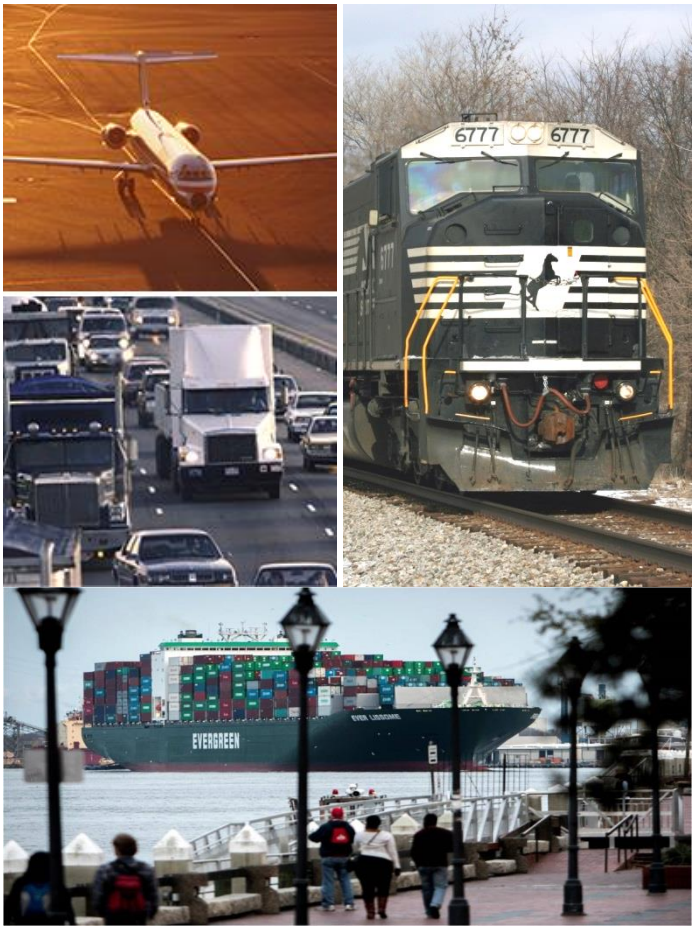
Atlanta Regional Freight Mobility Plan Update

Final Report

May 2016



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ARC
ATLANTA REGIONAL COMMISSION

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1.0 INTRODUCTION

The freight planning efforts of the Atlanta Regional Commission (ARC) focus on developing a framework for facilitating and enhancing goods movement in the region, improving economic competitiveness, and minimizing negative environmental and community impacts. In 2008, ARC completed the Atlanta Regional Freight Mobility Plan, the first freight plan for the metropolitan Atlanta Region. The goal of the plan was to enhance the region's economic competitiveness by providing efficient, reliable, and safe freight transportation while maintaining the quality of life in the region's communities. The purpose of that plan was to:

- Conduct a comprehensive regional study of freight, goods, and services mobility needs;
- Develop a framework to proactively address freight movement mobility needs and challenges in the Atlanta Region; and
- Examine all modes of freight transportation with emphasis on air, rail, and trucking.

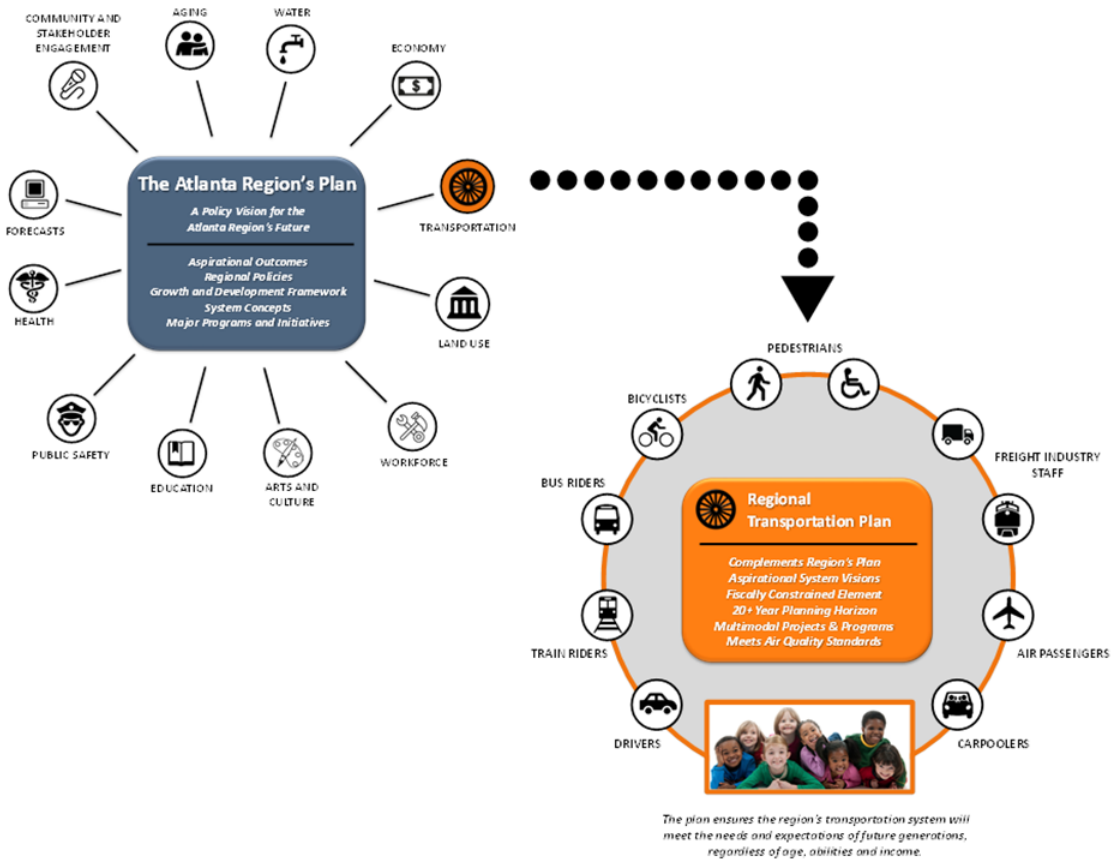
The prior Atlanta Regional Freight Mobility Plan was formulated before the Great Recession and much has changed. Federal legislative requirements in 2012's MAP-21 and the Fixing America's Surface Transportation (FAST) Act of 2015 require that MPO plans be performance driven, tie performance to national goals, and stipulate national freight goals that encompass such factors as productivity, efficiency and resilience, investment for economic competitiveness, utilization of advanced technologies, and reduced environmental impacts. Freight markets have also changed. Manufacturing is returning to US shores and the Southeast is expected to continue to be a prime beneficiary due to its favorable business environment. Therefore, this freight mobility plan update serves as a guiding planning document to support the region's strategies related to freight movement. The plan builds on previous planning efforts, evaluates recent changes, and identifies potential future freight needs in the region.

