflected in the TIP. This amount assumes an annual federal contribution of \$38,300 and local match of \$9,575 (20 percent) throughout each year of the TIP. As previously noted, Barrow County does not use these funds for the provision of human services transportation.

6.1.4. County and Municipal Transportation Funding Sources

Generally, the majority of local funding for transportation is dedicated to maintaining existing infrastructure. The primary local source of transportation funding is the Special Purpose Local Option Sales Tax (SPLOST), a one-cent sales tax for capital improvements. The current Barrow County SPLOST program began in 2012 and runs through June 2018. Other sources include the Capital Improvements Program and General Fund.

Pursuant to information from County staff:

- The 2012 SPLOST program is projected to generate \$8,000 per month throughout its lifetime. Nearly all revenues from the current SPLOST program are already dedicated to projects. Monies from the 2012 SPLOST will go to the 30% match for GDOT LMIG funds and used for patching and resurfacing. Funds from the 2001 and 2004 SPLOST programs are dedicated to the West Winder Bypass and Ed Hogan extension. Approximately \$80,000 of the 2012 SPLOST funds will remain in the fund after matching the 2015 LMIG commitment.
- The Capital Improvements Fund is also primarily used for maintenance, to match the GDOT LMIG program, and bridge repairs.
- The General Fund goes to the roadway department and is also used for maintenance. Current funding levels are approximately \$220,000 per year. In addition, shares of storm water fees, which generate about \$350,000 per year, are used for pipe and box culvert repair and replacement.

In addition to these sources, a small amount of municipal funds are also used for minor transportation improvements within the municipalities throughout the county.



Several economic development entities also present opportunities for local transportation funding, including:

- Braselton Community Improvement District (CID) - Located in northwest Barrow County and spanning into Gwinnett and Hall Counties, the Braselton CID has adopted a millage rate of 5 mills for each commercial property within the district that is eligible to fund transportation improvements within its boundaries.

6.2. Potential New Funding Sources

With respect to Barrow County, the renewal of the SPLOST program beyond 2018 is the most likely source of local funding for transportation improvements. Other potential funding sources include:

- Utilization of the Georgia Transportation Infrastructure Bank (GTIB) – The GTIB program offers grants and loans to local governments and other organizations, such as CIDs, for transportation improvements.
- Drawing down of Section 5340 and 5307 transit funds - Should transit service be introduced to Barrow County, these FTA funds would be a viable source to fund 80 percent of the associated costs. However, 20 percent of the funding must be provided by local sources.
- Private Investment - Soliciting private investment for transportation improvements can be accomplished through a number of ways, including waiving development fees and/or granting additional development rights for transportation improvements.
- Transportation Impact Fees – Initiating transportation impact fees serves as a means for developers to contribute towards transportation improvements based on their projected impacts to the transportation network.

It is important to consider that, other than renewing the SPLOST, some of these initiatives may not be politically favorable due to economic factors and a desire by growing counties such as Barrow to not provide disincentives to potential new development. These sources will be reviewed for applicability once prioritized project recommendations are determined.

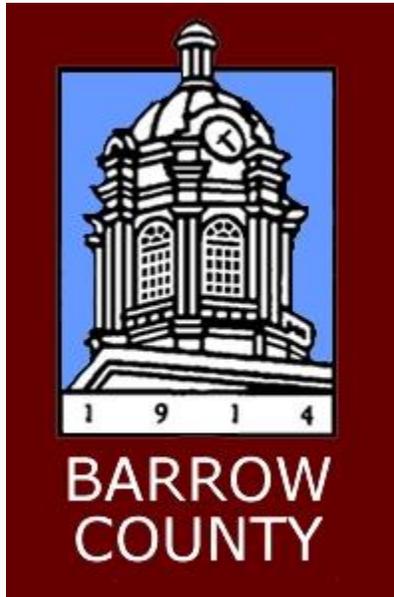
6.3. Trends in Federal and State Funding

The passage of MAP-21 increased the emphasis on funding transportation improvements that are more efficient, maximize existing infrastructure, and lend themselves to economic development. These trends reflect both the relative scarcity of funds from traditional federal and state sources and the increasing maintenance needs of an aging transportation network. With that said, the following priorities are expected to be reflected in future transportation investments:

- An increased focus on operational improvements as opposed to major capacity improvements.
- An emphasis on state of good repair.
- A focus on enhancing routes with high freight volumes and linkages between intermodal facilities.



- An increased focus to fund modal improvements that promote the most efficient use of the transportation system and environmental sustainability (transit, bicycle/pedestrian, TDM).



COMPREHENSIVE TRANSPORTATION PLAN UPDATE

**ASSESSMENT OF CURRENT AND FUTURE NEEDS
REPORT**

APPENDIX C

Prepared by:

JACOBS™

May 2015



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1. INTRODUCTION

This report provides an assessment of the ability of the Barrow County transportation network to meet community transportation needs based on current and future levels of service and conditions. Future needs have been determined based on the capacity of existing facilities and services to meet forecast demands, or are in need of improvement to accommodate growth and protect natural and cultural resources. The analysis addresses the need to improve or utilize transportation facilities during the planning period in a way that will preserve the existing system, provide a safe and efficient transportation network, and enhance mobility and accessibility. This Needs Assessment Report updates the transportation needs identified by the 2007 Comprehensive Transportation Plan (CTP).

1.1. Project Overview

The Atlanta Regional Commission (ARC) developed the Comprehensive Transportation Planning program to encourage counties and municipalities to practice long range transportation planning in support of regional planning efforts. Barrow County, Georgia, completed its initial CTP under this program in 2007. Barrow County, with the municipalities of Auburn, Bethlehem, Braselton, Carl, Statham, and Winder, is now updating its CTP through the 2040 horizon year. This CTP Update builds upon the 2007 CTP and develops short-term and long-term transportation projects based on the level of need, available funding, and stakeholder and community input.

The results of this CTP Update will be incorporated into the ARC's overall long range Regional Transportation Plan (RTP) for the Atlanta region. The ARC's Transportation Improvement Program (TIP), which allocates federal funds for the implementation of transportation projects over the short-term, is contained within the continually updated RTP. Recommended projects that will require federal funding for engineering, right-of-way, or construction will be forwarded to the ARC for potential inclusion in the RTP and TIP.



2. GOALS FOR THE CTP UPDATE

This section presents the proposed goals of the CTP Update, and then provides the methodology by which these goals were drafted. These updated goals were reviewed by the Stakeholder and Technical Committees and provide the foundation for the prioritization of projects.

2.1. Goals of the CTP Update

The proposed goals for this CTP Update include updated versions of the 2007 CTP goals and several new goals that are based on new emphasis areas in recent transportation policy (**Table 2.1**).

Table 2.1: Proposed Goals of the CTP Update

Emphasis Area	2007 Goal	Revised Goal
Multimodal Transportation	Incorporate all transportation modes	Promote and support a multimodal transportation system
Mobility and Efficiency	Reduce travel time and congestion	Reduce travel time and congestion
Safety	Promote improved safety and efficiency	Promote improved safety for all modes of travel
Public Participation/Equity	Involve all members of the Barrow community	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process
Environmental Preservation	Improve air and water quality	Preserve and protect the natural and human environment
Land Use /Transportation Connectivity	Evaluate land use impacts	Ensure connectivity between transportation and land use policy
Intergovernmental Coordination	Ensure intergovernmental coordination among government agencies	Ensure coordination with all relevant government agencies that can promote a cohesive transportation network and an efficient project delivery across jurisdictional boundaries
Infrastructure Condition (State of Good Repair)	NA	Preserve and maintain the transportation infrastructure
Major Corridor Prioritization	NA	Prioritize mobility along existing and future major corridors
System Reliability	NA	Focus on operational improvements to improve system reliability
Freight Mobility	NA	Enhance the transportation network to promote goods movement
Economic Development	NA	Prioritize enhancements to serve existing and/or planned industrial and commercial areas
Innovative Financing/Project Delivery	NA	Explore innovative financing options to facilitate project delivery

Sources: 2007 CTP, Jacobs

2.2. Goal Update Methods

The goals from the 2007 CTP were taken as the starting point for the development of goals for this CTP Update. Goals were revised through comparison with current transportation policy, and updated for easier conversion into performance measures. Public and stakeholder input supported the addition of an economic development-oriented goal.



2.2.1. Goal and Current Policy Comparison

This plan's financially-constrained list of recommendations is tied to potential funding sources from federal, state, and local sources. Its goals therefore need to strike a balance between the policy priorities of the Federal Highway Administration (FHWA), Georgia Department of Transportation (GDOT), ARC, and Barrow County. This plan updated the goals developed for the 2007 CTP based on the transportation-related goals from the following relevant policy documents:

- PLAN 2040 – PLAN 2040 is the ARC's current Regional Transportation Plan, into which many of the recommendations from this plan will be incorporated.
- Moving Ahead for Progress in the 21st Century (MAP-21) – MAP-21 is the federal transportation bill that sets policy for federal transportation funding. In addition, in April 2014, United States Department of Transportation (USDOT) Secretary Anthony Foxx issued a set of Planning Emphasis Areas (PEAs) to serve as joint priorities for FHWA and Federal Transit Administration (FTA) under MAP-21.
- Statewide Transportation Plan /Statewide Strategic Transportation Plan (SWTP/SSTP) – This state policy document, prepared by GDOT, combines the long range transportation plan with a strategy for transportation investment from a business perspective.

The comparison resulted in the addition of new goals addressing the following Planning Emphasis Areas (PEAs) in current transportation policy:

- Examination and prioritization of maintenance needs
- Major corridor preservation
- System reliability
- Economic development and goods movement
- Exploration of innovative funding strategies

The goals of the 2007 CTP and those of Plan 2040, MAP-21 – including PEAs – and the SWTP are compared in **Table 2.2**.



Table 2.2: Goals and Related Policy Comparison Matrix

Emphasis Area	2007 CTP Goals	PLAN 2040	MAP-21	SWTP
Multimodal Transportation	Incorporate all transportation modes	Continue to implement cost-effective improvements such as sidewalks, multi-use trails, bicycle lanes, and roadway operational upgrades to expand transportation alternatives, improve safety, and maximize existing assets	Efficiency goals promote more efficient use of the transportation system through shared and reduced trips	Support accessible care and active lifestyles
Mobility and Efficiency	Reduce travel time and congestion	Assure the preservation, maintenance and operation of the existing multimodal transportation system Strategically target roadway capacity improvements to serve regionally significant corridors and centers	Achieve a significant reduction in congestion on the National Highway System	Improve the movement of people and goods across and within the State
Safety	Promote improved safety and efficiency	Continue to implement cost effective improvements such as sidewalks, multi-use trails, bicycle lanes, and roadway operational upgrades to expand transportation alternatives, improve safety, and maximize existing assets	Achieve a significant reduction in traffic fatalities and serious injuries on all public roads	Reduce injury and loss of life on Georgia's roads
Public Participation/Equity	Involve all members of the Barrow community	<i>No specific reference to emphasis area</i>	PEA: As part of the transportation planning process, identify transportation connectivity gaps in access to essential services	<i>No specific reference to emphasis area</i>
Environmental Preservation	Improve air and water quality	<i>No specific reference to emphasis area</i>	<i>No specific reference to emphasis area</i>	<i>No specific reference to emphasis area</i>
Land Use / Transportation Connectivity	Evaluate land use impacts	PLAN 2040 serves as the transportation component of the overall Regional Comprehensive Plan prepared by ARC, which ties PLAN 2040 to the Unified Plan Growth Map.	<i>No specific reference to emphasis area</i>	<i>No specific reference to emphasis area</i>
Intergovernmental Coordination	Improve inter-governmental coordination among government agencies	<i>No specific reference to emphasis area</i>	PEA: Promote cooperation and coordination across MPO boundaries and across State boundaries where appropriate to ensure a regional approach to transportation planning.	Leverage public-private partnerships and improve intergovernmental cooperation for successful infrastructure development
Infrastructure Condition (State of Good Repair)	<i>No specific reference to emphasis area</i>	Assure the preservation, maintenance and operation of the existing multimodal transportation system	Maintain the highway infrastructure asset system in a state of good repair	<i>No specific reference to emphasis area</i>



Emphasis Area	2007 CTP Goals	PLAN 2040	MAP-21	SWTP
Major Corridor Prioritization	<i>No specific reference to emphasis area</i>	Strategically target roadway capacity improvements to serve regionally significant corridors and centers	Achieve a significant reduction in congestion on the National Highway System	<i>No specific reference to emphasis area</i>
System Reliability	<i>No specific reference to emphasis area</i>	Continue to implement cost effective improvements such as sidewalks, multi-use trails, bicycle lanes, and roadway operational upgrades to expand transportation alternatives, improve safety, and maximize existing assets	Improve the efficiency of the surface transportation system	<i>No specific reference to emphasis area</i>
Freight Mobility and Economic Development	<i>No specific reference to emphasis area</i>	Maintain industrial and freight land uses at strategic locations with efficient access and mobility Maintain and expand infrastructure to support air and rail travel and transport	Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.	Expand Georgia's role as a major logistics hub for global commerce Create jobs and grow businesses.
Innovative/ Streamlined Financing/Project Delivery	<i>No specific reference to emphasis area</i>	<i>No specific reference to emphasis area</i>	Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices	<i>No specific reference to emphasis area</i>

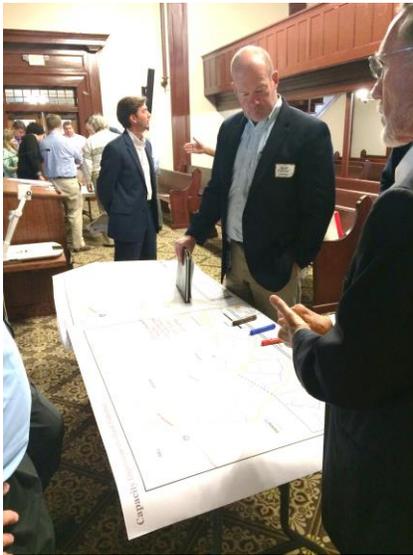
Sources: 2007 Barrow County CTP, Plan 2040, MAP-21, 2014 Planning Emphasis Areas, and SWTP



3. OUTREACH

An understanding of the County's most pressing transportation needs is essential to the assessment of Barrow County's transportation network. This understanding is rooted in the information gathered from Barrow County residents, employees, business owners, and other stakeholders at meetings for the discussion of transportation needs. This section describes how this information was obtained and lists identified needs.

3.1. Public Outreach Methods



Input was gathered from the Technical Committee, Stakeholder Committee, and the general public to determine critical transportation needs in the county. The Technical Committee is an advisory group to the CTP responsible for contributing to the plan from a technical and professional perspective. The committee is comprised of representatives from state and regional agencies and neighboring jurisdictions. The Stakeholder Committee is responsible for identifying needs from the perspective of a local transportation user and is comprised of community and business leaders in the county.

On December 1, 2014, at the Historic Barrow County Courthouse in Winder, GA, two separate small-group meetings were held for the Technical Committee and the Stakeholder Committee where each committee was asked to discuss and identify critical transportation needs.

An open-house public meeting was held on December 8, 2014, at the Historic Barrow County Courthouse in Winder, GA, with the purpose of giving an overview of the CTP and to gather input for the transportation needs in the county. The five participants were asked to identify transportation needs in the county within the following categories:

- New roadways
- Intersection improvements
- Roadway capacity
- Access management corridors
- Transit and Human Services Transportation (HST)
- Bicycle and pedestrian

To do this, unimplemented and unfunded transportation improvements recommended by the previous CTP were mapped and presented to the committees and the public, who were asked if there was an ongoing need for these improvements, or if other improvements now seemed more pressing. Committee members participating in these meetings are listed in **Table 3.1**.



Table 3.1: Participating Technical and Stakeholder Committee Members

Committee	Name	Agency
Technical Committee	David Clark, PE	Athens-Clarke County Representatives
	Jennifer Dees	Town of Braselton
	Lewis Cooksey	Gwinnett County Representatives
	Ron Griffith	City of Auburn
	Guy Herring	Barrow County Economic & Community Development
	Brian Jehle	Georgia Commute Options
	Kaycee Mertz	Georgia Department of Transportation, Office of Planning
	Scott Miller	Barrow County Airport Representatives
	Quinton Spann	Georgia Department of Transportation, Office of Planning
	Scott Snedecor	Braselton Community Improvement District (CID)
	Burke Walker	Northeast Georgia Regional Commission
	Srikanth Yamala	Hall County Representative
	Bill Cooper	Resident
	Alex Hill	Hill's Ace Hardware
	Tommy Jennings	Chamber of Commerce
	Andy Keith	Republic Services
	Chris Maddox	Downtown Development Association
	Boyd McLocklin	Resident
	Rick Shmurak PE	Walton International
John Stell	Joint Development Authority	
Mark Still	Joint Development Authority	
Keith Tipton	Chico's	
Mike Welch	Harrison Poultry	
Stakeholder Committee	Rebecca Whidden	Barrow County Planning Department

Source: Jacobs

3.2. Publicly-Identified Transportation Needs

Through the methods described above, a series of transportation needs were identified by the public. These are summarized in the sections that follow and illustrated in **Figure 3.1**.

3.2.1. New Roadway Needs

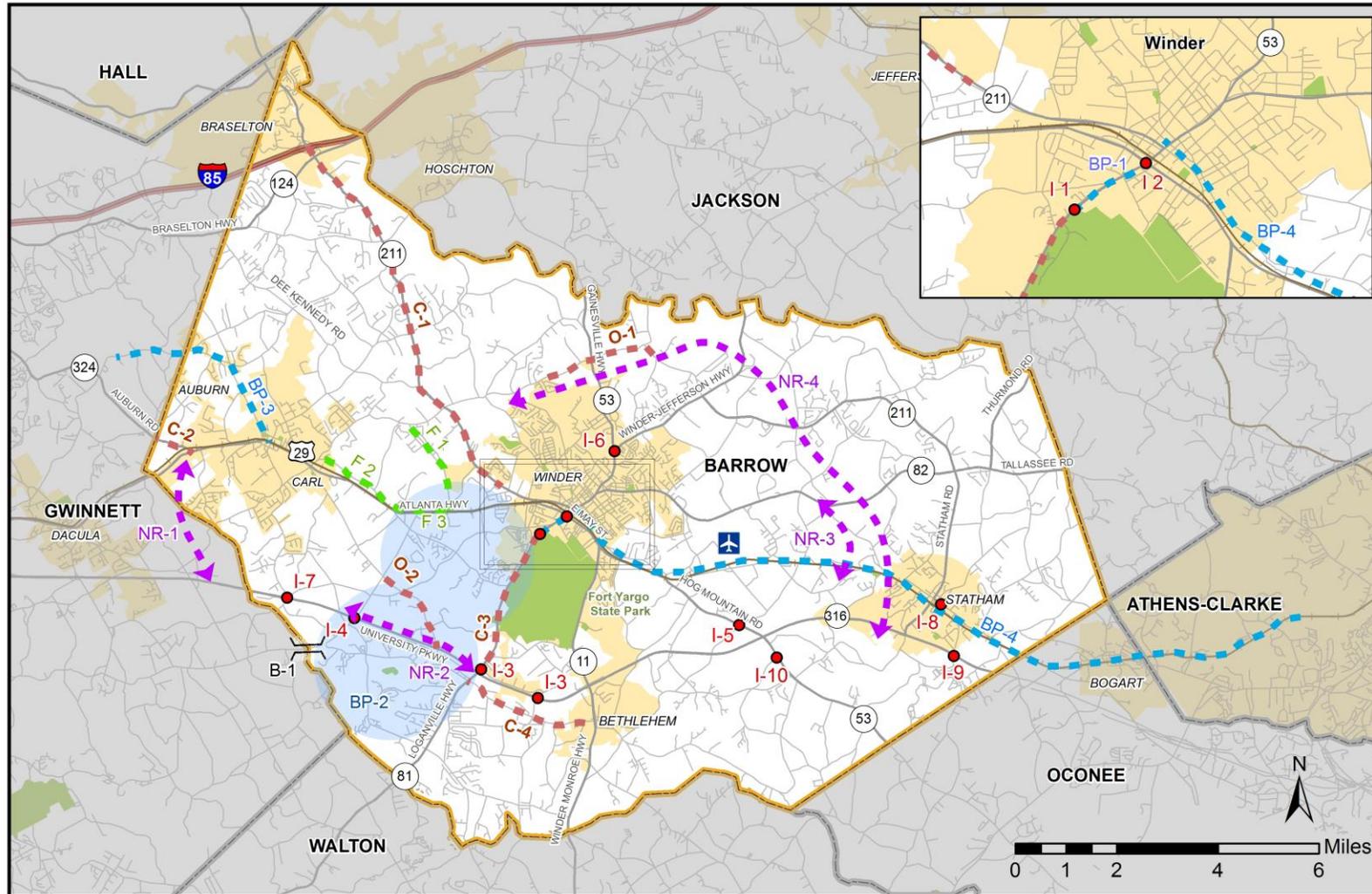
As discussed in the Existing Conditions Report, the need for a bypass around Winder was identified by the previous CTP. At this time, GDOT is planning for the phased construction of the West Winder Bypass. The committees and public confirmed the need for the bypass. They were asked if there was a need for other new roadways to serve mobility needs elsewhere in the county. Their responses can be



found in **Table 3.2**. These and other publicly identified needs are mapped in Figure 3.1.



Figure 3.1: Publicly Identified Transportation Needs



BARROW COUNTY CTP
Publicly Identified
Transportation Needs

Parks	Capacity / Operational	Intersections
Airport	Freight	Bridge Improvement
CSX Rail	Bicycle / Pedestrian	Pedestrian Improvements
Expressway	New Roads	
State Route		
Streets		

Source: ARC, Barrow County

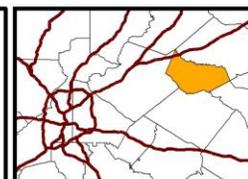




Table 3.2: Publicly-Identified Mobility Needs that may Require New Roadways

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
NR-1	Need for additional access to SR 316 from Carl and Auburn	New road from the junction of Atlanta Highway and SR 324 to SR 316	Public	No
NR-2	Need for improved access to adjacent properties once SR 316 is converted to a limited-access facility.	New collector-distributor road along the north side of SR 316 from SR 81 to Carl-Bethlehem Road.	Public	No
NR-3	Need to encourage economic development by improving access to the Barrow county airport.	New roadway from SR 82 to Atlanta Highway.	Stakeholder Committee	No
NR-4	Need to facilitate freight movement from the south and east that will not be served by the planned West Winder Bypass and so will still pass through Winder.	New roadway, an East Winder Bypass, from SR 316 to SR 211, along with a Cedar Creek Road realignment project.	Technical Committee	No

3.2.2. Capacity Needs

The previous CTP recommended the widening of several roadways, as described in the Existing Conditions Report. Meeting attendees supported the previously identified projects on SR 211, SR 81, and SR 324, and identified a new need for additional capacity along Harry McCarty Road that has been caused by recent development in that area (**Table 3.3**).

Table 3.3: Publicly-Identified Existing Roadways in Need of Increased Capacity

Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
C-1 SR 211 carries a high volume of truck traffic to I-85.	Widen SR 211 approaching I-85	Stakeholder and Technical Committees	Yes
C-2 Need to anticipate bottleneck that will be created by Gwinnett County's plans for a new interchange at SR 324 at I-85 and widening of SR 324 from the interchange to the Barrow County line.	Widen SR 324 from Gwinnett County to US Business 29 in Auburn.	Technical Committee	Yes
C-3 Need to accommodate high volumes of traffic along SR 81 from SR 316 to Fort Yargo.	Widen SR 81 from SR 316 to Fort Yargo	Technical Committee	Yes
C-4 Need to accommodate high volumes of traffic along Carl Bethlehem Road from SR 316 to SR 11.	Widen Carl Bethlehem Road from SR 316 to SR 11.	Technical Committee	No

3.2.3. Intersection Improvement Needs

The previous CTP identified the need for operations and safety improvements at 10 intersections, as described in the Existing Conditions Report. Meeting attendees identified the need for improvements at 10 additional intersections (**Table 3.4**).



Table 3.4: Publicly-Identified Intersections in Need of Improvement

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
I-1	Needs to address sight issues and lack of turn lanes on SR 81 at the existing entrance to Fort Yargo State Park.	Coordinate with the ongoing Fort Yargo Master Plan, which is re-envisioning the park entrance, to ensure the new entrance would address these safety issues and improve bicycle and pedestrian connections to downtown Winder.	Stakeholder Committee	Yes
I-2	Need to correct the delay caused by the light at the intersection of May Street/US Business 29 at South Broad Street/SR 81.	Adjust signal timing.	Public	Yes
I-3	Short term need to address safety issues entering SR 316 from Exchange Boulevard. The congested SR 81/SR 316 intersection has a spillover effect on the access road that runs in front of the commercial properties on Exchange Boulevard. Traffic returning to SR 81 from Exchange Boulevard cannot turn left due to the traffic queuing for the light. The intersection of Harry McCarty Road at SR 316, which is unsignalized and has poor visibility, is being used to avoid queuing congestion at the SR 81/SR 316 intersection at the other end of Exchange Boulevard.	Safety improvements to the intersection of SR 316 and Harry McCarty until the interchange projects can be constructed. Consideration of the frontage road in design of the interchange at SR 81 and SR316.	Stakeholder and Technical Committees	Yes
I-4	Need for safety improvements on SR 316 at Patrick Mill Road. At this location, a hill shortens the sight distance so that approaching traffic may not see cars overflowing the left turn lane on SR 316.	Additional turn lane storage and improved signal synchronization on SR 316.	Stakeholder Committee	Yes
I-5	Need for improvements on Jackson Trail Road at Hog Mountain Road to attract trucks off of Rockwell Church Road.	Addition of a turn lane and potential signalization on Jackson Trail Road at Hog Mountain Road	Technical Committee	No
I-6	There is a need for safety improvements at the intersection of Gainesville Highway/SR 53 at SR 11/SR 211/Jefferson Highway. The state routes come together in a Y intersection by the Barrow Regional Medical Center that has sight distance and turning issues.	Safety improvements to the intersection of Gainesville Highway/SR 53 at SR 11/SR 211/Jefferson Highway.	Technical Committee	No
I-7	There is a need for better access to SR 316, which is the major transportation corridor in the county. A major employment center utilizes the intersections at Kilcrease Road and Patrick Mill Road at SR 316 and both experience queuing during PM peak hours.	Add right turn lane to each intersection to allow for more traffic to move through the intersection during green light phase of signal.	Stakeholder Committee	No
I-8	Traffic on Broad Street delayed by turning traffic accessing Statham Elementary and Bear Creek Middle School at 3 rd Street.	Add turn lane on Broad Street at 3 rd Street.	Stakeholder Committee	No
I-9	There is turning traffic coming from Georgia Club at the intersection of SR 316 at Barber Creek Road.	Signalization of intersection of SR 316 at Barber Creek Road.	Stakeholder Committee	No
I-10	Traffic on Austin Road at Hog Mountain Road slowed by turning traffic accessing Sims Academy	Add turn lanes to Austin Road at Hog Mountain Road.	Stakeholder Committee	No



3.2.4. Operational Improvement Needs

The previous CTP identified the need for operational improvements on 18 roadway segments. In addition, meeting attendees identified two roadway segments that were in need of improvements to separate turning traffic from through traffic (**Table 3.5**).

Table 3.5: Publicly-Identified Needs for Operational Improvements

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
O-1	Need for operational improvements on Rockwell Church Road at Baskin Circle to SR 53 and at Moon Bridge Road where there is a very sharp curve in the road.	Address geometry of intersection of Rockwell Church Road at SR 53 and of segment of Moon Bridge Road.	Technical Committee	No
O-2	Lots of turning traffic along Carl-Bethlehem Road from Tucker Road to Patrick Mill Road	Add a center turn lane on Carl-Bethlehem Road from Tucker Road to Patrick Mill Road.	Stakeholder Committee	No

3.2.5. Transit, Bicycle, Pedestrian, and Other Needs

The previous CTP identified four bicycle improvements and supported the proposed commuter rail line through Barrow County. Meeting attendees supported the previously identified bicycle improvements, but only if funding those projects would not take money away from roadway funds. They also identified the need for additional bicycle projects, pedestrian projects, a bridge improvement, and transit support for impoverished persons (**Table 3.6**).

Table 3.6: Publicly-Identified Needs for Other Modes of Travel

Map ID	Need	Proposed Potential Action	Identified by	Identified in Previous CTP?
Not on map	There is a need for better access to jobs and services for low-income and zero-car households in the county.	Study potential for human services transit in Barrow County.	Public	No
BP-1	There is a need to attract mountain bikers from Fort Yargo to downtown Winder’s restaurants, shops, and services. There is also a need to support a more pedestrian-friendly, economically viable downtown. There is also an opportunity to attract bicyclists from Athens to downtown Winder.	A bike path from Fort Yargo to downtown Winder and a bike path from Athens to Fort Yargo/Downtown Winder.	Public	No
BP-2	There is the need for safe pedestrian and bicycle travel between residential areas and school clusters.	Sidewalks and multi-use trail connections to nearby residential areas from school clusters.	Stakeholder Committee	Yes
B-1	The bridge on Patrick Mill Road SW at the Gwinnett/Barrow County line needs improvement.	Improve bridge on Patrick Mill Road SW at the Gwinnett/Barrow County line.	Technical Committee	No
BP-3	There is a need for safe bicycle and pedestrian travel to Little Mulberry Park in Gwinnett, which is a popular destination.	A new bike/pedestrian connection to Little Mulberry Park in Gwinnett	Technical Committee	Yes
BP-4	There is a need to accommodate short trips via golf cart in the City of Statham.	Study golf cart trail system in Statham.	Technical Committee	No



3.2.6. Stakeholder-Identified Freight Needs

Stakeholders were interviewed regarding the specific needs related to the movement of freight, both rail and trucks. The interviewees represented chemical plants and steel cutting plants on Atlanta Highway in western Barrow County. These plants use the regional and local roadway networks, as well as the rail line, to receive raw materials and to ship out finished goods. In general interviewees supported the programmed improvements to SR 316 and SR 211 to support freight traffic. Additional specific freight needs identified in this discussion are listed in **Table 3.7**.

Table 3.7: Stakeholder-Identified Freight Needs

Map ID	Need	Proposed Potential Action	Identified in Previous CTP?
F-1	Pearl Pentecost Road needs pavement improvements to correct for the heavy truck traffic it carries and design improvements to carry truck traffic safely.	Resurface Pearl Pentecost Road	No
F-2	There is a need for improvements along Bankhead Highway to accommodate high volumes of truck traffic, particularly turning truck traffic.	Safety and operational improvements along Bankhead Highway to allow for separation of through traffic and turning traffic.	Yes
F-3	Maintenance needs and design needs at the rail crossing on Bankhead Highway and Atlanta highway near Industry Lane	Close rail crossing or redesign it with a longer approach appropriate for trucks.	No



4. DEMOGRAPHICS, POPULATION, HOUSEHOLDS AND EMPLOYMENT

An understanding of the current and future population and employment of Barrow County is important to assessing its transportation needs. Demographic data allows for the assessment of different types of needs, including needs for transit and human services transportation, and projected data allows for the assessment of the intensity of needs based on trip generation.

4.1. Forecast Growth in Population, Households, and Employment

This section presents forecasts of the potential growth in population, households and employment over the next 25 years. Population, household and employment density are considered in this analysis because they are measures of the intensity of land uses, either residential or commercial. In growing areas, it is possible to plan for the construction of sufficient infrastructure as new development occurs. The more developed an area becomes, the more disruptive and expensive transportation improvements will become in that area. Population, household and employment forecasts come from the ARC Travel Demand Model and correspond to the traffic forecasts for Average Annual Daily Traffic (AADT) and Level of Service (LOS) presented in this document.

4.1.1. Forecast Population

ARC forecasts project that the Barrow County population will grow by 70 percent through 2040, from 75,157 in 2015 to 128,075 in 2040 (**Table 4.1**). The rate of population growth in Barrow County is projected to outpace that of the region, which is projected to grow at a healthy 41 percent from 2015 to 2040. Even with strong growth, population density is projected to remain low countywide (**Figure 4.1**).

Table 4.1: Forecast Barrow County Population Growth

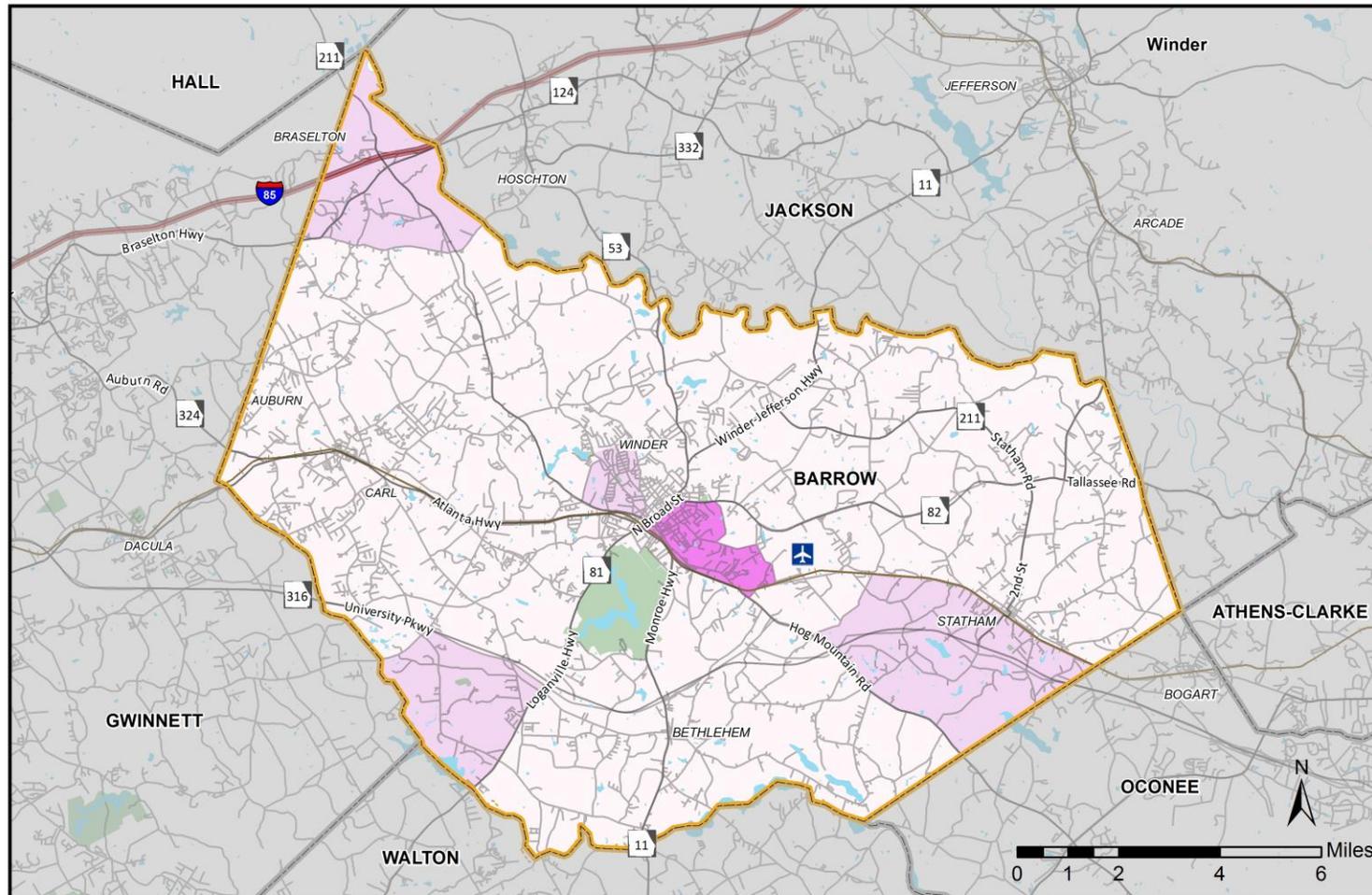
	2015	2020	2025	2030	2035	2040
Barrow County	75,157	82,170	92,943	102,666	113,368	128,075
Cumulative Growth from 2015	-	9%	24%	37%	51%	70%
ARC Region	5,520,493	5,868,766	6,318,008	6,779,441	7,249,844	7,756,667
Cumulative Growth from 2015	-	6%	14%	23%	31%	41%

Source: ARC Travel Demand Model

Population growth and its associated impacts are not projected to be distributed evenly across the county (Figure 4.1). The Braselton area, the Statham area, Winder, and south west Barrow County are all projected to add one person per acre over the next 25 years. This growth reflects Barrow’s projected continued suburbanization; the best method for ensuring sufficient transportation infrastructure for this growing area is through land-use planning that encourages or requires roadway connectivity, including a secondary roadway network with multiple access points along collector streets.



Figure 4.1: Projected Change in Barrow County Population Density, 2015 to 2040



BARROW COUNTY CTP
Change in Population
Density, 2015 -2040

Change Per Acre
 < 1 person
 1 - 2 persons
 > 2 persons
 Source: ARC, Barrow County

Barrow County
 Airport
 State Route
 Railroad
 Expressway
 Streets
 Park
 Waterbody





4.1.2. Household Growth

Households are projected to grow in Barrow County by 76 percent by 2040, again outpacing the rate of growth for households across the metro region, which is projected to be 44 percent (**Table 4.2**). As with population, household density is expected to increase notably by 2040 in the Statham and Winder areas as well as southwest Barrow County, while remaining at fairly low densities overall (**Figure 4.2**).

Table 4.2: Forecast Barrow County Household Growth

	2015	2020	2025	2030	2035	2040
Barrow County	27,663	30,522	34,746	38,543	42,723	48,615
Cumulative Growth from 2015	-	10%	26%	39%	54%	76%
ARC Region	2,101,169	2,247,371	2,430,660	2,617,319	2,813,675	3,031,448
Cumulative Growth from 2015	-	7%	16%	25%	34%	44%

Source: ARC Travel Demand Model

4.1.3. Impacts from Population and Household Growth

The projected 70 percent population growth and 76 percent household growth will place additional demands on the local and regional transportation system. Congestion already present in downtown Winder and along arterial roadways will increase without implementation of transportation improvements designed to increase roadway capacity and improve network operations. As Barrow County's low density residential development style is likely to continue over the coming decades, there will be additional needs for new roadways and additional capacity on the existing network, as well as general maintenance to address vehicle volumes.

4.1.4. Forecast Employment Growth

Employment is projected to grow at a slightly faster rate than population and households in Barrow County. Barrow County projected to attract an additional 17,250 jobs by 2040, an increase of 78 percent from 2015 (**Table 4.3**). Atlanta regional employment is projected to grow by 45 percent during that same period, adding approximately 1.3 million new jobs from 2015 to 2040.

Table 4.3: Forecast Barrow County Employment Growth

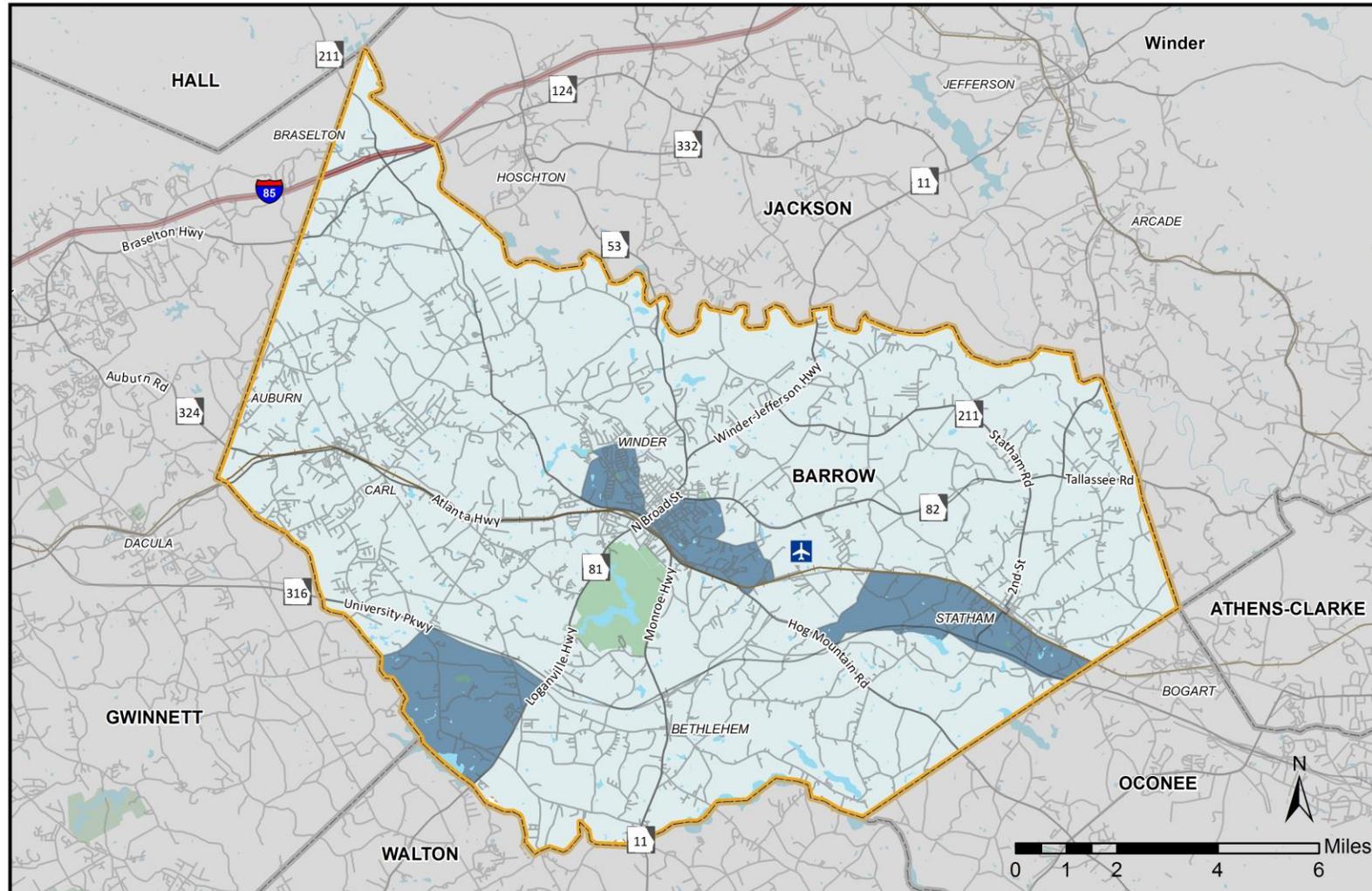
	2015	2020	2025	2030	2035	2040
Barrow County	22,210	26,131	29,148	32,490	36,095	39,460
Cumulative Growth from 2015	-	18%	31%	46%	63%	78%
ARC Region	2,908,551	3,205,951	3,439,557	3,689,497	3,962,027	4,212,089
Cumulative Growth from 2015	-	10%	18%	27%	36%	45%

Source: ARC Travel Demand Model

By 2040, employment densities are projected to increase by one or more jobs per acre in east Winder and by one job for every two acres in the Statham area, in the vicinity of the area where the County has plans for a new industrial park (**Figure 4.3**). Employment is not projected to increase substantially in southwest Barrow County and west Winder, even as those areas add population and households, indicating that they will remain largely residential in use. Also, in general, areas with relatively high levels of existing employment are projected to remain areas of strong employment. Transportation projects that improve access to areas of high employment, or economic centers, should be prioritized.



Figure 4.2: Projected Change in Barrow County Household Density, 2015 to 2040



BARROW COUNTY CTP

Change in Household
Density, 2015 -2040

Change Per Acre

- < 0.5 household
- > 0.5 household

Source: ARC, Barrow County

- Barrow County
- Airport
- State Route
- Railroad
- Expressway
- Streets
- Park
- Waterbody

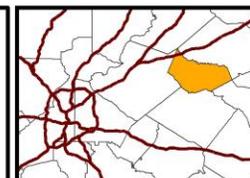
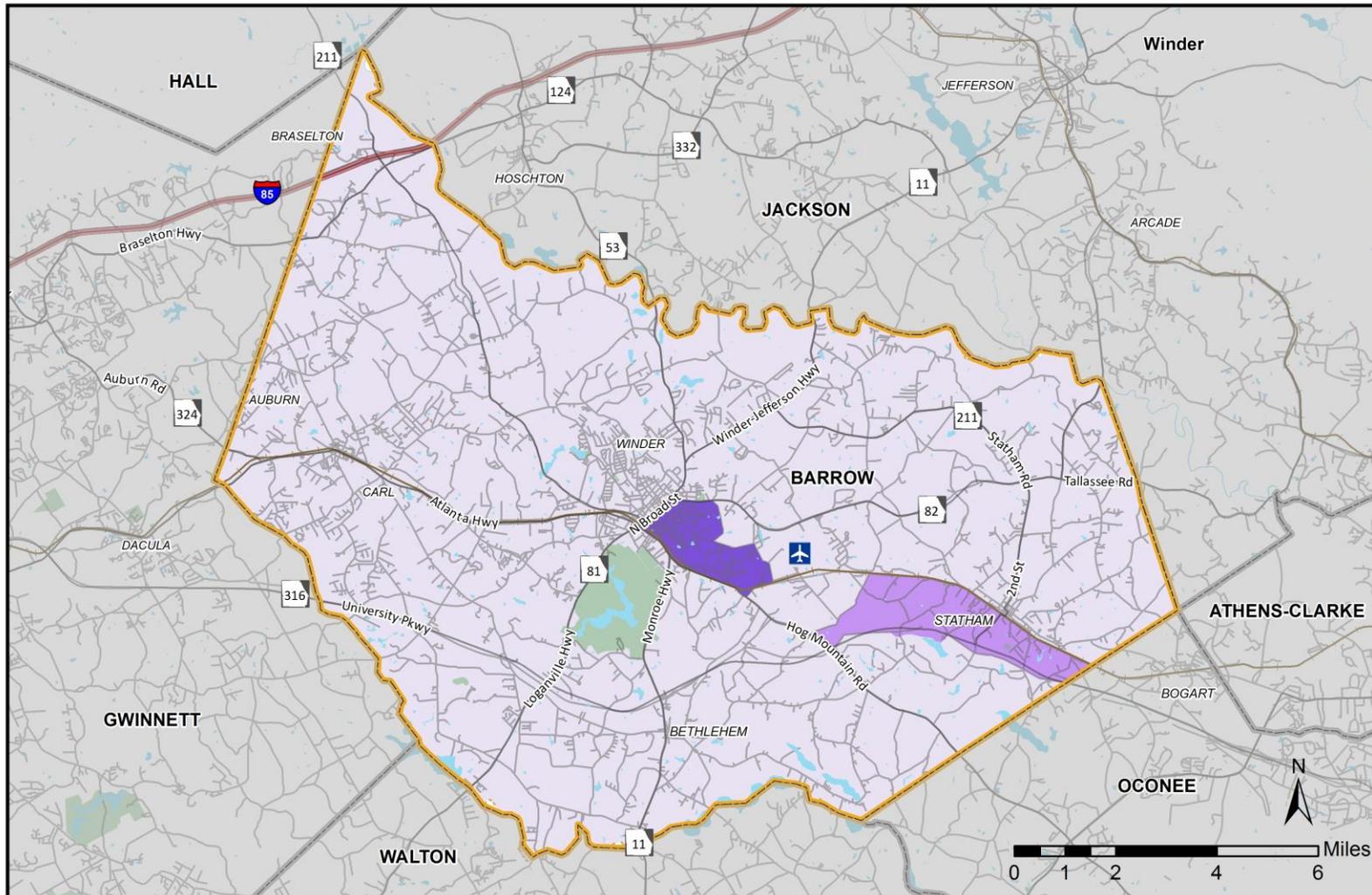




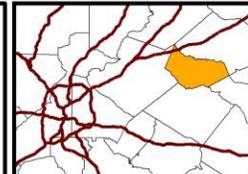
Figure 4.3: Projected Change in Barrow County Employment Density, 2015 to 2040



BARROW COUNTY CTP
Change in Employment
Density, 2015 -2040

Change Per Acre
 < 0.5 job
 0.5 - 1 job
 > 1 job
 Source: ARC, Barrow County

- Barrow County
- Airport
- Expressway
- Streets
- State Route
- Park
- Railroad
- Waterbody





4.1.5. Projected Commercial Development

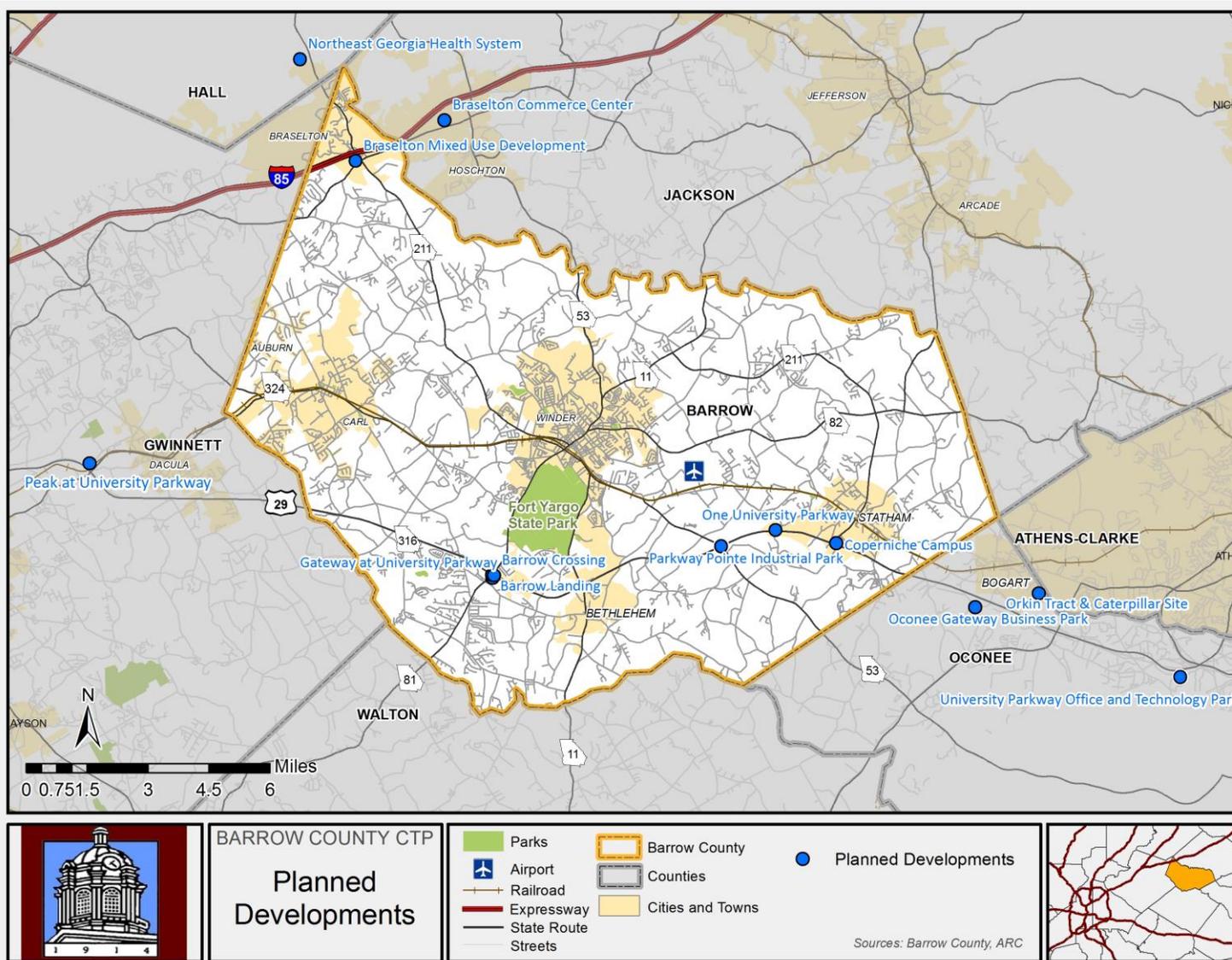
Many major commercial development initiatives are planned or proposed in Barrow County and neighboring Gwinnett and Oconee Counties. If implemented as planned, these projects have the potential to dramatically change SR 316 and I-85 corridors, adding millions of square feet of commercial space and thousands of housing units, many of them in master-planned mixed-use developments (**Table 4.4** and **Figure 4.4**).

Table 4.4: Current and Planned Development in Barrow County

Development	Status	Description
Parkway Pointe Industrial Park	Planned; no tenants have committed.	293-acre industrial park targeting bioscience firms developed by the Winder-Barrow Industrial Building Authority on County-owned land at SR 316 and SR 53 in Barrow County.
One University Parkway	Planned; proposed completion date of 2027.	A 360-acre master-planned development at the intersection of Wall Road and SR 316 in Barrow County. Mixed uses, including retail/commercial, flex office/industrial, office, institutional, senior living units, multi-family units, and amenities.
Barrow Landing	Proposed	A 325-acre master planned development planned for the corner of SR 316 and SR 81 in Barrow County. Mixed uses, including residential, commercial, light industrial, retail, and office.
Coperniche Campus	Announced in 2011, construction yet to commence.	The Barrow County Department of Economic Development is partnering with private-sector developers on a 90-acre high-end bioscience research and manufacturing park at the intersection of GA 316 and Highway 211.
Barrow Crossing– Gateway at University Parkway	Largely completed with additional sites available	Barrow Crossing is a large retail power center south of SR 316 at SR 81. This is the largest shopping center in the area, at approximately 513,000 SF.
Chateau Elan/ Braselton Mixed Use Development	Partially completed with additional sites available.	This retail center on the northwest corner of SR 316 and SR 81 is quickly finding new tenants. This site consists of 75 acres zoned for commercial uses.
Orkin Tract & Caterpillar Site	Proposed. Zoning approved in 2010; no construction date announced.	Halverson Development proposed a 200-acre development in the northern end of Barrow County, near the intersection of I-85 and SR 211. Mixed uses, with two major shopping centers including two hotels, and perhaps residential.
Peak at University Parkway	Completed in 2013, with additional phases underway.	New major manufacturing facility on 260 acres of the 920-acre Orkin Industrial tract in Bogart, Oconee County.
Oconee Gateway Business Park	Planned; DRI Submitted and approved 2012.	A 157-acre mixed-use master-planned community is planned for the northeastern quadrant of Winder Highway at University Parkway/SR 316 intersection in Gwinnett County, immediately west of the Barrow County line. Mixed uses, including commercial, retail, corporate office, industrial, research, medical, institutional, residential, and hotel/conference facilities.
University Parkway Office & Technology Park	Under development	Industrial Development Authority of Oconee County has developed a business park of 120 acres located on SR 316 at McNutt Creek Road, near the Intersection of Highway 78, just east of Barrow County. A pharmaceutical company announced plans to lease two buildings in the park.
Braselton Commerce Center	Largely complete, with additional sites available	Mid-rise office & technology park located in Oconee County adjacent to SR 316. The 40-acre site includes two undeveloped building pads, with plans for two additional buildings of 13,000 SF and 45,000 SF.
Northeast Georgia Health System	Underway; Completion is expected in 2015.	A 1.1 million SF distribution warehouse on SR 124 in Jackson County, near Barrow County.
	Announced	100-bed regional hospital with an adjoining 125,000 SF medical office building in south Hall County, near Braselton.



Figure 4.4: Major Developments either Planned or Underway in and around Barrow County





4.1.6. Impacts of Employment Growth

Employment growth, based on analysis of proposed new commercial developments and outputs from the Travel Demand Model, is likely to be strongest in Winder, along SR 316, and at I-85 in Braselton. As detailed elsewhere in this report, these areas currently face issues with congestion, delay and safety under current conditions. As employment increases, these issues are likely to increase as well. Winder experiences the greatest delay in Barrow County under current conditions, but the new West Winder Bypass should aid in shifting truck traffic away from Winder and improve conditions in general. Similarly, the intersection to interchange conversions planned along SR 316 will likely improve conditions along that facility in terms of safety and delay. SR 124 through Braselton currently experiences high levels of delay, and there are no projects programmed to address that delay at this time. There is a need to prioritize improvements that make travel through Winder, along SR 316, and to Braselton safer and more efficient to support employment growth projected for these areas.

4.2. Land Use Policy Needs

Development along SR 316 is occurring in a nodal style, clustered at intersections. This style of development is attractive to potential visitors and developers alike, and it allows for a continued through movement of traffic not bound for local destinations. This style of development has largely been the result of very limited access to SR 316, which does not allow direct driveway access to the facility, but access only from intersecting streets.

With the construction of the new West Winder Bypass, there is the opportunity to support quality, nodal development along this new facility, just as it has been successfully implemented along SR 316. An overlay district in this area would limit access to the main facility and create developable areas at intervals, ensuring the ongoing efficiency and safety of the new facility.

Furthermore, the conversion of intersections to interchanges is unlikely to disrupt existing or planned development along SR 316, and will strengthen the limits on access to the main facility. However, as these interchanges are constructed, alternative parallel routes should be created for inter-parcel access. Local traffic will then be able to utilize the smaller roads to move among destinations without adding to the traffic on SR 316, which would create a safety hazard and a bottleneck along that segment of an important regional thoroughfare.

4.3. Demographics

Analysis of Barrow County's demographics aids in the identification of transportation needs related to age and income, and allows for the minimization of the potential for negative impacts to Environmental Justice communities from the proposed transportation improvements that may result from this planning process. A general overview of Barrow County demographics is included in the *Existing Conditions Report*. Data from the 2010 American Community Survey (ACS) were used to identify minority, low-income, and senior (over 65) populations, as well as, zero-car households in the county. Most recent data available were compared to that presented in the 2007 CTP to determine the extent of demographic changes in the County and the impact of those changes on the transportation system.



Areas with a higher proportion of each population than the County average were identified via Geographic Information System (GIS) for this analysis.

4.3.1. Environmental Justice Populations

Executive Order 12898, signed by President Clinton on February 16, 1994, directs federal agencies to identify and address, as appropriate, high and adverse impacts on Environmental Justice (EJ) populations as a result of implementing federally funded projects, programs and/or policies. EJ populations consist of minority and low-income persons who are defined as: minority persons, who include individuals who have identified as Hispanic, Latino or a race other than White; and low-income persons who are defined as those whose median household income is at or below the U.S. Department of Health and Human Services poverty line. EJ populations are identified in this assessment in order to locate areas where there may be need for transportation investments or services as well as areas where disproportional negative impacts from transportation investments should be avoided.

Minority Persons

Minority persons are included in the Environmental Justice populations and are defined as a race other than white. Barrow County’s minority population, as a portion of the total population, has increased since the 2007 CTP. The 2007 CTP reported that Barrow County was 14.9 percent minority, based on 2000 Census data. In 2010, the county’s population was 21.0 percent minority, which is significantly lower than the minority populations of the Atlanta Metropolitan Statistical Area (MSA) and the state, which were 43.1 and 40.3 percent respectively (**Table 4.5**). Higher-than-average minority populations are found in and around the Winder, Statham, and Carl-Auburn areas (**Figure 4.5**). Recommended transportation improvements in these areas should avoid disproportional negative impacts to these communities.

Table 4.5: Minority Population

Area	Minority Persons 2010	Total Population	Percent Minority, 2010
Barrow County	14,568	69,367	21.0%
Atlanta MSA	2,209,017	5,125,113	43.1%
State of Georgia	3,900,213	9,687,653	40.3%

Source: US Census, 2006-2010 American Community Survey

Low-Income Persons

Individuals whose median household income is at or below the U.S. Department of Health and Human Services poverty line are classified as low-income persons and are included in the Environmental Justice populations. The 2007 CTP reported that 8.3 percent of persons living in Barrow County in 2000 were in poverty. That number increased to 12 percent by 2010, which is approximately the same as that for the MSA average of 12.4 percent, but lower than the state average of 17.4 percent (**Table 4.6**). This group may lack reliable transportation creating difficulties accessing jobs, shopping, and medical care. Low income persons are found in the central portion of the county (**Figure 4.6**).



Figure 4.5: Minority Population in Barrow County

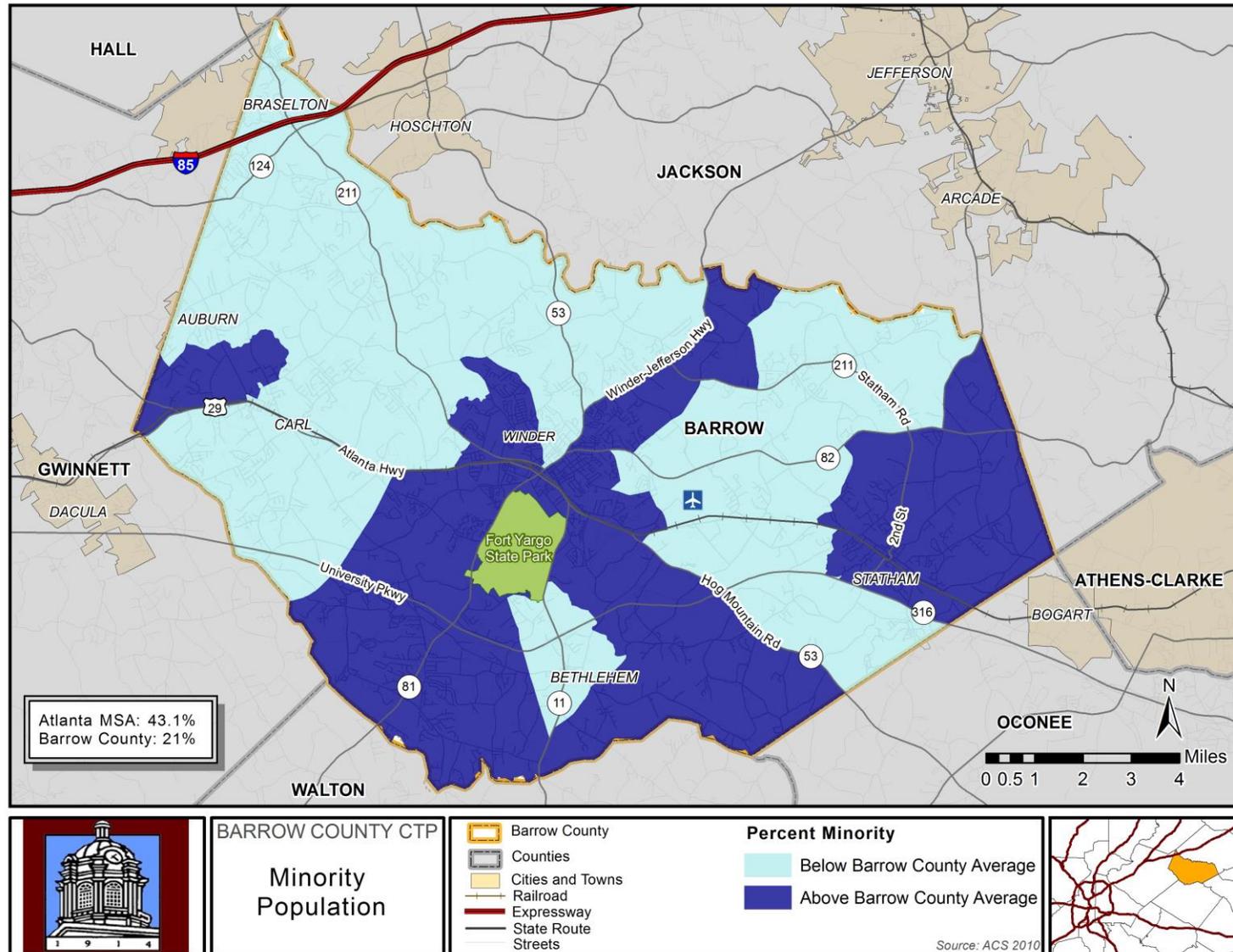




Figure 4.6: Low Income Population in Barrow County

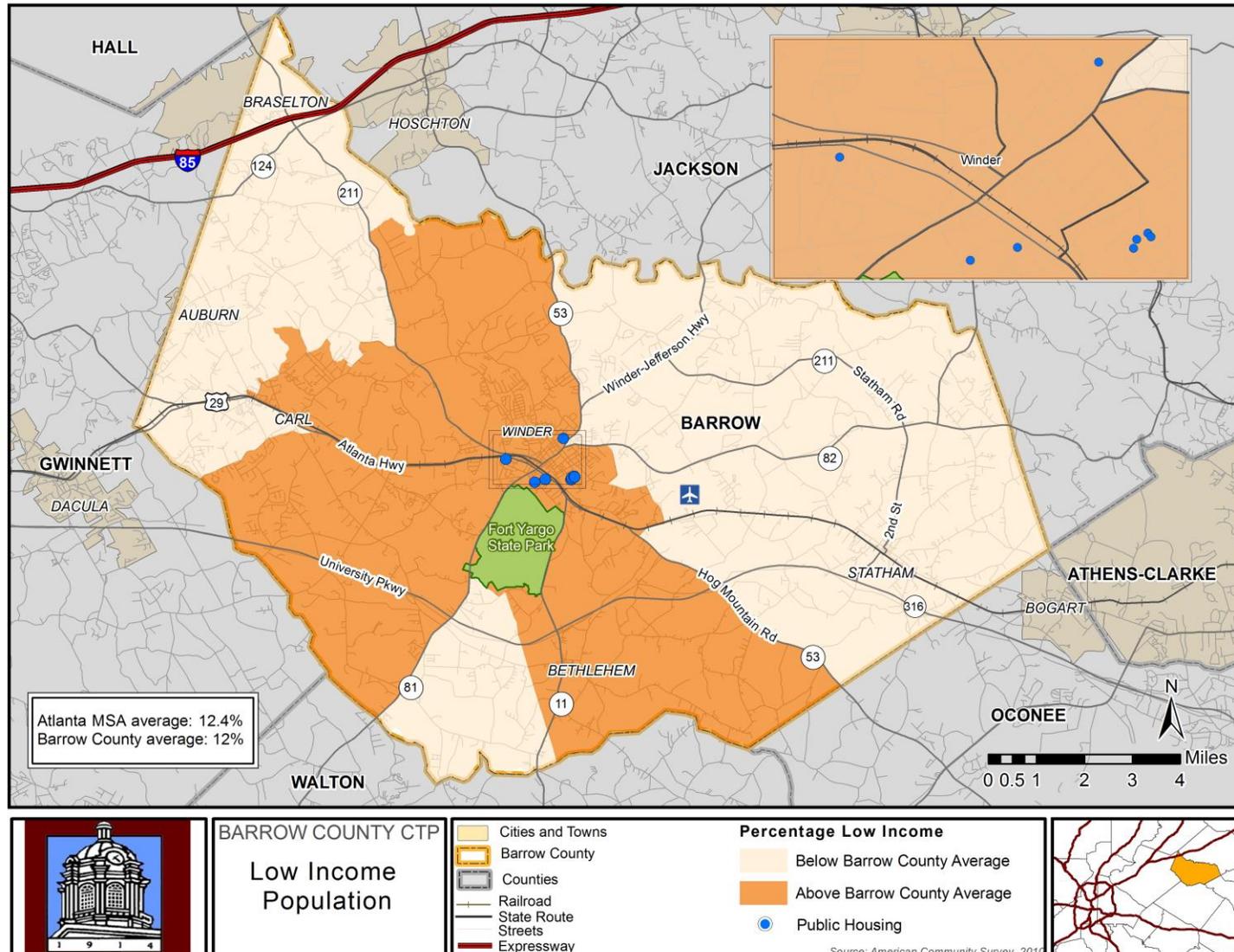




Table 4.6: Low Income Persons

Area	Low-Income Persons	Total Population	Percent Low-Income
Barrow County	8,295	69,367	12.0%
Atlanta MSA	635,003	5,125,113	12.4%
State of Georgia	1,688,932	9,687,653	17.4%

Source: US Census, 2006-2010 American Community Survey

4.3.2. Senior Populations

Seniors are defined as persons aged 65 or older. This is a group that traditionally has to rely on alternative transportation such as HST when they find they no longer can, or wish to, drive. The 2007 CTP reported that 9.1 percent of Barrow County’s population was over 65. In 2010, that number had fallen to 8.6 percent, which is similar to the MSA’s average of 8.5 percent and lower than the state average of 10.7 percent. Barrow County’s population is, in general, a little younger than that of the MSA and the state. The county’s median age of 33.6 is slightly younger than the MSA median age, 34.9, and the state’s median, 35.3 (Table 4.7).

Table 4.7: Senior Population

Area	Senior Persons	Total Population	Percent Seniors	Median Age
Barrow County	5,957	69,367	8.6%	33.6
Atlanta MSA	436,062	5,125,113	8.5%	34.9
State of Georgia	1,032,035	9,687,653	10.7%	35.3

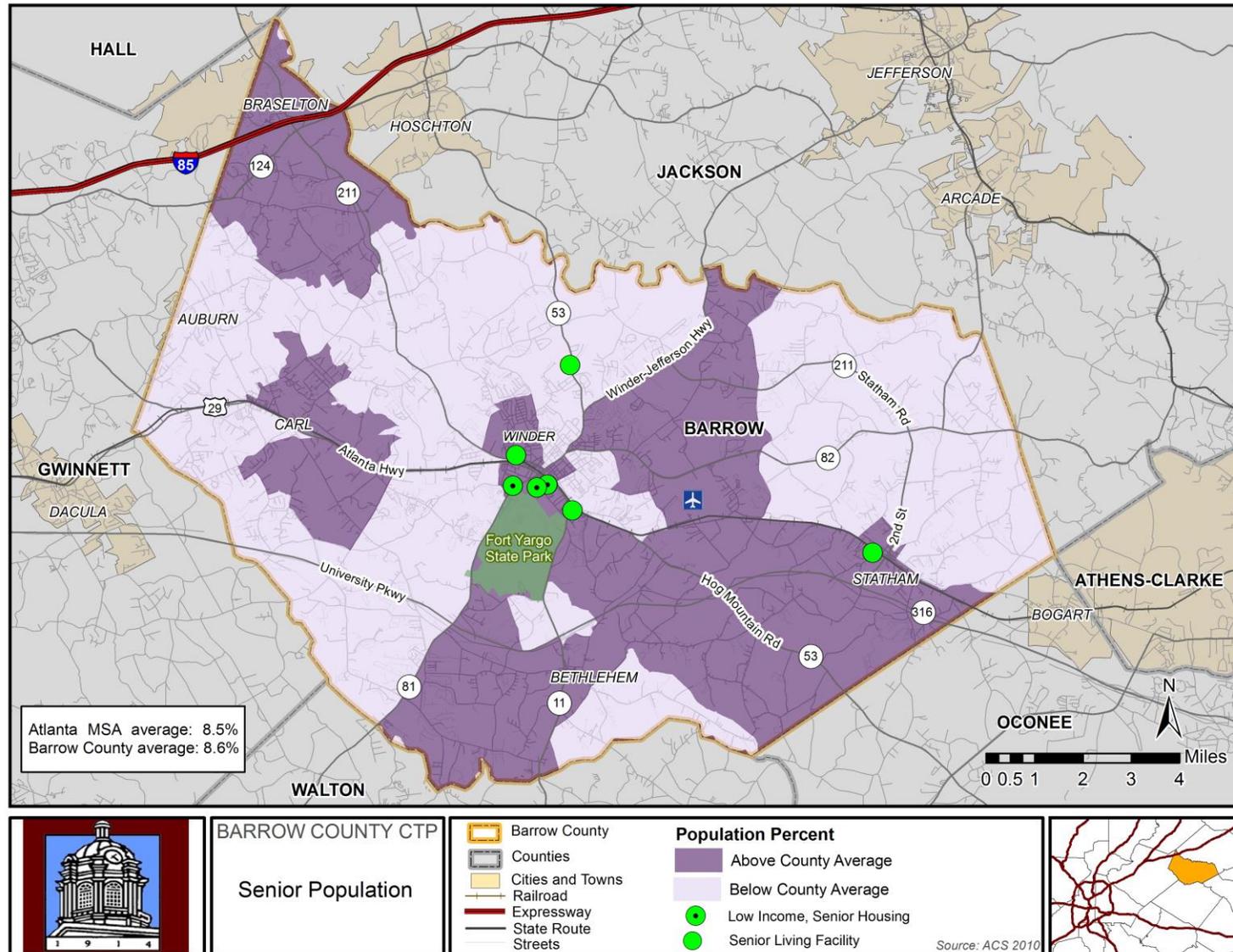
Source: US Census, 2006-2010 American Community Survey

There are three low-income, senior housing establishments in downtown Winder and four senior living facilities in the county, including assisted and independent living and nursing homes. Mulberry Grove Senior Living, located in Statham, is the only senior facility not located in the Winder area. Senior populations are higher than the county average in and around these homes, as well as in Braselton, Carl, and southeast Barrow County (Figure 4.7). The southeast portion of the County has higher than average senior and low-income populations. Whether or not these populations consist of the same people, there may be a need for additional service in this area.

The phenomenon of Aging in Place results in “naturally occurring retirement communities” where older adults are aging in car-dependent suburban and rural areas where they already reside. These communities are a challenge for social service providers and transportation since the communities were not designed for adequate transportation for seniors. Affordable transportation alternatives, like pedestrian-friendly streets and human services transit, are needed in order to successfully age in place in communities where daily activities require frequent car trips.



Figure 4.7: Senior Population in Barrow County





4.3.3. Zero-Car Households

Barrow County’s low population density is reflected in its small percentage of zero-car households. The 2007 CTP reported that 6.3 percent of Barrow County households were without access to vehicles. By 2010, that number had decreased slightly, to 4.0 percent of households (**Table 4.8**). The share of Barrow households without access to cars is roughly equivalent to the MSA average of 3.9 percent. Unlike many other areas across the MSA, however, households without cars in Barrow County do not have access to transit services. The only area in the County with a relatively high rate of non-car ownership is in east Winder (**Figure 4.8**). East Winder also has a relatively high population of low-income and minority persons, which may indicate a need for services in this area. The area does not have a high senior population, which suggests that the need for additional mobility in this area is not related to the need for additional mobility in the areas with higher than average senior populations.

Table 4.8: Zero-Car Households

Area	Zero-Car Households	Total Households	Percent
Barrow County	951	23,971	4.0%
Atlanta MSA	76,329	1,937,225	3.9%
State of Georgia	232,628	3,585,584	6.5%

Source: US Census, 2006-2010 American Community Survey

4.3.4. Equitable Target Areas

Another tool in the pursuit of equitable transportation investments is Equitable Target Areas (ETA), which the ARC created for use in the identification of environmental justice communities in the Atlanta region. ETAs were identified based on five parameters, age, education, median housing value, poverty, and race. Transportation investments in communities at levels below the regional ETA average should consider the resulting potential benefits and negative impacts to these communities. Based on the ETA map in **Figure 4.9**, the westernmost portion of Barrow County that borders Gwinnett County has an ETA index of 5 to 8 (just above regional average), while the remainder of the county has an ETA index of 9 to 11 (just below regional average), reflecting its slightly higher than average proportions of minority, low income, and senior persons. Relative to the region, neither portion of Barrow County would be considered an area for targeting equitable transportation investments.



Figure 4.8: Zero-Car Households in Barrow County

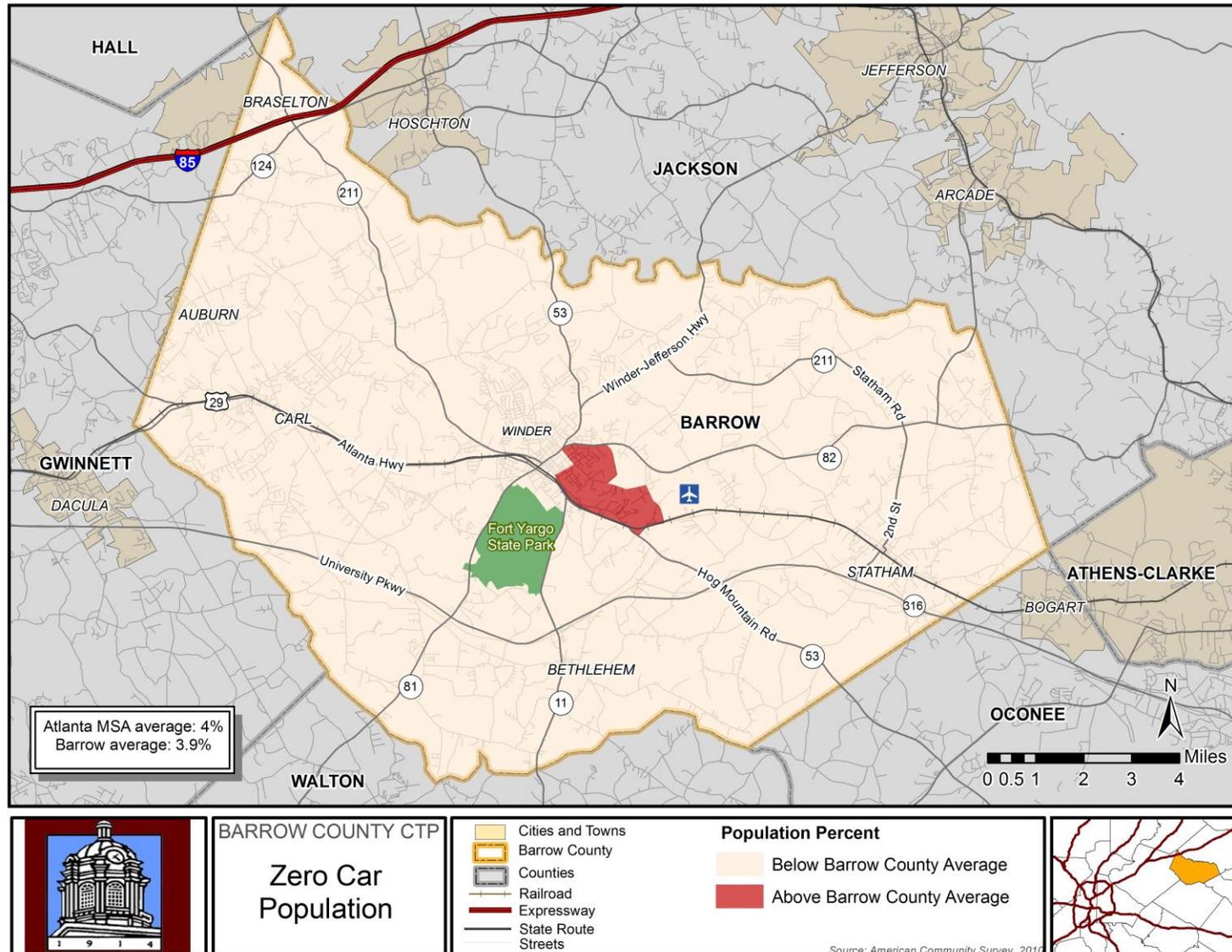
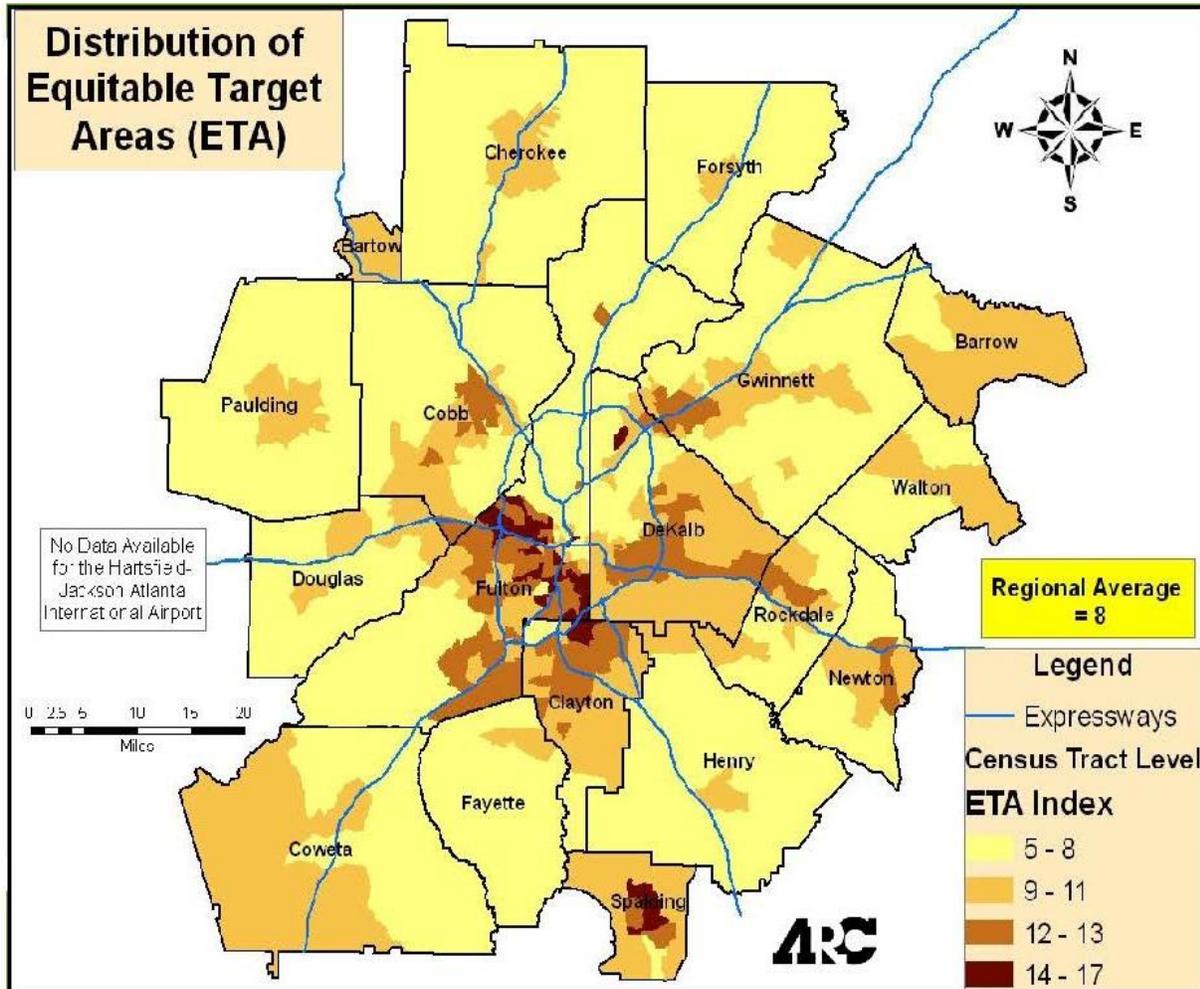




Figure 4.9: ARC Equitable Target Areas



4.3.5. Demographic Impacts

From the demographic analysis, it appears that Winder is located in the portion of Barrow County with a lower than average ETA index, with relatively high levels rates of households without cars, as well as low-income and minority persons. The presence of these populations may correlate with a need for transit or HST services in and to and from Winder, particularly to support access to jobs in nearby counties. In addition, comment from public involvement undertaken for this study indicates that human services programs, like Peace Place, located in Winder would benefit from improved access to transit and HST services. There is therefore a need for additional inquiry into the types of HST that may be warranted in Winder and Barrow County and the various sources of federal funding for such services.



5. ROADS AND INTERSECTIONS

This section presents the analysis of travel patterns, safety, traffic and congestion on the Barrow County roadway network to identify changes in the roadway segment and intersection needs of Barrow County’s transportation network since the 2007 CTP. Insights from client and public involvement activities in Barrow County, including public and stakeholder meetings as detailed in the Section 3 of this report, were included in this analysis.

5.1. Travel Patterns

Travel patterns reveal the mobility needs of an area. The ARC Travel Demand Model was used to identify the travel patterns for people and vehicles leaving from Barrow County. Because the ARC Travel Demand Model is a decision making tool for policymakers in the Atlanta region, its boundaries encompass the Atlanta 20-county non-attainment region. Barrow County is located at the eastern edge of this region, so some trips originating in Barrow County are to counties within the Atlanta region and therefore internal to the model. Other trips, however, to counties outside the Atlanta 20-county region are considered external to the model.

The level of detail available for internal trips is greater than that for external trips. Trips within the Atlanta region are coded according to the eventual destination, regardless of the counties passed through on the trip. A trip to Cobb County, for example, is shown in the model as having a destination in Cobb County, not Gwinnett. Trips external to the model, however, do not afford that level of detail, and information about the destinations of these trips is limited to the county first entered on the journey. Therefore trips to Athens, in Clarke County, do not register in the ARC Travel Demand Model as having their destination in Clarke County but as either Jefferson or Oconee Counties, because all roads between Barrow and Clarke Counties pass through these other counties first.

5.1.1. Analysis of Trips Internal and External to the Atlanta Region

Barrow County is located on the eastern edge of the Atlanta region, just west of the Athens metropolitan area. The Athens region is smaller in population and geography, and exerts a weaker pull on the travel patterns of Barrow residents. Just 8.7 percent of all vehicle trips that originate in Barrow County in 2015 go to destinations that are external to the model, such as Jefferson or Oconee Counties, while 27.0 percent go to destinations within the Atlanta region, such as Gwinnett, DeKalb or Fulton Counties (**Table 5.1**). These patterns are expected to stay stable through 2040. The majority of trips, 64.3 percent, that originate in Barrow County also have their destination in Barrow County. All other trips are illustrated in the desire line maps presented in **Figure 5.1** (internal trips) and **Figure 5.2** (external trips).

Table 5.1: Vehicle Trips to Destinations Internal and External to the Atlanta Region

Trips from Barrow County to...	2015	2030	2040
...Destinations in Barrow County	64.3%	65.6%	66.0%
...Destinations in the Atlanta region (internal to the ARC region)	27.0%	25.0%	24.3%
...Destinations outside the Atlanta region (external to the ARC region)	8.7%	9.3%	9.6%

Source: ARC Travel Demand Model



As can be seen from Figure 5.1, of the total 2015 vehicle trips that are bound for counties within the Atlanta region, most are destined for Gwinnett, Walton and Hall Counties, although some are destined for Forsyth, Fulton, DeKalb, Clayton, Rockdale and Newton Counties. By 2040, vehicle trips to Cobb County are included, and trips to Fulton and DeKalb County intensify. This trend indicates that Barrow County will become more and more a part of the greater Atlanta region, with trips to and from other locations in the region becoming a more regular matter. Trips to locations outside the region, on the other hand, are expected to increase overall as a factor of growth and development in the county, but are not projected to experience a shift in destinations (Figure 5.2).

5.1.2. Analysis of Home-Based Work Trips

Home-based work trips are the trips people make most often and usually during peak periods, when congestion and delay are highest. Understanding commuting patterns allows for planning for travel on a limited roadway network when travel volumes are highest. This section provides information about home-based work trips that originate from Barrow County in 2015, 2030 and 2040 to Barrow County itself and to counties internal to the ARC region.

Based on outputs from the ARC Travel Demand Model, Barrow commuters in 2015 are primarily driving to Gwinnett for work, with some people driving to jobs in Hall, Forsyth, Fulton, DeKalb, Newton and Walton Counties (**Figure 5.3**). By 2030, the commuting pattern to Gwinnett is projected to remain strong, although Gwinnett's share of overall commutes is decreasing, with more people driving to jobs in Fulton County. Commutes to Forsyth County are projected to fall off entirely, but a new commuting pattern to Cobb County is projected to emerge. By 2040, these patterns continue, and only slightly more commuters are destined for jobs in Gwinnett than other individual counties in the region, and more commuters driving to Cobb, Fulton, and DeKalb counties. This trend implies that the average commute for Barrow County residents will get longer, in terms of miles, over time, as more Atlanta region employees choose to make their homes in Barrow County.