The primary purposes of the Atlanta Regional Freight Mobility Plan Update are the following:

- Assess the current plan against the latest understanding of existing conditions and forecasts;
- Update the plan based on the latest federal, state, and Atlanta regional policies;
- Support the development of a FAST Act compliant Regional Transportation Plan (RTP) as it relates to applicable freight provisions;
- Identify projects of national, state, and regional significance; and
- Define a path forward for project investment and establishment of responsive strategies and initiatives.

This Update is the freight component of the Regional Transportation Plan, which is itself the transportation element of *The Atlanta Region's Plan*. As Figure 1-1 illustrates, freight fits into the larger picture of transportation, and more generally into the life of the region and its preparations for the future.

Figure 1-1: *The Atlanta Region's Plan* Framework



A vision for freight and a set of freight objectives that serve the six *The Atlanta Region's Plan* goals are defined in this Update. The whole is structured around the overarching vision established for *The Atlanta Region's Plan*, which is illustrated in Figure 1-2 and follows:

"Win the Future through world-class infrastructure, a competitive economy, and healthy livable communities"

Figure 1-2: *The Atlanta Region's Plan* Vision

1.1 Freight in Atlanta

Situated near the foot of the Appalachian mountain range, Atlanta has been a freight and transportation center since its founding as Terminus in the 1830's. The Metro Atlanta Region today is the most important freight location in the southeastern US because of the size of its economy, population and manufacturing base, its role as a multistate distribution hub and its associated relationship with the Port of Savannah. It is a crossroads for highway, rail, air and ocean freight and a prime asset in the American and global system of commerce. These characteristics are synergistic. The transportation network enables commerce, commerce creates economies for the network, and together they bring jobs and an abundance of affordable goods to the population. These are exceptional endowments that allow the region's vibrant culture to thrive, because the fundamental needs of everyday life are well provided for.

Endowments can be easy to take for granted, because when they work well, they can seem invisible. It takes a disruption like the winter storm of January 2014 to bring reminders that the food on the table depends on the truck getting through to the grocery store. At a deeper level, the interdependencies of freight, commerce, and home life are reminders that each element requires tending. The region's advantages bring growth, yet when growth exceeds capacity, economies are lost and Metro Atlanta could become a good location that cannot sustain good performance. Members of industry warn of this now. What is needed is a program of system investments and strategic initiatives such as those which this plan puts forward, and recognition that the endowments received by future generations depend on the stewardship of citizens today.

1.1.1 Freight in the Region's Economy

Freight transportation principally does two things: it provides service to industry, and it provides service to population. For industry, it keeps businesses operational by bringing in supplies, and it keeps them competitive by giving them access to markets at a viable price. For residents, it keeps families functioning by bringing in everyday household goods, and it keeps them within budget by doing this at a reasonable cost. Many of the businesses served by freight in turn are serving the household market, by manufacturing consumer products or by distributing them through retail channels. The supply chains that produce and distribute goods, and the transportation networks and companies that support them, help make Metro Atlanta the regional economic center that it is, and benefit from its economic position.

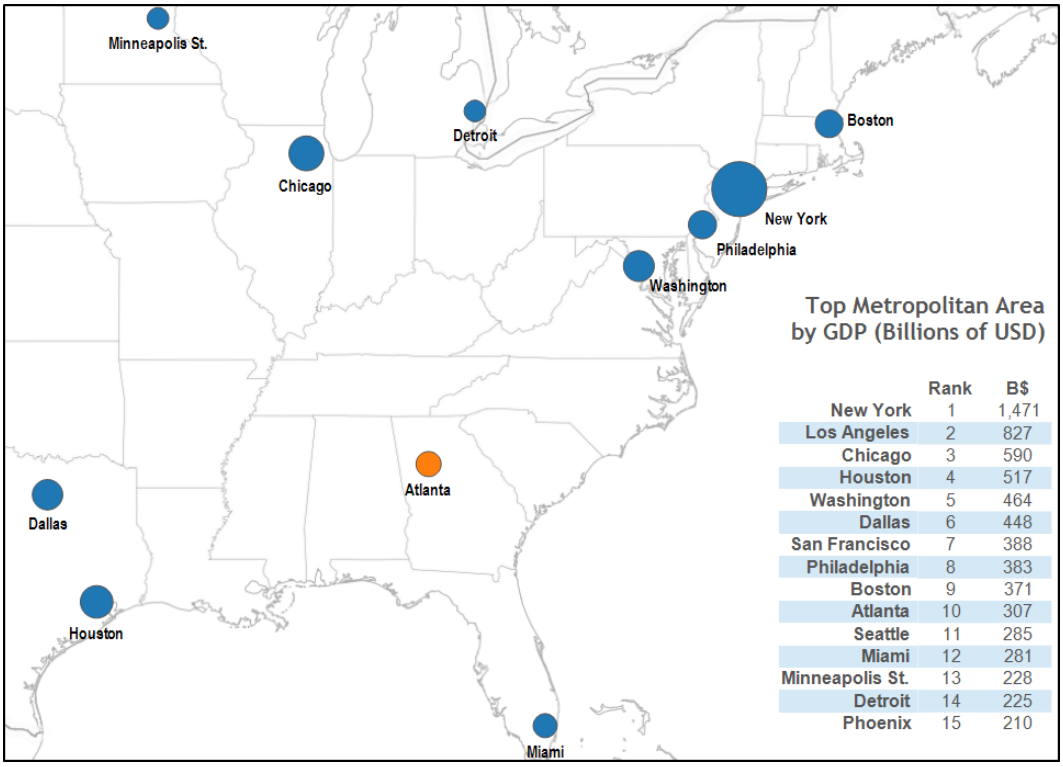
Metropolitan Atlanta in fact is a major hub for supply chain distribution, the main economic engine for the state of Georgia, and second only to Miami for population in the Southeast. As shown in Table 1-1 and Figure 1-3, respectively, Atlanta is the top economic center of the Southeast, with the biggest metropolitan manufacturing employment base and the largest gross domestic product (GDP). For the nation as a whole, Atlanta was ranked the eleventh largest manufacturing center by employment in 2013 and the tenth largest metropolitan area by gross domestic product (GDP).