5.1.3. Analysis of Home-Based Other Trips

Home-based other trips are those trips which begin at home but end at destinations other than work. These trips provide an illustration of where people choose to go, for errands, or to spend leisure time. Changes in these trips over time indicate shifts in the locations of services, retail, restaurants, entertainment and other uses.

Unlike the pattern in home-based work trips, most home-based other trips are projected to have their destinations in Gwinnett County in 2015, 2030 and 2040 (**Figure 5.4**). Gwinnett County is adjacent to Barrow County and offers most of the shopping, restaurants and services associated with a highly developed urban region, so it stands to reason that Barrow County residents would choose the shortest trip to these kinds of destinations when they decide to venture out of Barrow County. These "other" trips are flexible in terms of destination and time of day, and they are more traffic-sensitive than trips to work. Therefore it is not surprising that these types of trips to Forsyth County, prevalent in 2015 and 2030, are foregone by 2040 for destinations that are closer to home.



Figure 5.1: ARC Region Trips, 2015, 2030, and 2040

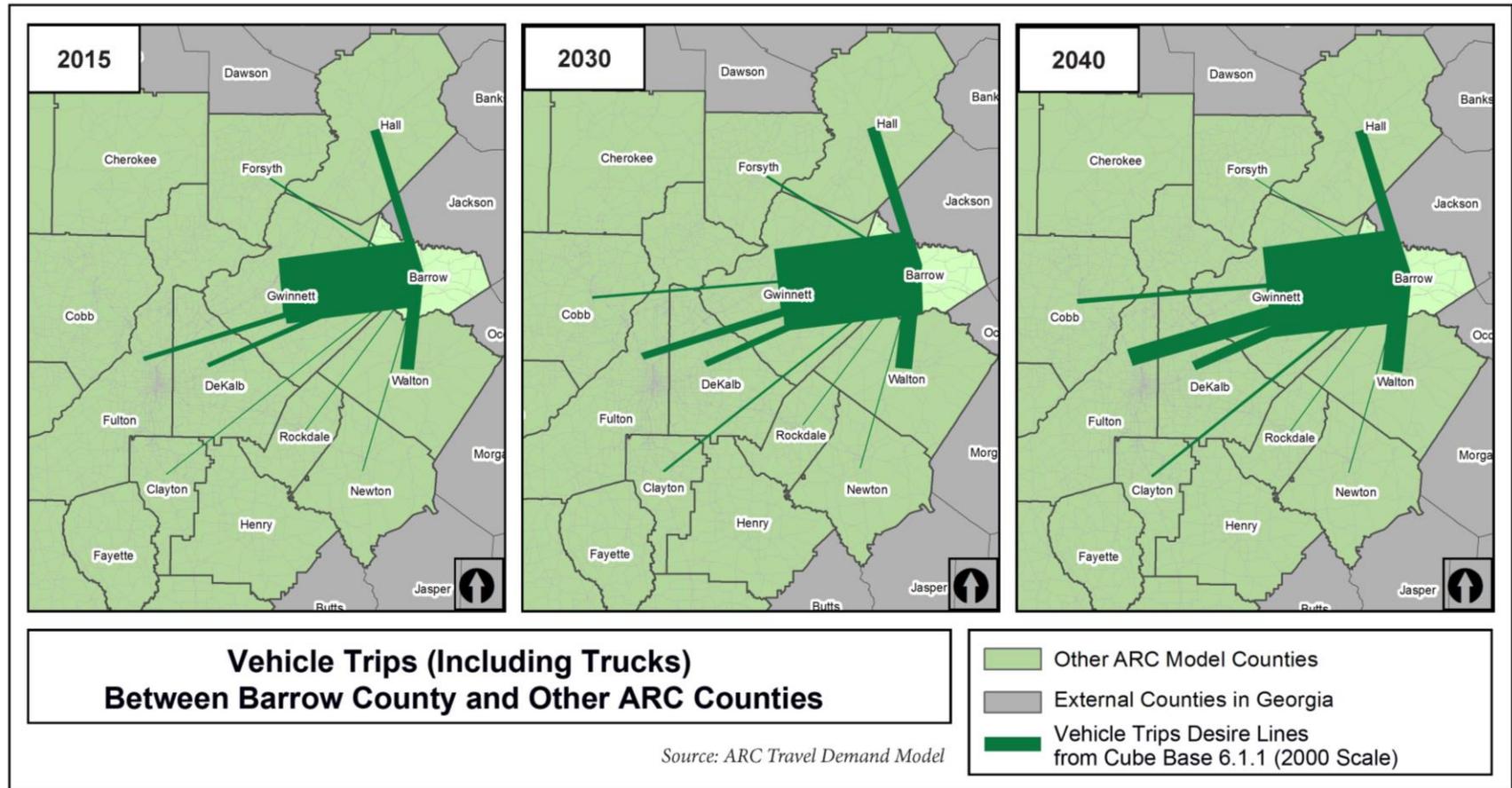




Figure 5.2: Non-ARC Region Trips, 2015, 2030, and 2040

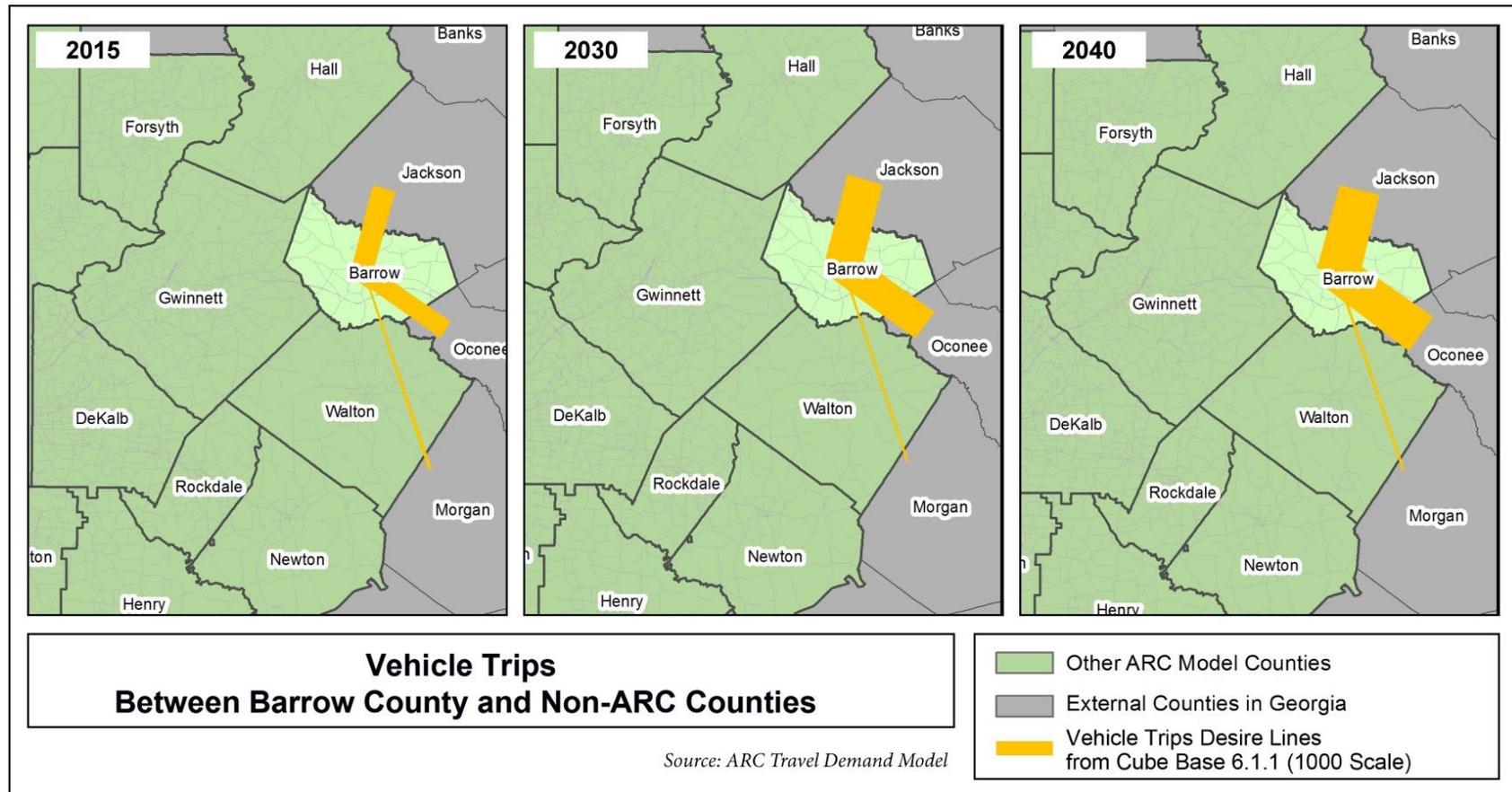




Figure 5.3: Home Based Work Trips, 2015, 2030 and 2040

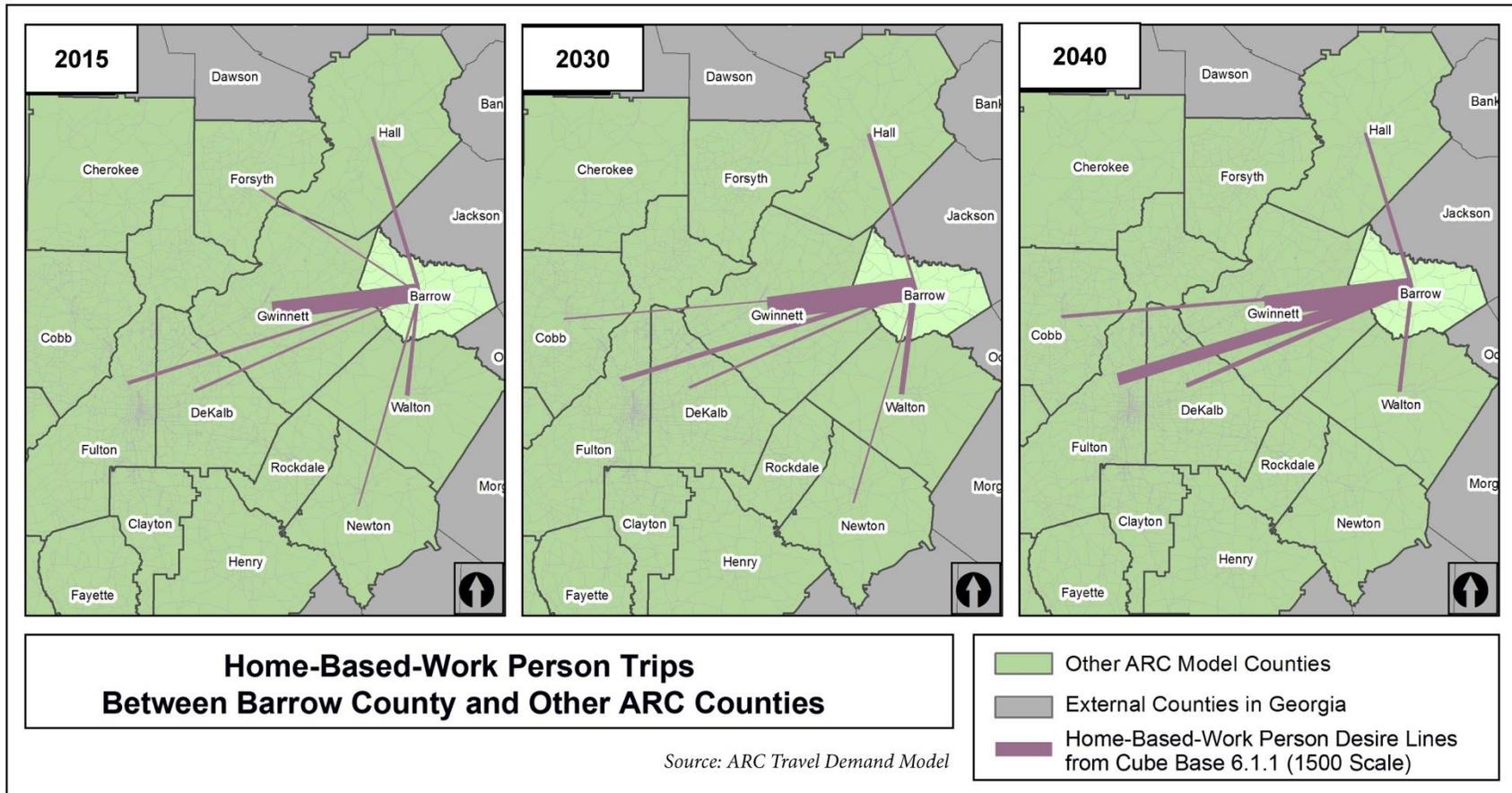
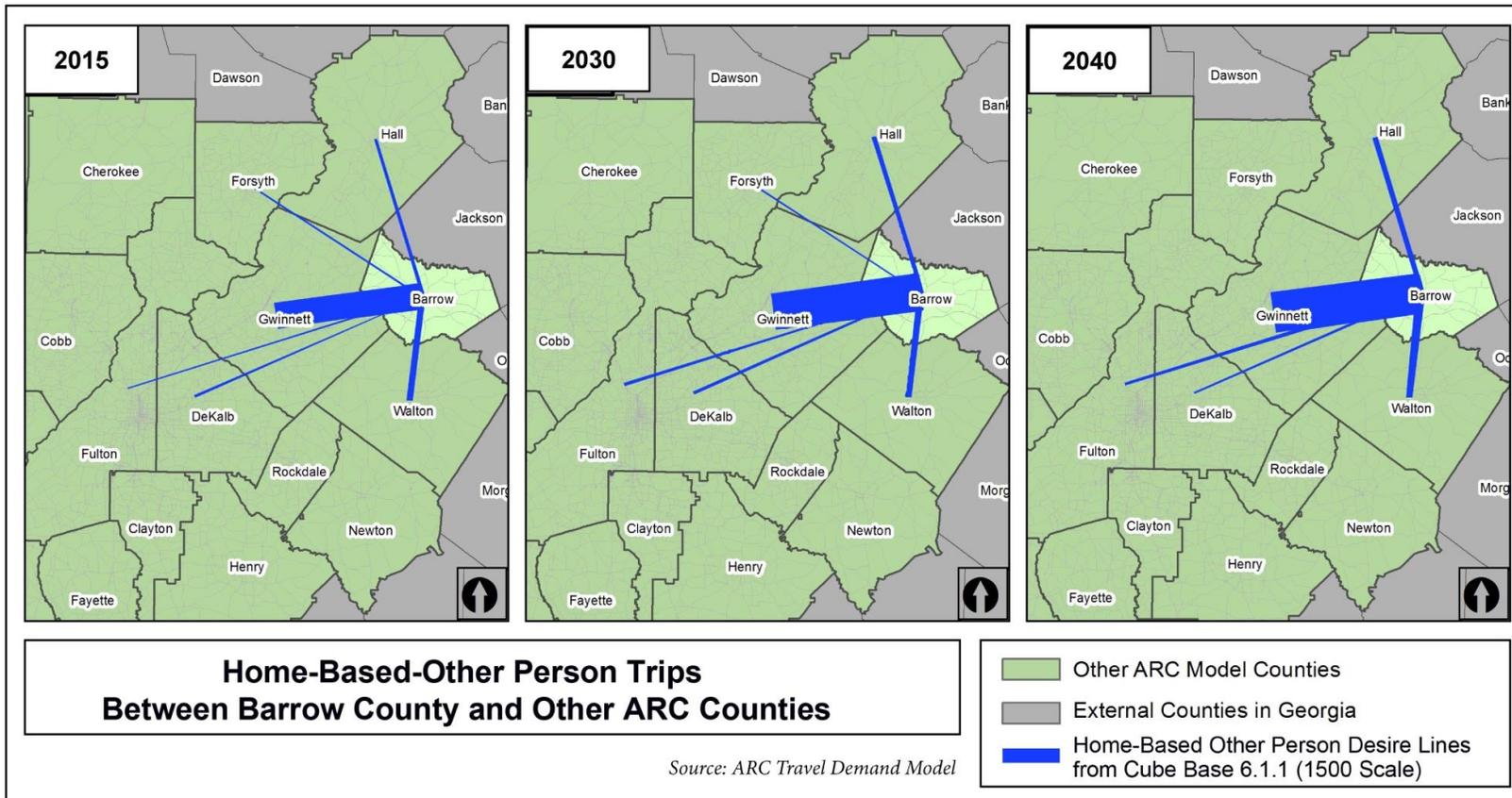




Figure 5.4: Home-Based Other Trips, 2015, 2030 and 2040





5.1.4. Travel Pattern Analysis Conclusions

The influence of the Atlanta region indicates that transportation investments that support increased mobility to and from the Atlanta region, particularly Gwinnett County, where many residents work, should be a priority of this CTP update.

5.2. Safety

Potential safety hot spots in the Barrow County roadway network were evaluated based on the ARC comparison of the *Barrow County Crash Rate Profile* crash rates with those of the region and an analysis of three years of recent GDOT crash data.

5.2.1. Crash Analysis

The ARC's 2012 *County Crash Profile Analysis in the Metropolitan Atlanta Region* for Barrow County compared the County's crash statistics for the 2006 to 2008 period to those of the greater 18-county region. (The region has since expanded to include 20 counties.) Crash rates were derived to normalize the data and to make it possible to compare crash histories across counties with great differences in geographical size and population. The study found that during the 2006 to 2008 study period, Barrow County had the highest crash fatality rate in the region (**Table 5.2**). Barrow County also had a higher incident of injury accidents, 27.0 percent, than the regional average, 23.4 percent.

Table 5.2: Crash Incidences and Rates for Barrow County and the Atlanta Region 2006-2008.

Crash Type	Barrow County Absolute	Barrow County Rates	18-County Region	County's Crash Rate Rank
All Crashes	5,014	-	456,779	13
Injury (Non-fatal)	1,354	27.00%	23.40%	12
Fatal	36	0.72%	0.28%	1
Intersection	2,525	50.36%	57.64%	N/A

Source: ARC County Crash Profile Analysis in the Metropolitan Atlanta Region for Barrow County

The data analyzed for this report is newer (2011 to 2013 rather than 2006 to 2008) but the findings were similar. According to GDOT crash data, approximately 5,500 automobile accidents occurred within the county over the three year study period (**Table 5.3**). Approximately 35 percent of these accidents were considered severe, because they resulted in an injury or fatality. That is an increase over the 27.7 percent of accidents that were considered severe during the ARC's 2006 to 2008 time period, although fatalities dropped to 34 from 36 from the previous study period.

Table 5.3: Crash Analysis by Year

Year	Crashes	Injuries	Fatalities	Severe Crashes
2011	1,728	607	10	35.7%
2012	2,087	714	13	34.8%
2013	1,676	584	11	35.5%
TOTAL	5,491	1,905	34	35.3%

Source: GDOT crash data



5.2.2. High-Crash Corridor Analysis

GDOT crash data were analyzed to locate corridors with the highest number of crashes in the county. Atlanta Highway experienced the most crashes in the county, accounting for 17 percent of the total crashes within the study period. SR 316 and SR 11 each accounted for another 12 percent of total crashes. Although Atlanta Highway proved to have the most crashes within the corridor, SR 81 had the highest crashes per mile, followed by SR 316, SR 11 and Atlanta Highway. The full results are shown below in **Table 5.4** and mapped in **Figure 5.5**.

Table 5.4: Top Ten Corridors (2011-2013)

Corridor	Length (miles) in Barrow County	Accidents 2011-2013	Accidents per mile (approximate)	Percent of Annual Total Crashes 2011-2013
Atlanta Highway	18.3	915	50	17%
SR 316	10.9	658	60	12%
SR 11	12.0	629	52	12%
SR 81	6.4	499	78	9%
SR 211	20.9	471	23	9%
SR 82	10.6	129	12	2%
Carl-Bethlehem Rd	7.5	124	17	2%
SR 53	6.7	117	17	2%
Patrick Mill Rd	4.1	77	19	1%
Interstate 85	5.0	71	14	1%
All Other Roadways	-	1872	-	33 %
TOTAL	-	5491	-	100%

Source: GDOT crash data

5.2.3. Intersection Analysis

The data were reviewed and normalized to isolate the ten intersections where crashes were most frequently occurring (**Table 5.5**). Intersection crashes include crashes reported on all approaches to an intersection, so the number of crashes at the intersection of SR 316 and SR 81 will include crashes in which the first vehicle was on SR 316 as well as those in which the first vehicle was on SR 81. Therefore there will not necessarily be fewer crashes at a roadway's intersections than along the roadway itself.

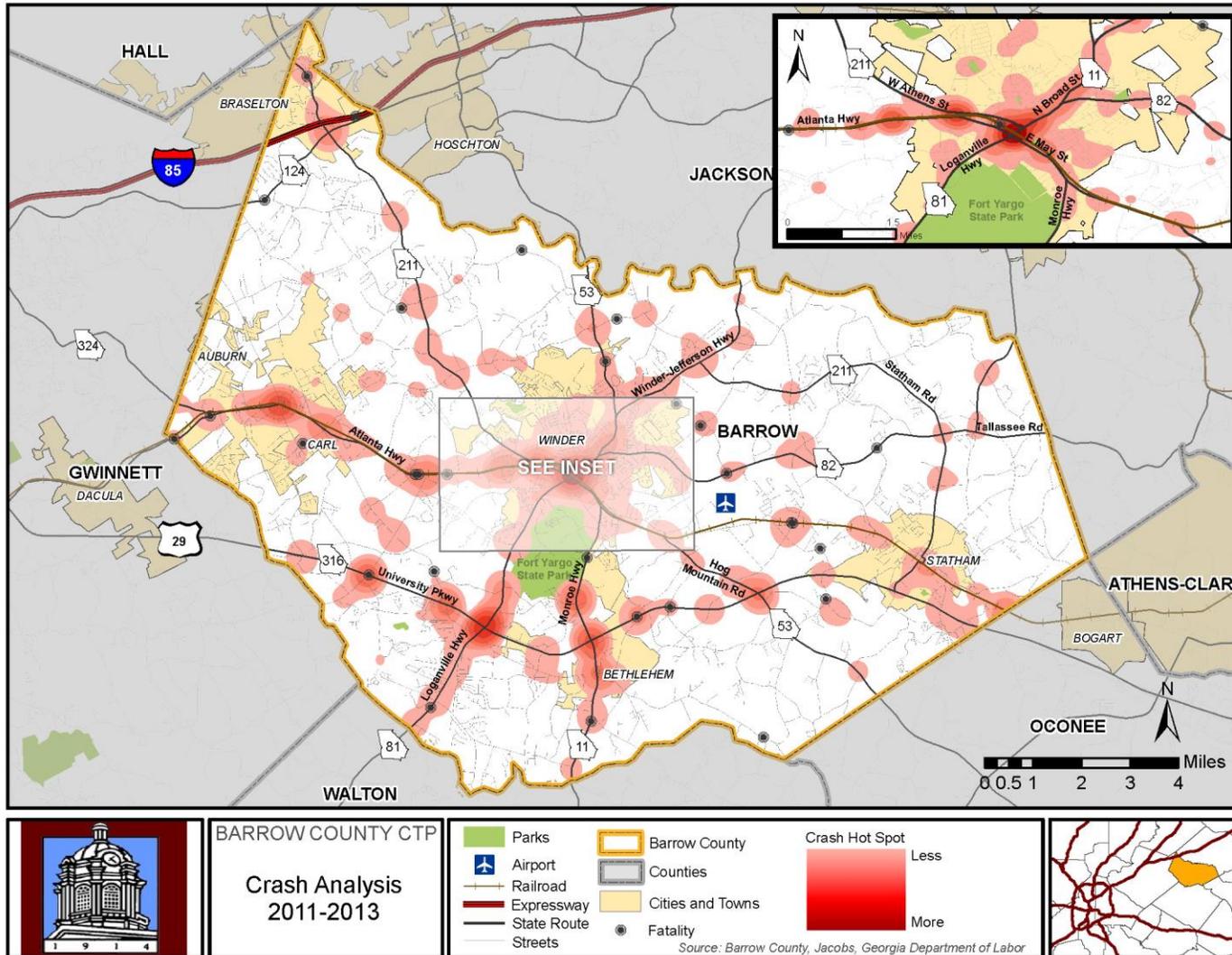
Table 5.5: Ten Intersections at which Crashes Most Frequently Occurred, 2011-2013

Intersection	Crashes 2011-2013
SR 316 and SR 81	221
SR 316 and Patrick Mill Rd	89
SR 316 and Kilcrease Rd	78
Atlanta Highway and SR 11	87
SR 316 and SR 11	74
SR 316 and Carl Bethlehem Rd	68
I-85 and SR 211	65
Atlanta Highway and Horton St	60
SR 316 and SR 53	48
SR 11 and Stephens Street	46

Source: GDOT crash data



Figure 5.5: Crashes in Barrow County, 2011-2013





The intersection with the most crashes over the three year time period was SR 316 at SR 81, with 221 crashes. In fact, of the ten intersections with the highest number of crashes over the three year period, six were on SR 316. The interchange conversions programmed at three locations along SR 316 are likely to reduce the number of crashes at intersections on that roadway in Barrow County. Similarly, the construction of the West Winder Bypass should reduce the number of crashes in Winder as it reduces overall traffic in the city. This would benefit the intersections of Atlanta Highway at SR 11 and at Horton Street, and SR 11 at Stephens Street.

Though not identified in the crash data analysis, the Y-intersection of Gainesville Highway/SR 53 at SR 11/SR 211/Jefferson Highway was identified by the Technical Committee as in need of safety improvements. GDOT is in the process of addressing this safety issue with an intersection redesign at this location. Likewise, the publicly-identified need for safety improvements on SR 81 at the existing entrance to Fort Yargo State Park is in the process of being addressed by the new Fort Yargo Master Plan.

5.2.4. Crash Severity Analysis

In light of the severity of crashes in Barrow County, it was determined that specific areas with high injury or fatality rates should be identified. To do this, the data from the study period was remapped to highlight areas where crashes resulted in injuries or fatalities (**Figure 5.6**). Locations with high injury or fatality severity as well as a history of repeated crashes were identified from this and the general crash analysis. Those intersections with crashes that are both frequent and severe are listed in **Table 5.6**.

As with the total number of crashes, many of the severe crashes occurred along SR 316. The number and severity of these crashes should be reduced once the new interchanges are constructed. Broad Street and May Street in Winder, too, were high-severity locations. Downtown Winder may see the severity of crashes decrease with truck traffic diverted along the West Winder Bypass. Likewise, the grade separation the rail crossing at Ed Hogan Road should reduce accidents and their severity at this location. In addition, the provision for grade-separated rail line crossing may reduce accidents and their severity at other rail crossings as well, as drivers utilize the option to cross the rail line at a location that will not be impeded by train activity.



Figure 5.6: Crash Severity in Barrow County, 2011-2013

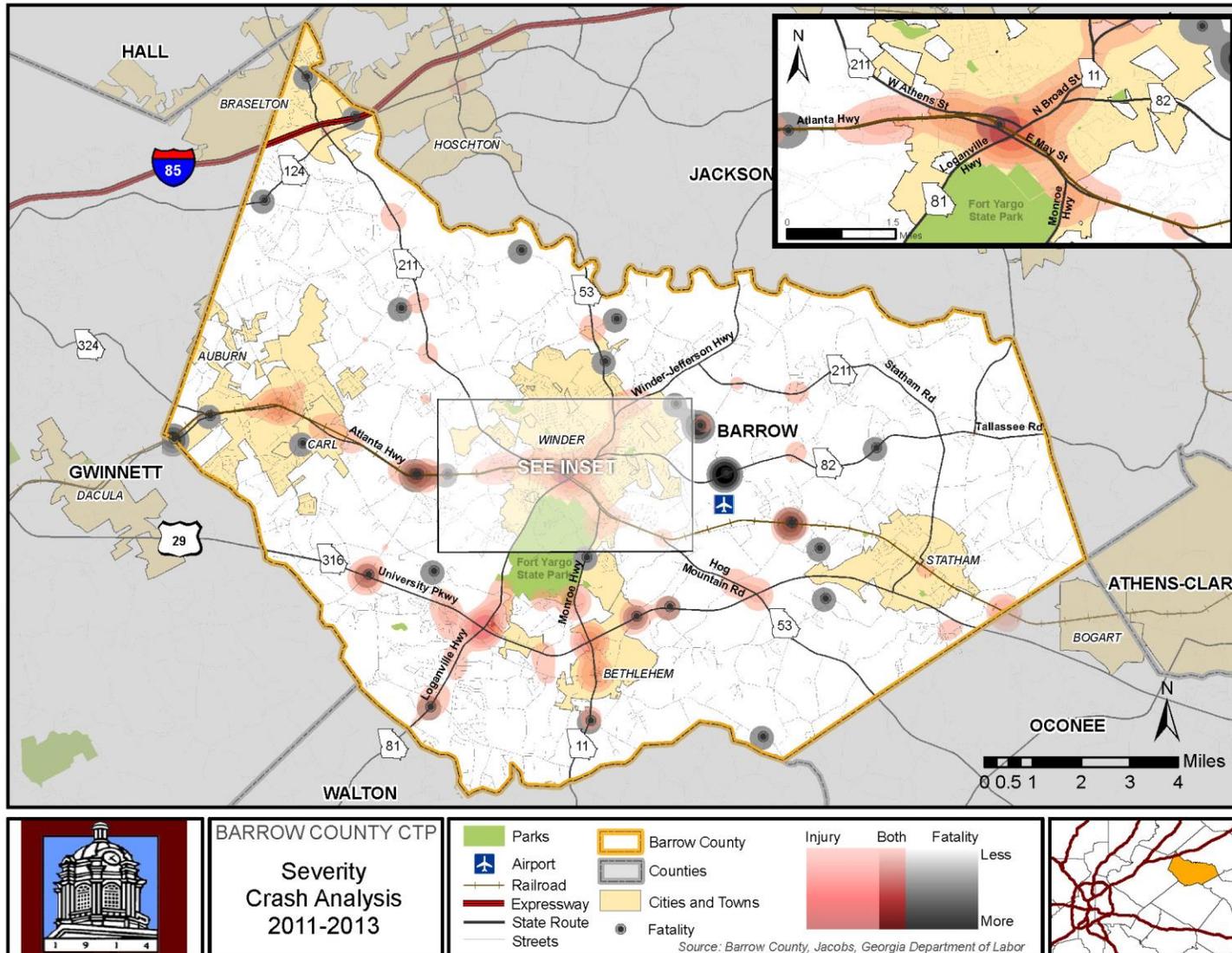




Table 5.6: High-Severity Crash Locations in Barrow County, 2011-2013

Corridor	Intersection	Severity Type
SR 316	Patrick Mill Road	Injury/Fatality
	Carl-Bethlehem Road	Injury
	SR 81	Injury
	Harry McCarty	Injury
	SR 11	Injury
	Harrison Mill Road	Injury/Fatality
	Smith Cemetery Road	Injury/Fatality
Downtown	SR 53/Hog Mountain Road	Injury
	E May Street/Atlanta Highway	Injury/Fatality
Winder	N Broad Street	Injury
Atlanta Highway	SR 324	Fatality
	Downtown Auburn (Mount Moriah Road, County Line Auburn Road/6 th Street)	Injury
	Downtown Carl (Carl-Cedar Hill Road, Carl-Bethlehem Road, Carl-Midway Church Road)	Injury
	Patrick Mill Road	Injury/Fatality
	Ed Hogan rail crossing	Fatality
	SR 11	Injury
SR 211	Bowan Mill Road	Fatality
	I-85	Injury
	Liberty Church Road	Fatality
	Old Hog Mountain Road	Injury
	County Line-Auburn Road	Injury
	Dee Kennedy Road	Injury
	Pleasant Hill Church Road	Injury
Downtown Statham (Atlanta Highway/Broad Street)	Injury	
SR 81	SR316 (includes nearby Exchange Boulevard)	Injury
	Carl-Bethlehem Road	Injury
	Tanners Bridge Road	Injury/Fatality
SR 11	Punkin Junction Road	Injury
	SR 316 (includes nearby Wise Men Lane)	Injury
	Downtown Bethlehem (Star Street)	Injury
SR 53	McElhannon Road	Injury/Fatality
	Rockwell Church Road	Injury/Fatality
	Cedar Valley Trail road	Fatality
SR 82	Jackson Trail Road	Injury
	Holsenbeck School Road	Fatality
Holsenbeck School Road	Bowan Mill Road	Injury
	SR 82	Fatality
Carl Bethlehem Road	Dunahoo Road	Fatality
	Tucker Road	Fatality
Brown Bridge Road	Governor's Ridge Road	Fatality

Source: GDOT Crash Data

5.2.5. Crash Analysis Conclusions

Crashes in Barrow County are frequent and often severe. The preponderance of narrow two-lane roads and thoroughfares that meet at intersections at high speeds creates safety issues throughout the county. The safety analysis performed by this CTP update confirms the need for operational improvements along Atlanta Highway in Auburn identified by the 2007 CTP. Safety improvements are also needed along the other roadways that experienced the most crashes during the study period, as



well as at intersections that experienced the greatest frequency and severity of crashes during the study period. After this study is over, the continued gathering and analysis of traffic safety data is recommended as a tool to support well-informed transportation decisions at the county level.

Safety improvements may include:

- Addition of a center turn lane to separate turning traffic from through traffic
- Separation of bicycle and pedestrian traffic from vehicular traffic and provision of bike/ped facilities
- Wider shoulders on state routes where drivers may need to pull off after a collision or in the case of vehicular issues.
- Signalization of intersections where warranted by high traffic volumes on both approaches or other means
- Access management techniques
- Sight distance improvements
- Intersection skew improvements
- Improved stop control

5.3. Traffic Volumes

Vehicle volume analysis considered traffic volumes in terms of AADT. AADT provides a direct measure of the usage level of a given roadway. It is a primary means of identifying the most well-traveled and critical roadways within a transportation network.

5.3.1. Traffic Volume Methodology

For this analysis, AADT was mapped by functional class according to classifications based on traffic distribution across the Atlanta region represented in the ARC Travel Demand Model. **Table 5.7** lists average projected AADT for Barrow County roadways by functional classification by year.

Table 5.7: Average AADT for Barrow County Roadways by Functional Classification (Rounded)

Functional Class	2015	2030	2040
Rural Interstate	32,000	40,330	45,740
Urbanized Principal Arterial	17,390	19,970	22,980
Rural Principal Arterial	17,240	19,500	18,030
Rural Minor Arterial	11,070	13,340	14,570
Rural Major Collector	7,520	9,820	11,340
Rural Minor Collector	7,320	9,290	11,310
Urbanized Minor Arterial	7,160	8,460	8,1320
Urbanized Collector	4,830	6,300	7,480
Urbanized Local	4,040	5,420	6,150
Rural Local	3,720	5,170	6,090

Source: ARC Travel Demand Model



Projected 2015, 2030, and 2040 AADT for roadway segments across Barrow County, based on outputs from the ARC Travel Demand Model, are mapped in **Figure 5.7**, **Figure 5.8**, and **Figure 5.9**. The ARC Travel Demand Model assumes construction of funded projects based on programming dates. The projected future AADT maps incorporate the implementation of expected new roadways and other capacity improvements, so the West Winder Bypass and interchange conversion projects along University Parkway impact the AADT in the 2030 and 2040 figures. Projected 2015, 2030, and 2040 AADT for the most used Barrow County roadways can be found in **Table 5.8**.

Table 5.8: Highest AADT roadways in Barrow County, 2015, 2030 and 2040

Roadway	2015 AADT (Rounded)	2030 AADT (Rounded)	2040 AADT (Rounded)
I-85 (near SR 211)	34,720	43,230	49,140
Broad Street in Winder (near May Street)	30,060	34,060	32,980
SR 211 (near I-85)	28,260	35,770	40,970
Atlanta Highway (west of Winder) (near SR 324)	20,940	26,060	28,310
Athens Street in Winder (near Broad Street)	20,900	19,740	17,700
SR 316/University Parkway (near SR 81)	20,650	21,350	26,020
SR 81 (south of SR 316/University Parkway)	9,590	14,540	14,580
SR 11 (south of SR 316/University Parkway)	23,540	26,670	30,310

Source: ARC Travel Demand Model

5.3.2. Traffic Volume Analysis

In 2015, the projected traffic patterns concentrate vehicles along a few major arterial routes across the county, all of which pass through downtown Winder (Figure 5.7). This creates an extremely high level of vehicles in downtown Winder, particularly on West Athens Street.

By 2030, traffic volumes are generally higher than in 2015, and newly constructed projects are expected to shift traffic patterns onto new roads (Figure 5.8). The West Winder Bypass is projected to divert a portion of the traffic that formerly travelled along SR 211 into Winder. The Bypass is not projected to alleviate the high traffic levels seen on Broad Street and May Street entirely.

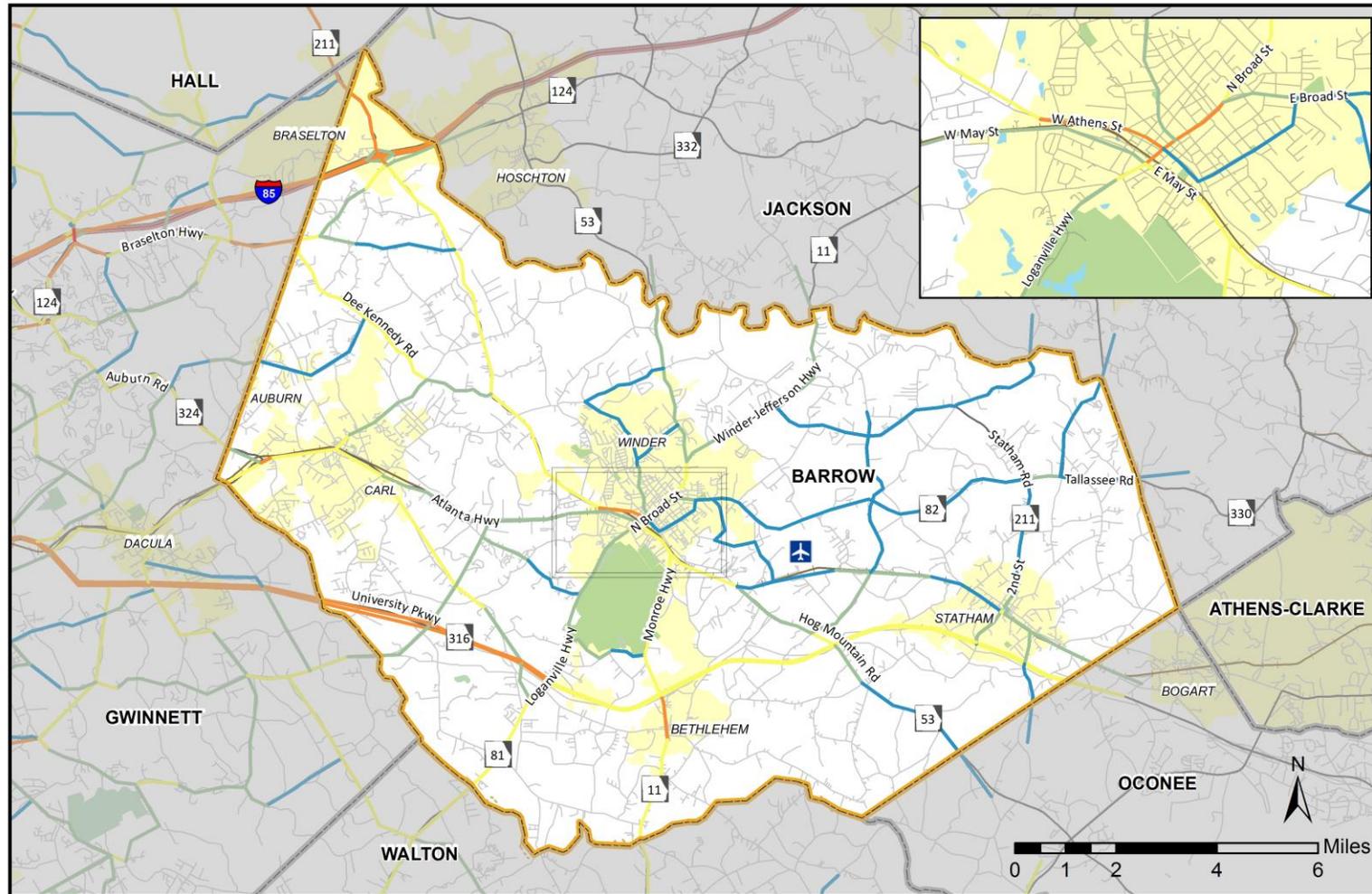
These trends are projected to continue through 2040 with projected AADT continuing to decrease along SR 211 east of the West Winder Bypass (Figure 5.9). The bypass itself is projected to carry a large amount of traffic between Atlanta Highway and University Parkway by 2040. Traffic levels along Broad Street and May Street are projected to remain elevated, while traffic along Atlanta Highway is projected to decrease slightly.

5.3.3. Traffic Volume Analysis Conclusions

This AADT analysis reveals significant changes in Barrow County traffic patterns between 2015 and 2040. The West Winder Bypass appears as a critical means of lessening traffic through central Winder, but it is unable to completely alleviate the high traffic levels along downtown Winder streets. SR 316/University Parkway, SR 11, SR 81, and Atlanta Highway continue to serve as critical arterials for travel through and within Barrow County to 2040.