Table 1-1: Top 15 US Manufacturing Centers by Employment, 2013

Rank	Metropolitan Statistical Area	Manufacturing Employment
1	Los Angeles	508,526
2	Chicago	386,575
3	New York	338,127
4	Dallas	231,789
5	Houston	223,777
6	Detroit	207,036
7	Minneapolis	176,604
8	Philadelphia	168,032
9	Boston	152,822
10	Seattle	152,339
11	Atlanta	133,107
12	Cleveland	121,442
13	Milwaukee	113,926
14	San Francisco	105,958
15	San Diego	100,475

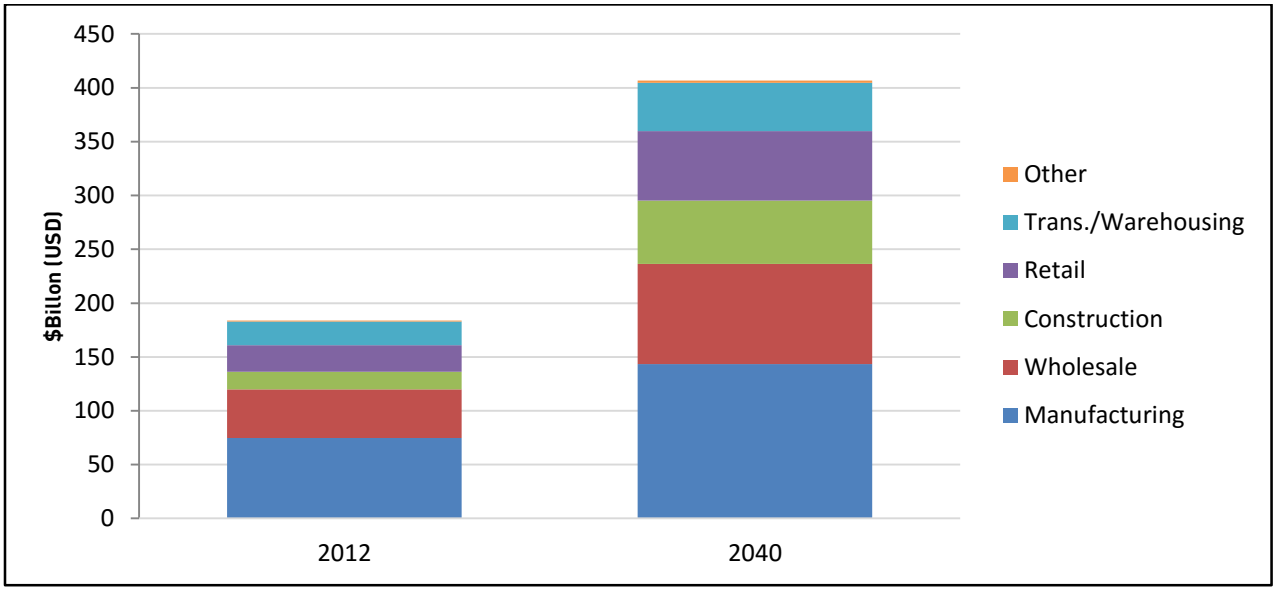
The supply chains of the Southeast that drive its manufacturing, distribution, and trade and are dependent on its freight transportation system contribute strongly to the Metro Atlanta economy. As shown in Figure 1-4, output from freight dependent industries contributes 38 percent of regional GDP. This translates to almost two out of every five dollars in the Metro Atlanta economy dependent on freight, with output from these industries more than doubling from $184 billion in 2012 to $407 billion in 2040.

Figure 1-3: Top Metropolitan Areas by GDP (Billions, US Dollars)



Source: 2013 Bureau of Economic Analysis, US Department of Commerce

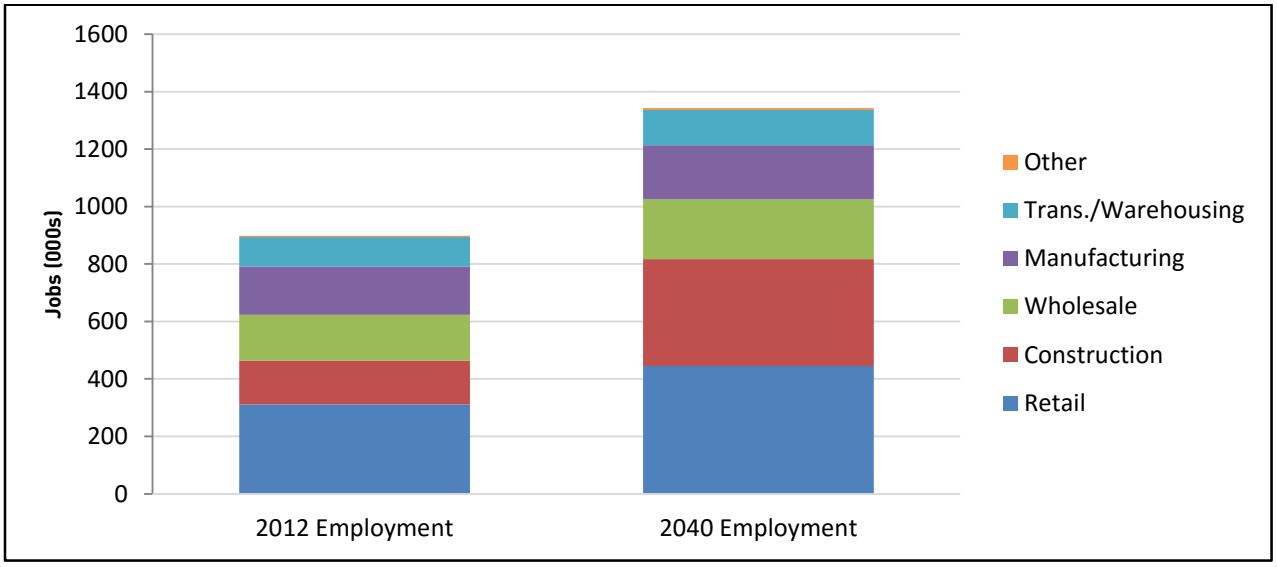
Figure 1-4: Freight Dependent Industries



Source: REMI for ARC

The jobs contribution from freight dependent industries also is strong. Nearly one-third of Metro Atlanta employment is in industries that rely substantially on freight transportation. As shown in Figure 1-5, freight dependent jobs are forecast to grow from 900,000 in 2012 to more than 1.3 million in 2040.

Figure 1-5: Freight Dependent Jobs



Source: REMI for ARC

Daily life is freight dependent as well. The food in home refrigerators and the fuel in the gas tanks of cars need refilling after a number of days. The retail outlets that act as supply points are themselves continually resupplied by a regular flow of freight. Table 1-2 illustrates this by showing the typical period of time for which supermarkets maintain in-store supplies; the table comes from national research but Metro Atlanta companies report similar patterns.

Table 1-2: Supermarket In-Store Supplies

Type of Goods	Days' Supply
Prepared Foods	1 Day
Dairy and Eggs	2 Days
Produce, Meat, Fish	1-3 Days
Dry Goods	Up to 7 Days

Source: National Cooperative Freight Research Program (NCFRP) Report 14

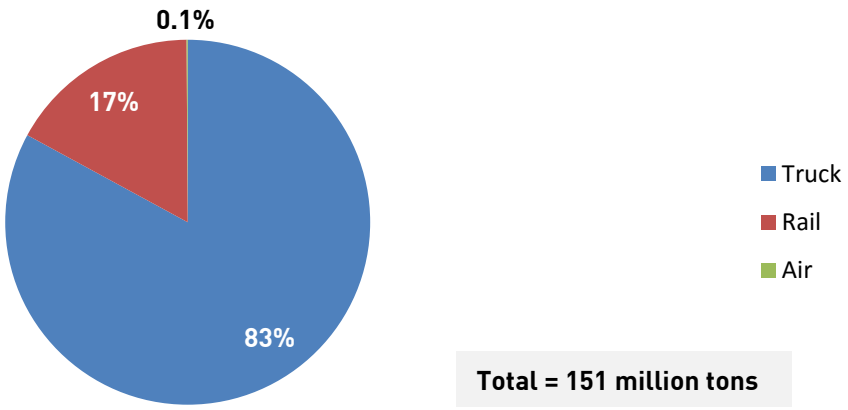
Supermarkets receive freight deliveries daily. The table indicates that without such service - and without the transportation infrastructure on which it depends - supermarkets would experience shortages in a day and face empty shelves within a week. The effect on households would be nearly immediate. The point is that freight transportation is a continuous activity that supports the ongoing life of the region, from the level of the total metropolitan economy down to the level of the gas tank and dinner table.

1.1.2 Freight Activity in the Region

Metro Atlanta is well served by every mode. It is a freight transportation hub at the intersection of three interstate highways, with direct service by the two principal freight railroads of the eastern United States, the main international gateway for one of the world's top airlines, and multimodal connections to one of the largest container ports on the North Atlantic Ocean. A full modal array is a key criterion for industries when they select a location for new operations or expansion of existing ones, and it is common for businesses to directly or indirectly employ a portfolio of modes. In addition, a key advantage of hubs is the breadth of markets receiving high quality transportation service, making them preferred places for staging goods. The range and quality of modal options supported in Metro Atlanta are thus a significant way the region attracts and retains jobs.

Trucking: As Figure 1-6 illustrates, trucking is the workhorse of the system, carrying nearly three-quarters of the 176 million tons of freight generated and/or consumed in the region. This includes the connection that trucking provides between the business establishments of the region and the rail, air, and marine facilities they utilize that may be miles away from their premises. Truck volumes, as illustrated in Figure 1-7, incorporate freight that passes through the region traveling between other parts of the country, which are excluded from the tonnages cited in the chart below.

Figure 1-6: Modal Distribution of ARC Regional Freight Tonnage (2013)



Source: 2013 Transearch Database. (Note: Numbers may not sum to total due to rounding.)

The penetration that trucking achieves to all parts of the region can be seen in Figure 1-7, which is reproduced from a later section of this report providing complete multimodal freight profiles. The map depicts the numbers of trucks on the Atlanta Strategic Truck Route Master Plan or ASTRoMaP System, which was designed and adopted by ARC in 2010 as the core roadway freight network for Metro Atlanta. Interstate highways are the high volume routes, but facilities such as SR 316, SR 6, and Fulton Industrial Boulevard also carry substantial volumes – and the key observation is that trucks reach everywhere.

Figure 1-7: Truck Volumes on the ASTRoMaP System

Source: Georgia Department of Transportation, Atlanta Regional Commission

Marine: As the distribution hub of the Southeast, Atlanta has a symbiotic relationship with the Port of Savannah. Goods imported through Savannah travel to Metro Atlanta distribution centers, where they are mixed with products from elsewhere in the country and world, then shipped out to businesses and consumers in Atlanta and throughout the Southeastern states. Trucks can reach Atlanta from Savannah in half a day, both major railroads offer regular service, and exports from Atlanta factories are able to follow the reverse route. Over 70,000 truckloads travel annually between Atlanta and the Port of Savannah, along with three intermodal trains daily. This relationship has served as a catalyst for the port becoming the top container facility in the Southeast, and the fourth largest container port in North America, with strong prospects for growth as expansion of the Panama Canal brings larger ships to US shores.