Figure 5.7: Estimated Barrow County AADT, 2015



BARROW COUNTY CTP
Average Annual
Daily Traffic
2015

AADT (Thousands) Source: ARC, Barrow County

— 0 - 5	— 20 - 40	 Barrow County	— Expressway
— 5 - 10	— > 40	Airport	— Streets
— 10 - 20		— Railroad	 Park

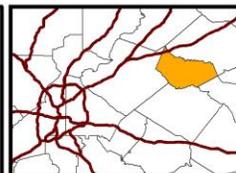




Figure 5.8: Projected Barrow County AADT, 2030

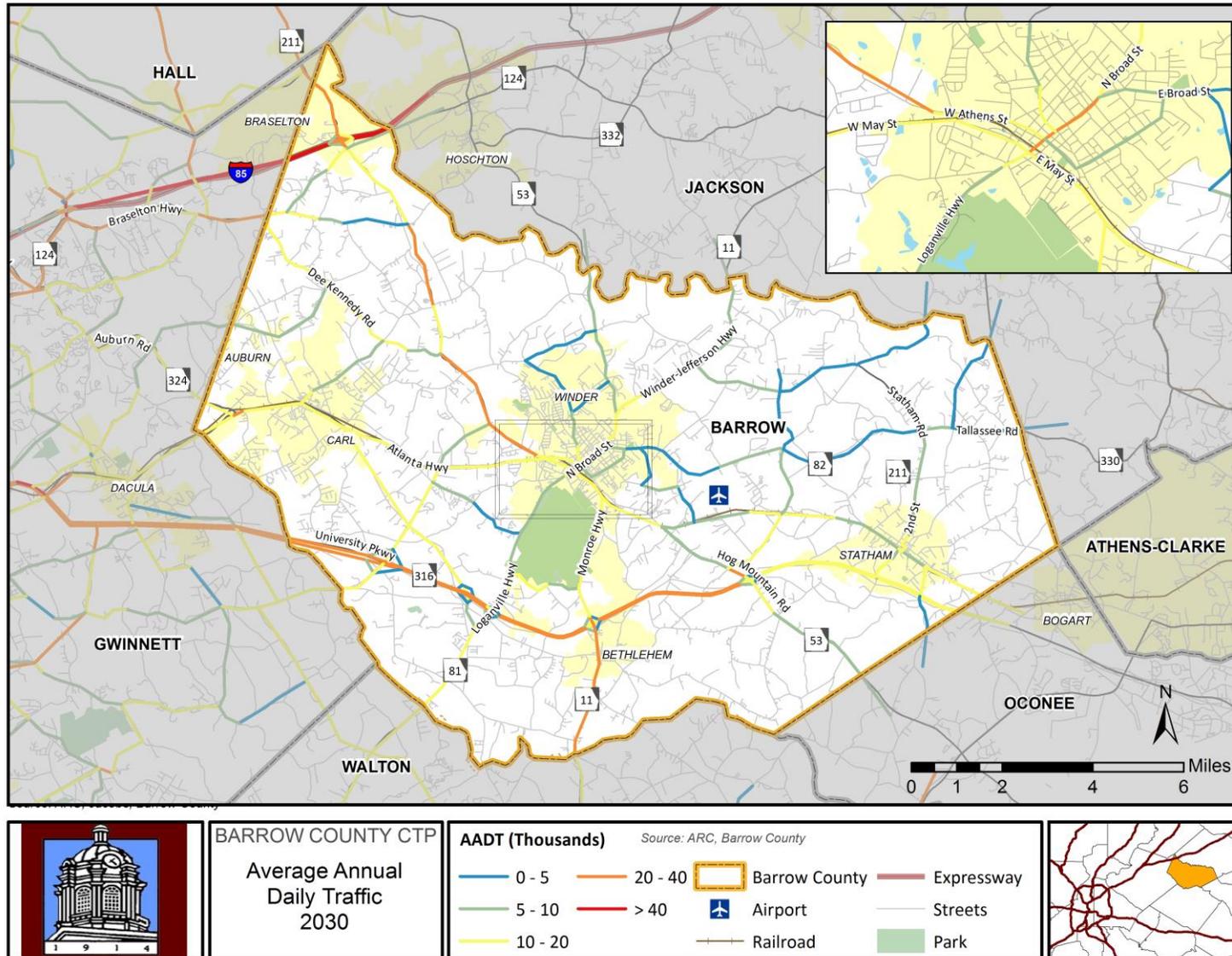
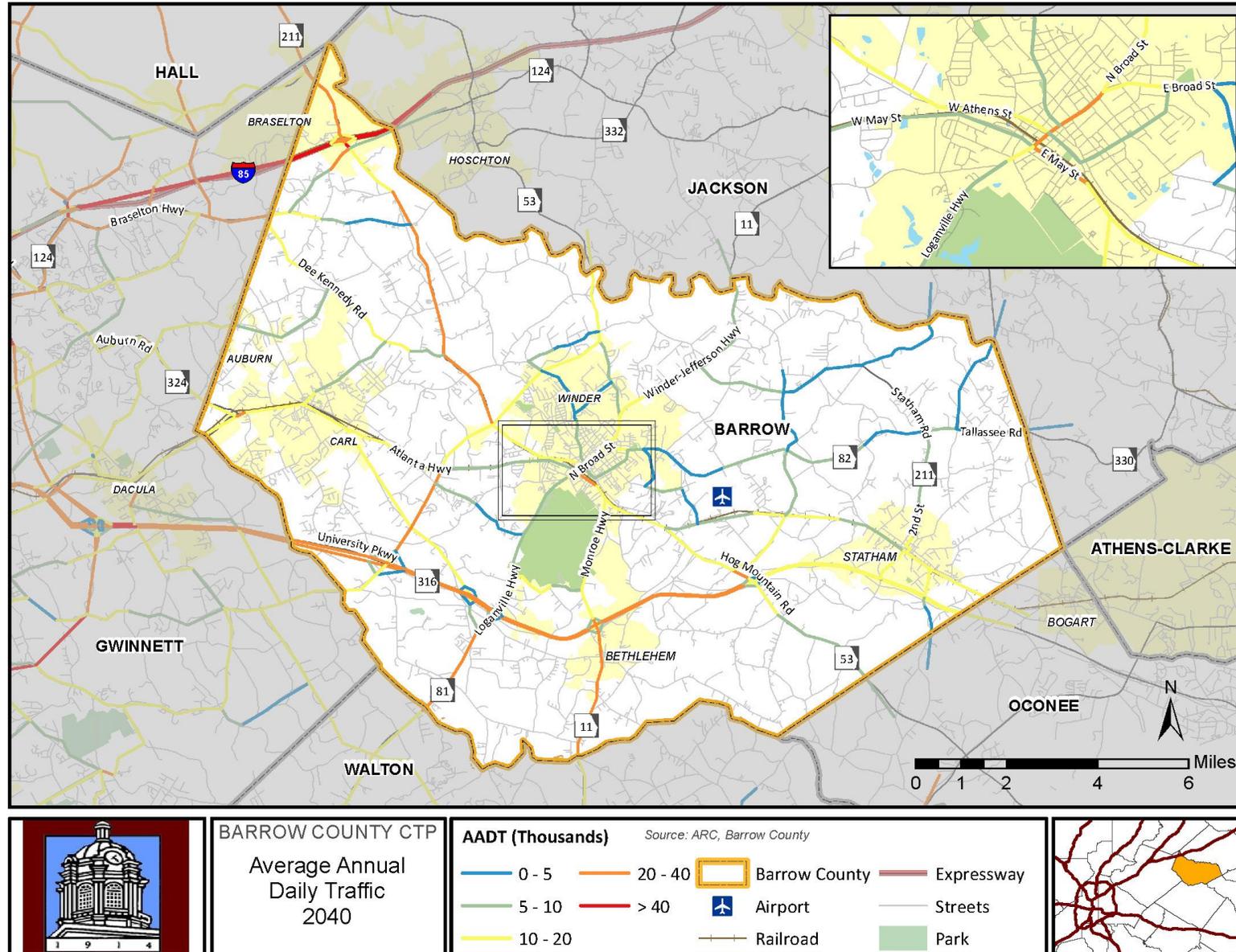




Figure 5.9: Projected Barrow County AADT, 2040

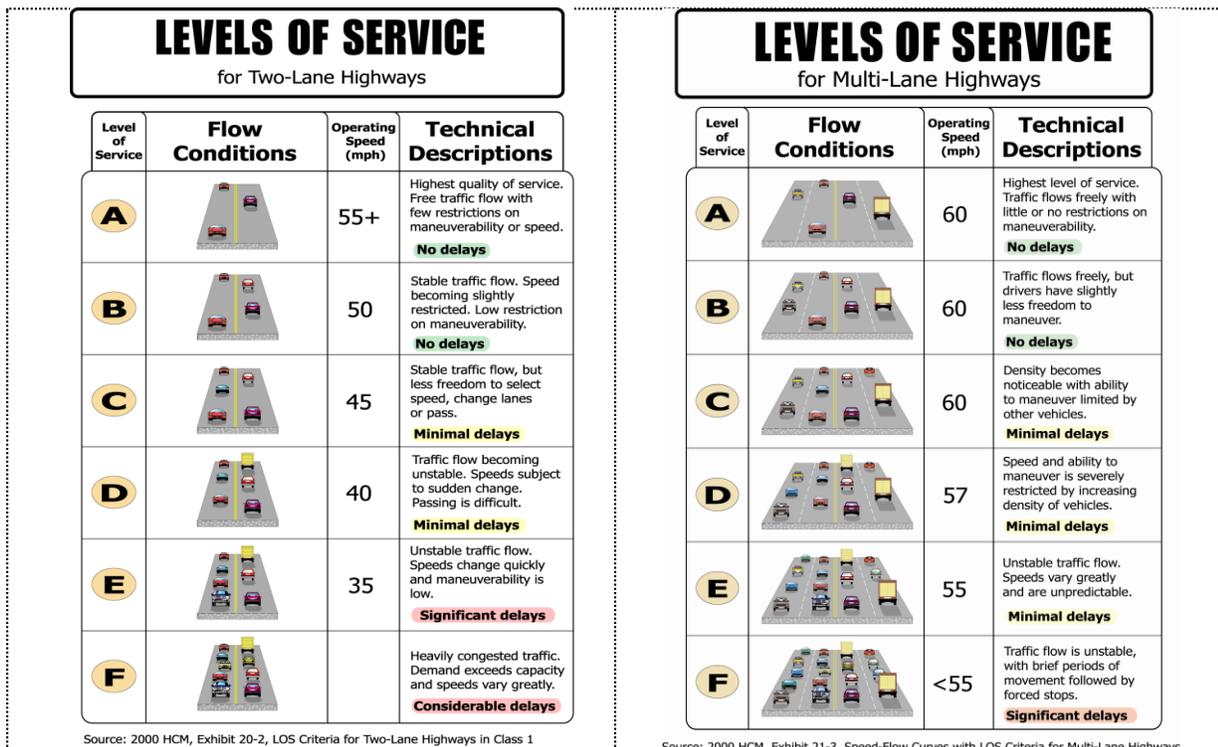




5.4. Level of Service (LOS)

This section presents an analysis of the existing and projected level of service (LOS) for the Barrow County roadway network in 2015, 2030 and 2040, based on data from NAVTEQ and the ARC Travel Demand Model. Level of service (LOS) is a standardized measure of congestion levels along roadway segments that uses letter ratings from A to F to represent the amount of a given roadway's capacity that is utilized or the length of delay traffic experiences along a roadway segment. LOS is calculated based on traffic levels during the PM travel peak as this time period generally experiences the greatest total traffic volumes and highest potential for congestion. LOS A or B represents a roadway with free flowing traffic that operates well under its designed capacity. LOS C represents a roadway with typical traffic patterns that rarely experiences congestion delays. LOS D represents a roadway with traffic that moves consistently but is subject to moderate congestion delay at times. LOS E represents a roadway that is at or near its designed capacity, regularly experiencing congestion delay. LOS F represents a roadway operating above its designed capacity with severe congestion relatively commonplace. For rural areas like Barrow County, LOS E and F are considered unacceptable levels of service. However, Barrow County drivers used to more free-flowing conditions may be more sensitive to congested conditions and may experience LOS D as a significant delay. LOS A through F is illustrated in **Figure 5.10**.

Figure 5.10: Level of Service Description





5.4.1. NAVTEQ Level of Service (LOS) Data and Methodology

NAVTEQ traffic data, available through the cooperation of Barrow County and the ARC, is developed through the consolidation of travel data from personal GPS-enabled devices, including in-car navigation systems and smart phones. Real-time data offers several advantages for assessing existing congestion levels over model data. Real-time data accurately record congested travel conditions as they occur, whereas model data provide a simplified interpretation of existing conditions and have the potential to exhibit data distortions. Another advantage is that real-time data can pinpoint congested areas within very small sections of roadway as opposed to the larger roadway segments which comprise the model network. Because it can capture a very detailed picture of existing traffic conditions, NAVTEQ data uses much smaller roadway segments than the ARC Travel Demand Model does; the result is that it can “pinpoint” precise locations at which delay is occurring.

NAVTEQ LOS data are based on the level of delay that traffic experiences during peak hours. LOS for the 2012 PM peak hours was determined from a calculated travel time index (TTI) for each link, or roadway segment, as represented in the model. The TTI for a link is the travel time on that link divided by its corresponding top 95th percent travel time. For example, if the PM peak hour travel time on a link is 90 seconds, but free flow travel time is 60 seconds, then the TTI for that link is 1.5. TTIs were then translated into LOS based on the values provided in **Table 5.9**. The example link with a TTI of 1.5 would operate at LOS D during the PM peak. LOS for 2012 was then mapped based on these conversions for use in analysis (**Figure 5.11**).

Table 5.9: Travel Time Index ratings and their Corresponding Levels of Service

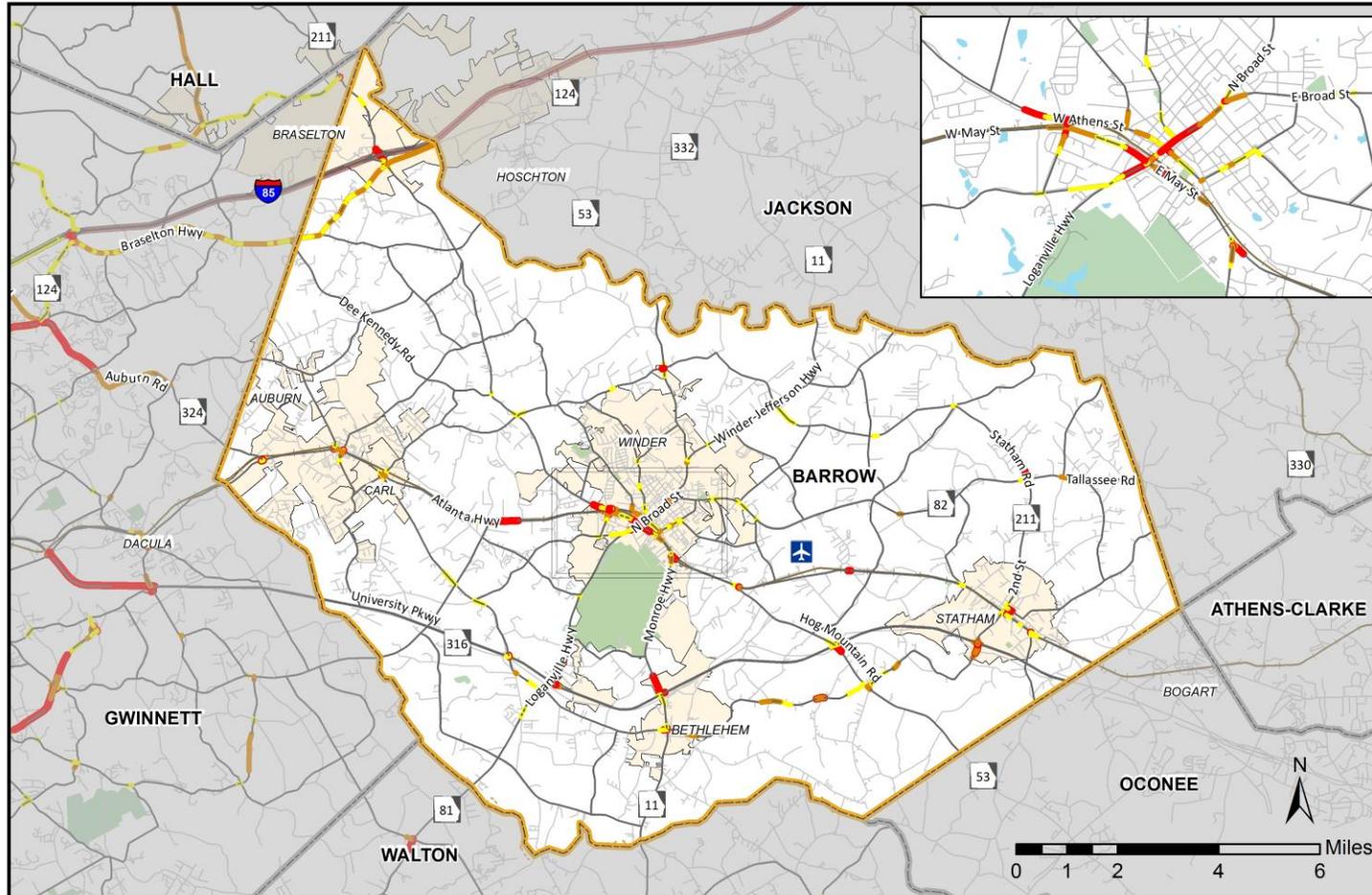
TTI	LOS
<= 1.3	A/B
1.3 – 1.444	C
1.445 – 1.625	D
1.626 – 1.857	E
> 1.857	F

Source: ARC

The NAVTEQ data are accurate for 2012. Since 2012, intersection improvements at this location have improved operations in the area of SR 211 at I-85. The data are no longer accurate for congestion in this area, and depicts delay as worse than under actual current conditions.



Figure 5.11: Existing (2012) LOS based on NAVTEQ Data



	BARROW COUNTY CTP Existing LOS (2012 PM Peak)	Level of Service — D — E — F C or Better Not Shown	 Barrow County ✈ Airport Major Road Railroad	— Expressway Streets Park Waterbody	
	Source: ARC, Barrow County				



5.4.2. ARC Travel Demand Model Data

ARC Travel Demand Model LOS data are based on the changing volumes of traffic that utilize unchanging infrastructure. Using ARC Travel Demand Model data, LOS was determined using a volume to capacity (V/C) ratio in which the model’s projected traffic volumes were divided by the projected roadway capacity for that same year. These ratios were then converted to an LOS letter rating using the ARC’s V/C to LOS conversion table (**Table 5.10**). Projected LOS for 2015, 2030, and 2040 based on the ARC Travel Demand Model projections was then mapped for use in analysis (**Figure 5.12**, **Figure 5.13**, and **Figure 5.14**).

Table 5.10: ARC V/C to LOS Conversion

V/C	LOS
<0.5	A/B
0.5 - 0.7	C
0.7 - 0.84	D
0.84 - 1	E
> 1	F

Source: ARC

As described in more detail in the *Existing Conditions Report*, there are portions of the Barrow County transportation system that are not depicted accurately in the output from the ARC’s Travel Demand Model for existing conditions. First, the ARC Travel Demand Model data overstates current congestion the following roadway segments:

- SR 11 from Joseph Street to University Parkway/US 29/SR 316 in Bethlehem
- SR 211 at I-85 interchange in Braselton

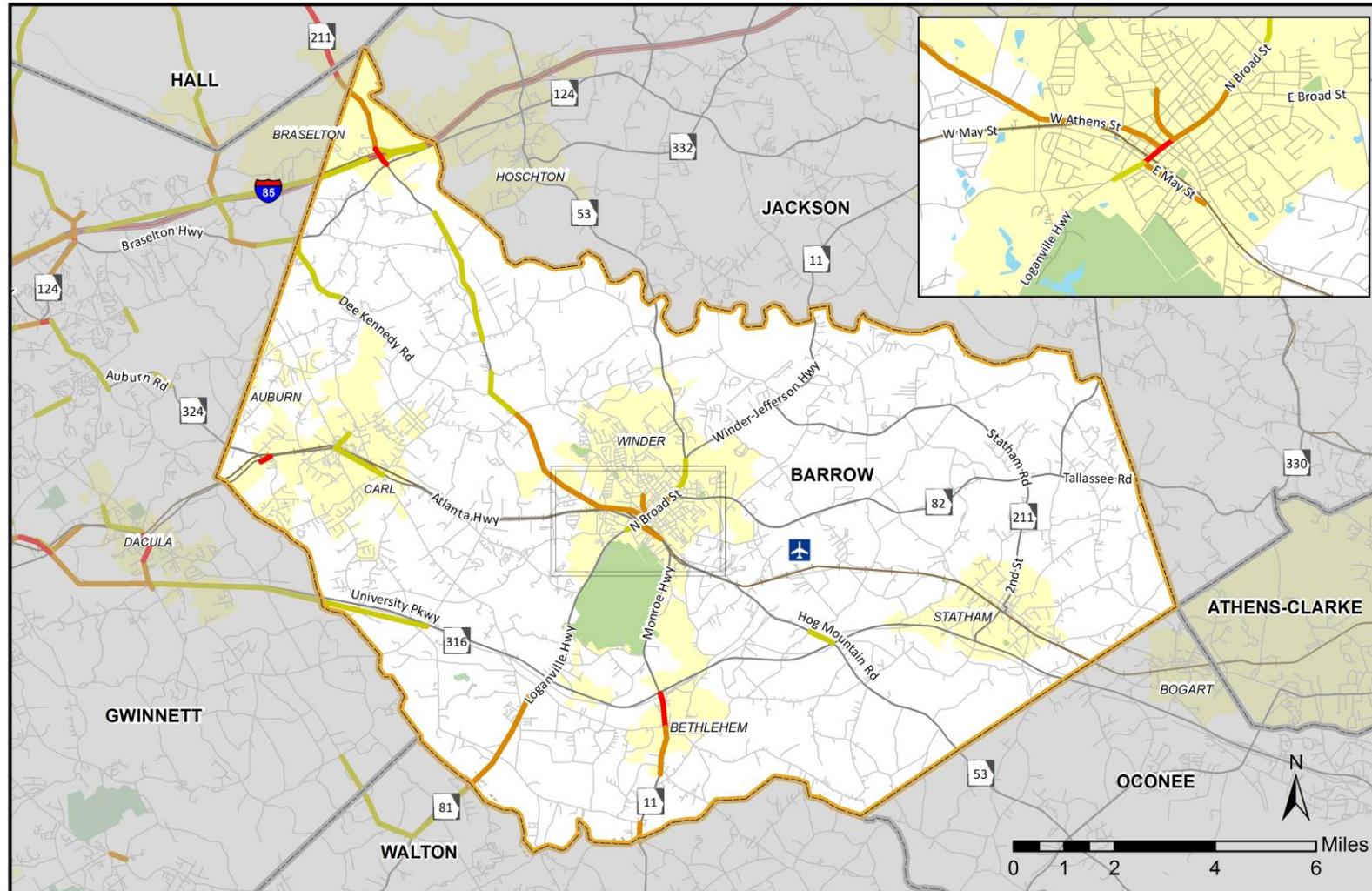
Second, the ARC Travel Demand Model data understates current congestion the following roadway segments:

- SR 81 at SR 316
- SR 316 at SR 81

Finally, a note regarding the presentation of ARC Travel Demand Model data. In contrast to the short segments used in the NAVTEQ data, the ARC Travel Demand Model uses longer segments due to the model’s regional nature. Roadway segments experiencing deficient LOS are not necessarily deficient for the entirety of the segment; the bottleneck or other traffic impediment may occur at any point within the segment. It should be noted that projecting current congestion on the Barrow County network with the ARC Travel Demand Model is not as accurate as it is using NAVTEQ data, but the ARC model does allow forecasting projected conditions through 2040.



Figure 5.12: Existing (2015) Level of Service, based on ARC Travel Demand Model Data



BARROW COUNTY CTP
Level of Service
2015 PM Peak

Level of Service	— E	▭ Barrow County	— Expressway
— D	— F	✈ Airport	— Streets
C or Better Not Shown	— State Route	— Park	
Source: ARC, Barrow County	— Railroad		

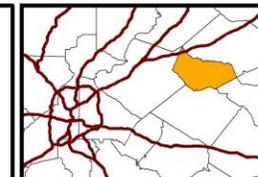




Figure 5.13: 2030 Level of Service, based on ARC Travel Demand Model Data

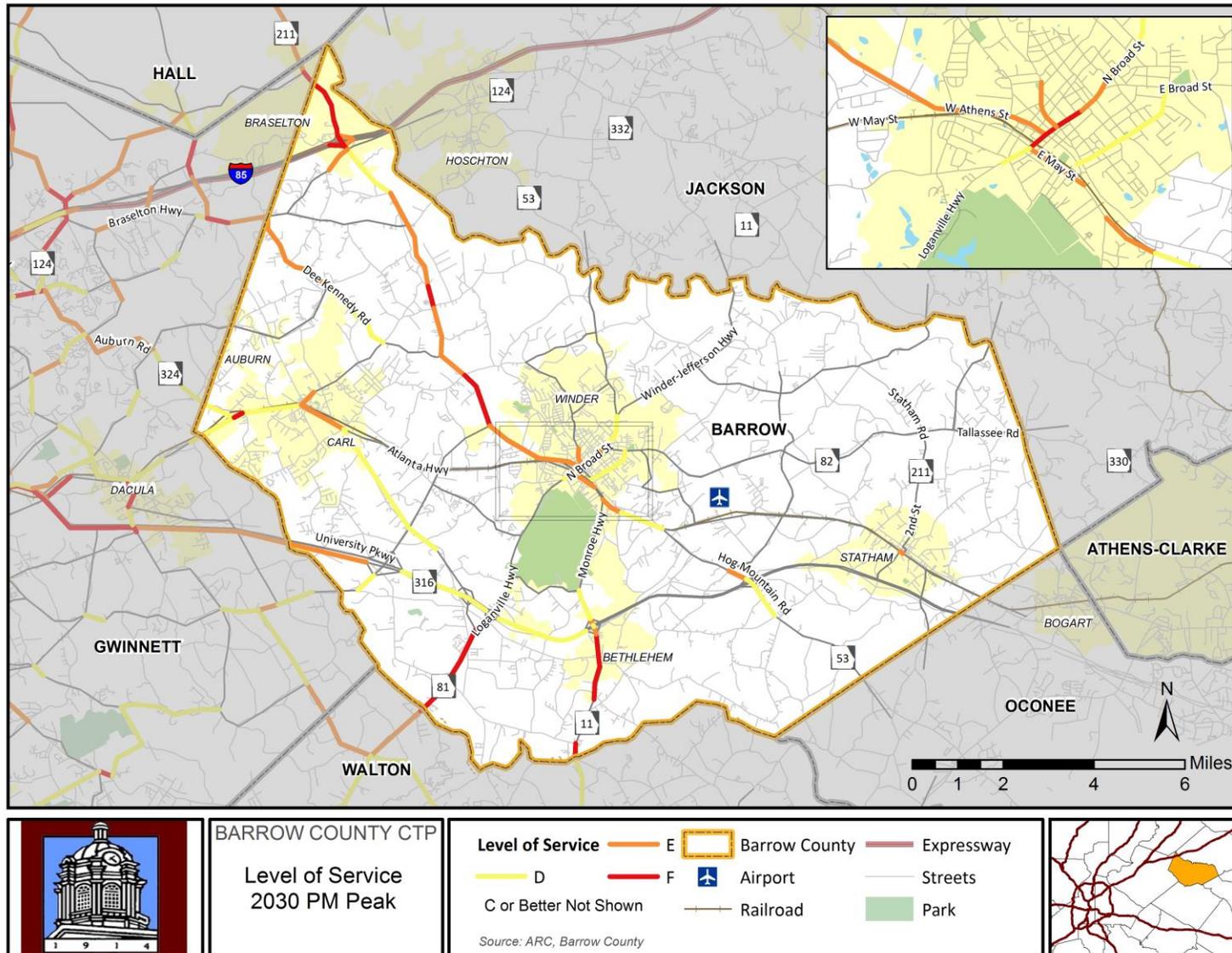
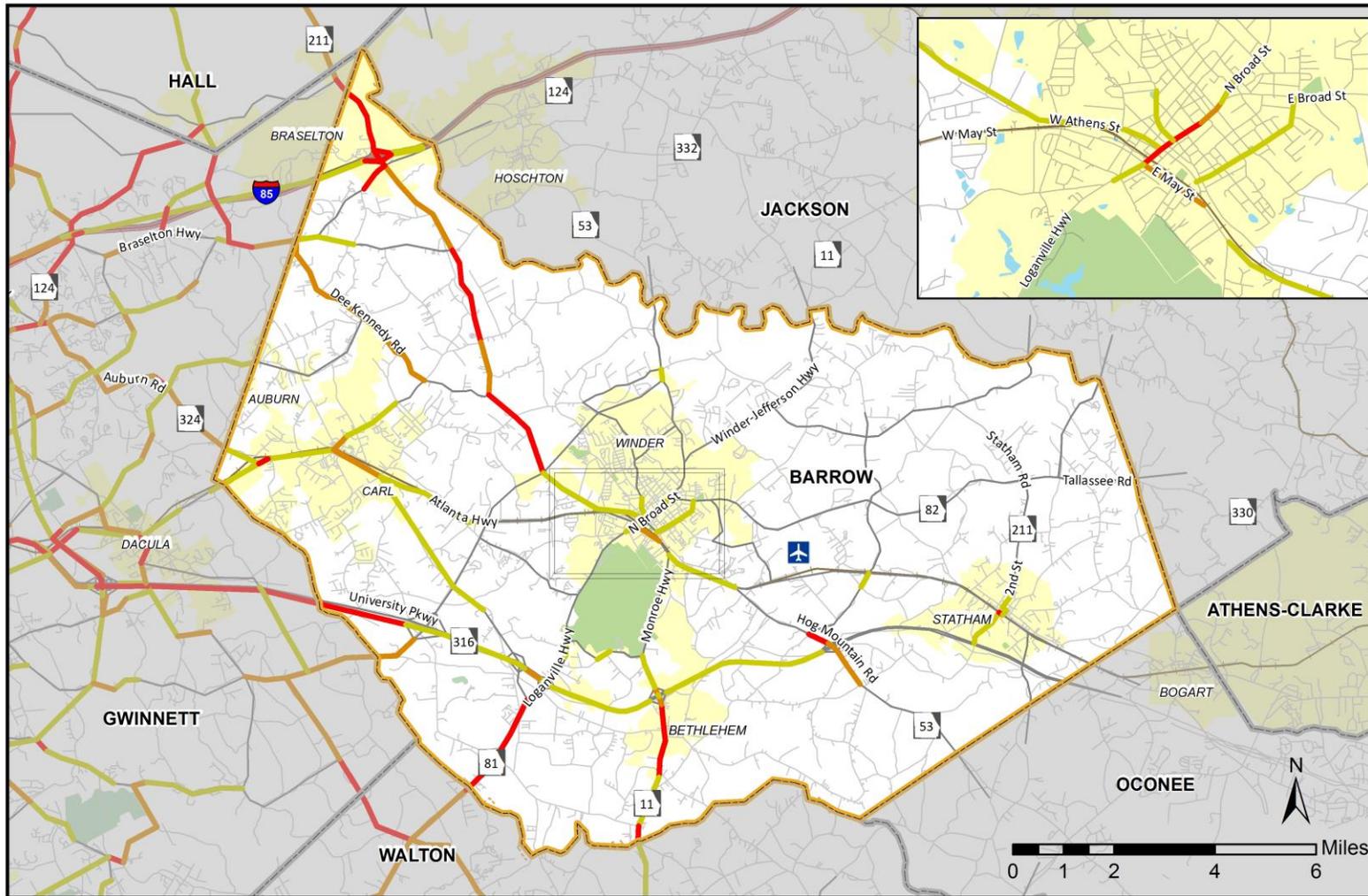




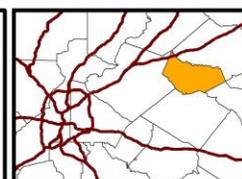
Figure 5.14: 2040 Level of Service, based on ARC Travel Demand Model Data



BARROW COUNTY CTP
Level of Service
2040 PM Peak

Level of Service	— E	— Barrow County	— Expressway
— D	— F	— Airport	— Streets
C or Better Not Shown	— Railroad	— Park	

Source: ARC, Barrow County





5.4.3. LOS Methodology

For the determination of short term capacity and intersection improvement needs, 2012 LOS data for the PM peak from the NAVTEQ data were reviewed. This review utilized the NAVTEQ data because it offered a more accurate, and more localized, picture of the Barrow County roadway network than did the ARC Travel Demand Model. For the determination of long term roadway needs, projected LOS data for 2030 and 2040 for the PM peak from the ARC Travel Demand Model were reviewed. LOS projections from the Travel Demand Model account for programmed roadway improvement projects within Barrow County. For example, the projected 2030 Barrow County roadway network assumes prior implementation of the West Winder Bypass.

Roadway segments operating at, or projected to operate at, LOS E or worse were considered as being in likely need of additional capacity. Intersections with localized operational issues, as evidenced by short segments operating at LOS E or worse at intersections, were considered as in need of improvement. Input from the Stakeholder and Technical Committees, as well as from the general public, was utilized to confirm needs identified in this analysis. A variety of solutions may be necessary to improve LOS, including but not limited to road widenings or other capacity improvements.

5.4.4. LOS Analysis

City of Winder

Under current conditions, all major roadways in downtown Winder operate at LOS D or worse during PM peak, and the segments in the heart of the city operate at LOS F. That so much delay occurs in this location has wide repercussions; Atlanta Highway, SR 211, SR 53, SR 11, SR 82 and SR 81 all converge here. Considering the level of local and regional travel, both vehicular and freight, that uses these state routes to travel within and through Barrow County, operational deficiency in downtown Winder impacts a good share of the traffic in Barrow County.

The proposed West Winder Bypass will reroute some through traffic away from downtown Winder. However, even with its construction, LOS along Broad Street and May Street in downtown Winder is projected to continue to worsen through 2030, while LOS on Athens Street is projected to remain stagnant at LOS E. Although all four phases of the West Winder Bypass have not been funded at this time, the ARC Travel Demand Model assumes its full construction by 2040. According to model data, then, in 2040 LOS along Athens Street and May Street are projected to improve slightly, while Broad Street is projected to remain highly congested.

These continued levels of congestion threaten the vitality of Winder's downtown. The need may remain for additional improvements for local traffic for which the bypass is not an option. Due to the number of historic properties in the downtown area, reconstruction of deficient intersections in this area would likely have undesired impacts. Therefore there is a need for operational improvements, such as signal timing, through the city of Winder, as a first step toward reducing delay. Once the first three phases of the bypass are constructed, traffic operations in Winder should be studied to optimize the potential benefits of the new roadway.



SR 316, SR 81 and SR 11

Under existing conditions, SR 316 and its cross streets experience delay during PM peak at the following five signalized intersections:

- Carl Bethlehem Road
- SR 81
- SR 11
- Hog Mountain Road/SR 53
- SR 211

The ARC Travel Demand Model assumes implementation of the intersection to interchange conversions at SR 81, SR 11, and SR 53 by 2030. Delay at these specific locations should decrease as a result. All the same, SR 316 is projected to operate at LOS D/E in 2030 and at D, E, and F by 2040.

As traffic increases SR 316, it also increases on the major roadways that connect to it. By 2030, SR 81 and SR 11 approaching SR 316/University Parkway from the south are projected to operate at LOS F by 2030. It may be that the ongoing development along SR 31 near SR 81 and SR 11 will add volume to these two-lane roadways; or the additional traffic may be headed for SR 316 itself. There may be a long term need for additional capacity along SR 81 and SR 11 in Barrow County.

The technical committee confirmed the need for widening on SR 81 south of SR 316. Any projects intended to address the congestion on SR 81 north of SR 316 should also address the queuing issues at the intersection of SR 316 and Exchange Boulevard reported by the Stakeholder and Technical Committees.

Carl Bethlehem Road

Carl Bethlehem Road/Smith Mill Road/Bethlehem Road runs south of and roughly parallel to SR 316, and experiences many segments of delay from its intersection with SR 316 in the west and its intersection with SR 316 in the east. It is assumed that many local trips take place on Carl Bethlehem Road/Smith Mill Road/Bethlehem Road rather than on SR 316. However, the secondary facility has only two-lanes and many intersections, which results in high levels of delay. In addition, Carl Bethlehem Road from SR 316 to SR 11 is adjacent to some of the county's most-visited commercial properties. The technical committee confirmed the need for widening along Carl Bethlehem in the commercial area. Strategic intersection improvements or signal timing may decrease delay on this facility, and there may be a long-range need for widening of this roadway.

SR 124

SR 124 through Barrow County operates at LOS D or E throughout Barrow County during PM peak hours. It is likely that this roadway is experiencing delay due to the volume of traffic using this two-lane facility, which collects and distributes traffic in the vicinity of I-85 in northwest Barrow County. The ARC Travel Demand Model projects that the segment of SR 124 closest to SR 211/I-85 interchange will operate at LOS E by 2030 and LOS F by 2040. In addition, the planned widening of I-85 through Barrow County is



likely to induce additional demand on this facility and its feeder network, including SR 124. There is a long range, and perhaps a short range, need for additional capacity on this roadway segment.

Atlanta Highway

The existing conditions analysis indicates that many of the sources of delay on Atlanta Highway are not related strictly to traffic volume, and include intersections, heavy truck traffic, and rail traffic delays. One segment of Atlanta Highway, from Patrick Mill Road to Pearl Pentecost Road, operates at LOS F during current PM peak. There is heavy truck activity along this segment and rail spurs serve adjacent industrial uses. There are also several areas of delay on this facility as it becomes May Street in the City of Winder. These intersections, all which are signalized unless noted otherwise, operate at LOS E or worse during current PM peak hours:

- SR 324
- Main Street (in Auburn)
- 6th Street/County Line Auburn Road (in Auburn)
- Carl-Midway Church Road (in Carl)
- Patrick Mill Road (unsignalized)
- SR 11
- SR 53
- Hardigree Road (unsignalized, east of the Barrow County Airport)

In Statham, a series of intersections along Atlanta Highway operates at LOS D under currently PM peak conditions. Should LOS deteriorate further at these locations, one or more may be in need of eventual improvements:

- Pleasant Hill Church Road (unsignalized)
- 2nd Street/SR 211
- Glen Jackson Road
- US 78

The ARC Travel Demand Model projects that this roadway outside of Winder will operate primarily at LOS C or above in 2030 and 2040, with exceptions through the Auburn/Carl area in the west and at 2nd Street in Auburn in the east. These areas are likely in need of operational improvements to address rail, truck, and intersection issues that are responsible for ongoing delay on these locations.

SR 82

There are two intersections on SR 82, at SR 211 and at SR 82/SR 330 in the eastern part of the county, that operate at LOS F during current PM peak. These intersections are currently four-way stops a little under a mile apart from one another, and both experience considerable queueing during peak hours. There is a need for improvements at these locations, through signalization or roundabout construction, to address the delay at this location.



SR 211 and the West Winder Bypass

Under existing conditions, SR 211 operates at LOS C or better during PM peak hours. By 2030, LOS is projected to worsen along SR 211, with most of the roadway operating at LOS E or F. This worsening in LOS is likely due to the construction of the West Winder Bypass, which shift additional traffic onto SR 211. The ARC Travel Demand Model assumes that all four phases of the bypass will be constructed by 2040 (again, the fourth phase is not yet funded). Therefore the model data for 2040 indicate that LOS along SR 211 from I-85 to the West Winder Bypass will worsen to LOS F as more traffic from the bypass utilizes SR 211, and LOS on SR 211 from the bypass south to Winder will improve to LOS D. There is both a short and long-term need to add capacity to SR 211 to support the operations of the West Winder Bypass, regardless of whether three or four segments of the bypass are implemented. The stakeholder and technical committees confirmed the need for additional capacity on SR 211, primarily due to the high volumes of truck traffic it carries.

SR 324

Under existing conditions, the intersection of SR 324 and Atlanta Highway operates at LOS E during PM peak hours. According to the ARC Travel Demand Model, SR 324 is projected to operate at LOS D in Barrow County and E in Gwinnett County by 2040. The model would not, however, include recent information regarding Gwinnett's plans to widen SR 324 from I-85 to the Barrow County line using local funds. If this were to occur, LOS within Gwinnett County would improve for existing and future conditions, while LOS within Barrow County would likely degrade. In the case that Gwinnett County locally funds the widening of SR 324 within its borders, there will be a need for inter-County coordination to ensure that the roadway is widened to its terminus at Atlanta Highway in Auburn, to avoid the creation of a bottleneck on this facility between Atlanta Highway and Bailey Road.

West Winder Bypass

Completion of the West Winder Bypass from SR 211 east to SR 53 may be needed to reroute the desired number of trucks around Winder. As seen in the ARC Travel Demand Model projections for 2040, which assume a full build-out of the proposed facility, the fourth segment of the bypass would further improve traffic conditions in Winder over the bypass's partial implementation. Stakeholder input confirms this need and indicates that there may be a need to extend the bypass as far east as SR 316 east of Winder. However, additional significant regional investments in new facilities in Barrow County are unlikely to be the most cost-effective methods of meeting Barrow County's transportation needs.

5.4.5. LOS Analysis Conclusions

Analysis confirmed and updated the need for additional capacity on the Barrow County roadway network that was identified in the 2007 CTP. The 2007 CTP supported a new West Winder Bypass. This analysis confirms that by rerouting traffic, especially trucks, the new roadway will reduce congestion and delay in downtown Winder, a significant bottleneck on the countywide transportation network.

Analysis indicates that there is a need for additional capacity projects to address increasing vehicle volumes through 2040. Those these are identified here as capacity needs, they may also be met with travel demand reduction, alternative route availability, or operational improvements. Furthermore,



based on the analyses of existing and projected future LOS, there appears to be a need for operational improvements at intersections throughout Barrow County.

5.5. Roadway and Intersection Needs

Based on the travel pattern, safety, traffic volumes, and level of service analyses, several corridor and intersection locations were identified as in need of improvement.

5.5.1. SR 316 Corridor

The 2007 CTP set aside the SR 316 corridor for special consideration, because SR 316 was, “based on existing and projected share of traffic and level of development...most important to Barrow’s overall mobility.” As development along this corridor has intensified and AADT has increased, SR 316 has only become more important to Barrow County.

Growing traffic and development accompany safety issues and congestion. SR 316 experienced the second highest number of accidents of all facilities in Barrow County from 2011 to 2013. During that time period, twelve percent of accidents on Barrow County roadways occurred on SR 316. With 658 accidents, SR 316 experienced 60 crashes per mile over the three year period. Six of the ten intersections with the most crashes from 2011-2013 in Barrow County are on SR 316. Furthermore, the approaches of SR 81, SR 11, and SR 53 to SR 316 are also all projected to operate at LOS F by 2040.

The 2007 CTP stipulated that maintaining acceptable LOS along the entire corridor would require the conversion of intersections into interchanges along the corridor to increase safety. Those conclusions are confirmed by this analysis. The safety and operational issues at SR 316 at SR 81, SR 11, and SR 53 will be addressed by the programmed construction of the interchanges those locations. There is a need to address the safety at other intersections on SR 316 in the design of those interchanges, for example by providing for parallel access road and closing uncontrolled intersections. A summary of intersection needs on SR 316 is presented in **Table 5.11**.

Table 5.11: Intersection Needs on SR 316

Intersection	Top Crash Location	Crash Hot Spot	Deficient LOS in 2012	Publicly-Identified Need
Kilcrease Road				X
Patrick Mill Road	X	X		X
Carl-Bethlehem Road	X	X	X	
SR 81	X	X	X	X
Harry McCarty		X		X
SR 11	X	X	X	
Harrison Mill Road		X		
Smith Cemetery Road		X		
SR 53/Hog Mountain Road	X	X	X	

Source: ARC Travel Demand Model, GDOT crash data, Jacobs

5.5.2. Needs for Other Barrow County Corridors

The travel pattern analysis determined that there is a need to support primary travel patterns, such as to and from Gwinnett County. AADT analysis determined that there is a need to prioritize improvement



on those roadways that carry the most vehicles. Analysis of crash frequency and severity indicates that there is a need for safety improvements along identified corridors. LOS analysis determined that there is a need to support the efficient movement of people and goods across the Barrow County roadway network by adding capacity at those areas that operated at deficient LOS. **Table 5.12** summarizes these needs by corridor.

Table 5.12: Summary of Barrow County Corridor Needs

Roadway	Supports primary travel patterns	Primary Facility	Safety Need	Capacity Need	Publicly-Identified Need
SR 211	X	X	X	All in Barrow County - especially between West Winder Bypass and I-85 and north of I-85	X
Atlanta Highway	X	X	X		
SR 81	X	X	X	From Walton County Line to Carter Hill Church Road	X
SR 11	X	X	X	From Walton County Line to SR 316	
SR 82			X		
SR 53		X	X		
Patrick Mill Road			X		
North Broad Street	X		X		
May Street/Atlanta Highway	X		X		
SR 124				Gwinnett County Line to Jackson County Line	
SR 324				From Gwinnett County Line to Atlanta Highway	X
Carl Bethlehem Road			X	SR 316 to SR 11	X
West Winder Bypass Extension	x		x		X

Source: ARC Travel Demand Model, GDOT crash data, Jacobs

5.5.3. Needs for Barrow County Intersections

Analysis of crash frequency and severity indicates that there is a need for safety improvements at identified intersections. LOS analysis determined that there is a need to support the efficient movement of people and goods across the Barrow County roadway network by addressing areas of delay under current conditions with intersection operational improvements. **Table 5.13** summarizes these needs by intersection.