The prominence of the Atlanta and Savannah metropolitan regions as the freight hubs of Georgia is apparent in Figure 1-8. This figure shows the total tonnage for all modes and directions by county for the year 2013. The data confirms that the heaviest freight activity statewide occurs in the Atlanta and Savannah metropolitan regions.

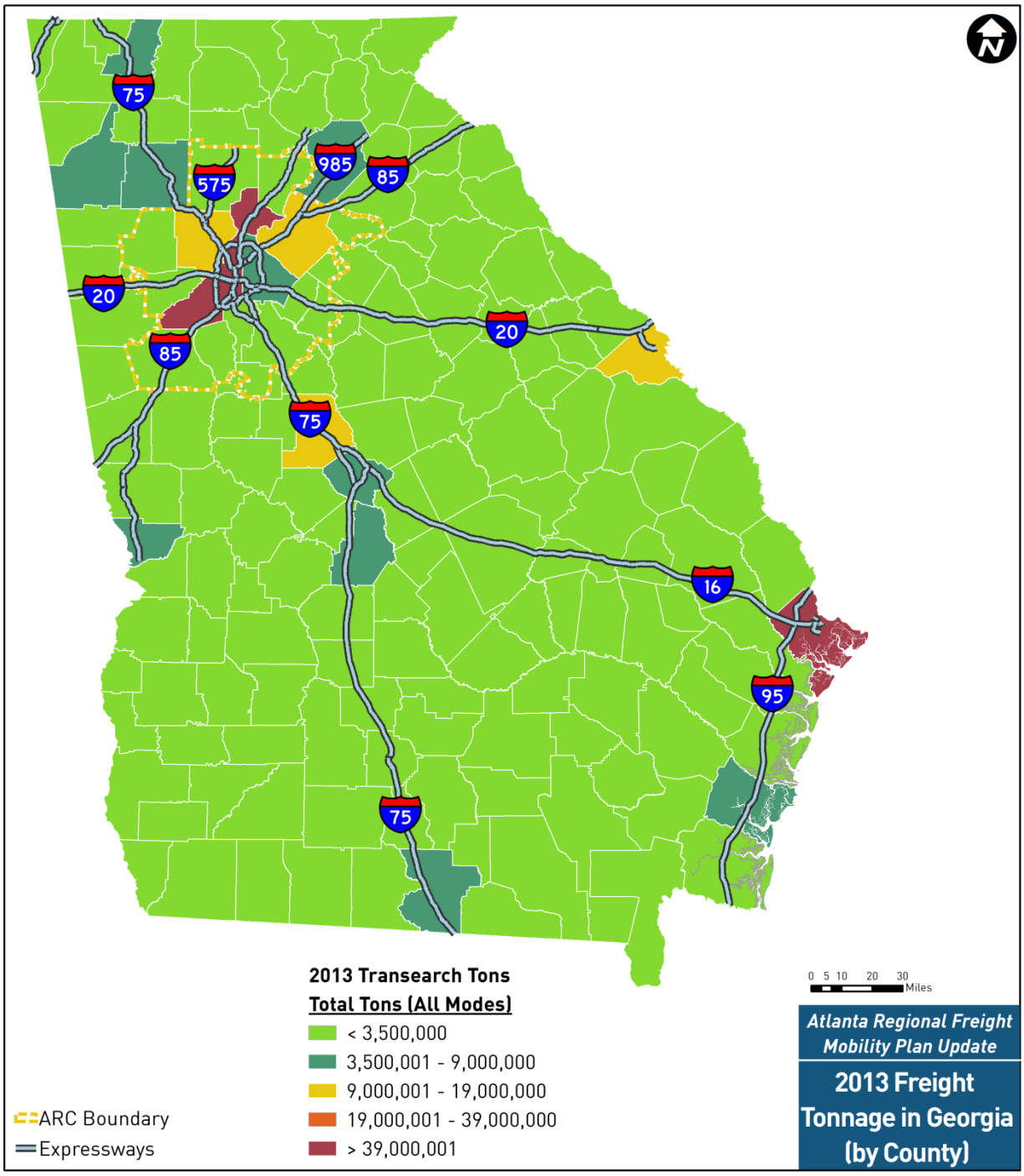
The relationship also has strengthened the competitive position of Atlanta as an effective site for distribution and manufacturing facilities. The growth of logistics facilities in Henry County in recent years reflects this, because of the county's location on the main route from Savannah (I-75, connecting with I-16) and at the southeastern edge of the region's traffic congestion. At approximately 220 miles from Savannah, Henry County is nearly at the limit of the distance a single truck driver can travel from the port, deliver shipments and return to the starting point within the time span of one work shift (typically 11 hours). This makes for a very efficient operation, reinforcing the competitive attractiveness of Atlanta-Savannah as a trade route to the markets of the Southeast. Combined, the Atlanta and Savannah metropolitan regions are the state of Georgia's two primary freight centers. Figure 1-8 illustrates this point by depicting total state freight tonnage (originated plus terminated) by county, and showing the Atlanta and Savannah regions with the greatest concentrations of volume.

Rail: Over a quarter of the freight tonnage in Metro Atlanta is handled by rail, and 40% of the rail tonnage is international and domestic intermodal containers shipped to and from the region. CSX Transportation (CSXT) and Norfolk Southern (NS) are the two major ("Class I") railroads of the eastern US, and both maintain a pair of intermodal facilities in the region: one each inside the Perimeter and the others at Fairburn (CSXT) and Austell (NS). A great variety of other products are transported by rail for industrial users, chief among them chemical and food products, coal, construction aggregates, and paper. A map of Metro Atlanta rail facilities illustrated in Figure 1-9 is reproduced from the later section of this report. It shows the considerable regional coverage afforded by rail and underscores its importance to the freight system and economy.