Table 5.13: Summary of Barrow County Intersection Needs

Corridor	Intersection	Top Crash Location	Crash Hot Spot	Deficient LOS in 2012	Publicly-Identified Need
Downtown Winder	Intersections on May and Broad Street		X	X	X
	SR 324		X	X	
Atlanta Highway	Downtown Auburn (Mount Moriah Road, County Line Auburn Road/6 th Street)		X	X	
	Downtown Carl (Carl-Cedar Hill Road, Carl-Bethlehem Road, Carl-Midway Church Road)		X	X	
	Patrick Mill Road		X	X	
	SR 11	X	X	X	
	Bowan Mill Road		X	X	
SR 211	I-85	X	X	X	
	Liberty Church Road		X		
	Old Hog Mountain Road		X		
	County Line-Auburn Road		X		
	Dee Kennedy Road		X		
	Pleasant Hill Church Road		X		
	Downtown Statham (Atlanta Highway/Broad Street)		X	X	
SR 81	Carl-Bethlehem Road		X	X	
	Tanners Bridge Road		X		
SR 11	Punkin Junction Road		X		
	Downtown Bethlehem (Star Street)		X	X	
SR 53/Hog Mountain	McElhannon Road		X		
	Rockwell Church Road		X	X	
	Cedar Valley Trail Road		X		
SR 82	Jackson Trail Road		X		X
	Holsenbeck School Road		X		
Holsenbeck School Road	Bowan Mill Road		X		
	Dunahoo Road		X		
Carl Bethlehem Road	Tucker Road		X		
Brown Bridge Road	Governor's Ridge Road		X		

Source: GDOT crash data, ARC Travel Demand Model, Jacobs



6. FREIGHT TRANSPORTATION NEEDS

This analysis reviews the truck and rail freight modes within Barrow County in order to identify the impact of freight on the transportation network.

6.1. Truck Traffic Analysis Methods

This analysis was based on a review of existing and projected future truck traffic conditions, including truck volumes and percentages, and designated truck and non-truck routes. This analysis considered medium truck and heavy truck traffic on the Barrow County roadway network. Medium trucks are defined as Federal Highway Administration (FHWA) vehicles classes F4 through F6 (buses, two axle and three axle single unit trucks), while heavy trucks are defined as FHWA classes F8 through F13 (single or multiple trailer combinations). While heavy trucks exert the most significant impact on roadway function, medium trucks also impact congestion and safety to a greater degree than standard passenger vehicles. The twenty roadways with the highest daily percentages and volumes of heavy and medium trucks for 2015 were identified based on data obtained from the ARC Travel Demand Model (**Table 6.1**).

Table 6.1: Top Medium and Heavy Truck Volumes and Percentages, 2015

Top 20 Commercial Vehicle Volumes			Top 20 Commercial Vehicle Percentages			
Roadway	Location	Volume	Roadway	Location	Volume	Percentage
I-85 East	SR 211	9631	I-85 East	SR 211	9631	27.74%
I-85 West	SR 211	9383	I-85 West	SR 211	9383	27%
SR 211	I-85	4660	SR 211	I-85	4660	19.65%
SR 316	SR 11	2640	SR 316	SR 11	2640	14.70%
N Broad St	May St	2124	Double Bridges Rd	Statham Rd	130	11.89%
SR 11	SR 316	1982	Lays Dr	E Broad St	142	11.62%
Winder Monroe Hwy	Walton County	1868	Winder Monroe Hwy	Walton County	1868	10.91%
Dee Kennedy Rd	SR 124	1272	SR 82	Statham Rd	566	10.28%
SR 124	SR 211	1178	SR 124	SR 211	1178	9.10%
SR 81	Walton County	1176	Carl Bethlehem Rd	Atlanta Hwy	908	9.06%
Atlanta Hwy	6th St	1020	8th St	SR 316	848	8.75%
SR 53	SR 316	998	SR 11	SR 316	1982	8.42%
Carl Bethlehem Rd	Atlanta Hwy	908	Dee Kennedy Rd	SR 124	1272	8%
County Line Auburn Rd	Atlanta Hwy	894	Bowman Mill Rd	Atlanta Hwy	360	7.70%
8th St	SR 316	848	6th St	Atlanta Hwy	894	7.62%
Winder Jefferson Hwy	N Broad St	612	SR 81	Walton County	1176	7.47%
SR 82	Statham Rd	566	Atlanta Hwy	6th St	1020	7.27%
Jackson Trail Rd	SR 53	384	N Broad St	May St	2124	7.07%
Bowman Mill Rd	Atlanta Hwy	360	Winder Jefferson Hwy	N Broad St	612	6.28%
Midland Ave	N Broad St	324	SR 53	SR 316	998	5.85%

Source: ARC Travel Demand Model

Forecasts from the ARC Travel Demand Model were used to map projected 2015 truck volumes on the Barrow County roadway network (**Figure 6.1**), 2015 truck percentages (**Figure 6.2**), 2040 truck volumes (**Figure 6.3**) and 2040 truck percentages (**Figure 6.4**). Truck traffic data from GDOT count locations, displayed in **Figure 6.5**, were used to confirm projections from the Travel Demand Model. Finally, freight



generating land uses were mapped to complement the travel demand analysis and to identify corridors which serve businesses in need of effective freight access (**Figure 6.6**).

6.2. Truck Traffic Analysis

Analysis of the truck traffic data indicates that there are several roadway needs related to freight transportation in Barrow County.

6.2.1. SR 211

SR 211 carries nearly 5,000 medium and heavy trucks daily from I-285, which is significant considering that SR 211 is a shoulder-less, two lane roadway (Table 6.1). As the major freight connection to I-85 within Barrow County, this roadway may require further operational or capacity enhancements.

6.2.2. Winder and Statham

Truck traffic analysis indicates a concentration of truck volumes at several key locations across Barrow County, including urban locations not necessarily well suited for high truck volumes. The ARC Travel Demand Model indicates a large number of trucks traveling through both downtown Winder and Statham, which also experience passenger vehicle traffic congestion. This creates the potential for safety and efficiency conflicts between freight modes and other traffic at these locations.

The intersections of SR 11/N Broad Street and SR 211/W Athens Street, and SR 11/N Broad Street and Atlanta Highway/W May Street, critical nodes for the Winder area, currently handle large volumes of truck traffic that may contribute to the congestion on nearby roadways. The presence of an active CSX rail line parallel to Atlanta Highway through Winder creates additional congestion and delay and presents further safety and efficiency concerns.

Even more significantly, Broad Street within central Winder carries over 2,000 medium and heavy trucks in 2015, a volume which contributes to the corridor's severe congestion problems (Table 6.1). As a downtown commercial corridor, Broad Street is not intended to carry large volumes of truck traffic. However, the radial network of state routes in Barrow County forces trucks on both through trips and local trips to pass through the 900 feet of Broad Street between May Street and Athens Street.

6.2.3. Proposed West Winder Bypass

By 2040, it is projected that the West Winder Bypass will have been constructed (Figure 6.3 and Figure 6.4). (The model assumes full build out of the project even though only the first three phases are currently in the ARC TIP.) This project will provide a critical alternative for trucks traveling through Barrow County from I-85, significantly improving freight conditions along Athens Street in Winder. Commercial traffic projections for 2040 from the ARC Travel Demand Model indicate a subsequent reduction in truck traffic along SR 211 south of the intersection with the West Winder Bypass and in truck traffic on North Broad Street. While implementation of the West Winder Bypass is projected to alleviate some of the congestion generated by present day commercial vehicle volumes, further improvements to the road network within central Winder itself may prove necessary to completely alleviate the congestion in the area.



Figure 6.1: Existing Truck Volumes (2015 Daily)

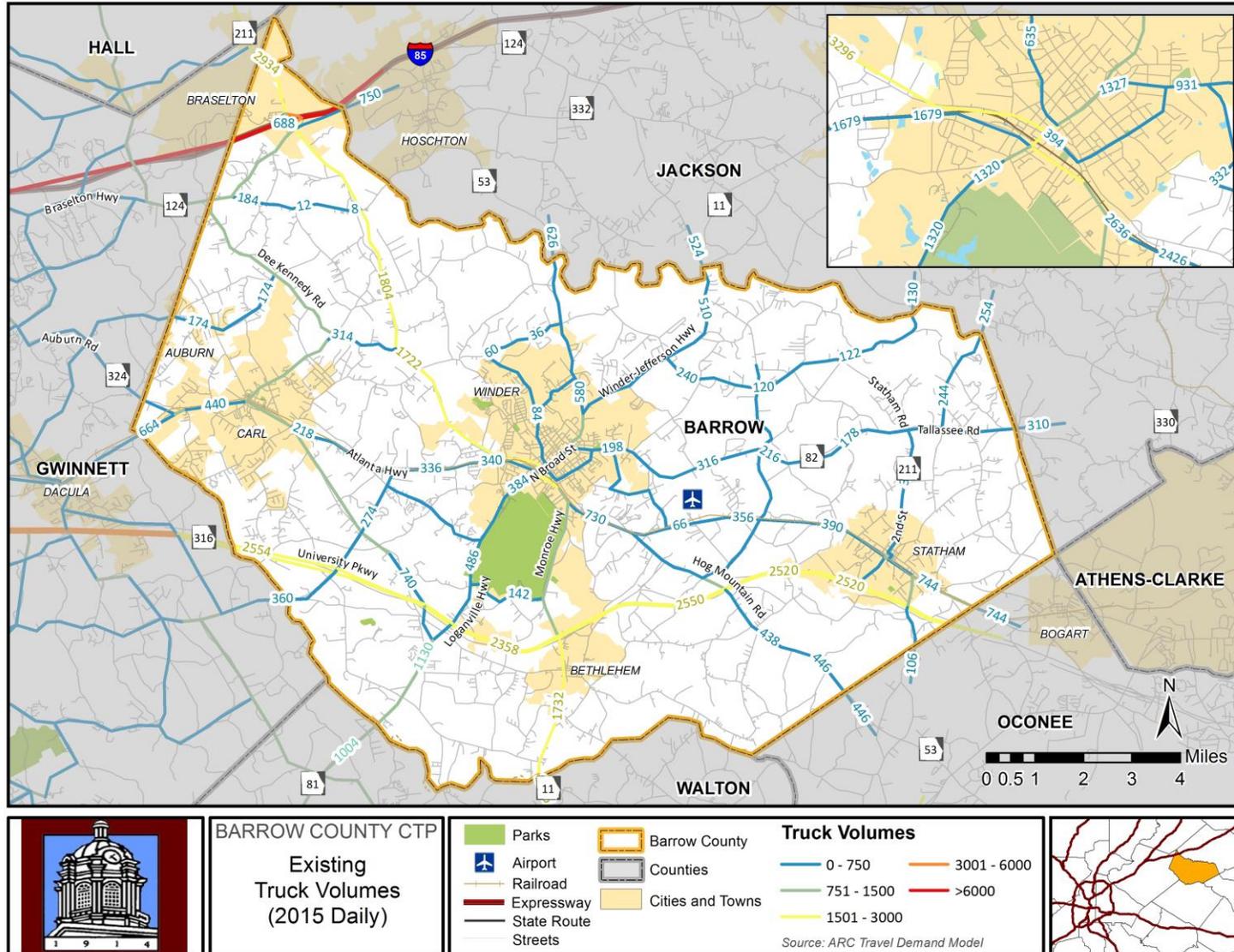




Figure 6.2: Existing Truck Percentages (2015 Daily)

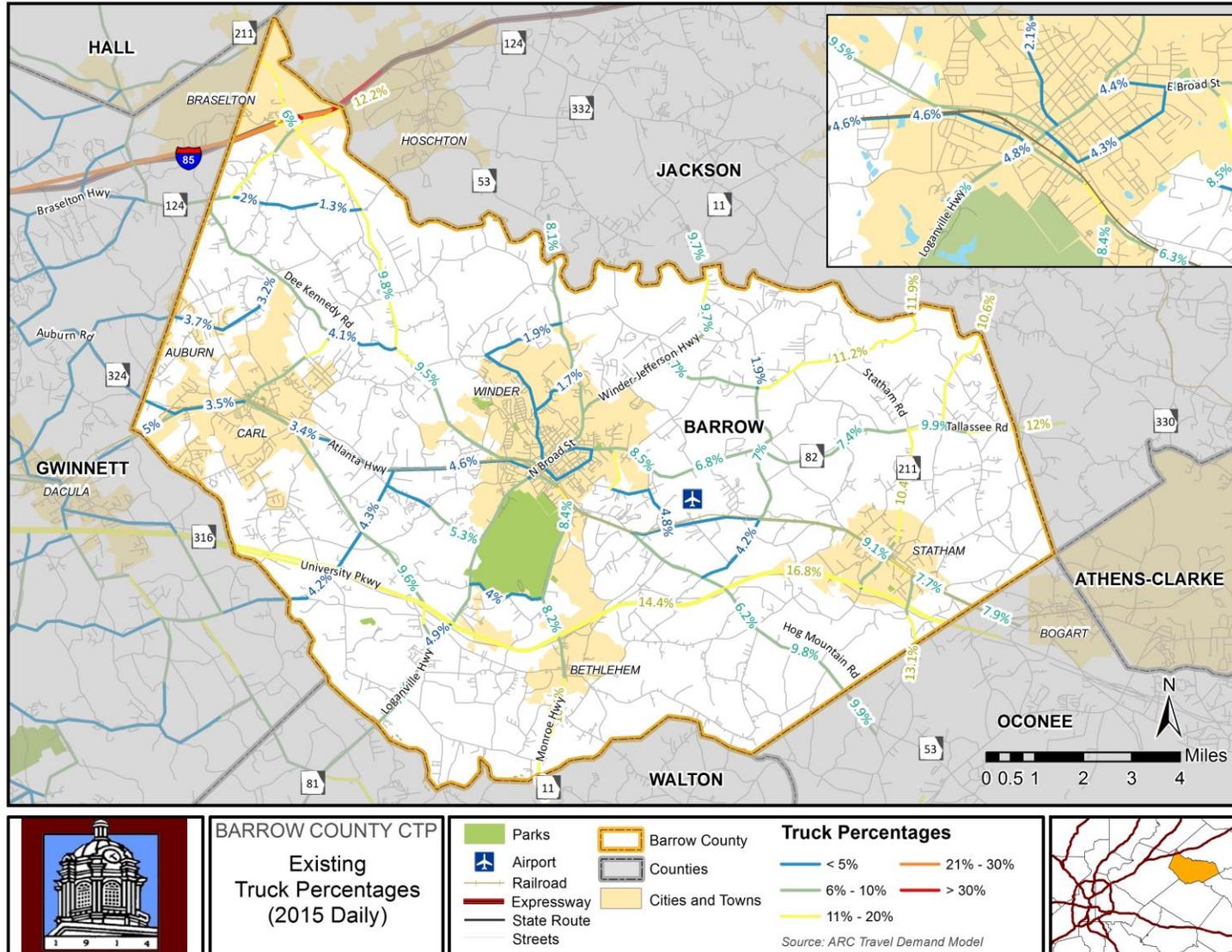




Figure 6.3: Projected 2040 Truck Volumes (Daily)

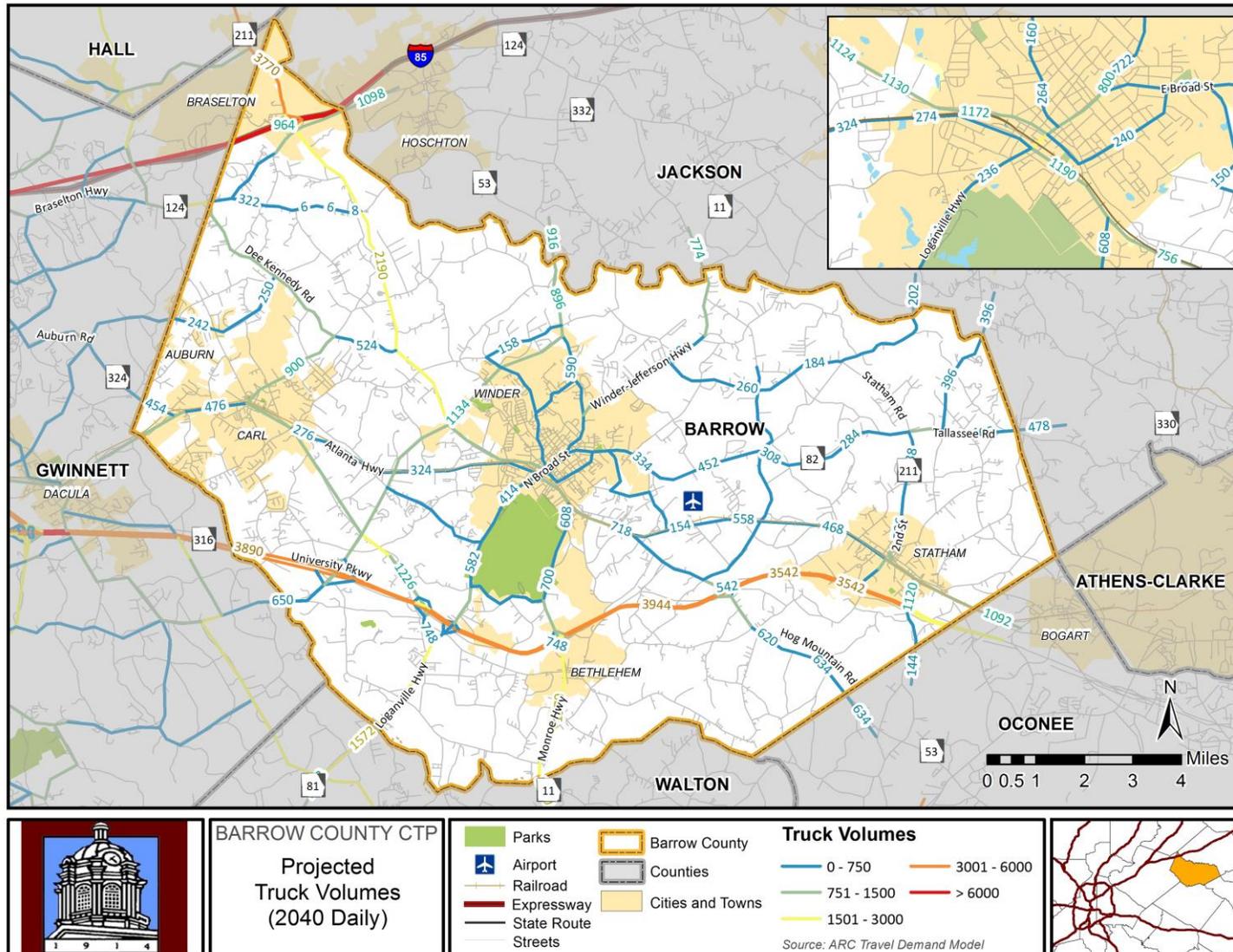




Figure 6.4: Projected 2040 Truck Percentages, Daily

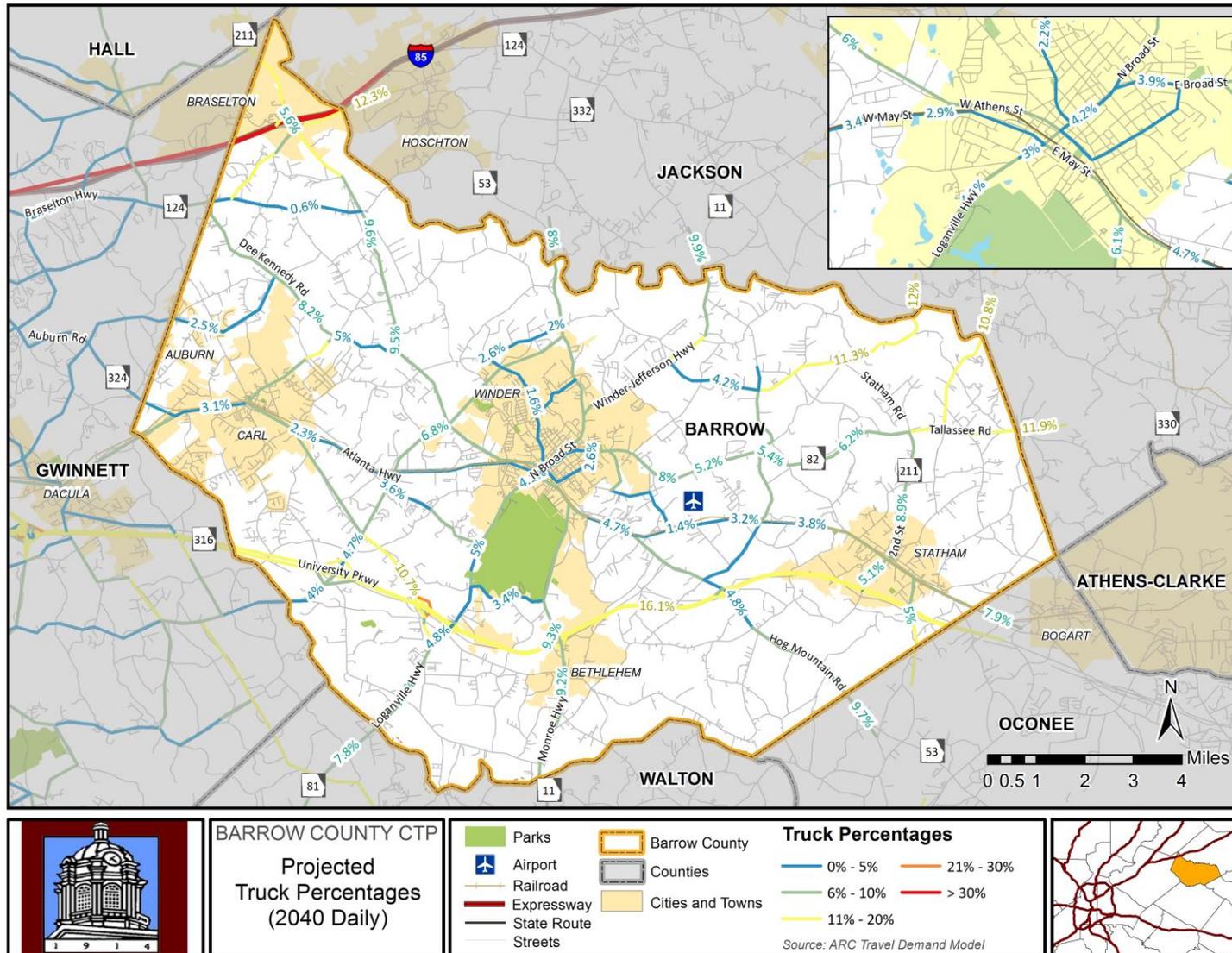




Figure 6.5: GDOT Truck Volumes and AADT, 2012

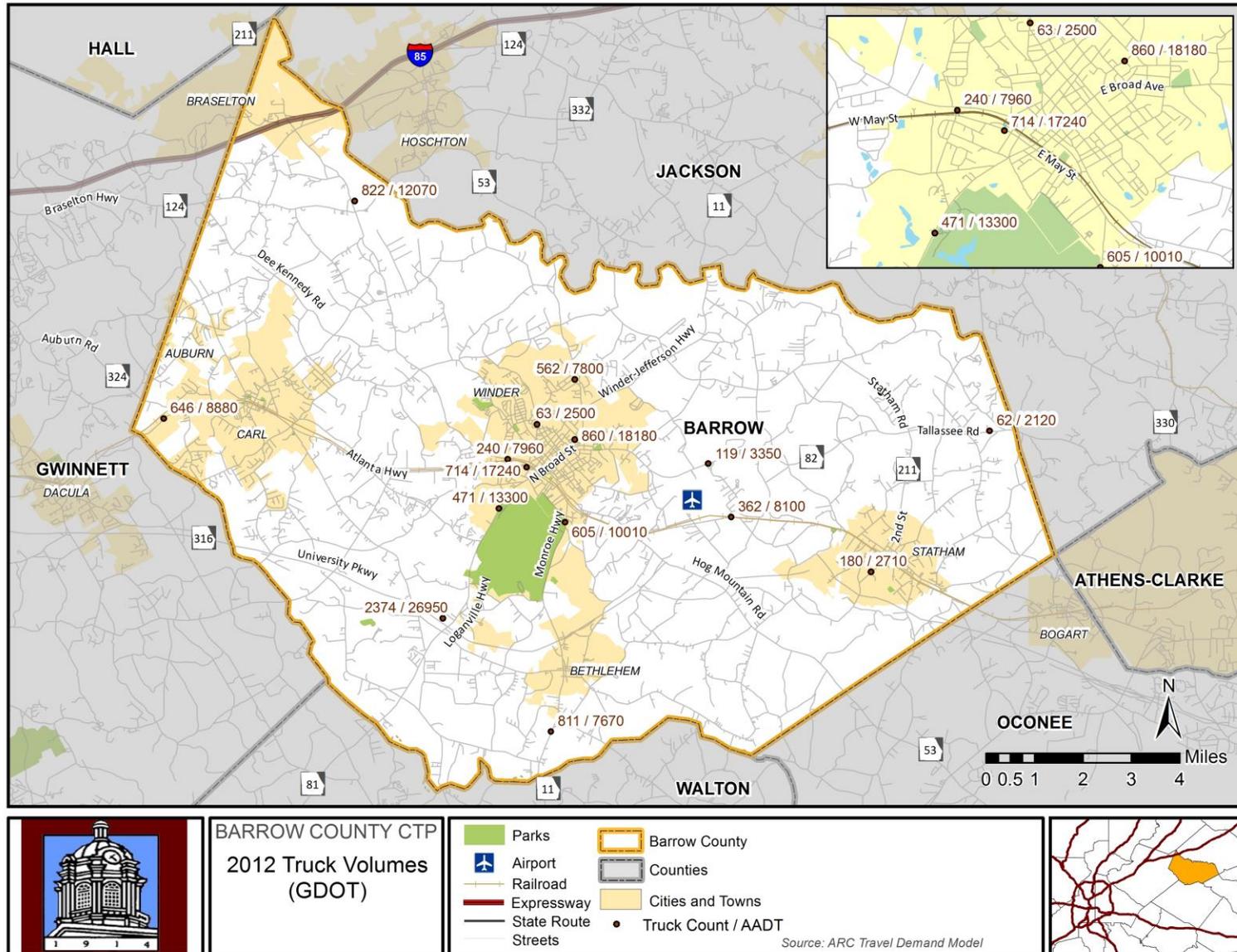
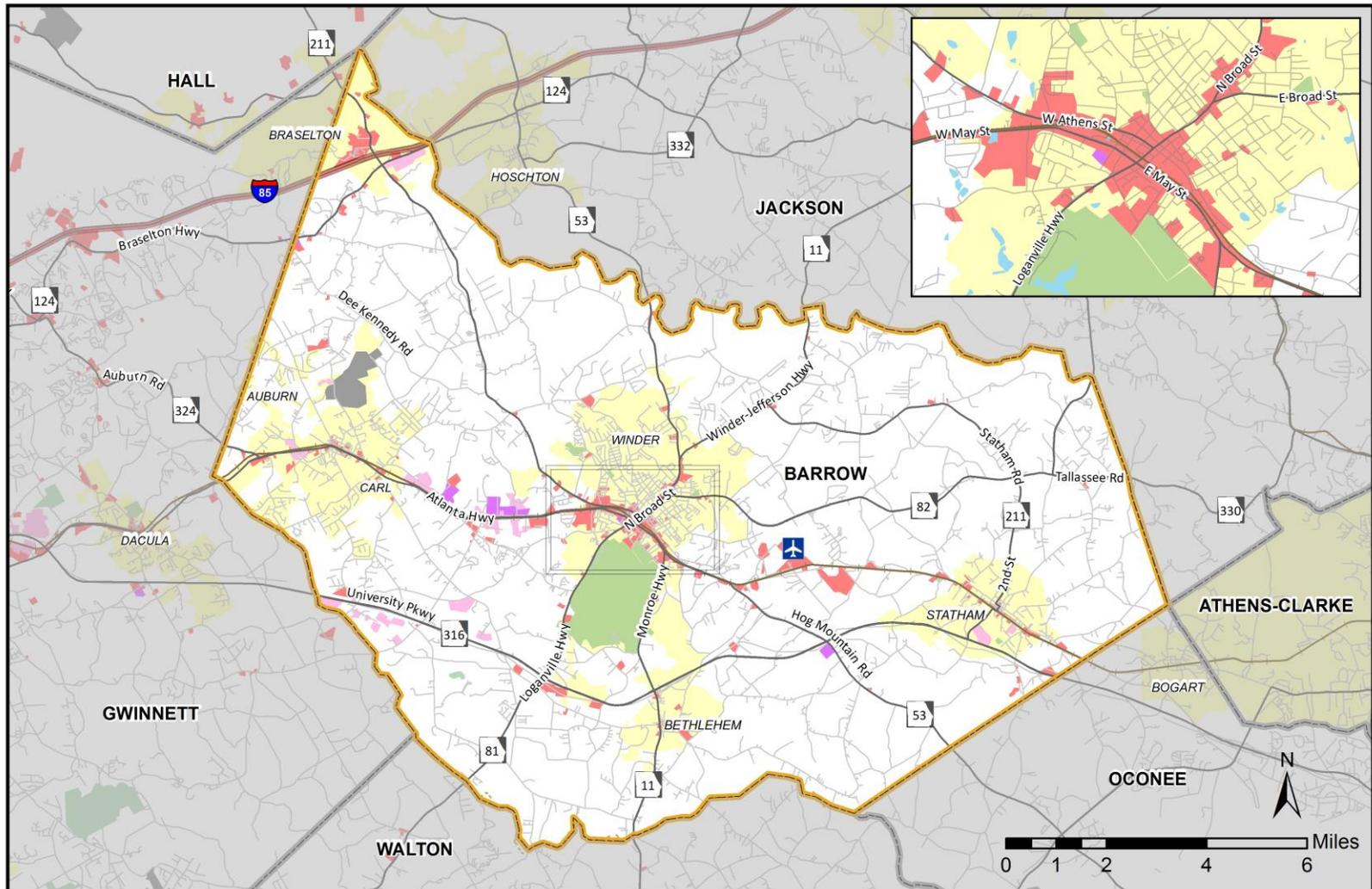




Figure 6.6: Freight Generating Land Uses



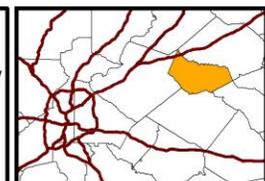
BARROW COUNTY CTP
Freight Generating
Land Uses

Freight Generating Land Uses

- Commercial
- Industrial / Commercial
- Industrial
- Quarries

Source: ARC, Barrow County

- Barrow County
- Expressway
- Streets
- Park
- Airport
- Railroad





6.2.4. Other Needs

Improvements to the Winder and Statham primary roadways and intersections or implementation of alternative truck routes are needed to provide significant safety and efficiency improvements in terms of Barrow County’s freight transportation. Less critical but still relevant areas of need include the major intersections along SR 316/University Parkway, which provide access to the County’s second most significant freight route after I-85.

Dee Kennedy Road from SR 124 to SR 211 may also represent a potential truck need. It is currently marked as a non-truck route, yet the ARC Travel Demand Model outputs indicate it may carry a significant volume of trucks. More enforcement may be needed if the route is intended to remain a non-truck route; conversely improvements may be needed if the route is intended to carry truck traffic.

Finally, significant operational improvements to roadways which serve major freight producing industries along Atlanta Highway and Bankhead Highway are necessary. Stakeholders identified Pearl Pentecost Road as in need of significant pavement improvements and operational enhancements to support heavy trucks, and Bankhead Highway as in need of turning accommodations for truck traffic. Ultimately, operational and safety improvements to the roadways serving these industries along Atlanta Highway will be necessary to facilitate continued economic growth within freight-producing industries in Barrow County.

6.2.5. Truck Traffic Needs

Barrow County’s primary freight needs areas are mapped with current ARC-designated truck routes in **Figure 6.7**. Needs associated with truck traffic are listed in **Table 6.2**. These areas represent the greatest opportunities for improved safety, efficiency, and freight access conducive to economic development.

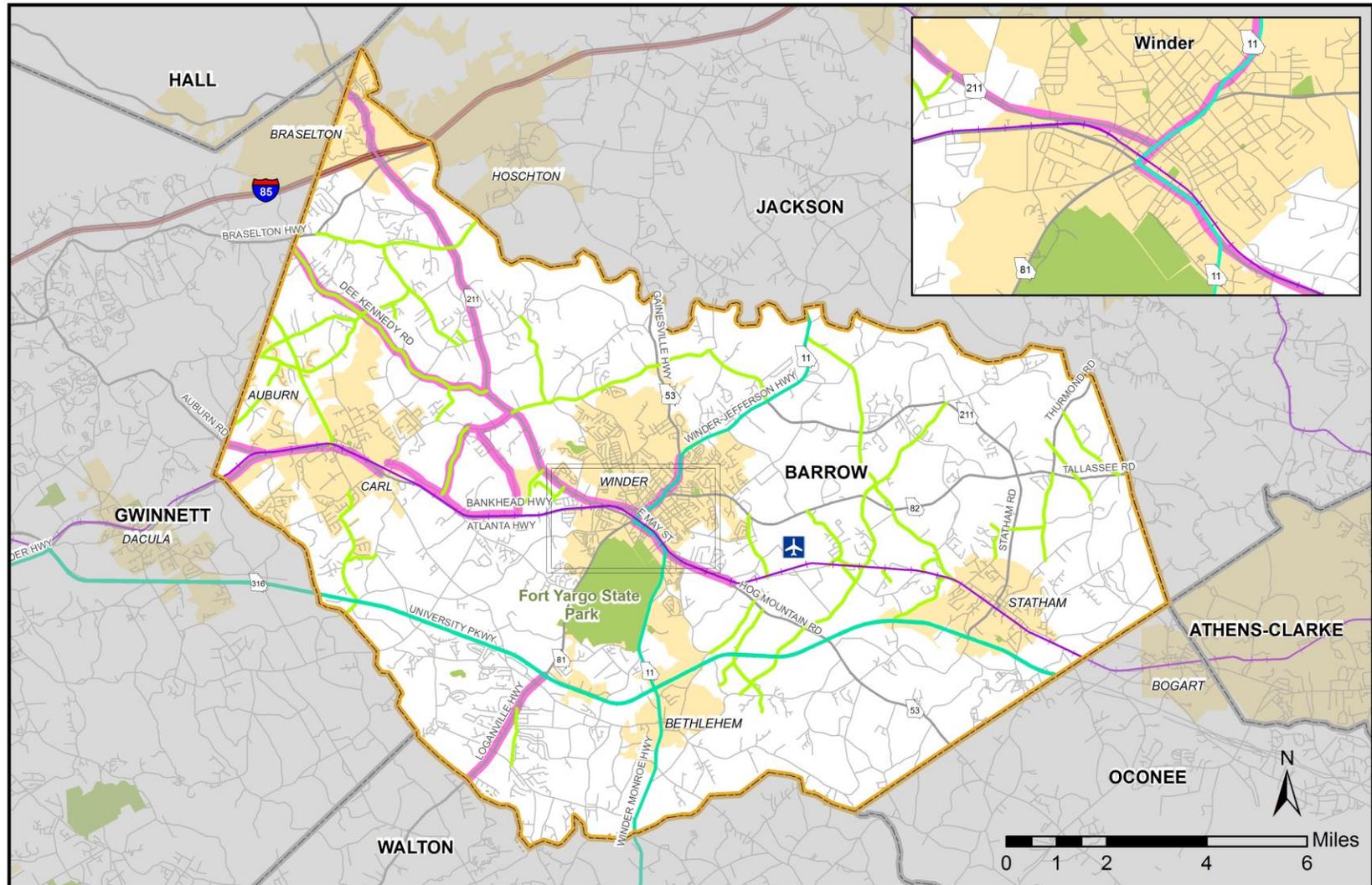
Table 6.2: Truck Traffic Accommodation Needs

Roadway	Segment	Need
SR 211	from Gwinnett County Line to Broad Street in Winder	Additional Capacity
Dee Kennedy Road	SR 124 to SR 211	Add shoulders; bring roadway to design standard
May Street	Broad Street in Winder to Hog Mountain Road	
Atlanta Highway	Gwinnett County Line to Pearl Pentecost Road	Operational Improvements
Pearl Pentecost Road	Atlanta Highway to Carl Cedar-Hill Road	Add shoulders; bring roadway to design standard
Carl-Cedar Hill Road	Atlanta Highway to SR 211	Add shoulders; bring roadway to design standard
SR 81	Walton County Line to SR 316	Add shoulders; bring roadway to design standard

Source: Jacobs



Figure 6.7: Barrow County Truck Needs

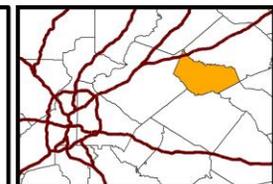


BARROW COUNTY CTP

Potential Truck Needs Areas

- Parks
- Airport
- CSX Rail
- Expressway
- State Route
- Streets
- Barrow County
- Counties
- Cities and Towns

- Designated Routes and Needs**
- Truck Routes
 - No Truck Routes
 - Truck Needs
- Source: ARC, Barrow County





6.3. Rail Conditions

Barrow County is traversed by an active CSX railway that passes directly through the urban centers of Winder and Statham, where it results in conflicts between rail and highway traffic. Analysis of rail needs is based on the number, location, and type of rail crossings on the roadway network, and a safety analysis of accidents at rail crossings over the past five years. The implementation of a new grade separated rail crossing at Ed Hogan Road and the associated closure of three less safe crossings is also considered.

6.3.1. Rail Analysis

CSX operates auto, intermodal, and merchandise trains throughout Barrow County, with 15 road and 4 local trains scheduled per day, plus a number of unscheduled trains (coal, grain, etc.) that varies. A number of these merchandise trains serve business customers in Barrow County who ship commodities such as lumber, granite, ethanol, steel, and other products. The infrastructure needed to provide these services creates a large number of highway rail crossings across Barrow County.

Nearly all of Barrow County's rail crossings are at-grade, presenting a large number of potential conflicts between roadway and rail traffic, particularly in Winder. The lack of grade-separated crossings creates delays on the roadway network as vehicles wait for trains to pass. Furthermore, the presence of major intersections within several hundred feet of at-grade rail crossings creates the potential for traffic to queue across rails, creating additional safety hazards. While the majority of the County's rail crossings are equipped with barriers to enhance safety, some remain protected only by signage and flashing light signals. CSX notes issues with clearance distance for trucks with low ground clearance at multiple locations throughout the county, particularly Bankhead Highway, Horton Street, and Deer Run Trail. These clearance issues have created crossings incidents and collisions in the past. The full extent of active railway and highway rail crossings in Barrow County are displayed in **Figure 6.8**.

From 2010 through 2014, there were nine crashes at rail crossings in Barrow County, which resulted in a total of four injuries and one fatality. Despite multiple crashes resulting in injuries and a fatality at the Beulah Street crossing, the crossing remains unprotected. **Table 6.3** and **Figure 6.9** provide details regarding all highway rail accidents across Barrow County over the previous five year period.

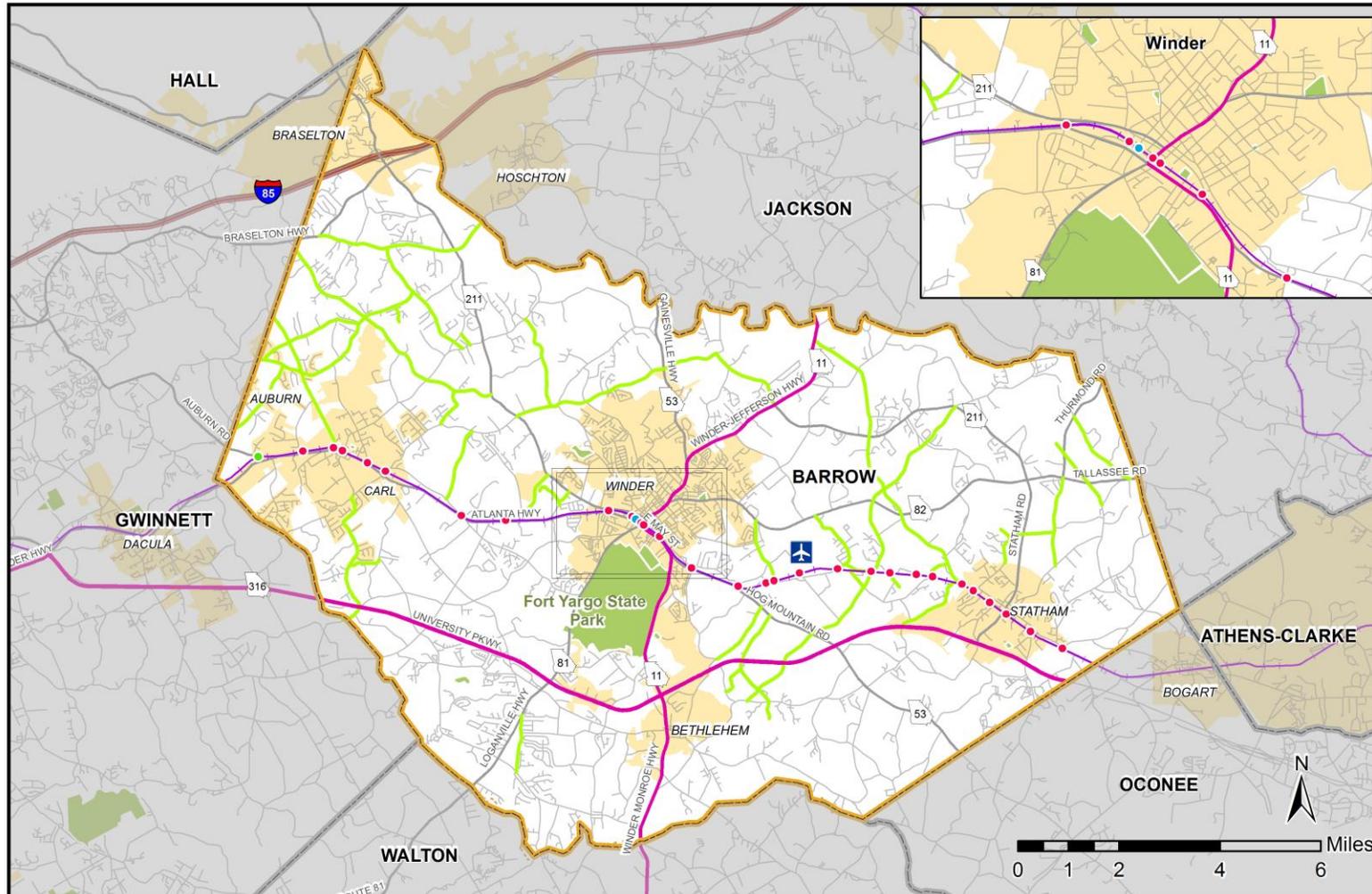
Table 6.3: Highway Rail Crashes, 2010 to 2014

Crossing ID	Highway	Date	Vehicle Occupants	Injuries	Fatalities
640181X	Bankhead Hwy	January 20, 2011	1	0	0
640105E	Eighth St	April 22, 2011	1	1	0
640106L	Jefferson St	June 3, 2011	3	2	0
640128L	Beulah St	June 21, 2011	1	1	0
640128L	Beulah St	November 29, 2011	1	0	1
640133H	Johns-Manville Rd	November 30, 2011	1	0	0
640129T	Horton St	April 20, 2012	1	0	0
640109G	Pleasant Hill Rd	February 2, 2014	0	0	0
640126X	S Broad St	May 12, 2014	1	0	0
<i>Total</i>		<i>9 accidents</i>		<i>4</i>	<i>1</i>

Source: Federal Railroad Administration



Figure 6.8: Truck Routes and Rail Crossings



BARROW COUNTY CTP
**Truck Routes
and Rail Crossings**

Parks	Barrow County	Railroad Crossings	
Airport	Counties	RR Under	Truck Routes
CSX Rail	Cities and Towns	At Grade	No Truck Routes
Expressway		RR Over	
State Route		Source: ARC, Barrow County, Federal Railroad Administration	
Streets			

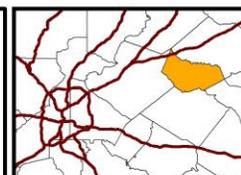
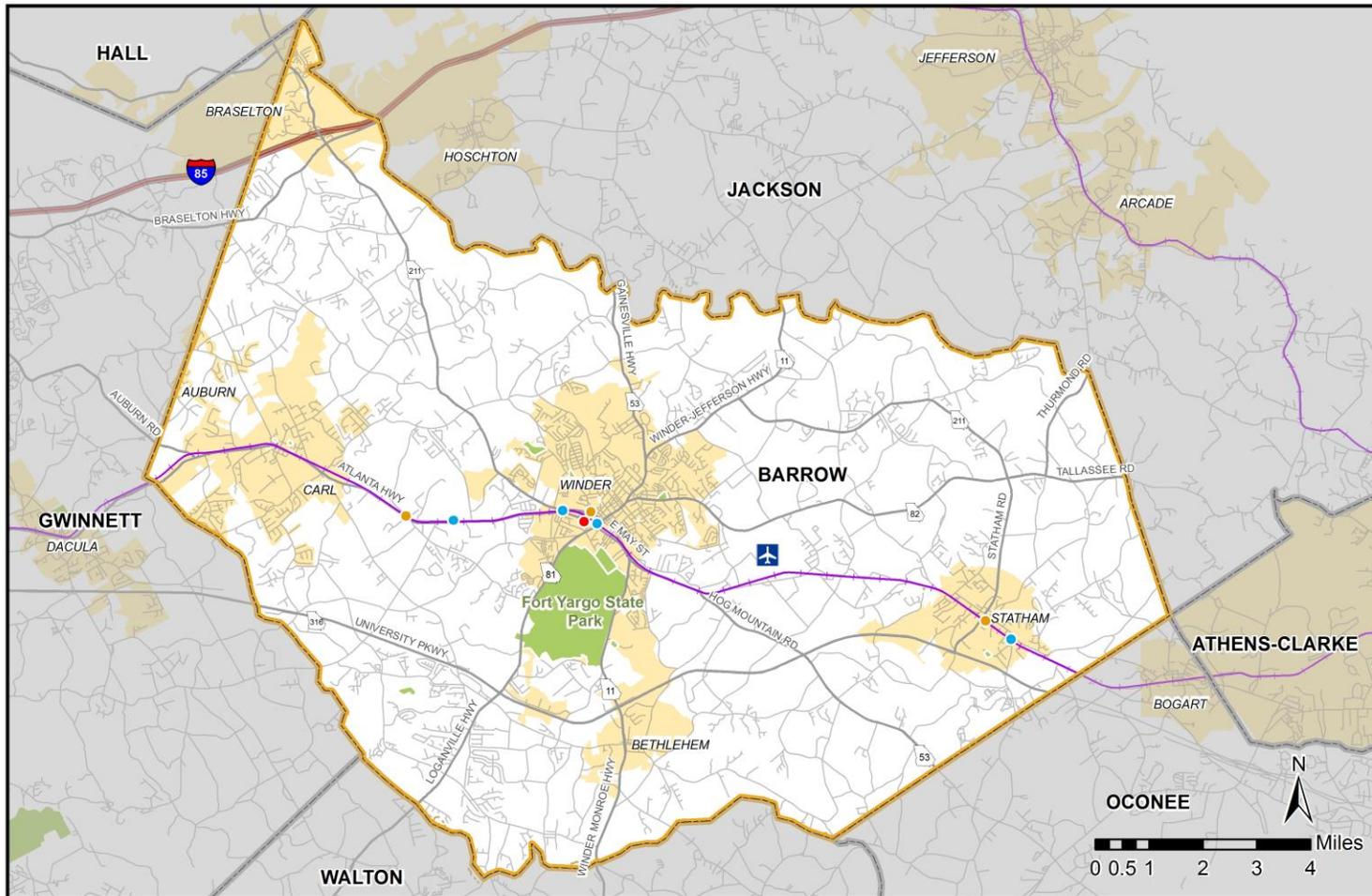




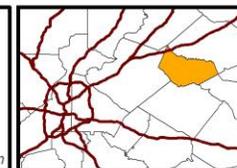
Figure 6.9: Rail Crashes, 2010 to 2014



BARROW COUNTY CTP
Rail Crashes
2010 to 2014

- Parks
- Airport
- CSX Rail
- Expressway
- State Route
- Streets
- Barrow County
- Counties
- Cities and Towns

- Highway - Rail Crashes**
- Fatal
 - Injury
 - No Injury
- Source: Federal Railroad Administration





6.4. Rail Network Needs

Based on the needs analysis, Barrow County is currently underserved in terms of accommodations for the presence of active freight rail lines. All but two of the County’s rail crossings are at-grade, presenting a large number of possibilities for highway rail conflicts and crashes. Crossings within urban areas such as Winder are particularly dangerous. Congestion in the Winder area creates the potential for traffic to queue across rail lines. Furthermore, some Barrow County rail crossings are not fully protected. Crossing amenities within Winder, Statham, and at other key locations must be improved with barriers, pre-signals, and signal preemption to avoid traffic queuing across active lines. Maintenance of pavement near rail crossings may also be necessary to ensure safe and successful crossing of rail lines by all vehicles, including trucks with low ground clearance. Improved signage at locations with ground clearance issues may also avert further incidents involving trucks at rail crossings.

Barrow County has a programmed project to add a new grade-separated crossing at Ed Hogan Road across the CSX rail line. This project will be accompanied by the closure of three less safe, less efficient rail crossings throughout the county at Cosby Road, Russell Cemetery Road, and Deer Run Trail. There is a need for this project, the implementation of which will significantly improve Barrow County’s currently inadequate rail crossing infrastructure by providing an additional crossing site with the unmatched safety and efficiency afforded by a grade-separated facility.

These findings of this analysis confirm and update the analysis presented in the previous CTP. Barrow County’s primary rail needs revolve around improving the safety and efficiency of adjacent non-rail modes. As a secondary need, operation of rail spurs which serve Barrow County industries must be enhanced through maintenance of rail crossings and improved signage. Additional congestion and potential for highly fatal crashes results from the presence of rail lines that are not well accommodated by the current roadway network. Small scale fixes at individual crossings and larger retiming, signalization, and preemption measures are potential primary strategies to address rail needs. Improved rail crossing and intersection design can be seen at the already sufficient Midland Avenue crossing, which may serve as an example for future improvements. Expansion of existing rail infrastructure is not necessary given current conditions. Key intersections and rail crossings that need improvement to safely accommodate nearby rail traffic can be found in **Table 6.4** and **Figure 6.10**.

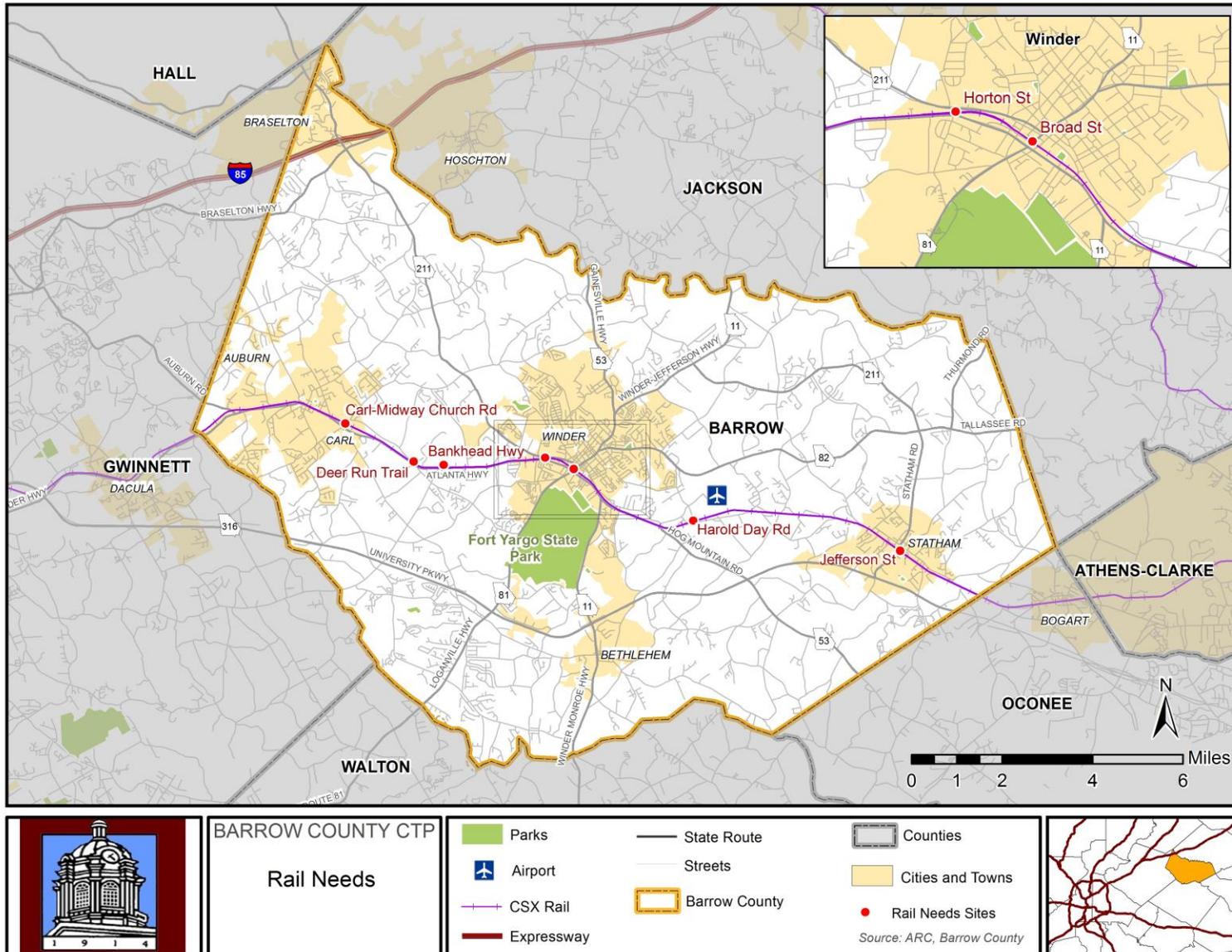
Table 6.4: Needs for the Accommodation of Rail Traffic

Crossing Location	Need
Carl-Midway Church Road	Maintenance, pavement improvements
Deer Run Trail	Maintenance and improvements to ground clearance for trucks
Bankhead Highway	Maintenance and improvements to ground clearance for trucks
Horton Street	Signal Timing / Pre-Emption to prevent traffic queueing across rail
Broad Street	Pre-Signal and Pre-Emption to prevent queueing across rail, sidewalks
Harold Day Road	Maintenance, barrier and flashing light installation
Jefferson Street	Pre-Signal, Pre-Emption to prevent queueing across rail

Source: Jacobs



Figure 6.10: Rail Needs Locations





7. BRIDGES

As inventoried in the Existing Conditions Report, there are 35 bridges in Barrow County maintained by GDOT and another 44 bridges maintained by the county. This analysis addresses bridges that are on- and off- system separately to acknowledge that the off-system bridge repairs are the responsibility of Barrow County.

7.1. Bridge Need Analysis

An analysis of Barrow County's bridge replacement, rehabilitation and repair needs was undertaken to confirm the need for these types of bridge improvements, as identified in the 2007 CTP. On- and off-system bridges with low sufficiency ratings, structural obsolescence, or structural deficiency were identified as in need for either replacement or rehabilitation based on the Bridge Inventory Rating Sheets obtained from GDOT. Local bridges with specific replacement, repair, or rehabilitation needs were identified based on the April 8, 2014 Bridge Re-inspection letter from GDOT. Many bridges not included in this report require ongoing maintenance from the county to retain their current ratings.

Bridge sufficiency ratings measure the ability of a bridge to remain in service. The standardized rating formula is a scale of zero to 100, in which an entirely deficient bridge would receive a rating of zero and an entirely sufficient bridge, usually new, would be given a rating of 100. This analysis identified those bridges with sufficiency ratings of 65 or below as in need of either replacement or rehabilitation. Rehabilitation can include maintenance or repair of bridge decks, expansion joints, bridge railings, foundations, and piers etc. Bridge rehabilitation can be a cost efficient solution for bridges with sufficiency ratings below 50 if it can be demonstrated that the rehabilitation will improve the bridge to an acceptable sufficiency rating.

Functionally obsolete bridges do not meet current design standards for their roles, usually either due to a change in design standards or increases in traffic. Functional obsolescence is not related to bridge sufficiency; a sufficient bridge may nevertheless be a bottleneck on a busy road and thus functionally obsolete.

Structurally deficient bridges have a reduced load-bearing capability due to deteriorating conditions or a particular defect, but are not necessarily insufficient. Bridges that are structurally deficient may be required to have a posted load weight maximum but are not necessarily unsafe.

7.2. On-System Bridge Needs

Analysis of the bridge data in Barrow County identified one on-system bridge as being structurally deficient and in need of replacement to remove posted weight limits: Fort Yargo Park Road at Mulberry Creek (see **Table 7.1** and **Figure 7.1**). Three were identified as in need of rehabilitation, with projects in the design phase:

- SR 81 at Apalachee River (joint with Walton County)
- SR 11 at Apalachee River (joint with Walton County)
- Statham Road at Beech Creek



Table 7.1: On-System Bridges in Barrow County with Sufficiency Ratings Under 65

Map ID	Structure ID	Description	Sufficiency Rating	Year Built	Structurally Deficient/ Functionally Obsolete	Bridge Needs
2	013-5014-0	FT Yargo Park Road at Marbury Creek	42.1	1965	Structurally Deficient; posted for load	Bridge replacement
4	297-0023-0	SR 81 at Apalachee River*	46	1955		Bridge rehabilitation – widening with deck
5	013-0012-0	Farm Market Road at Duncan Creek	50.1	1969	Functionally Obsolete	No immediate replacement need; Maintenance and repair
6	297-0019-0	SR 11 at Apalachee River*	50.6	1942	Functionally Obsolete	Bridge rehabilitation – widening with deck
7	013-0016-0	Statham Road at Beech Creek	50.7	1965	Functionally Obsolete	Bridge rehabilitation – widening with deck
8	013-0028-0	SR 124 at Mulberry River	52.7	1990		Maintenance and repair
79	013-0010-0	Statham Road at Middle Oconee River	61.3	1967		Maintenance and repair
12	013-0018-0	Hills Shop Road at CSX Railroad	62.2	1973		Maintenance and repair
17	013-0014-0	Thompson Mill Rd at Little Mulberry River	73.4	1971	Functionally Obsolete	No immediate replacement need; Maintenance and repair

Source: GDOT Bridge Inventory 2014, GDOT Bridge Re-Inspection Letter 2014. *Walton County

7.3. Off-System Bridge Needs

Review of the bridge data available for off-system bridges revealed four bridges in need of replacement or repair to remove required posting:

- Patrick Mill Road at Apalachee River (Walton County)
- Old Thompson Mill Rd at Little Mulberry River

Two additional bridges were in need of repair to remove required posting:

- Boss Hardy Road at Little Mulberry River
- Liberty Church Road at Mulberry Creek

One bridge required posting for clearance limitations:

- CSX Railroad at M-5406 Center Street

Bridges with replacement, rehabilitation, or repair needs for which the County is responsible are listed in **Table 7.2** and mapped in Figure 6.1.



Figure 7.1: Bridges in Need of Improvement

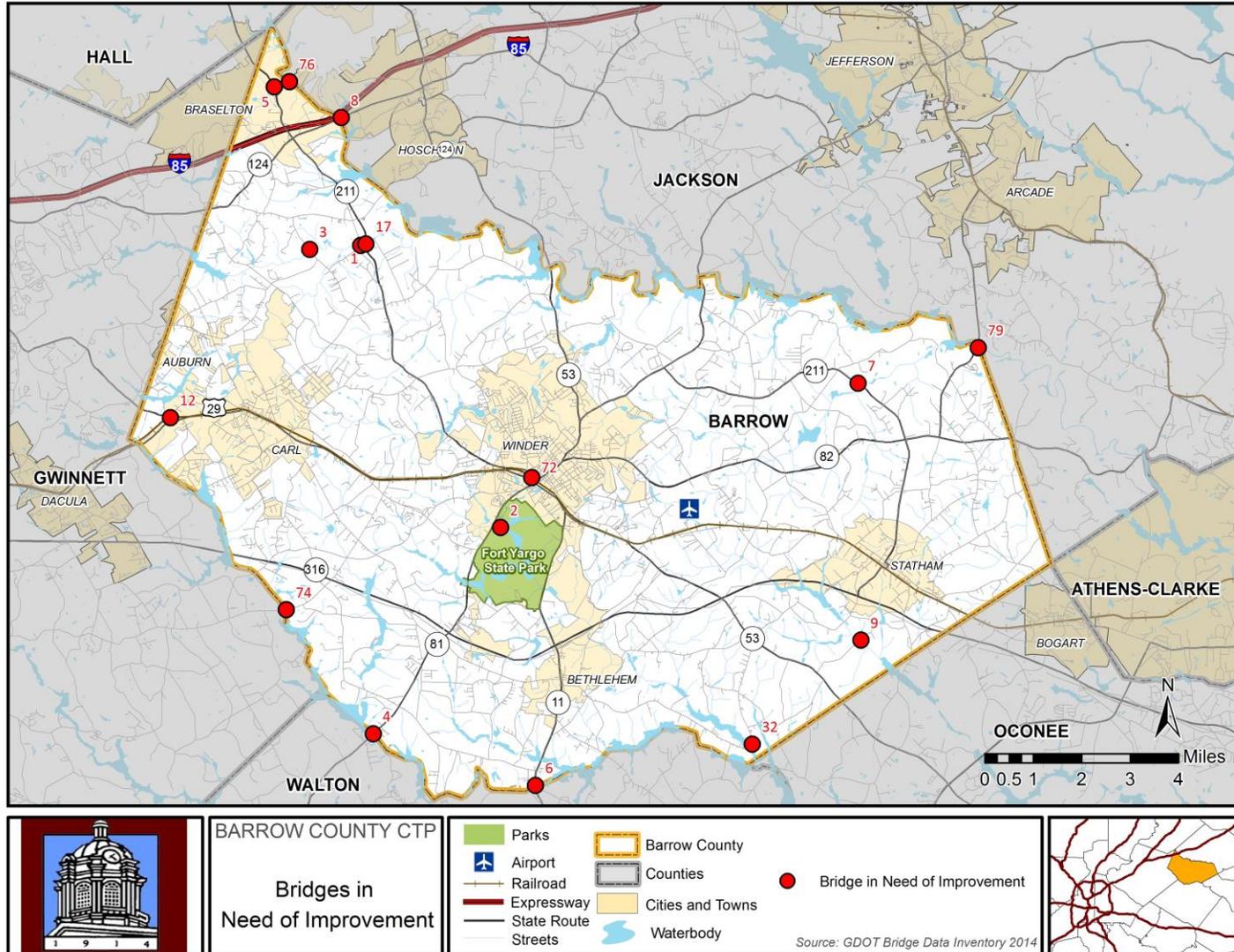




Table 7.2: County and Federal Aid Secondary Bridge Needs

Map ID	Structure ID	Description	Sufficiency Rating	Structurally Deficient/Functionally Obsolete	Posting Requirements/Inspection Notes	Bridge Needs
74	013-5017-0	Patrick Mill Road at Apalachee River*	29.3	Structurally Deficient	Post this structure for 20 Tons H-Truck; 19 Tons Type 3 Truck and 24 Tons Timber Truck. This structure requires posting due to insufficient flexural capacity of the steel superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.	Bridge replacement to remove posting; bridge repair and maintenance
1	013-5039-0	Old Thompson Mill Rd at Little Mulberry River	30.1	Structurally Deficient, Functionally Obsolete	This structure requires posting due to the condition of the floor beams. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.	Bridge replacement to remove posting; bridge repair and maintenance
3	013-5006-0	Boss Hardy Road at Little Mulberry River	45.7		Post this structure for 13 Tons H-Truck; 13 Tons Type 3 Truck; 16 Tons Timber Truck; 14 Tons HS-Truck and 20 Tons Type 3S2 Truck. This structure requires posting due to insufficient shear capacity of the concrete intermediate bent caps. Post-tensioning of the intermediate concrete bent caps is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.	Bridge repair to remove posting; bridge maintenance
76	013-5009-0	Liberty Church Road at Mulberry Creek	52.5		This structure requires posting due to insufficient shear capacity of the concrete intermediate bent caps. Upgrading of the load carrying capacity would require post-tensioning of the caps at bents #2 and #4. This bridge structure is in fair condition. Maintenance recommendations have been identified to maintain current rating.	Bridge repair to remove posting; bridge maintenance
9	013-5025-0	Robertson BR Road at Barber Creek	56.1	Functionally Obsolete	Post this structure for 16 Tons H-Truck; 16 Tons Type 3 Truck and 22 Tons Timber Truck. This structure requires posting due to insufficient flexural capacity of the steel superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified.	Bridge replacement to remove posting; bridge repair and maintenance
32	013-5021-0	Manning Gin Road at Marbury Creek	87.7		This structure requires posting due to insufficient shear capacity of the concrete superstructure. A replacement structure is required to upgrade this structure to a point where posting is no longer required. Maintenance recommendations have been identified to maintain current rating.	Bridge replacement to remove posting; bridge repair and maintenance
72	013-0026-0	CSX Railroad at M-5406 Center Street	Not rated	None	Minimum vertical clearance is substandard and requires posting.	Post vertical clearance

Source: GDOT Bridge Inventory 2014, GDOT Bridge Re-Inspection Letter 2014. *shared with Jackson County



8. MAINTENANCE

Barrow County is responsible for the paving, leveling and resurfacing of county roadways, including subdivisions and dead-ends. Through the Road Improvement Plan, Barrow County specifies those road segments that it will be paving during the year using Local Maintenance and Improvement Grant (LMIG) funds. The 2015 Road Improvement Plan sets out \$7.74 million in pavement surface needs for County roads (**Table 8.1**) and another \$1.61 million in needs on County subdivision and dead-end roads (**Table 8.2**). Barrow County will use LMIG funds to patch, level and resurface three County roadway segments and three dead-end roads for a total estimated cost of \$727,744. That estimated cost for 2015 will address approximately 7.8 percent of the county's resurfacing needs. With the maintenance backlog as it is, the county should consider "fix it first" approach to transportation priorities, in which funds are not allocated to additional large scale expansion projects until the existing road network is in adequate condition.



Table 8.1: Patching, Leveling and Resurfacing Needs for Existing Paved Rural County Roads

Priority	Road Name	Mileage	Cost/Mile
1	Jefferson Rd. - From Arnold Rd. to Statham City Limits. (2015 LMIG)*	1.48	\$204,201
2	Yearwood Rd. - From Manning Gin Rd. to McElhannon Rd. (2015 LMIG)*	1.10	\$146,516
3	Hardegee Rd. - From Atl. Hwy. (east most int.) to Jackson Trail Rd. (2015 LMIG)*	1.62	\$261,761
4	Union Grove Church Rd. - From Mt. Moriah Rd. to Gwinnett County Line	0.88	\$132,000
5	Harmony Grove Church Rd. - From Dee Kennedy Rd. to Scenic Ln. (Auburn City Limits)	1.46	\$219,000
6	Midland Avenue - From Winder City Limits to Russell Cemetery Rd.	0.31	\$46,500
7	Kilcrease Rd. - From SR316 to Goldenrod Lane	1.85	\$277,500
8	Rockwell Church Rd. - From SR 11 north to Moon Bridge Road	1.70	\$255,000
9	Tanners Bridge Road - From SR 11 south to Tanners Bridge Circle (west most intersect.)	2.12	\$318,000
10	Old Thompson Mill Rd. - From SR211N and ends at SR211N	1.33	\$199,500
11	Picklesimon Rd. - From Atlanta Hwy. to SR 82	1.35	\$202,500
12	Bowman Mill Rd. - From SR82 to Laurie Williamson Rd.	0.69	\$103,500
13	Wright Street - From Winder City Limits to Picklesimon Rd.	1.19	\$178,500
14	Pearl Pentecost Rd (truck route) - From Bankhead Hwy to Carl-Cedar Hill Rd.	1.98	\$430,000
15	Dee Kennedy Rd. - From County Line Auburn to Flanigan Mill Rd.	1.81	\$271,500
16	Dee Kennedy Rd. - From Flanigan Mill Rd. to Gwinnett County Line	1.93	\$289,500
17	Double Bridges Rd. - From SR211 to Jackson County Line	2.03	\$304,500
18	Hoyt King Rd. - From SR81/new asphalt to Haymon Morris Rd.	0.72	\$108,000
19	Foster Rd. - (tar & gravel, no patching req'd.) - From Bethlehem Rd. to Bethlehem Rd.	0.84	\$71,000
20	Elder Rd. - (tar & gravel, no patching req'd.) - From Hardegee Rd. to Wall Rd.	0.47	\$40,000
21	Rockwell Church Rd. - From Michael Drive to SR 53 north	1.20	\$180,000
22	Arnold Rd. - From SR330 to Jefferson Rd.	1.26	\$189,000
23	Bill Rutledge Rd. - From Matthew School Rd. to Winder City Limits	1.25	\$187,500
24	Manning Gin Rd. - From Bethlehem City Limits to Clacktown Rd.	3.83	\$574,500
25	Tanners Bridge Road - From SR 81 to Tanners Bridge Circle (west most intersection)	1.15	\$172,500
26	Rockwell Church Rd. - From Moon Bridge Rd. to SR 53 north	1.13	\$169,500
27	Harvey Lokey Rd. (tar & gravel, no patching)- From Bethel Bowers Rd. to Briscoe Mill Rd.	1.51	\$100,000
28	Victron Drive - (tar & gravel, no patching req'd.) - From Dee Kennedy Rd. to Old Hog Mtn Rd.	1.15	\$98,000
29	Fred Kilcrease Rd. - From Patrick Mill Road to Kennedy Sells Rd.	0.78	\$117,000
30	Glenn Jackson Rd. - From Luke Circle (east most intersection) to Statham City Limits	1.34	\$201,000
31	Maddox Rd. - (tar & gravel, no patching req'd.) - From Rockwell Ch. Rd. to Chicken Lyle Rd.	0.75	\$64,000
32	Cosby Rd. - (tar & gravel, no patching req'd.) - From Atlanta Hwy. to Jackson Trail Rd.	1.11	\$94,000
33	Rooks Rd. - From SR11 to Pendergrass Rd.	0.34	\$51,000
34	Freeman Johnson Rd. (tar & gravel, no patching re.) - From SR211 to Old Victron Sch. Rd.	1.39	\$118,000
35	Fleeman Rd. - (tar & gravel, no patching req'd.) - From Dee Kennedy Rd. to Victron Dr.	1.19	\$101,000
36	Hancock Bridge Rd. - From SR 11 to Jackson Cty. Line	2.23	\$334,500
37	Lackey Rd. - From SR53S to Oconee County Line	1.82	\$273,000
38	City Pond Road - From Winder City Limits to Rockwell Ch. Rd.	1.30	\$195,000
39	Fred Kilcrease Rd. - From Kennedy Sells Rd. to Kilcrease Rd.	0.94	\$141,000
40	Crowe Rd. - From Oconee Cty. Line to Craft Rd.	0.37	\$55,500
41	Cash Rd. - From Pleasant Hill Church Rd. to Atlanta Hwy.	0.49	\$73,500
42	Bogart Jefferson Rd. - From Jordan Cofer Rd. to Rat Kinney Rd.	0.98	\$147,000
43	Ernest Elder Rd. - (tar & gravel, no patching req'd.) - From Giles Rd. to Bowman Mill Rd.	0.56	\$47,000
	Total Needs	54.93	\$7,742,478

Source: Barrow County Road Improvement Plan

*Included in Barrow County 2015 Road Improvement Plan LMIG-funded paving projects



Table 8.2: Patching, Leveling and Resurfacing Needs for Existing Paved County Subdivision Streets and Dead End Roads

Priority	Road Name	Mileage	Cost/Mile
1A	Warren Way - From Rockwell Church Rd. to Dead End (2015 LMIG)*	0.35	\$57,052
2A	Beau Court - From Warren Way to Dead End (2015 LMIG)*	0.17	\$34,054
3A	Leigh Court - From Warren Way to Dead End (2015 LMIG)*	0.12	\$24,160
4A	Beaver Dam Road - From SR 211 north to Dead End	0.71	\$78,100
5A	Pinebrooke Rd. - From Kennedy Sells Rd. to Dead End	0.37	\$41,000
6A	Pinebrooke Court - From Pinebrooke Rd. to Dead End	0.12	\$13,000
7A	Georgetowne Drive - From Mulberry Rd. to Dead End	0.90	\$100,000
8A	Fort St. - From Matthews School Rd. to Dead End	0.36	\$40,000
9A	Hiram Way - From Fort St. to Dead End	0.06	\$7,000
10A	Pine Tree Lane - From Green Tree Dr. to Dead End	0.05	\$6,000
11A	Dogwood Lane - From Greentree Dr. to Dead End	0.08	\$9,000
12A	Cross Creek Court - From Union Grove Rd. to Dead End	0.36	\$40,000
13A	Cross Creek Place - From Cross Creek Court to Dead End	0.31	\$34,000
14A	Meadow Lane - From Bee Robinson Road to Dead End	0.23	\$25,300
15A	Brooks Lane (curb & gutter)- From Midland Ave. to Dead End	0.23	\$20,000
16A	Brent Way - From Autumn Ave. to Dead End	0.08	\$9,000
17A	Autumn Ave. - From Giles Rd. to Dead End	0.14	\$15,000
18A	Bent Creek Court - From Giles Rd. to Dead End	0.16	\$18,000
19A	Ridgecrest Dr. - From Sunset Dr. to Giles Rd.	0.23	\$25,000
20A	White Way Rd. - From Pendergrass Rd. to Dead End	0.26	\$29,000
21A	Beech Creek Circle - From SR82 to Beech Creek Circle	1.36	\$150,000
22A	Mulberry Trail - From Chicken Lyle Rd. to Dead End	0.45	\$50,000
23A	Dooley Town Dr. - From Dooley Town Rd. to Dead End	0.28	\$31,000
24A	Woodland Rd. - From Carl-Bethlehem Rd. to Dead End	0.21	\$23,000
25A	Hillside Lane - From Woodland Rd. to Dead End	0.04	\$5,000
26A	Maple Park Drive - (tar & gravel, no patching req'd.) -From SR 82 to SR 82	0.47	\$28,000
27A	Lakeview Dr., SW - From Atlanta Highway west intersection to Spring Street	0.21	\$23,000
28A	Smokerise Lane (curb & gutter)- From Kilcrease Rd. to Dead End	0.55	\$56,000
29A	Cedar Creek Court - From Anita Dr. to Dead End	0.09	\$10,000
30A	Etheridge Drive - (tar & gravel, no patching req'd.) - From Kilcrease Rd. to Dead End	0.83	\$50,000
31A	Cabin Bridge Rd. - From Tanners Bridge Rd. to Dead End	0.24	\$26,000
32A	Jeffords Rd. - From White Way Rd. to Dead End	0.21	\$23,000
33A	Blueberry Lane - From Picklesimon Road to Dead End	0.44	\$48,000
34A	Rainey Brook Dr. (curb & gutter)- From Giles Rd. to Dead End	0.26	\$24,000
35A	Beaver Hill Dr. - From Beaver Lane to Dead End	0.62	\$68,000
36A	Lois Lane - From Fort St. to Dead End	0.07	\$8,000
37A	Sunset Drive - From Giles Rd. to pavement joint	0.25	\$37,500
38A	Scott Dr. - (tar & gravel, no patching req'd.) - From Matthews School Rd. to Dead End	0.33	\$20,000
39A	Laurel Lane - From Rockwell Church Rd. to Dead End	0.58	\$64,000
40A	Huckleberry Lane (curb & gutter) - From Midland Ave. to Dead End	0.62	\$63,000
41A	Bear Creek Rd. - From Arnold Rd. to Dead End	0.66	\$73,000
42A	Whispering Way - From Bill Rutledge Rd. to Dead End	0.27	\$30,000
43A	Tabby Lane - From White Way Rd. to Dead End	0.09	\$10,000
44A	Bussy Lane - From White Way Rd. to Dead End	0.13	\$14,000
45A	Beaver Lane - From Tom Miller Rd. to Beaver Hill Dr.	0.12	\$18,000
46A	Anita Drive - From Cedar Creek Dr. to SR211	0.29	\$32,000
Total		14.96	\$1,609,166

*Included in Barrow County 2015 Road Improvement Plan LMIG-funded paving projects



9. OTHER MODES

This section determines the extent to which the mobility needs of people and goods can be accommodated by alternative modes of transportation, such as walking, or biking. It also considers the needs of the Barrow County Airport.

9.1. Bicycle Network

Fort Yargo, in central Barrow County, is a popular destination for mountain bike enthusiasts, but there are no bicycle facilities connecting this recreational asset to other locations in the county. Bicycle facilities are extremely limited across the County.

9.1.1. Analysis

The analysis of bicycle needs considered safety and input from stakeholders and the public. According to safety statistics from GDOT, there were four vehicular crashes that involved bicycles in Barrow County from 2011 through 2013. This low rate of incidents indicates that there are few bicyclists currently using Barrow County roadways for travel.

Public and stakeholder input, as described in Section 3, indicate a need to create connections to parks for bicycle recreation. Input received indicated a need for new bicycle connections from western Barrow County to Little Mulberry Park in Gwinnett County, a popular family destination for Barrow County residents. Moreover, input expresses the need to expand the potential attractiveness and impact of Fort Yargo State Park as a biking destination through the construction of new bicycle facilities. Facilities are needed that would connect Fort Yargo visitors with additional amenities in downtown Winder, as well as connect the park to additional potential visitors in Athens.

9.1.2. Bicycle Network Needs

The 2007 CTP identified the need for safe routes for bicyclists through Barrow County through the provision of new bicycle facilities along a total 10.9 centerline miles of roadway. These facilities would be along principal arterials, including SR 316, US Bus 29 east of Winder, and Atlanta Highway from US Bus 29 to downtown Statham. The CTP also identified the need to implement bicycle facilities around activity centers and schools as needs arise.

The analysis completed for this CTP update confirms the need for additional bicycle safety facilities across the county. However, the increase in traffic and safety issues along SR 316, in addition to the new interchanges proposed along that facility, may make this alignment more difficult to parallel with bicycle facilities, even if they take the form of an off-street trail. For recreational and economic development purposes, the 2007 CTP also identified the need for special attention should be given to bicycle needs in the area around Fort Yargo State Park and for a loop facility in the northwest part of the county along SR 53, Mulberry Road, SR 211, and SR 124. The analysis completed for this CTP update indicates that there is more interest in recreational bicycle opportunities in and around Fort Yargo State Park than elsewhere in the county. There is an opportunity to bring Fort Yargo visitors to downtown Winder that would make the most of Winder's existing pedestrian amenities and support its shops, restaurants, and services.



9.2. Pedestrian Network

Sidewalks in Barrow County are predominantly limited to the downtown areas of Winder, Statham and Bethlehem. Multiple subdivisions, particularly in the Apalachee High School area, contain sidewalks; however, as they often do not extend beyond their neighborhoods, there is very little pedestrian connectivity between these developments.

9.2.1. Pedestrian Network Analysis

Pedestrian needs for the CTP update were identified through analysis conducted during the inventory of existing conditions and an assessment of pedestrian facilities within high priority pedestrian areas identified to connect residents to nearby schools, parks and/or activity centers.

A countywide survey of pedestrian facilities was conducted during the inventory of existing conditions. It identified the need for new sidewalks to enhance pedestrian connectivity between downtown Winder and adjacent residential areas, including sidewalk expansion along North 5th Avenue and West Candler Street, as well as the expansion of the sidewalk network in the incorporated areas of Auburn and Carl. The public involvement process completed to date (as described in Section 3) identified the need for sidewalks or multi-use trail connections to nearby residential areas from school clusters.

Pedestrian Priority Areas

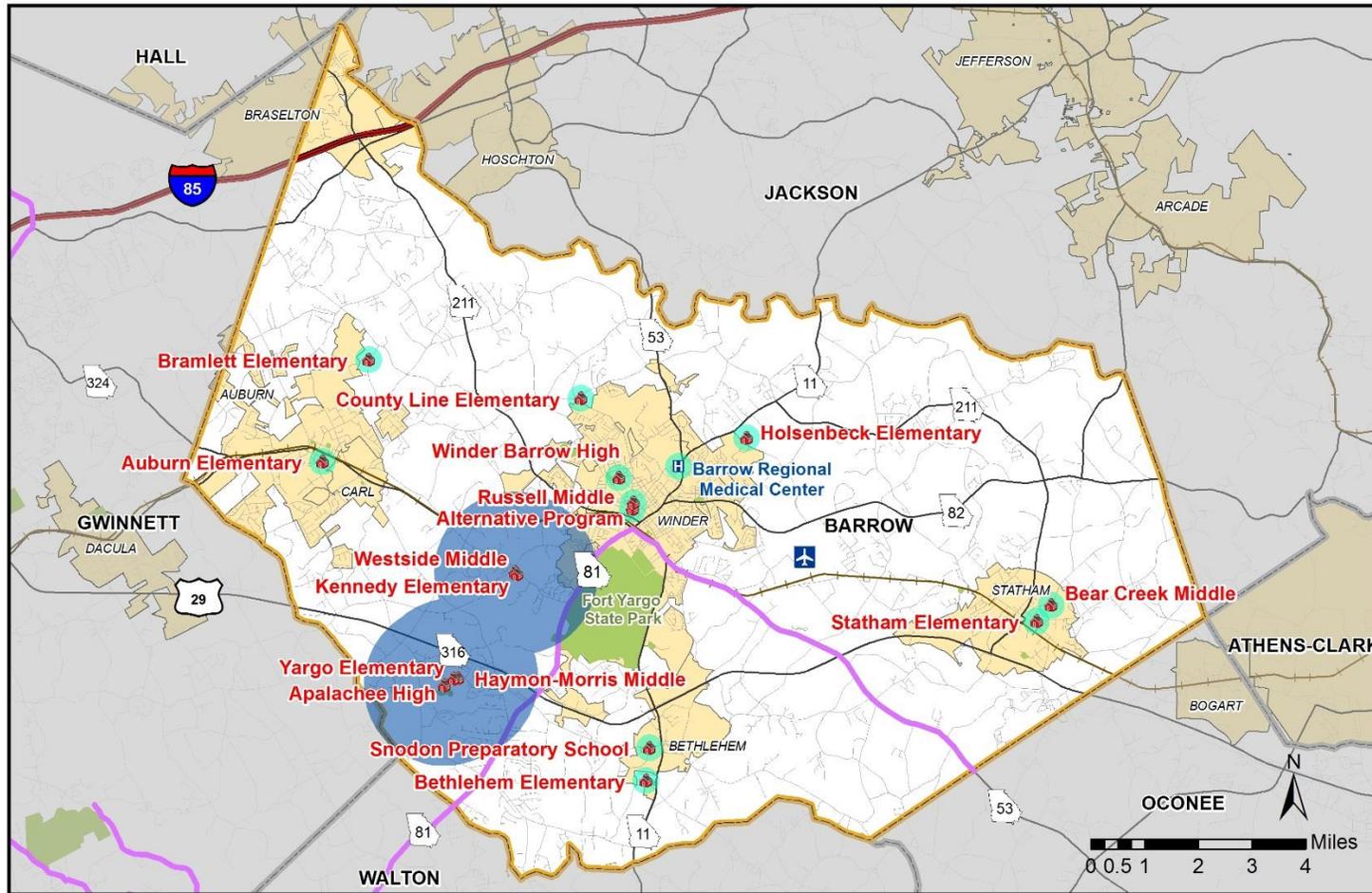
Priority areas to assess bicycle and pedestrian needs within the county were identified based on the results of the existing conditions inventory and input from County staff and the Stakeholder Committee. The resulting 13 priority areas surround schools and the Barrow Regional Medical Center and connect to Fort Yargo State Park. The priority areas are shown in **Figure 9.1**.

The 13 priority areas identified for this analysis feature a quarter-mile radius, which represents a comfortable walking distance. There are two exceptions: the priority areas surrounding the Westside Middle/Kennedy Elementary and Apalachee High/Haymon Morris Middle/Yargo Elementary clusters have a radius of 1.5 miles. This expanded radius was chosen because these schools are in high growth areas where dangerous walking conditions exist. The roads leading to schools in these areas are largely state routes, with high volumes of traffic traveling at high speeds. Because bus services are not reimbursed for children who live within 1.5 miles of schools, those children walk to school.

Analysis of the sidewalk network in the pedestrian priority areas identified areas where sidewalk had not been constructed. These segments are listed in **Table 9.1**.



Figure 9.1: Bicycle and Pedestrian Priority Areas



BARROW COUNTY CTP
Bicycle & Pedestrian
Priority Areas
Facilities Map

- Parks
 - Airport
 - Railroad
 - Expressway
 - State Route
 - Streets
 - Barrow County
 - Counties
 - Cities and Towns
 - Bike Route
 - Pedestrian Priority Area (0.25 mi)
 - Expanded Priority Area (1.5 mi)
 - Hospital
 - School
- Source: Barrow County, Jacobs, Georgia Department of Labor

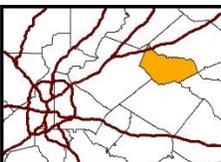




Table 9.1: Pedestrian Needs Summary

Location	Pedestrian Priority Area	Needs
Winder	Holsenbeck Elementary School	Sidewalks along Holsenbeck School Road between Holsenbeck Elementary and Magnolia Drive.
Winder	Winder Barrow High School	Sidewalks along 5 th Street north of the school to connect to residential areas to the north.
Winder	County Line Elementary School	Sidewalks along Rockwell Church Road between the school and Baskins Circle, and along Miles Patrick Road between Ashwood Drive and Rockwell Church Road.
Winder	Barrow Medical Center	Sidewalks along Jefferson Highway from Wisteria Drive to Shenandoah Drive.
Statham	Bear Creek Middle and Statham Elementary	Sidewalks along 3 rd Street from Jefferson Street to Broad Street to link Bear Creek Middle to the central residential areas of Statham Sidewalks along Jefferson Street from Bear Creek Middle to the existing sidewalk just north of Hillcrest Drive
Bethlehem	Snodon Preparatory School	A short sidewalk segment along West Star Street between Snodon School and Bishop Woods Road.
Unincorporated Barrow County	Haymon Morris School Cluster	Sidewalks along Hoyt King Road from SR 81 to Haymon Morris Road Sidewalks along Haymon Morris Road/Roxey Maxey Road from Hoyt King Road to Roxywood Drive Sidewalks along SR 81 from Otis Drive to Hoyt King Road Sidewalks along Tom Miller Road from Blakewood Street to Evergreen Way
Unincorporated Barrow County	Matthews School Road School Cluster	Sidewalks along Matthews School Road from Patrick Mill Road to SR 81 Sidewalks along SR 81 from Township Avenue to Matthews School Road Sidewalks along Flat Rock Road from Township Avenue to Southridge Road
Unincorporated Barrow County	Fort Yargo State Park	Bicycle lanes along SR 81 from the park entrance to downtown Winder Sidewalk along SR 81 to connect to South Center Street

9.2.2. Pedestrian Network Needs

The 2007 CTP identified Barrow County as needing sidewalks along most roadways, especially within city limits. It identified the need for pedestrian improvements with areas of high pedestrian activity such as schools, downtown districts and activity centers. The analysis undertaken for the CTP update supports the needs identified by the 2007 CTP. Given the high level of pedestrian needs across the county, this update would prioritize the pedestrian needs for sidewalks or multiuse paths leading to schools in unincorporated Barrow County, where vehicles traveling at high speeds travel along state routes next to children walking to school. The pedestrian needs identified by this analysis are listed in Table 9.1.