Air: Air cargo is a low tonnage component of the freight portfolio by comparison to other modes, but its importance is greater. Air carries high value and perishable products, and more significantly, it acts as the fail safe for supply chain systems. Because competitive supply chains run on minimal inventory, their need for reliable freight transportation is high, and when failures and disruptions inevitably occur, the crucial way to recover is through expedited shipping by air. Air is the most expensive form of transportation and most businesses strive to minimize its use, but its availability and quality are vital to supply chain operations. Two of the top air commodities in the Atlanta market exemplify the two roles it serves: electrical equipment, which is of high value, and transportation equipment, which is very likely to be associated with the just-in-time operations of automobile assembly plants in neighboring states and the Tier I auto parts suppliers in Metro Atlanta.

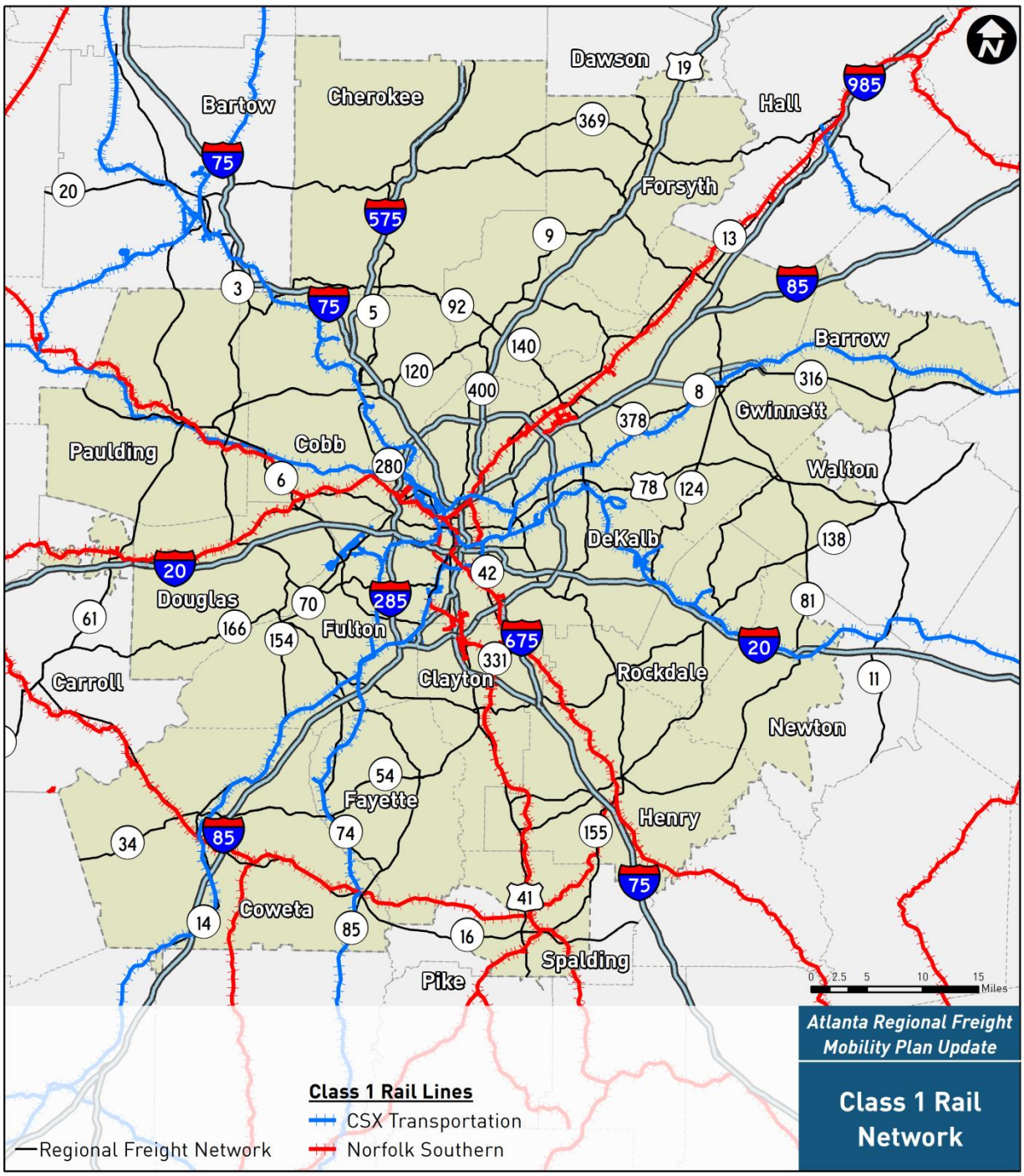
Air cargo in Atlanta is carried primarily by the dominant, integrated domestic carriers UPS and FedEx, who connect from HJAIA to their national hubs in Louisville, Memphis, and Indianapolis. International cargo is a different story. While UPS and FedEx offer global services, international air cargo mostly travels in the bellies of wide body passenger aircraft, for which the Delta Airlines principal hub at HJAIA offers extensive service and connections through its own operations as well as with partner airlines to European and Asian markets.

Figure 1-8: Georgia's Freight Centers



Source: 2013 Transearch Database, Georgia Department of Transportation

Figure 1-9: ARC Region Rail Network



Source: Region Rail Network: U.S. Bureau of Transportation Statistics National Transportation Atlas Database.

1.1.3 Looking Ahead

This report examines the freight system in metropolitan Atlanta from a variety of perspectives: a vision about who we are and objectives for carrying us forward, the modal and industrial traffic in the region, the market trends that will change the traffic, the performance challenges the region faces, and the capacity and operational projects that can address those challenges, using today's resources and tomorrow's. It also sets forth a set of strategies and initiatives that go beyond familiar project responses into resiliency

planning and redevelopment, and especially into the areas of connected vehicles and home delivery that can radically alter the way that freight is transported and the population is served. Atlanta intends to win the future. It has an enviable position in the geography and economy of the American South. The events coming over the horizon that can disrupt or cement that position are visible today. The future is won by preparing for it. This requires not only an investment plan, but the effort to understand and channel new forces, and to help our communities take them in hand.