9.3. Aviation

This analysis considered the needs associated with operations and access to the Barrow County Airport (WDR). It considered the airport's Capital Improvements Plan to determine the airport's immediate infrastructure needs and the functionality of the roadway network surrounding it to determine access needs.

9.3.1. Analysis

Capital Improvement Plans are the basis for the Federal Aviation Administration's Airport Improvement Program, which grants funds for the development of public use airports. Improvements listed in an



airport’s Capital Improvement Plan represent its critical development needs for the next five years. However, if funding is not obtained, these improvements will not necessarily be constructed. The December 2014 Barrow County Airport Capital Improvements Plan lists the airport’s needed improvements for the next five years (**Table 9.2**).

Table 9.2: Barrow County Airport Capital Improvement Plan

Fiscal Year	Project Description	Federal Share	State Share	Local Share	Total Cost
2016	Parallel Taxiway Ext and Apron Connector	\$1,080,000	\$60,000	\$60,000	\$1,200,000
	Land Acquisition Reimbursement	\$150,000		\$16,667	\$166,667
2017	Runway 13-31 Rehabilitation	\$1,330,000	\$35,000	\$30,000	\$1,400,000
	Pave 500' parallel Taxiway to Runway 13 End	\$150,000		\$16,667	\$166,667
2018	Crack Seal & Remark of Taxiways / Taxilanes	\$150,000		\$16,667	\$166,667
2019	Rehabilitate Main Apron Area	\$617,500	\$16,250	\$16,250	\$650,000
2020	Install Fuel Farm	\$225,000	\$12,500	\$12,500	\$250,000

Source: Barrow County Airport Capital Improvements Plan, December 2014

As can be seen from Figure 5.5, Figure 5.6 and Figure 5.7, the roadway network immediately surrounding the airport currently operates at LOS C or better and is projected to operate at LOS C or better for the most part through 2040. However, from 2011 to 2013, there were a high number of crashes on Atlanta Highway south of the airport, which is where the entrance to the airport is located. Should the airport facilities expand, additional traffic, and likely additional crashes on these roads should be expected. In the case of an expansion in airport operations, then, improvements may be needed at and approaching the airport entrance off of Atlanta Highway/US Bus 29.

9.3.2. Aviation Needs

The 2007 CTP noted that the extension of runway 13/31 to 6,500 feet was planned for 2010 in the airport Capital Improvement Plan. The needs of the Barrow County airport have changed since the 2007 CTP, and the airport is not currently planning a runway extension.

The findings of this CTP Update also confirm the 2007 CTP findings that it would become important to examine the infrastructure around the airport as it continues to grow to ensure that it will support on-field activities. This includes making sure the roads are suitable for freight traffic and that sufficient parking facilities exist for employees and passengers.



10. NETWORK IMPROVEMENT TECHNIQUES

This report considers methods to eliminate, shorten trips, or increase reliability of the current network as practical and cost-effective means of improving network performance. These methods include Transportation Demand Management (TDM) techniques, transit options, HST, access management, and Intelligent Transportation Systems (ITS).

10.1. Transportation Demand Management (TDM) Techniques

Data from the 2010 Census indicate that most of the daily work trips in Barrow County are made by car. Nearly 95 percent of the labor force in the county drives alone or uses carpools for their work commutes, which is significantly higher than the regional average (**Table 10.1**). A greater percentage of the Barrow population carpools to work (12.2 percent of Barrow County vs. 10.8 percent of the MSA) and this is likely because, because Barrow County does not offer transit services, people are more likely to share rides if they cannot afford to or do not wish to drive to work alone.

Table 10.1: Barrow County Journey to Work, 2010

Area	Drove Alone	Carpool	Other
Barrow County	24,293 / 82.3%	3,596 / 12.2%	1,615 / 5.5%
Atlanta MSA	1,881,294 / 77.5%	261,013 / 10.8%	284,480 / 11.7%

Source: 2010 ACS 5 year estimates; "Selected Economic Characteristics"

Carpooling is one example of a Transportation Demand Management (TDM) technique. TDM approaches are used to reduce or decrease the demand on existing transportation facilities. TDM can reduce the demand placed on roadways at peak commuting periods by encouraging more efficient use of the current system through incentives, travel options, and other means that are intended to influence the use of facilities in ways that cause less congestion or preclude additional infrastructure investments.

In addition to carpooling, TDM strategies include telecommuting and van pool programs. For example, Georgia Rideshare is a GDOT sponsored program that assists commuters find carpool and vanpool services for convenient travel to and from jobs. Additionally, the state operates park-and-ride lots in various locations to aid commuters in taking advantage of TDM services like the Georgia Rideshare. The county may want to investigate options such as vanpools and park and ride lots that will give residents additional options for travelling to work, particularly commutes to Gwinnett or Clarke Counties that are not served by Georgia Regional Transportation Authority (GRTA) Xpress bus.

The 2007 CTP noted that, with continued growth, there may be a need for a new vanpool service operated through a public-private partnership between the county and a private entity.

10.2. Transit Options

The 2007 CTP did not find sufficient demand to recommend transit service for Barrow County. The low population and employment density identified in this report confirm this conclusion. However, the 2007 CTP noted that, with strong, continued growth, population densities could reach levels where some commuter transit services would be beneficial, such as an expansion of the GRTA Xpress Bus service along SR 316, or the introduction of demand-response transit service in the county. This analysis



indicates that there is not an immediate need for these services but that they should be included in planning for additional population in Barrow County.

10.3. Human Services Transportation (HST)

Barrow County operates a van to serve the needs of seniors. Barrow County's senior population accounts for approximately the same share of the population (8.6 percent) as across the region (8.5 percent). At this time, it appears that service is adequate to meet existing demand.

The 2007 CTP identified a potential need for coordination with the Northeast Georgia Regional Commission (NEGRC) to offer HST services to participants who have limited means of mobility to activities. For the update, representatives from local human service organizations reported that low-income persons in the county were in need of access to transit to access jobs. Many of these persons want to or are able to work in the Athens area but lack a vehicle for attending work regularly. Therefore, there may be a need to study the implementation of new HST services Winder, where levels of low-income persons and zero-car households are highest.

10.4. Access Management

There is the need in Barrow County to manage access on new roadways, in order to enhance their efficiency and safety. By managing roadway access, Barrow County can increase public safety, extend the life of major roadways, reduce traffic congestion, support alternative transportation modes, and even improve the appearance and quality of the built environment. Access management guidelines are developed to maintain traffic flow on the network so each roadway can provide its functional duties while providing adequate access for private properties to the transportation network. This harmonization of access and mobility is the keystone to effective access management.

10.5. Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) is a tool that can be used to reduce travel delay, maintain mobility, and promote safety along heavily traveled corridors. As capacity improvements have become less feasible due to funding limitations, there is a greater focus on maintaining and improving the sound operation of existing transportation networks. ITS improves transportation safety and mobility through the integration of advanced communications into transportation infrastructure and vehicles. In Barrow County, ITS specifically applies to communications among signalized intersections.

The Stakeholder Committee for this update identified the need for signal timing in Winder and across the county, and analysis in the Existing Conditions Report determined that the relatively numerous and closely-spaced traffic lights in Winder may be causing delay. Given the limited funds available for transportation improvements, ITS improvements may be an economical method for improving network operations.



11. FUNDING ASSESSMENT

The purpose of this section is to assess methods of funding transportation in Barrow County through federal, state and local sources. Strategies to address proposed improvements will be developed once a prioritized list of projects has been developed through the CTP process. In addition to what is contained here, an overview of available funding sources from the federal, state, and local levels is provided in the *Inventory of Existing Conditions Report*.

11.1. State and Local Funding Environment

This analysis considers the available funds generated at the state and local level by Local Maintenance and Improvement Grant (LMIG) funds, the Barrow County Special Purpose Local Option Tax (SPLOST) funds, and the Barrow County Capital projects funds.

11.1.1. LMIG Funding and County Maintenance Needs

The LMIG program is funded by GDOT for improvements that include engineering, utility adjustments, resurfacing, and adding turn lanes, bridge projects and maintenance, among other things. A 30 percent local match is required for these funds. This funding is very important for local governments due to its flexibility and ease of use. LMIG funds are a vitally important way of meeting local bridge and roadway maintenance needs.

Based on data collected for the last three years, funding levels are steady for the LMIG program (**Table 11.1**). The local match amounts to about \$158,000 annually, which is about 0.5% of the overall \$34.7 million FY 2014 Barrow County budget. Currently, Barrow County funds the LMIG local match through a combination of the Capital Projects Fund (a sub-allocation of the general fund) and the 2012 SPLOST. The County should continue to prioritize the 30 percent local match needed to utilize these funds with a goal of full utilization of LMIG funds every year. However, even with full utilization of LMIG funds road maintenance will not keep up with needs.

Table 11.1: Three-year LMIG Funding History

	Unincorporated Barrow County	City of Auburn	City of Bethlehem	City of Braselton	Town of Carl	City of Statham	City of Winder	Total Barrow County
2013	\$489,689	\$51,324	\$9,197	\$7,646	\$3,174	\$22,686	\$118,961	\$702,676
2014	\$525,687	\$59,640	\$8,786	\$8,397	\$3,385	\$18,657	\$127,192	\$751,743
2015	\$525,487	\$58,981	\$8,800	\$13,758	\$3,385	\$32,932	\$128,932	\$771,487

Source: GDOT

Barrow County has identified about \$13.6 million worth of maintenance and dirt road paving work (**Table 11.2**). FY 2015 maintenance work amounts to \$730,000, or 5.3 percent of total needed improvements. At that rate it would take almost 18.5 years to address all current maintenance needs. This analysis includes neither future needs nor cost increases. Increasing the implementation rate to 15% (\$2,040,000 annually) reduces the maintenance cycle to less than 7 years.



Table 11.2 Barrow County Maintenance Needs

Need Category	Cost of Needed Maintenance
Road Maintenance	\$9.4 million
Bridge Maintenance	\$1.5 million
Dirt Road Paving	\$2.7 million
All Maintenance Needs	\$13.6 million

Source: Barrow County 2015 Road Improvement Plan

Analysis of LMIG Funding and Maintenance Needs indicates the following:

- LMIG funds are not enough to properly maintain county roads. They should be supported by additional local allocation.
- Barrow County should spend about \$1.5 million annually, an increase of about \$1.3 million, on maintenance.
 - \$1.5 million is about 4 percent of the \$34.7 million FY 2015 county operating budget.

11.1.2. SPLOST Funding

Allocation of SPLOST Funds

In 2001, Barrow County voters approved their first SPLOST. A SPLOST is a one percent sales tax used to fund capital improvements of a permanent and long lived nature such as roads, bridges, storm water infrastructure, buildings, and equipment. Although all SPLOST project lists are different, most counties in the Atlanta region use a SPLOST program as a primary source of capital improvement funding with transportation generally making up a large portion of SPLOST programs. Percentages allotted to transportation projects by recent Atlanta region SPLOST programs can be found in **Table 11.3**.

Table 11.3: Share of Recent SPLOSTs Dedicated to Transportation

SPLOST area	Transportation Share of Total SPLOST	Total Amount for Transportation
Unincorporated Spalding	65%	\$17.6 million
Unincorporated Rockdale	49%	\$31 million
Unincorporated Douglas	42%	\$26 million
All Forsyth	41%	\$71.9 million
Unincorporated Newton	0.2%	\$100K
Unincorporated Barrow	2%	\$1.2 million

Sources: Spalding, Rockdale, Douglas, Forsyth, Newton and Barrow Counties

In contrast, transportation receives eight percent (and just two percent of unincorporated Barrow's share) of the 2012 Barrow County SPLOST. Previous Barrow SPLOSTs in 2001 and 2005 allocated 29 percent and 22 percent to transportation respectively. Bond payments (from both General Obligation and the Bear Creek Reservoir debt) make up the largest portion of the 2012 SPLOST program at 54 percent (68 percent of unincorporated Barrow's share). The current bond repayment schedule runs through 2027, making it likely that bond payments will be included in SPLOST future programs.

SPLOST Revenues

Since bottoming out in FY 2009, Barrow County SPLOST collections have been steadily increasing (**Figure 11.1 and Table 11.4**). FY 2014 collections are at near pre-recession levels. If trends over the last five



years continue, future SPLOSTs may have the ability to carry the bond debt and fund a more robust transportation program as well. It will be important to clearly make the case for transportation funding in future SPLOST development.

Projecting annual one percent SPLOST collections at FY 2014 levels of \$9 million, a six year program would raise \$54 million. If funding allocations were returned to the 30 percent levels of the 2001 SPLOST, Barrow County could invest over \$16 million into the transportation system.

Figure 11.1: Annual Barrow County SPLOST Revenue, 2003 to 2014

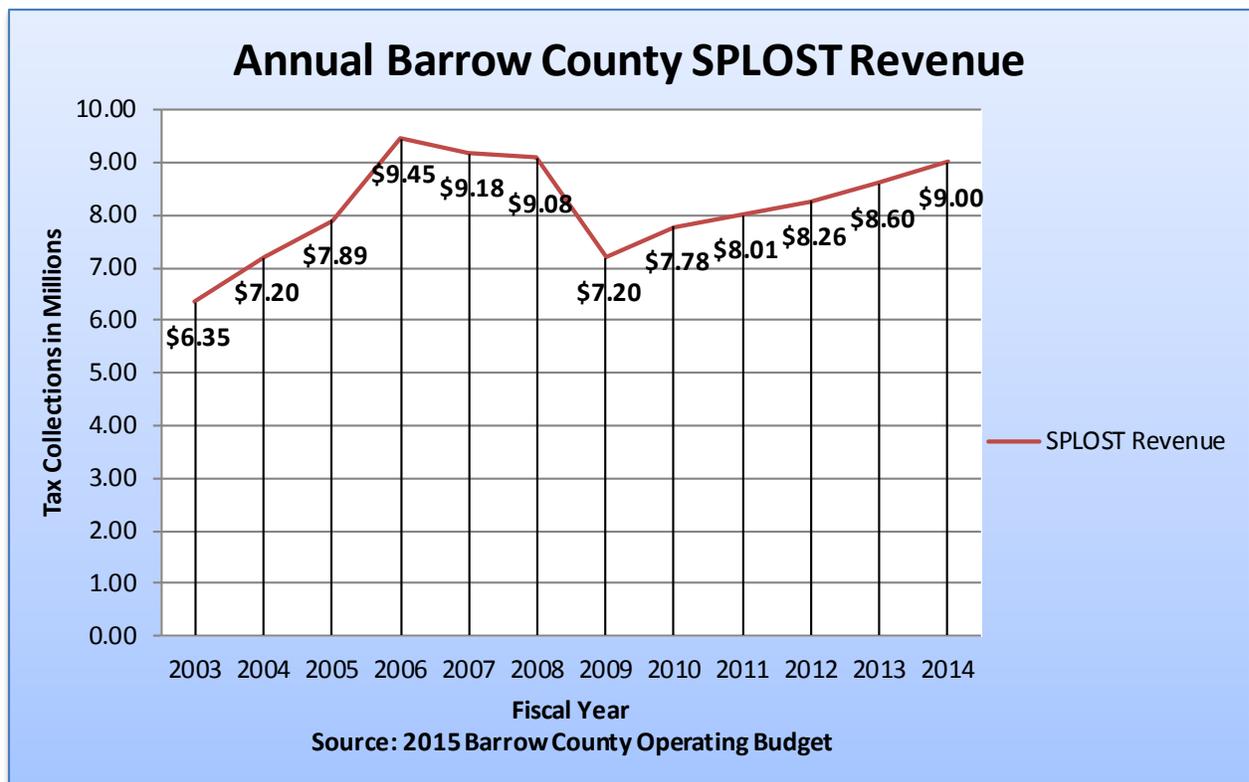


Table 11.4: Barrow County SPLOST Revenue, 2003 to 2014

Fiscal Year	SPLOST Funds Collected
2003	\$6,352,109
2004	\$7,200,334
2005	\$7,898,402
2006	\$9,446,502
2007	\$9,177,300
2008	\$9,082,699
2009	\$7,200,652
2010	\$7,777,153
2011	\$8,007,788
2012	\$8,259,320
2013	\$8,598,126
2014	\$8,996,225



Since FY 2009, SPLOST collections have been growing at a rate of just under five percent per year. Using FY 2014 as a base year and a 5 percent growth rate a new SPLOST starting in 2018 could collect \$74.5 million. By going back to the 30 percent funding allocation of the 2001 SPLOST, Barrow County could invest just over \$22 million into the transportation system.

Analysis of Barrow County SPLOST funding indicates the following:

- 2012 Barrow County SPLOST allocates largest portion to debt repayment.
- 2012 SPLOST largely ignores transportation needs.
- Other counties spend a greater percentage of SPLOST revenue on transportation than Barrow.
- Greater allocation to transportation will be needed to just meet safety and maintenance needs.
- Expansion of the Barrow County transportation system not possible under current funding environment.

11.1.3. Capital Projects Fund

Barrow County’s General Capital Projects fund was created in October 2013. It is used to account for the proceeds of up to 1 mil of property taxes and other revenue to fund needed capital projects. Allocations to this fund are discretionary. Since its inception, a total of \$3,119,152 has been apportioned to the fund. Expenditures are also discretionary with such decisions made on a yearly budgeting basis (**Table 11.5**).

Table 11.5: Capital Projects Fund History

Fiscal Year	General Fund Allocation	Total Capital Projects Fund Expenditures	Transportation Expenditures	Transportation Share of Total Expenditures
2013 (actual)	\$1,647,098	\$568,637	\$0	0%
2014 (actual)	\$1,472,054	\$1,136,144	\$614,089	54%
2015 (budgeted)	\$0	\$1,638,329	\$372,516	23%
Total	\$3,119,152	\$3,343,110	\$986,605	30%

Source: Barrow County 2013, 2014 CAFR, and 2015 Operating Budget

In terms of transportation, the Capital Projects fund has been used mainly to match LMIG funds, but also for the purchase of new mowing equipment, and general road and bridge repair. For the 3 years that the Capital Projects Fund has existed, Barrow County has transferred an average of \$1 million per year from the General Fund. Transportation made up about 30 percent of expenditures over the same period.

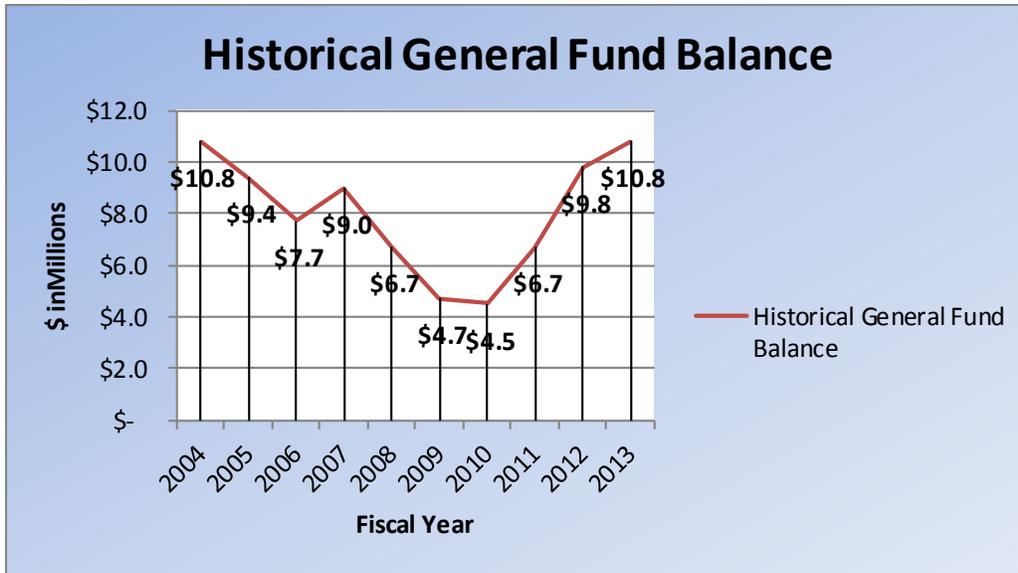
11.1.4. Capital Projects Fund Analysis

For the duration of the 2012 SPLOST (through June 30, 2018), this fund will be the main source of investment into the Barrow County transportation system. Because the Capital Projects Fund is dependent on transfers from the general fund, the overall health of the Barrow County budget will impact its ability to fund transportation projects. The recession drained the county reserves to its lowest point in FY 2010 (\$4.5 million, **Figure 11.2**). Since then, however, the recovery of the economy has



allowed the County to repair its fund balance. FY 2013 reserves (\$10.8 million) were at a level not seen since FY 2004.

Figure 11.2: Historic General Fund Balance, Barrow County, 2004 to 2014



Source: FY 2015 Barrow County Operating Budget

The additional maintenance needs discussed in the LMIG section could be addressed in the Capital Projects Fund. LMIG funds could eventually become a smaller portion of road and bridge maintenance with General Fund monies taking on a greater role.

Based on analysis of Barrow County’s General Fund, the following maintenance funding mix is recommended:

- Total Annual Maintenance Budget - \$2,040,000
- State (LMIG) \$525,000
- County \$1.515 million
- 74 percent County / 26 percent State

11.2. Federal Funding Environment

The primary source for large-scale capacity improvements such as the West Winder Bypass and SR 316 interchanges are federal Surface Transportation Program (STP) funds that are administered by ARC and passed on to GDOT for project implementation.

As shown in **Table 11.6**, major projects within the County that have some level of funding in the TIP are Phases 1, 2, and 3 of the West Winder Bypass, interchanges along SR 316, and I-85 widening. For this analysis, it is assumed that funding has been secured for all projects programmed through construction in the TIP.

Table 11.6: PLAN 2040 Projects with Programmed Funding



ARC ID	Description	Limits	Phase	Fiscal Year	Fund Source	
BA-023	SR 211 Bridge Replacement	at Beech Creek	ROW	2014	Bridge (On-System)	
			PE	2016	STP – Statewide Flexible (GDOT)	
			CST	2016	STP – Statewide Flexible (GDOT)	
BA-001	Ed Hogan Road Intersection Improvement	at Atlanta Highway and Bankhead Highway	UTL	2019	Local Funds	
			CST	2019	STP – Urban (>200K) (ARC)	
BA-005A	West Winder Bypass: Phase 1 – New Alignment	From SR 211 near Cedar Creek to Matthews School Road	ROW	2016	STP – Statewide Flexible (GDOT)	
			UTL	2018	STP – Statewide Flexible (GDOT)	
			CST	2018	STP – Statewide Flexible (GDOT)	
BA-005B	West Winder Bypass: Phase 2 – New Alignment	From Matthews School Road to SR 316	ROW	2018	STP – Statewide Flexible (GDOT)	
			UTL	LR 2020-2030	General Federal Aid (2020-2040)	
			CST	LR 2020-2030	General Federal Aid (2020-2040)	
BA-005C	West Winder Bypass: Phase 3 – New Interchange	At SR 316	ROW	2018	STP – Statewide Flexible (GDOT)	
			UTL	LR 2020-2030	General Federal Aid (2020-2040)	
			CST	LR 2020-2030	General Federal Aid (2020-2040)	
BA-008/ GW-386	I-85 North Widening	From Hamilton Mill Road in Gwinnett to SR 53 in Jackson County	CST	2019	National Highway Performance Program (NHPP)	
BA-026	SR 316 – New interchange	at SR 81	ROW	2016	National Highway Performance Program (NHPP)	
			UTL	2018		
			CST	2018		
BA-027*	SR 316 – New interchange	as SR 11	ROW	2016	National Highway Performance Program (NHPP)	
			UTL	2018		
			CST	2018		
BA-028*	SR 316 – New interchange	at SR 53	ROW	2018	National Highway Performance Program (NHPP)	
			UTL	LR 2020-2030		General Federal Aid (2020-2040)
			CST	LR 2020-2030		General Federal Aid (2020-2040)

Source: ARC TIP. *Barrow County has requested that GDOT reverse the order of construction of BA-027 and BA-028. Note: Table does not include West Winder Bypass Phase 4 and SR 316 interchange at SR 211 because they have no phases currently programmed in the ARC TIP.

There are three projects in the TIP with phases that extend beyond the current TIP timeframe:

- West Winder Bypass, Phase 2 – ROW in TIP, all other phases in 2020-2030 RTP
- West Winder Bypass, Phase 3 - ROW in TIP, all other phases in 2020-2030 RTP
- SR 316 Interchange at SR 53 - ROW in TIP, all other phases in 2020-2030 RTP

Based on input from GDOT staff, given that right-of-way funds are programmed in the GDOT work program it is also safe to assume funding for the remaining utility and construction phases has been committed by the Department. However, should funding sources fall short, the potential ARC and SRTA sources noted for the PE of West Winder Bypass Phase 3 may also be used to supplement funding for later phases of the projects listed in Table 11.6.

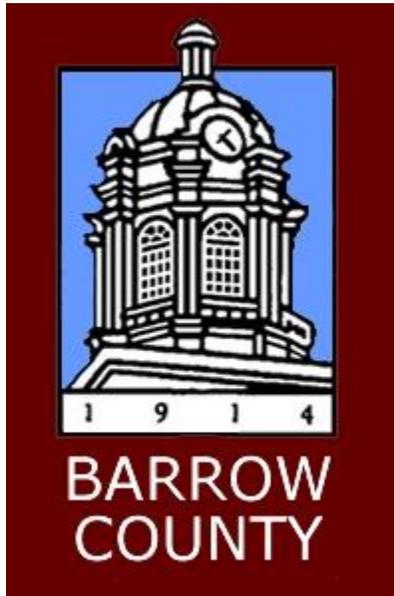
Given the focus on short-term implementation, Phase 4 of the West Winder Bypass extension from SR 211 to SR 53 and the SR 316 interchange at SR 211 were not included in this analysis because no phase was funded in the TIP. From a programmatic perspective, potential options to move these projects forward should be revisited based on funding trends at the time during future CTP updates.



Currently, there is a funding shortfall of \$1.2 million for Preliminary Engineering (PE) on Phase 3 (BA-005C) of the West Winder Bypass. PE was initially funded in FY 2013. The County has applied for additional federal funding through ARC's TIP application process. If this application is not successful the county will have to explore other options such as 100% local funding, federal funds administered by GDOT, additional state funding, or a combination.

Analysis of federal funding sources for Barrow County projects indicates the following:

- Barrow County has been successful in securing federal and state funding for large capacity improvements.
 - The West Winder Bypass and the SR 316 interchange projects are 80% federally and 20% state funded.
- Future capacity improvements will likely need local matching.



COMPREHENSIVE TRANSPORTATION PLAN UPDATE

PRIORITIZATION MEMORANDUM

APPENDIX D

Prepared by:

JACOBS[™]

May 2015



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1. EVALUATION METHODOLOGY

1.1. Congestion and Delay

Goal: Reduce travel time and congestion	
Project Types	Scoring
Intersections, Rail Crossings	5 - Project on road with deficient level of service in the year 2012. 3 - Project on road with deficient level of service in the year 2040. 0 - Other project.
Roadway Capacity, Bridge Repair	5 - Project on road segment with deficient level of service in year 2015. 3 - Project on road segment with deficient level of service in year 2040. 0 - Other project.
New Roadways	5 - New roadway project that addresses congestion on roadway segments with deficient level of service in the year 2015. 3 - New roadway project that addresses congestion on roadway segments with deficient level of service in the year 2040. 0 - Other new roadway project.
Sources: 2040 LRTP, ARC Travel Demand Model; CTP update Needs Assessment (May 2015)	

1.2. Multi-Modal Travel

Goal: Promote and support a multimodal transportation system	
Project Types	Scoring
Bicycle and Pedestrian	5 – Project would address pedestrian and bicycle needs in pedestrian priority area. 3 - Project would address pedestrian and bicycle needs. 0 - Other project.
Sources: 2040 LRTP, CTP update Needs Assessment (May 2015)	

1.3. Land Use

Goal: Ensure connectivity between transportation and land use policy.	
Project Types	Scoring
Intersections, Rail Crossings, Roadway Capacity, New Roadways, Bicycle and Pedestrian	5 - Project is located in adopted growth area identified in County Comprehensive Plan. 3 - Project is compatible with future land uses. 0 - Other project.
Sources: 2040 LRTP, ARC Travel Demand Model; Barrow County Future Land Use Map, CTP update Needs Assessment (May 2015)	



1.4. Land Use

Goal: Prioritize enhancements to serve existing and/or planned industrial and commercial areas	
Project Types	Scoring
Intersections, Rail Crossings, Roadway Safety, Roadway Capacity, New Roadways	5 – Project is located near a major activity or employment center. 3 - Project is located in an area of significant employment. 0 – Other intersection improvement.
Source: 2040 LRTP, ARCTravel Demand Model; CTP update Needs Assessment (May 2015)	

1.5. Safety

Goal: Promote improved safety for all modes of travel	
Project Types	Scoring
Intersections, Rail Crossings	5 - Project at high-crash intersection with crashes resulting in injuries and fatalities. 3 - Project at intersection with injury or fatality crashes. 0 - Other intersection project.
Roadway Safety, Roadway Capacity	5 - Project on road segment with one of the top 5 crash roadways. 3 - Project on road segment within top 10 crash roadways. 0 - Other roadway safety project.
New Roadways	5 - New roadway provides alternate route to roadway segment within top 5 crash locations. 3 - New roadway provides alternate route to roadway segment within top 10 crash locations. 0 - Other new roadway project.
Source: 2040 LRTP, ARCTravel Demand Model; CTP update Needs Assessment (May 2015)	

1.6. System Preservation

Goal: Preserve and maintain the transportation infrastructure	
Project Types	Scoring
Roadway Safety, Bridge Repair	5 - Project on roadway with AADT over 10,000 in 2015. 3 - Project on roadway with AADT over 5,000 in 2015. 0 - Other project.
Goal: Focus on operational improvements to improve system reliability	
Intersections, Rail Crossings, Roadway Capacity	5 - Project is within existing right-of-way. 3 - Project is within existing right-of-way but may require additional right-of-way. 0 - Other intersection project.
New Roadways	5 - Project incorporates existing roadways into new roadway alignment. 3 - Project incorporates existing roadways into new roadway alignment but requires significant additional right-of-way. 0 - Other new roadway project.
Source: 2040 LRTP, ARCTravel Demand Model; CTP update Needs Assessment (May 2015)	



1.7. Major Transportation Corridors

Goal: Prioritize mobility along existing and future major corridors	
Project Types	Scoring
Intersections, Rail Crossings, Bridge Repair, Roadway Capacity	5 - Project is located on an urban or rural arterial roadway. 3 – Project is located on an urban or rural collector roadway. 0 – Other improvements.
Source: Functional Classifications, CTP update Existing Conditions Report (March 2015)	

1.8. Freight Mobility

Goal: Enhance the transportation network to promote goods movement	
Project Types	Scoring
Intersections, Rail Crossings, Bridge Repair, Roadway Safety, Roadway Capacity, New Roadways	5 - Project is located on a corridor with an above average truck volume or adjacent to freight generating uses. 3 - Project serves freight generating uses. 0 - Other intersection projects.
Source: 2040 LRTP; ARC Travel Demand Model; CTP update Needs Assessment (May 2015)	

1.9. Intergovernmental Coordination

Goal: Ensure coordination with all relevant government agencies that can promote a cohesive transportation network and an efficient project delivery across jurisdictional boundaries	
Project Types	Scoring
Roadway Capacity	5 - Project is essential to completing a corridor improvement in tandem with another governmental agency. 3 - Project is supported by ongoing coordination with other governmental agencies, as appropriate. 0 - Other projects.
Source: 2040 LRTP; ARC Travel Demand Model; CTP update Needs Assessment (May 2015)	

1.10. Public and Committee Support

Goal: Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	
Project Types	Scoring
All Projects	5 - Project is supported by the technical committee and the public. 3 - Project is supported by either the technical committee or by the public. 0 - Other project.
CTP update Needs Assessment (May 2015); CTP update Technical Committee and public meetings (December 2014 and May 2015).	



1.11. Constructability

Goal: Preserve and protect the natural and human environment	
Project Types	Scoring
All Projects	5 - Project has minimal community or environmental impacts. 3 - Project has some community or environmental impacts. 0 - Other projects.
Source: Google Earth; CTP Update Existing Conditions Report (March 2015); CTP update Needs Assessment (May 2015).	
Goal: Explore innovative financing options to facilitate project delivery	
All Projects	5 -Project maximizes leveraging opportunities, and prioritizes cost-effectiveness. 3 - Project provides for some leveraging opportunities, and is cost effective in the long term. 0 - Other projects.
Source: Google Earth; CTP Update Existing Conditions Report (March 2015); CTP update Needs Assessment (May 2015).	



2. EVALUATION

The evaluation process seeks to rate projects on their ability to satisfy the many goals of this CTP update. These ratings provide a starting point for prioritizing projects for implementation. The prioritization process takes into account planning and engineering expertise, local knowledge, and project costs in addition to these evaluation ratings. It should also be noted that, because each mode is evaluated by a separate set of criteria, ratings are useful within project type but not conducive to comparisons among project types.

2.1. Intersections

The top intersection improvements in this rating were on state routes: SR 211 at Holsenbeck School Road, SR 316 at Kilcrease Road, and SR 81 at Tanners Bridge Road. All three of these projects are also on roadway segments that may, in the mid to long term, be appropriate for widening projects. It will be up to Barrow County to determine if these improvements are appropriate in the near term. If there is a likelihood of a funded widening project on the horizon, an intersection improvement may not be needed at this time. However, intersection improvements can improve safety and mobility along a corridor at considerably less expense than a major infrastructure project. Scores resulting from this prioritization process for intersections are presented in **Table 1.1**.

Two intersection improvements on the Atlanta Highway were the top scoring local projects. This corridor also has numerous high-scoring roadway safety projects. The Atlanta Highway may be in need of its own corridor safety study to determine and prioritize the particular needs for the roadway and intersections.

Three proposed intersection projects were dropped from the evaluation process. Two of these projects, (I-14) SR 316 at Smith Cemetery Road and (I-15) SR 316 at Harrison Mill Road, addressed safety issues on SR 316. It was determined that it would not be financially prudent to recommend intersection improvements along this facility at this time, given the intersection to interchange conversions already in the TIP. A third proposed intersection project recommending signal synchronization is considered a policy recommendation and was not evaluated.

2.2. Rail Crossing Improvements

Improvements to the rail crossings at Broad Street in Winder and at Jefferson Street in Statham ranked at the top of potential rail crossing projects. Both of these projects would require improvements to grade and other items outside of simple signing that could add to the expense of the project; however, both of the locations are important to the overall rail and road networks. Results for rail crossing improvements are in **Table 1.2**.

2.3. Roadway Safety Improvements

All the proposed safety projects are on county-owned roads, and the top three in this rating are on Atlanta Highway. Roadway safety improvement prioritization results are in **Table 1.3**.



Three initial recommendations that addressed freight issues were dropped from consideration because they duplicated another recommendation (F-2) Safety Improvements along SR 211, (F-7) Safety Improvements along SR 81, and (F-11) SR 324 Widening. Another two projects, (F-6) Safety Improvements on Broad Street in Winder and (F-8) Safety Improvements on May Street in Winder, were dropped from evaluation because they addressed safety considerations along roadways that should be positively affected by the construction of the West Winder Bypass, which is already in the TIP.

2.4. Bridge Replacement and Repair

The top two bridge projects in this analysis were on the Apalachee River, at Patrick Mill Road and at SR 81. Coordination with Gwinnett County and Walton County will be required on these improvements. Bridge improvement results are in **Table 1.4**.

2.5. Capacity Projects

The best scoring of these capacity projects is the proposed interchange on SR 316 at SR 211. The top ranking widening projects are found along SR 211, SR 81, and SR 11, all of which are state routes. The need for these three projects is dependent on the completion of projects currently in the ARC TIP and should be considered in the long range, to be visited in later updates to this CTP. Capacity project results are listed in **Table 1.5**.

Carl Bethlehem Road is the highest scoring local road widening project, but the number of residences along this corridor may make add expense and impacts to the project.

The potential widening of the Barrow County segment of SR 324 was evaluated both with and without the widening of the Gwinnett County portion of this corridor. With continued coordination with Gwinnett County, the SR 324 corridor widening will benefit residents of both counties.

One capacity project, (C-2) SR 124 Widening, was dropped from evaluation because the need it addressed was identified based on errant data. The delay along SR 124 during the NAVTEQ study period (2012) was a result of construction in that area during that time, and it not an ongoing need.

2.6. New Roads Projects

There are two proposed new roads projects considered in this analysis, both of which would be implementable in the long-range (after 2030), after the construction of the first three phases of the West Winder Bypass. These projects can be considered by later updates of this CTP. New road project results are listed in **Table 1.6**.

2.7. Bicycle and Pedestrian Projects

Two bicycle and pedestrian projects are proposed by this CTP update and they rated similarly in this evaluation. The sidewalk near Apalachee High School may qualify for Safe Routes to School funds, and there may be some business interest in constructing a path connecting to potential customers at the state park. Bicycle and Pedestrian project results are listed in **Table 1.7**.



Table 1.1 Intersection Project Prioritization Results

Map ID	Location	Reduce Congestion and Delay	Ensure connectivity between transportation and land use policy.	Prioritize enhancements to serve existing and/or planned industrial and commercial areas	Promote improved safety for all modes of travel	Focus on operational improvements to improve system reliability	Prioritize mobility along existing and future major corridors	Enhance the transportation network to promote goods movement	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
I-17	SR 211 at Holsenbeck School Road	5	5	5	3	5	3	3	3	5	5	4.2
I-6	SR 316 at Kilcrease Road	3	5	5	0	5	5	5	3	5	5	4.1
I-12	SR 81 at Tanners Bridge Road	3	5	3	5	5	3	5	0	5	5	3.9
I-5	SR 11 at McElhannon	0	5	3	5	5	5	5	3	3	3	3.7
I-23	SR 211 at Rockwell Church Road	3	5	0	3	5	3	5	3	5	5	3.7
I-7	SR 211 at County Line -Auburn Road	3	5	0	3	5	5	5	0	5	5	3.6
I-20	SR 211 at Old Hog Mountain Road	3	5	0	3	5	5	5	0	5	5	3.6
I-9	SR 211 at Cedar Creek Road and Hal Jackson Road	3	5	5	3	3	5	5	0	3	3	3.5
I-10	Atlanta Highway at SR 324	5	3	5	3	5	5	3	0	3	3	3.5
I-18	Atlanta Highway at Bowan Mill Road SE	3	3	5	5	5	5	3	0	3	3	3.5
I-13	SR 211 at Dee Kennedy Road	3	5	0	3	5	5	3	0	5	5	3.4
I-2	SR 211 at SR 82	5	3	3	3	3	5	3	0	3	3	3.1
I-21	SR 53 at SR 11	0	3	5	3	3	5	5	0	3	3	3
I-4	SR 53 N at Mulberry Road	0	5	0	0	5	5	3	0	5	5	2.8
I-16	Dunahoo Road at Holsenbeck School Road	0	5	0	5	5	0	0	3	5	5	2.8
I-22	SR 211 at SR 53	5	5	0	0	3	3	3	3	3	3	2.8
I-3	SR 82 at SR 330	5	3	0	0	3	3	0	3	5	5	2.7
I-11	Old Hog Mountain Road at SR 124	0	5	0	3	5	5	3	0	3	3	2.7
I-8	Pearl Pentecost Road at Carl-Cedar Hill Road	0	3	0	0	3	0	5	0	3	3	1.7
I-1	SR 211 at SR 11	0	5	0	0	3	5	3	0	0	0	1.6

Table 1.2: Rail Crossing Improvement Prioritization Results

Map ID	Location	Reduce Congestion and Delay	Ensure connectivity between transportation and land use policy.	Prioritize enhancements to serve existing and/or planned industrial and commercial areas	Promote improved safety for all modes of travel	Focus on operational improvements to improve system reliability	Prioritize mobility along existing and future major corridors	Enhance the transportation network to promote goods movement	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
R-4	Broad Street	5	3	5	3	5	5	5	5	5	5	4.6
R-5	Jefferson Street	5	3	3	5	5	5	5	5	3	3	4.2
R-8	CSX Railroad at M-5406 Center Street	5	5	5	3	5	5	5	0	5	5	4.1
R-3	Harold Day Road	0	3	5	5	5	5	3	3	5	5	3.9
R-2	Horton Street	5	3	5	5	5	3	3	0	5	5	3.9
R-6	Deer Run Trail	0	5	5	5	5	0	5	3	5	5	3.8
R-7	Bankhead Highway	0	5	5	5	5	0	5	3	5	5	3.8
R-1	Carl-Midway Church Road	3	3	3	3	5	3	3	0	5	5	3.3



Table 1.3: Roadway Safety Improvement Prioritization Results

Map ID	Location	Prioritize enhancements to serve existing and/or planned industrial and commercial areas	Promote improved safety for all modes of travel	Preserve and maintain the transportation infrastructure	Enhance the transportation network to promote goods movement	Promote participation from all sectors of the community , including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
F-12	Atlanta Highway	5	5	3	5	3	5	5	4.3
F-3	Atlanta Highway	5	5	5	5	3	3	3	4.1
S-3	Atlanta Highway	5	5	3	3	3	3	3	3.6
F-9	Carl-Cedar Hill Road	3	0	3	3	3	5	5	3.4
F-4	Pearl Pentecost Road	3	0	3	3	3	5	5	3.1
F-10	Bankhead Highway	3	0	0	3	3	5	5	2.8
F-1	Dee Kennedy Road	0	0	5	3	3	3	3	2.5
S-1	Old Hog Mountain Road	0	0	3	0	3	3	3	1.9
S-2	Rockwell Church Road	0	0	0	0	3	3	3	1.5

Table 1.4: Bridge Replacement and Repair Prioritization Results

Map ID	Location	Reduce Congestion and Delay	Preserve and maintain the transportation infrastructure	Focus on operational improvements to improve system reliability	Prioritize mobility along existing and future major corridors	Enhance the transportation network to promote goods movement	Promote participation from all sectors of the community , including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
B-5	Patrick Mill Rd at Apalachee River	3	3	5	3	3	3	3	3	3.3
B-4	SR 81 at Apalachee River	3	5	5	3	3	0	3	3	3.1
B-6	Liberty Church Road at Mulberry Creek	3	0	5	0	0	0	5	5	2.3
B-1	Thompson Mill Rd at Little Mulberry River	0	0	5	0	0	0	5	5	1.9
B-2	Fort Yargo Park Rd at Marbury Creek	0	0	5	0	0	0	5	5	1.9
B-3	Boss Hardy Rd at Little Mulberry River	0	0	5	0	0	0	5	5	1.9
B-7	Robertson BR Road at Barber Creek	0	0	5	0	0	0	5	5	1.9
B-8	Manning Gin Road at Marbury Creek	0	0	5	0	0	0	5	5	1.9



Table 1.5: Capacity Project Prioritization Results

Map ID	Location	Reduce Congestion and Delay	Ensure connectivity between transportation and land use policy.	Prioritize enhancements to serve existing and/or planned industrial and commercial areas	Promote improved safety for all modes of travel	Focus on operational improvements to improve system reliability	Prioritize mobility along existing and future major corridors	Enhance the transportation network to promote goods movement	Ensure coordination with all relevant government agencies that can promote a cohesive transportation network and an efficient project delivery across jurisdictional boundaries	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
C-9	SR 316 Interchange at SR 211/ Bethlehem Road	5	3	5	5	5	5	3	3	3	3	3	3.9
C-3	SR 81	3	5	5	5	3	3	5	3	3	3	3	3.8
C-1	SR 211	3	5	3	5	3	5	5	3	5	3	0	3.7
C-4	SR 11	3	3	5	5	3	5	3	3	3	3	3	3.6
C-5	SR 324 (with Gwinnett Co construction)	5	5	0	3	3	5	5	5	3	3	3	3.6
C-5	SR 324 (without Gwinnett Construction)	0	5	0	0	3	5	5	3	0	3	0	2.2
C-6	Carl Bethlehem Road (BA-015)	0	5	5	3	3	3	3	3	3	0	0	2.5
C-7	Dee Kennedy Road	3	3	0	0	3	3	3	3	0	3	0	1.8
C-8	Mount Moriah Road	0	3	0	0	3	3	0	3	3	3	0	1.5

Table 1.6: New Road Project Prioritization Results

Map ID	Name	Reduce Congestion and Delay	Ensure connectivity between transportation and land use policy.	Prioritize enhancements to serve existing and/or planned industrial and commercial areas	Promote improved safety for all modes of travel	Focus on operational improvements to improve system reliability	Enhance the transportation network to promote goods movement	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
NR-1	West Winder Bypass – Phase 4	3	3	3	5	3	3	5	3	3	3.4
NR-2	East Winder Bypass	3	0	0	5	0	3	3	0	0	1.6

Table 1.7: Bicycle and Pedestrian Project Prioritization Results



Map ID	Name	Promote and support a multimodal transportation system	Ensure connectivity between transportation and land use policy.	Promote improved safety for all modes of travel	Promote participation from all sectors of the community, including those traditionally underserved, in the planning process	Preserve and protect the natural and human environment	Explore innovative financing options to facilitate project delivery	Average
BP-1	Fort Yargo Multi-Use Path	5	5	5	5	3	3	4.3
BP-2	Sidewalk near Apalachee HS	5	3	5	3	3	5	4.0



3. PROJECT INFORMATION

Intersection projects are listed in **Table 1.8** and mapped in **Figure 1.1**. Rail crossing projects are listed in **Table 1.9** and are mapped in **Figure 1.2**. Roadway safety projects are listed in **Table 1.10** and are mapped in **Figure 1.3**. Bridge projects are listed in **Table 1.11** and are mapped in **Figure 1.4**. Capacity and new road projects are listed in **Table 1.12** and are mapped in **Figure 1.5**. Bicycle and pedestrian projects are listed in **Table 1.13** and are mapped in **Figure 1.6**.

Table 1.8: Intersection Projects

Map ID	Project Name	Project Description
I-1	SR 211 at SR 11	Roundabout
I-2	SR 211 at SR 82	Roundabout
I-3	SR 82 at SR 330	Roundabout
I-4	SR 53 N at Mulberry Road	Improve sight distance and correct intersection skew; add turn lane on SR 53 northbound
I-5	SR 11 at McElhannon	Improve sight distance and correct intersection skew
I-6	SR 316 at Kilcrease Road	Add right turn lane northbound
I-7	SR 211 at County Line-Auburn Road	Correct skew and offset, allow for truck turning movements.
I-8	Pearl Pentecost Road at Carl-Cedar Hill Road	Correct skew to allow sufficient truck turning movement.
I-9	SR 211 at Cedar Creek Road and Hal Jackson Road	Correct skew and alignment of intersection
I-10	Atlanta Highway at SR 324	Safety improvements
I-11	Old Hog Mountain Road at SR 124	Safety improvements
I-12	SR 81 at Tanners Bridge Road	Two left turn lanes on SR 8.
I-13	SR 211 at Dee Kennedy Road	Two left turn lanes on SR 211
I-16	Dunahoo Road at Holsenbeck School Road	Two left turn lanes on Dunahoo Road
I-17	SR 211 at Holsenbeck School Road	Right turn and left turn lanes on SR 211; left turn lane on Holsenbeck School Road
I-18	Atlanta Highway at Bowman Mill Road SE	Realign Bowman Mill Road in both directions to fix skew, correct rail crossing to 90 degrees
I-20	SR 211 at Old Hog Mountain Road	Safety improvements
I-21	SR 53 at SR 11	Left turn lanes added on all approaches
I-22	SR 211 at SR 53	Roundabout
I-23	SR 211 at Rockwell Church Road	Left turn lane northbound

Table 1.9: Rail Crossing Projects

Map ID	Project Name	Project Description
R-1	Carl-Midway Church Road	Maintenance, pavement improvements Signal Timing/ Pre-Emption to prevent traffic queueing across rail
R-2	Horton Street	
R-3	Harold Day Road	Maintenance, barrier and flashing light installation Pre-Signal and Pre-Emption to prevent queueing across rail, sidewalks
R-4	Broad Street	Pre-Signal, Pre-Emption to prevent queueing across rail, address height difference at rail line
R-5	Jefferson Street	
R-6	Deer Run Trail	Maintenance and improvements to ground clearance for trucks
R-7	Bankhead Highway	Maintenance and improvements to ground clearance for trucks
R-8	CSX Railroad at M-5406 Center Street	Bridge 72 on map, 013-0026-0,



Table 1.10: Roadway Safety Projects

Map ID	Project Name	Project Description
F-1	Dee Kennedy Road	Add shoulders; bring roadway to design standard from SR 124 to SR 211
F-3	Atlanta Highway	Operational Improvements from Gwinnett County Line to Pearl Pentecost Road
F-4	Pearl Pentecost Road	Add shoulders; bring roadway to design standard from Highway to Carl Cedar-Hill Road
F-9	Carl-Cedar Hill Road	Add shoulders; bring roadway to design standard from Atlanta Highway to SR 211
F-10	Bankhead Highway	Shoulders
F-12	Atlanta Highway	Operational Improvements including improved signage, restriping for safety, tree removal for improved sight lines, and turning radius enhancements
S-1	Old Hog Mountain Road	SR 124 to SR 211. Widen roadway and improve the roadside clear zone, with improvements to SR 124 and SR 211 intersections.
S-2	Rockwell Church Road	Add paved shoulder widening to both sides of road, mill, patch, resurface, mark pavement, from SR 11 to SR 53
S-3	Atlanta Highway	Mill, patch, resurface and pavement markings, and eliminate the transverse bumps in the road caused by expansion of concrete joints under the existing asphalt Atlanta Highway improvements (7.6 Mi. ; see map by Audra).

Table 1.11: Bridge Projects

Map ID	Project Type	Location	Structure ID and Sufficiency Rating
B-1	Bridge Replacement	Thompson Mill Rd at Little Mulberry River	Structure ID- 013-5039-0; Sufficiency rating 30.1
B-2	Bridge Replacement	Fort Yargo Park Rd at Marbury Creek	Structure ID 013-5014-0; Sufficiency rating 42.1
B-3	Bridge Replacement	Boss Hardy Rd at Little Mulberry River	Structure ID 013-5006-0; Sufficiency rating 45.7
B-4	Bridge Replacement	SR 81 at Apalachee River	Structure ID 297-0023-0; Sufficiency rating 46
B-5	Bridge Replacement	Patrick Mill Rd at Apalachee River	Structure ID 013-5017-0; Sufficiency rating 29.3
B-6	Bridge Repair	Liberty Church Road at Mulberry Creek	Structure ID 013-5009-0; Sufficiency rating 52.5
B-7	Bridge Replacement	Robertson BR Road at Barber Creek	Structure ID 013-5025-0; Sufficiency rating 56.1
B-8	Bridge replacement	Manning Gin Road at Marbury Creek	Structure ID 013-5021-0; Sufficiency rating 87.7

Table 1.12: Capacity Projects

Map ID	Project Name	Project Description
C-1	SR 211	Widen from two to four lanes from SR 347 in Hall Co. to Winder/WWBP (8.5 Mi.) (BA-013)
C-3	SR 81	Widen from 2 to 4 lanes from Walton Co. line/Apalachee River to Winder City Limit line at Carson Wages Road (3.6 Mi.)
C-4	SR 11	Widen from 2 to 4 lanes from Walton County line to SR 316 (BA-016)
C-5	SR 324 with Gwinnett Co construction	Widen SR 324 from Gwinnett County project terminus to Atlanta Highway, including improvements to intersection at Atlanta Highway; assume no impact to railroad.
C-5	SR 324 without Gwinnett Construction	Widen SR 324 from Gwinnett County project terminus to Atlanta Highway, including improvements to intersection at Atlanta Highway; assume no impact to railroad.
C-6	Carl Bethlehem Road (BA-015)	Widen from 2 to 4 lanes from US 29 Business to SR 316
C-7	Dee Kennedy Road	Widen from 2 to 4 lanes from Gwinnett County to SR 211 (BA-017)
C-8	Mount Moriah Road	Widen from 2 to 4 lanes from Gwinnett County to Atlanta Highway
C-9	SR 316 Interchange	At SR 211



Table 1.13: New Road Projects

Map ID	Project Name	Project Description
NR-1	Phase 4 of the West Winder Bypass	New location roadway from SR 21 to SR 53
NR-2	East Winder Bypass	New alignment extension east around Winder from SR 53

Table 1.14: Bicycle and Pedestrian Projects

Map ID	Project Name	Project Description
BP-1	SR 81	Multi-Use trail from Fort Yargo State Park to Winder
BP-2	Pedestrian Priority Areas	Sidewalk on Haymon Morris Road near Apalachee High School



Figure 1.1: Intersection Projects

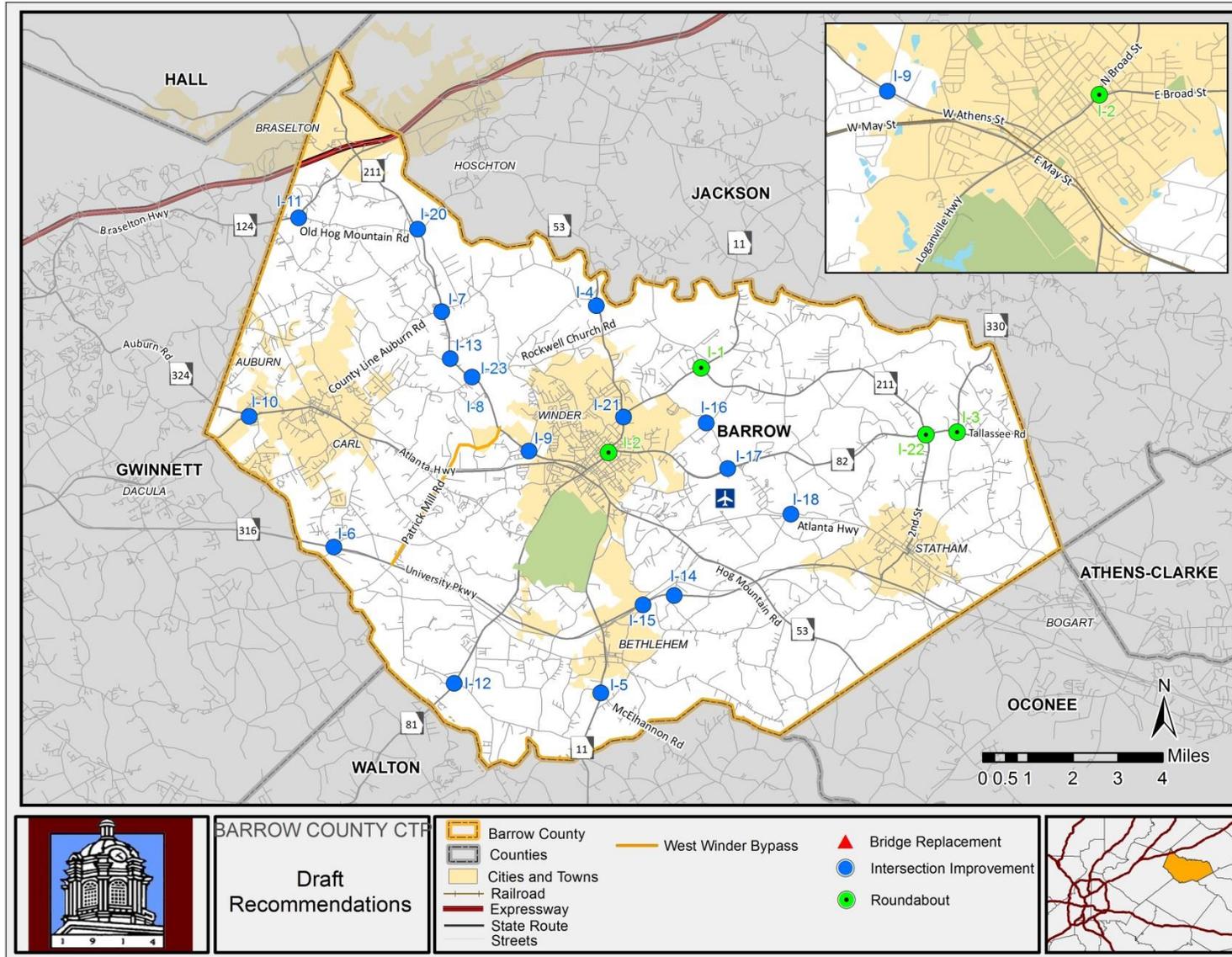
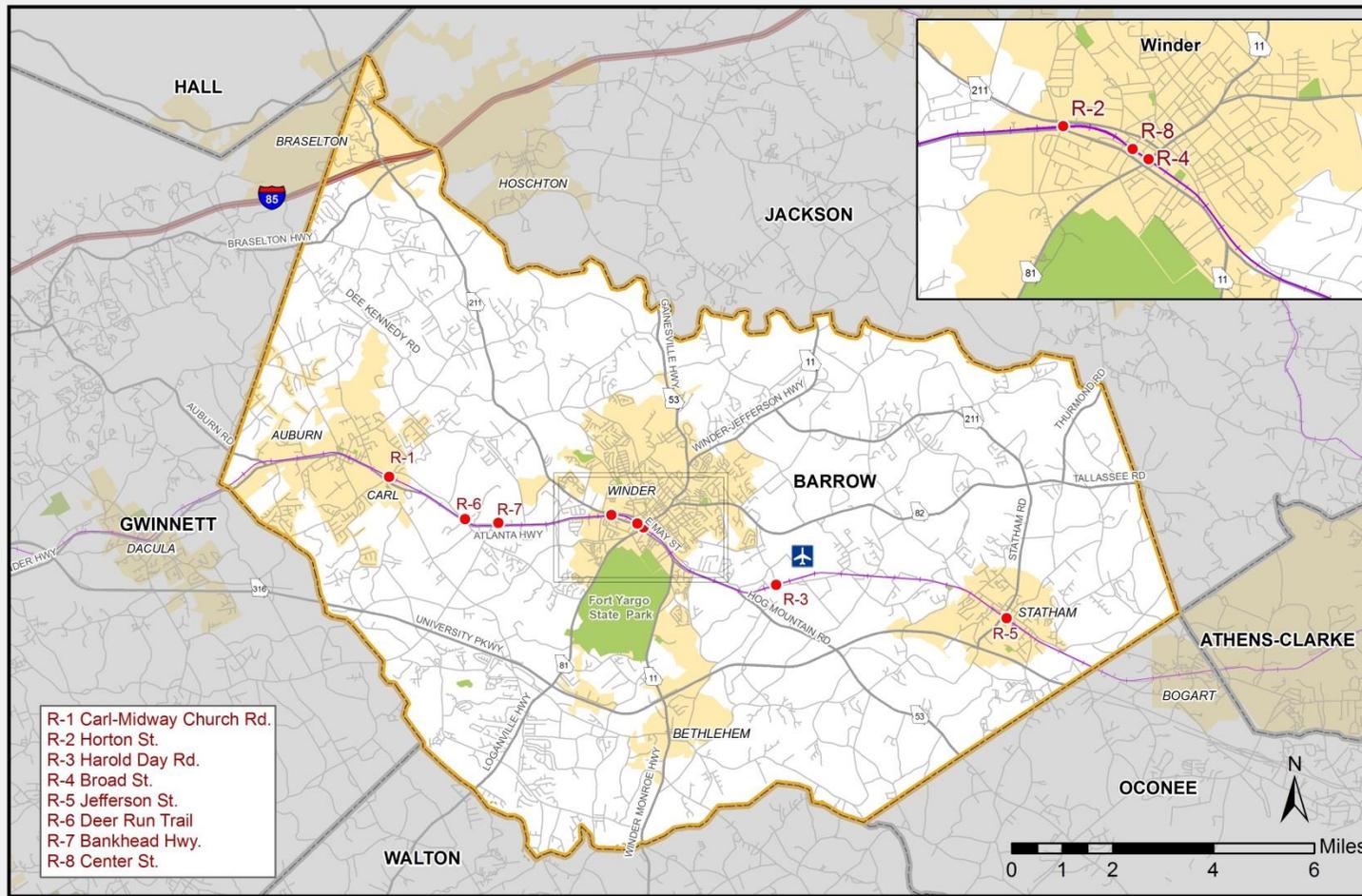




Figure 1.2: Rail Crossing Projects



- R-1 Carl-Midway Church Rd.
- R-2 Horton St.
- R-3 Harold Day Rd.
- R-4 Broad St.
- R-5 Jefferson St.
- R-6 Deer Run Trail
- R-7 Bankhead Hwy.
- R-8 Center St.



BARROW COUNTY CTP
Rail Crossing Recommendations

Parks	Barrow County	Rail Needs Sites
Airport	Counties	
CSX Rail	Cities and Towns	
Expressway		
State Route		
Streets		

Source: ARC, Barrow County

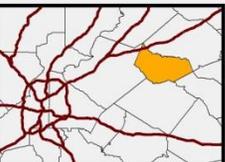




Figure 1.4: Bridge Projects

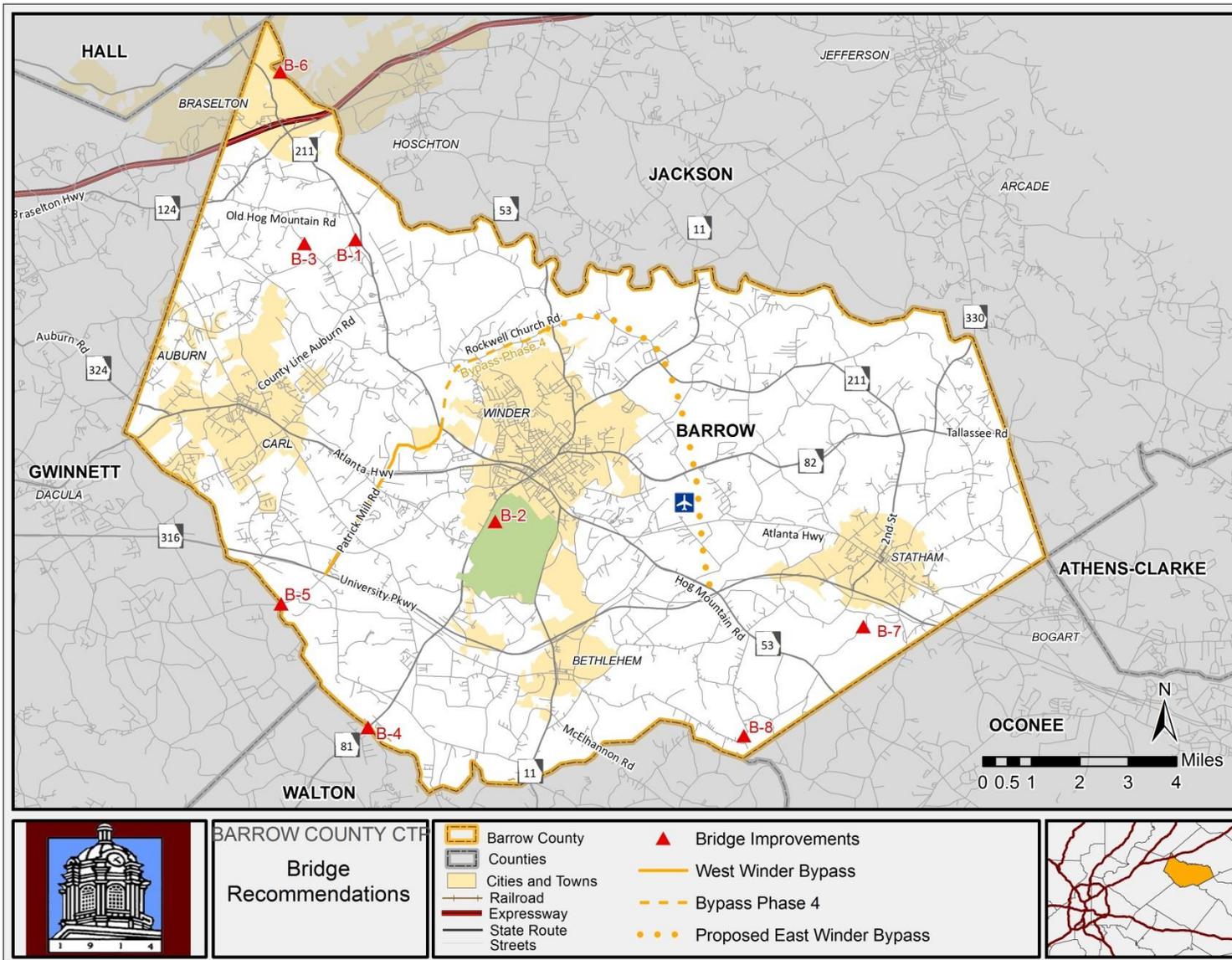




Figure 1.5: Capacity and New Road Projects

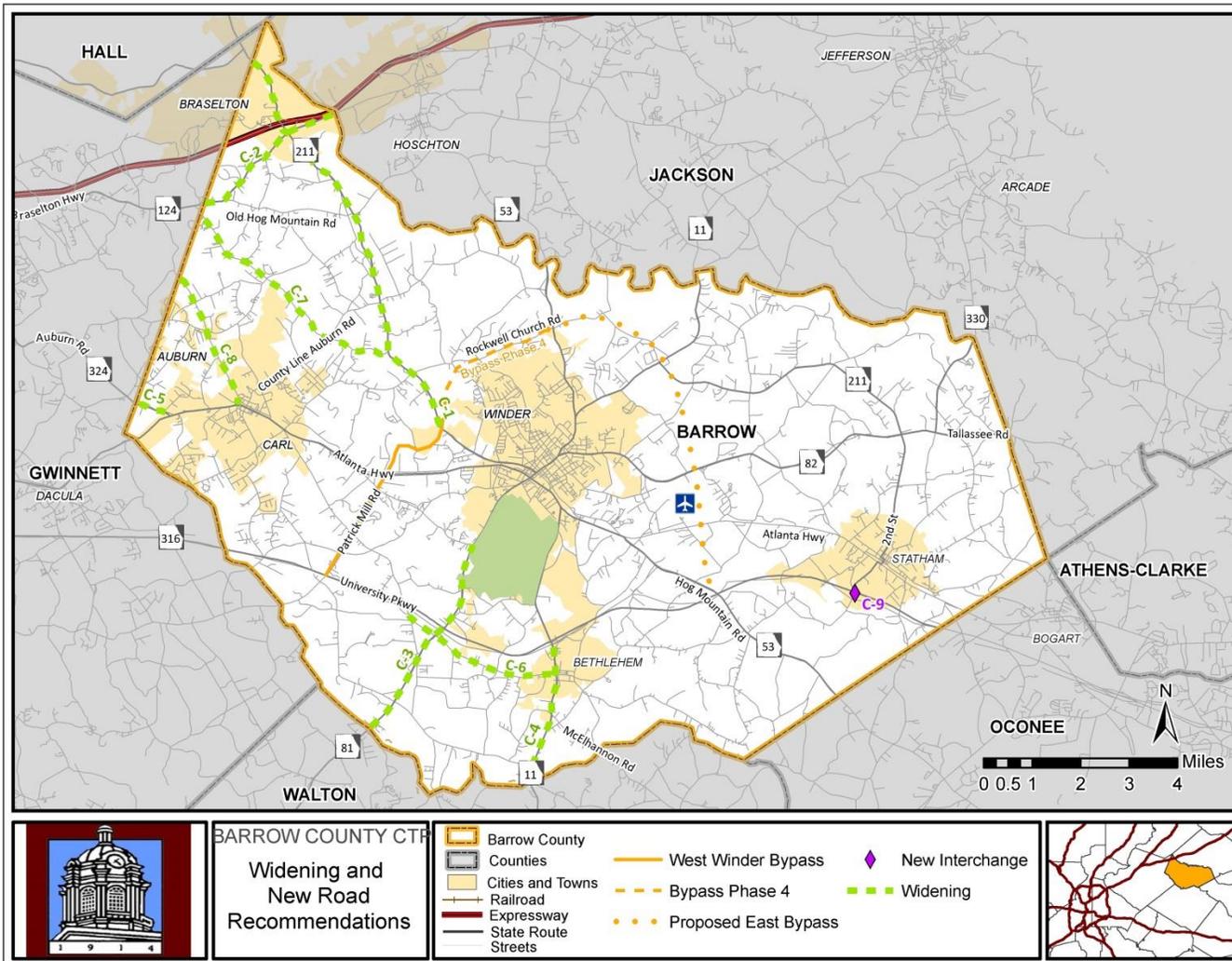
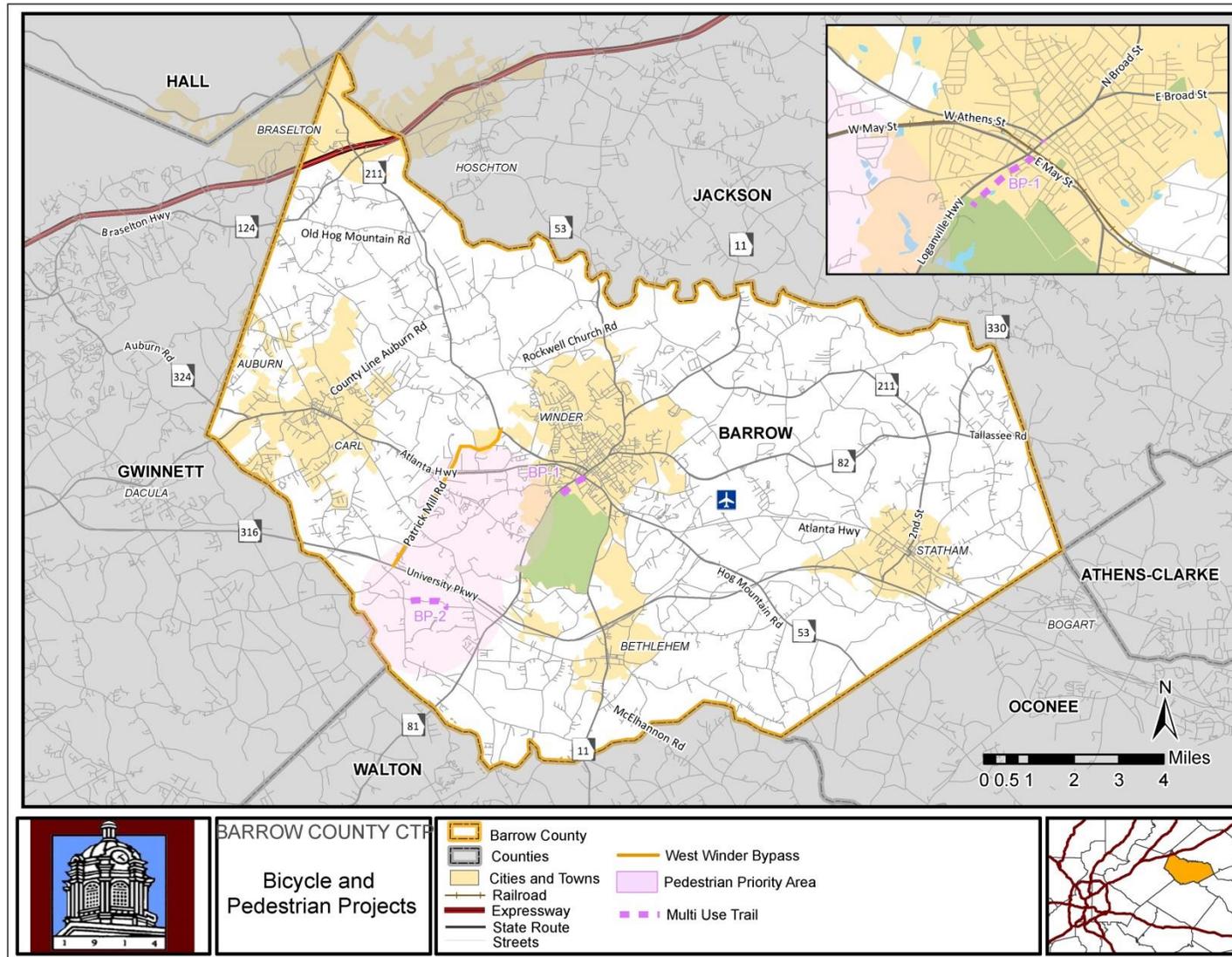
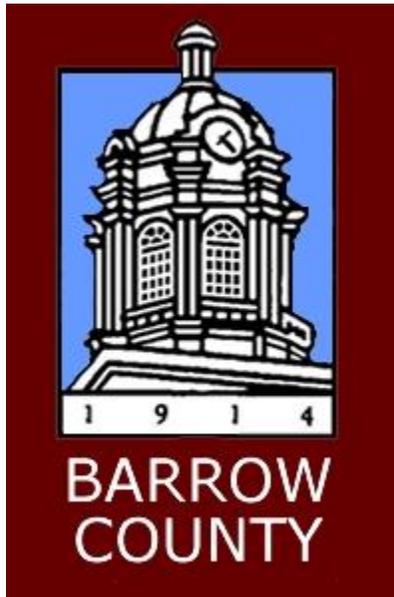




Figure 1.6: Bicycle and Pedestrian Projects





COMPREHENSIVE TRANSPORTATION PLAN UPDATE

COST ESTIMATES

APPENDIX E

Prepared by:

JACOBS[™]

June 2015



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Table 1: Intersection Improvement Cost Estimates

Map ID	Location	Description	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated	Lead Agency
I-17	SR 211 at Holsenbeck School Road	Safety improvements	\$1,595,500	2016	\$133,000	2017	\$26,000	2018	\$1,389,000	\$138,000	\$1,686,000	GDOT
I-6	SR 316 at Patrick Mill Road	Extend right turn lane northbound	\$765,700	2016	\$57,000	2017	\$96,000	2018	\$595,000	\$59,000	\$807,000	Barrow County
I-12	SR 81 at Tanners Bridge Road	Safety improvements	\$1,090,600	2016	\$91,000	2017	\$26,000	2018	\$942,000	\$94,000	\$1,153,000	GDOT
I-5	SR 11 at McElhannon	Improve sight distance and correct intersection skew.	\$4,106,460	2016	\$303,000	2017	\$257,000	2018	\$3,157,000	\$619,000	\$4,336,000	GDOT
I-7	SR 211 at County Line-Auburn Road	Correct skew and offset, allow for truck turning movements.	\$1,103,100	2016	\$91,000	2017	\$39,000	2018	\$942,000	\$94,000	\$1,166,000	GDOT
I-20	SR 211 at Old Hog Mountain Road	Left turn lanes	\$2,203,700	2016	\$181,000	2017	\$75,000	2018	\$1,885,000	\$188,000	\$2,329,000	GDOT
I-9	SR 211 at Cedar Creek Road and Hal Jackson	Correct skew and alignment of intersection	\$2,551,440	2016	\$144,000	2017	\$780,000	2018	\$1,500,000	\$259,000	\$2,683,000	GDOT
I-18	Atlanta Highway at Bowan Mill Road SE	Safety improvements	\$1,567,250	2016	\$104,000	2017	\$205,000	2018	\$1,084,000	\$260,000	\$1,653,000	Barrow County
I-13	SR 211 at Dee Kennedy Road	Safety improvements	\$550,300	2016	\$45,000	2017	\$18,000	2018	\$471,000	\$47,000	\$581,000	GDOT
I-2	SR 211 at SR 82	Roundabout	\$1,189,900	2016	\$95,000	2017	\$81,000	2018	\$984,000	\$98,000	\$1,258,000	GDOT
I-24	Kilcrease Road at SR 316	Channelized northbound right turn lane on Kilcrease Road	\$765,700	2016	\$57,000	2017	\$96,000	2018	\$595,000	\$59,000	\$807,000	Barrow County
I-8	Pearl Pentecost Road at Carl-Cedar Hill Road	Correct skew to allow sufficient truck turning movement.	\$1,269,600	2031	\$141,000	2032	\$53,000	2033	\$1,466,000	\$146,000	\$1,806,000	Barrow County
I-21	SR 53 at SR 11	Realignment of SR 11 to a T intersection at SR 11	\$6,208,320	2031	\$308,000	2032	\$7,492,000	2033	\$3,331,000	\$620,000	\$11,751,000	GDOT
I-4	SR 53 N at Mulberry Road	Improve sight distance and correct intersection skew; add turn lane on SR	\$2,020,164	2031	\$214,000	2032	\$147,000	2033	\$2,226,000	\$286,000	\$2,873,000	GDOT
I-16	Dunahoo Road at Holsenbeck School Road	Safety improvements	\$1,169,500	2031	\$132,000	2032	\$25,000	2033	\$1,371,000	\$137,000	\$1,665,000	Barrow County
I-22	SR 211 at SR 53	Roundabout	\$2,434,400	2031	\$256,000	2032	\$280,000	2033	\$2,659,000	\$265,000	\$3,460,000	GDOT
I-3	SR 82 at SR 330	Roundabout	\$1,202,400	2031	\$127,000	2032	\$126,000	2033	\$1,324,000	\$132,000	\$1,709,000	GDOT
I-11	Old Hog Mountain Road at SR 124	Safety improvements	\$2,203,700	2031	\$244,000	2032	\$102,000	2033	\$2,537,000	\$253,000	\$3,136,000	Barrow County
I-1	SR 211 at SR 11	Roundabout	\$3,732,400	2041	\$155,000	2042	\$4,472,000	2043	\$1,614,000	\$159,000	\$6,400,000	GDOT



Table 2: Safety Improvement Cost Estimates

Map ID	Name	Description	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated Cost	Lead Agency
F-12	Atlanta Highway from Carl Midway Church Road to Patrick Mill Road	Operational Improvements including improved signage, restriping for safety, tree removal for improved sight lines, and turning radius enhancements	\$2,376,300	2016	\$76,000	2017	\$484,000	2018	\$786,000	\$223,000	\$1,569,000	Barrow County
F-3	Atlanta Highway from Gwinnett County Line to Carl Midway Church Road	Operational Improvements from Gwinnett County Line to Pearl Pentecost Road	\$1,491,450	2016	\$122,000	2017	\$687,000	2018	\$1,274,000	\$416,000	\$2,499,000	Barrow County
S-3	Atlanta Highway from SR 53 to Oconee County Line	Mill, patch, resurface and pavement markings, and eliminate the transverse bumps in the road caused by expansion of concrete joints under the existing asphalt.	\$4,298,940	2016	\$292,000	2017	\$0	2018	\$2,982,000	\$1,191,000	\$4,465,000	Barrow County
S-1	Old Hog Mountain Road	SR 124 to SR 211. Widen roadway and improve the roadside clear zone, with improvements to SR 124 and SR 211 intersections.	\$10,351,444	2016	\$758,000	2017	\$203,000	2018	\$7,883,000	\$2,099,000	\$10,943,000	Barrow County
F-4	Pearl Pentecost Road	Add shoulders; bring roadway to design standard from Highway to Carl Cedar-Hill Road	\$8,861,284	2016	\$585,000	2017	\$572,000	2018	\$6,083,000	\$2,119,000	\$9,359,000	Barrow County
S-4	County-Line Auburn Road	SR 211 to Auburn City Limits -re-striping, repaving, new signage.	\$4,200,432	2016	\$300,000	2017	\$86,000	2018	\$3,121,000	\$933,000	\$4,440,000	Barrow County
F-9	Carl-Cedar Hill Road	Add shoulders; bring roadway to design standard from Atlanta Highway to SR 211	\$14,617,952	2031	\$1,325,000	2032	\$868,000	2033	\$13,788,000	\$4,804,000	\$20,785,000	Barrow County
F-10	Bankhead Highway	Shoulders	\$18,713,244	2031	\$1,626,000	2032	\$2,979,000	2033	\$16,920,000	\$5,047,000	\$26,572,000	Barrow County
F-1	Dee Kennedy Road	Add shoulders; bring roadway to design standard from SR 124 to SR 211	\$24,666,544	2041	\$2,726,000	2042	\$1,784,000	2043	\$28,363,000	\$9,883,000	\$42,756,000	Barrow County
S-2	Rockwell Church Road	Add paved shoulder widening to both sides of road, mill, patch, resurface, mark pavement, from SR 11 to SR 53	\$5,298,444	2041	\$611,000	2042	\$0	2043	\$6,326,000	\$2,219,000	\$9,156,000	Barrow County



Table 3: Bridge Improvement Cost Estimates

Map ID	Location	Type	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated Cost	Lead Agency
B-5	Patrick Mill Rd at Apalachee River	Bridge Replacement	\$773,500	2016	\$66,000	2017	\$19,000	2018	\$709,000	\$70,000	\$864,000	Barrow County
B-4	SR 81 at Apalachee River	Bridge Replacement*	\$924,700	2016	\$79,000	2017	\$19,000	2018	\$850,000	\$84,000	\$1,032,000	GDOT
B-6	Liberty Church Road at Mulberry Creek	Bridge Repair	\$360,000	2016	\$31,000	2017	\$0	2018	\$337,000	\$33,000	\$401,000	Barrow County
B-1	Thompson Mill Rd at Little Mulberry River	Bridge Replacement	\$924,700	2041	\$210,000	2042	\$50,000	2043	\$2,267,000	\$225,000	\$2,752,000	Barrow County
B-2	Fort Yargo Park Rd at Marbury Creek	Bridge Replacement	\$861,000	2041	\$175,000	2042	\$303,000	2043	\$1,889,000	\$187,000	\$2,554,000	Barrow County
B-3	Boss Hardy Rd at Little Mulberry River	Bridge Replacement	\$360,000	2041	\$80,000	2042	\$0	2043	\$865,000	\$86,000	\$1,031,000	Barrow County
B-8	Manning Gin Road at Marbury Creek	Bridge replacement	\$827,500	2041	\$187,000	2042	\$50,000	2043	\$2,024,000	\$201,000	\$2,462,000	Barrow County



Table 4: Capacity Improvement Cost Estimates

Map ID	Location	Description	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated Cost	Lead Agency
C-1a	SR 211	Widen from two to four lanes from SR 347 in Hall Co. to north of I-85 (8.5 MI.) (BA-013)	\$27,668,240	2016	\$1,686,000	2017	\$4,866,000	2018	\$17,543,000	\$5,065,000	\$29,160,000	GDOT
C-5	SR 324	Widen SR 324 from Gwinnett County project terminus to Atlanta Highway, including improvements to intersection at Atlanta Highway; assume no impact to railroad.	\$16,274,860	2041	\$3,125,000	2042	\$2,227,000	2043	\$33,804,000	\$9,221,000	\$48,377,000	GDOT
C-3	SR 81	Widen from 2 to 4 lanes from Walton Co. line/Apalachee R to Winder City Limit line at Carson Wages Rd (3.6 MI.)	\$20,733,340	2031	\$1,864,000	2032	\$2,419,000	2033	\$19,389,000	\$5,787,000	\$29,459,000	GDOT
C-1b	SR 211	Widen from two to four lanes from north of I-85 to Winder/WWBP (8.5 MI.) (BA-013)	\$133,192,948	2031	\$11,694,000	2032	\$19,831,000	2033	\$121,667,000	\$35,967,000	\$189,159,000	GDOT
C-4	SR 11	Widen from 2 to 4 lanes from Walton County line to SR 316 (BA-016)	\$17,671,200	2031	\$1,668,000	2032	\$1,155,000	2033	\$17,357,000	\$4,945,000	\$25,125,000	GDOT
C-9	SR 316 Interchange*	at SR 211/Bethlehem Road	\$19,200,000	2030	#REF!	2031	#REF!	2032	#REF!	#REF!	\$19,200,000	GDOT
C-6	Carl Bethlehem Road	Widen from 2 to 4 lanes from US 29 Business to SR 316 (BA-015)	\$71,012,400	2041	\$8,131,000	2042	\$5,095,000	2043	\$84,598,000	\$25,268,000	\$123,092,000	Barrow County
C-5	SR 324 without Gwinnett Construction	Not recommended without Gwinnett participation.										
C-7	Dee Kennedy Road	Widen from 2 to 4 lanes from Gwinnett County to SR 211 (BA-017)	\$75,677,560	2041	\$8,673,000	2042	\$5,317,000	2043	\$90,238,000	\$26,953,000	\$131,181,000	Barrow County
C-8	Mount Moriah Road	Widen from 2 to 4 lanes from Gwinnett County to Atlanta Highway	\$49,645,820	2041	\$5,602,000	2042	\$4,749,000	2043	\$58,279,000	\$17,402,000	\$86,032,000	Barrow County



Table 5: New Roadway Cost Estimates

Map ID	Location	Description	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated Cost	Lead Agency
NR-1	Phase 4 of the West Winder Bypass	New location roadway from SR 211 to SR 53	\$79,946,300	2041	\$8,057,000	2042	\$24,485,000	2043	\$83,826,000	\$21,851,000	\$138,219,000	GDOT
NR-2	East Winder Bypass	New alignment extension east around Winder from SR 53	\$123,808,300	2041	\$12,455,000	2042	\$36,553,000	2043	\$129,581,000	\$35,486,000	\$214,075,000	GDOT



Table 6: Bicycle and Pedestrian Improvement Cost Estimates

Map ID	Project Name	Description	Total Estimated Cost, Base Year	Year PE	PE \$	Year ROW	ROW \$	Year CST	CST \$	Contingency	Total Estimated Cost	Lead Agency
BP-2	Sidewalk near Apalachee HS	Sidewalk on Haymon Morris Road near Apalachee High School	\$336,960	2016	\$29,000	2017	\$0	2018	\$298,000	\$30,000	\$357,000	Barrow County
BP-1	Fort Yargo Connection Multi-Use Trail	Multi-Use Trail from Fort Yargo State Park to Winder	\$976,660	2016	\$27,000	2017	\$689,000	2018	\$278,000	\$27,000	\$1,021,000	Barrow County



Table 7: Railroad Crossing Improvement Cost Estimates

Map ID	Location	Description	Year PE	Year ROW	Year CST	Total Estimated Cost	Lead Agency
R-4	Broad Street	Pre-Signal and pre-emption to prevent queueing across rail, sidewalks	2016	2017	2018	\$70,000	Barrow County with CSX assistance
R-5	Jefferson Street	Pre-Signal to prevent queueing across rail, signage	2016	2017	2018	\$70,000	Barrow County with CSX assistance
R-8	CSX Railroad at M-5406 Center Street	Signage	2016	2017	2018	\$2,000	Barrow County with CSX assistance
R-2	Horton Street	Pre-signal to prevent traffic queueing across rail	2016	2017	2018	\$70,000	Barrow County with CSX assistance
R-7	Bankhead Highway	Maintenance and improvements to ground clearance for trucks	2016	2017	2018	\$147,000	Barrow County with CSX assistance
R-1	Carl-Midway Church Road	Maintenance, pavement improvements	2016	2017	2018	\$170,000	Barrow County with CSX assistance
R-3	Harold Day Road	Maintenance, barrier and flashing light installation	2031	2032	2033	\$250,000	Barrow County with CSX assistance