1.2 Study Process

The update of the freight mobility plan occurred over an eight month period, beginning in April 2015. The process to update the freight mobility plan was data driven, but also provided opportunities for key stakeholders to be engaged in identifying freight needs and opportunities and developing strategies for effective freight planning in the Atlanta Region. This process culminated in the identification and prioritization of freight projects.

1.3 Stakeholder Outreach

Stakeholder engagement was an integral part of the Atlanta Regional Freight Mobility Plan Update, with activities occurring throughout all phases of the project. The purpose of the outreach strategy was to create an awareness of the update to the freight mobility plan, understand current developments and challenges in the markets served by freight, provide feedback opportunities, and disseminate project-related information.

Obtaining the input of key stakeholders was critical to identifying and understanding freight needs and challenges in the Atlanta Region and developing strategies and recommendations on how these might best be addressed.

The targeted audiences for outreach included:

Different outreach methods were used to obtain opinions and responses from key stakeholders and structured around milestones at key stages in the process. Outreach activities were conducted in the following methods:

- Bi-monthly meetings with ARC's Freight Advisory Task Force (FATF);
- Stakeholder interviews with freight industry professionals, local governments, and Community Improvement Districts (CID);
- An online questionnaire developed for ARC's Transportation Coordinating Committee (TCC); and
- Briefing presentations to ARC's TCC and Transportation Air Quality Committee (TAQC).

Additionally, ARC's existing freight webpage was utilized as a portal for materials such as FATF meeting agendas, meeting presentations, and interim and final deliverables.

1.3.1 Freight Advisory Task Force (FATF)

The Freight Advisory Task Force (FATF) was established in 2003 as part of the ARC's regional planning process. The FATF was convened throughout the study process and served as the Technical Advisory Committee (TAC). The FATF membership - comprised of public and private freight representatives including local governments, state and federal agencies, colleges and universities, supply chain managers, railroads, trucking and airport officials, third-party logistics providers (3PLs), developers, chambers of commerce, and CIDs - was utilized to guide the development of the freight mobility plan update, provide feedback on draft deliverables, and aid in the implementation of the completed freight mobility plan update. The FATF meetings were held throughout the duration of the study in order to vet technical approaches and methodologies; discuss goals, objectives, and performance measures; and discuss priority freight projects, prioritization, and policies. Table 1-3 summarizes the five FATF meetings and the topics that were discussed at each meeting.

Table 1-3: Freight Advisory Task Force Meetings

Meeting Number	Meeting Date	Meeting Topics
1	April 29, 2015	Overview of the freight mobility plan update
2	June 18, 2015	Discussion of regional freight mobility vision and goals
3	August 13, 2015	Discussion of performance measures and preliminary projects
4	October 14, 2015	Discussion of trade trends, freight clusters and regional performance, and project prioritization
5	December 3, 2015	Briefing on the draft update of the freight mobility plan and discussion of policy recommendations and correlation to *The Atlanta Region's Plan*

1.3.2 Stakeholder Interviews

Between June 2015 and August 2015, 17 one-on-one interviews were conducted with key freight stakeholders ranging from CIDs to developers to major shippers and carriers in an effort to identify first-hand freight needs and challenges in the metropolitan Atlanta Region. In the short time frame to complete the freight mobility plan update, a limited number of stakeholders were selected for the interviews that would comprise a cross-section of the region and offer a diverse mix of perspectives on freight needs, opportunities, and challenges in the region. These key freight stakeholders represented public sector partner agencies, private sector companies engaged in freight-related business activities, and freight trade associations and included the following:

- Airport West CID
- Boulevard CID
- The Coca-Cola Company
- DASCHER Transport of America, Inc.
- FedEx Corporation
- Gwinnett Village CID
- Georgia Department of Transportation (GDOT) Intermodal Division
- Henry County Development Authority
- The Home Depot
- The Kroger Company
- Majestic Realty Company
- McDonald Development
- Metro Atlanta Chamber
- Norfolk Southern
- Ryder Logistics
- South Fulton CID
- US Foods

1.3.2.1 Highlights of Findings: Public Sector

Discussions with public sector agencies identified key features and upcoming considerations, including the following:

- General land use description and locations of primary industrial development
- Top industries
- Areas of focus regarding freight improvements
- Existing and proposed projects and studies for freight improvements

Citizens within these jurisdictions are primarily concerned with the high volume of truck traffic and the distribution of trucks. Truck traffic is a common issue across many of these municipalities. For example, a 2008 truck study completed for the Gwinnett Village CID revealed that trucks comprise approximately five to six percent of traffic in the area.

Interviewees indicated that their biggest concerns and areas of focus included unclogging bottlenecks, improving geometric roadway design, keeping pace with current demand, addressing public safety, and improving access, mobility, and safety. For example, Henry County's population is projected to double from 211,000 in 2013 to over 400,000 in 2040. The county is also experiencing increased industrial growth due to recent expansion and relocations of freight-related industries. This growth in population and industrial development highlights their focus to make freight-related investments in the county.

Interviewees also expressed a desire to better understand freight from a regional perspective, i.e. why trucks use certain routes and the alternative routes used by truck drivers. One suggestion was to conduct a focus group with truck drivers to provide clarity on how they navigate around the region. Interviewees were also interested in pilot projects related to truck collector roads to analyze localized truck circulation and innovative technology (e.g. red light cameras to detect truck speeds).

1.3.2.2 Highlights of Findings: Private Sector

Private companies report a constant effort to balance the competing demands of customer service and efficiency, affecting where their facilities are located, their service areas, and the routes selected to make deliveries. The quality of customer service and the cost efficiency of providing it are substantially influenced by the quality of the region's logistics operating environment, consisting of such factors as infrastructure conditions, facility access, roadway safety and performance risks. One company summarized its objective as "running the fewest miles necessary to make service" – but in Metro Atlanta's congested environment, they find that this can mean traveling 20 extra miles to avoid congestion and save 30 minutes. This means that the company absorbs the extra cost of traveling further in order to fulfill its time commitments to customers. Additional key highlights from this outreach include:

- Freight deliveries for many regional companies follow a stem and pocket pattern: for example, a truck might drive a 10 mile "stem" route across town to reach its delivery area, and then make a dozen deliveries within a "pocket" of several miles radius. Trucks that can drive their stem before rush hour do so, and the congestion they face is on access routes in the pocket. Other trucks cannot start early because they deliver freight arriving overnight from out of town, and their quality of service can depend on "the one fender bender that day" that turns highway congestion into gridlock.
- Companies strive to maintain service quality by building extra time into schedules and by limiting the number of deliveries each truck is assigned – but this is costly to do. One company aims for three work assignments or "turns" per truck per day, but achieves substantially fewer. Another company locates facilities at the edge of a service area so it can deliver against the flow of traffic, absorbing more travel miles than from a central location but saving time.
- Service is sensitive. Companies typically reported that they deliver to each business several times a week and as often as daily, implying that business inventories need steady replenishment and

performance failure on the logistics side means performance failure for the stores and factories awaiting goods.

- Companies cited a variety of locations posing material obstacles to freight mobility. They centered on the north side of I-285 and GA 400, including adjacent routes. There was significant concern for the capacity of interstates to accommodate expected growth, notably around the new Braves stadium and redevelopment of the former General Motors Doraville site – in other words, at both ends of the north side of I-285. There was concern on the south side of the region as well, particularly along I-75 toward McDonough; one respondent commented that "I-85 South is the only good corridor left."

The growth of e-commerce and retail home delivery is dramatizing both the logistics challenges companies described and the need for integration of freight into communities. Retail outlets must be placed "where the customers are" despite the difficulties of accessing them by truck. When the "customers" are at home, the access difficulty is greater. E-commerce services providing free delivery in exchange for membership fees reportedly are encouraging on-line ordering of everyday household goods, including bulky items like pet food and paper products; same day and even one hour e-commerce delivery service is available today in some parts of Atlanta. Traditional retailers are working out how to deliver from stores, although most stores were not designed for such functions. The general blurring of distinction between e-commerce and storefront retail is causing distribution facilities to rise in number and be located differently, in order to establish a balance of efficiency with a new and demanding set of customer service expectations.

Facility location overall is undergoing change and in some ways returning to its roots, but with a new generation of capabilities. Companies seeking tracts of inexpensive land can find they are "30 miles" from the region's core facing transportation costs that are "getting too high." For some large volume businesses, each mile outside of I-285 can add "a million dollars" to expenses.

Industry participants characterize Atlanta as the key place for Southeast distribution, but the fifth or sixth regional distribution location a company will add to its network, after larger markets like Chicago, New York, Los Angeles, and Dallas. The decision is driven by volume, which is a combination of the size of the company and the size of the market. As Atlanta's population continues to grow, its importance for distribution grows with it, even as rising land costs and congestion harm its competitiveness. The consequence has been that the region's importance and its competitiveness "have been playing against each other."

Warehouse and factory automation change this calculus by making smaller plots of land with shorter travel distances to market more viable. Automation makes it possible for facilities to store and retrieve more goods horizontally and especially vertically, with ceiling heights over 40 feet instead of 20-30 feet in traditional buildings; one new Metro Atlanta distribution center reportedly has ceilings up to 80 feet. Automated facilities require "a different building" and redevelopment of traditional building stock is thought to be coming in "5 to 7 years." However, redevelopment of a close-in industrial cluster such as Fulton Industrial Boulevard could support a "50-75 percent" increase in freight volume from the same acreage – in other words, a huge shift in the productive capacity of the region's land.

1.3.3 Online Questionnaire

An online questionnaire was created in June 2015 for the ARC's Transportation Coordinating Committee (TCC). The stakeholder interviews discussed in Section 1.3.2 focused on a selected cross-section of representatives from public sector agencies and private sector companies. However, the online questionnaire targeted the city and county transportation staff on the ARC's TCC to obtain feedback on freight-specific issues impacting local communities. A total of 27 respondents completed the online questionnaire, which collected responses on freight-specific transportation policies in place, types of projects considered to address freight-related issues, primary funding sources of freight projects,

recently implemented freight-related projects, important freight investments and barriers to implementation, and freight issues to be considered in the freight mobility plan update. A full copy of the online questionnaire and results are provided in Appendix B. Table 1-4 lists the broad freight issues identified in the online questionnaire and examples of important freight investments that can be or were currently being made to address these freight issues.

Table 1-4: Key Freight Questionnaire Topics

Most Common Freight Issues	Important Freight Investments
Truck traffic, congestion, and safety	Funding and construction of new interchanges
Railroad safety	Roadway widening and operational improvements
Roadway capacity and geometric design	Grade separation at railroad crossings
Freight traffic through neighborhoods and local streets	Truck-only lanes
Land use and infrastructure	

1.3.4 Summary of the Outreach Process

Some common themes were revealed as a result of the stakeholder interviews and the online questionnaire. These themes included the following needs:

- More efficient freight movement throughout the state,
- Address safety issues at railroad crossings; and
- Improve network mobility, reliability, and accessibility for freight and commuter travel.

The responses to the online questionnaire and comments during the stakeholder interviews also shed light on the differing priorities of local government and freight industry stakeholders on the focus of regional freight movement.

A summary of perspectives from these is included in Table 1-5. This feedback was factored into the assessment of freight trends, opportunities, and needs and used to develop freight strategies and initiatives for freight planning in the Atlanta Region described in Sections 5 and 7 in this freight mobility plan update, respectively.

Table 1-5: Outreach Priorities Summary

Local Government/CID Priorities on Regional Freight Movement	Freight Industry Priorities on Regional Freight Movement
Improve through traffic flow on local roads and state routes within their respective jurisdictions	Education and training needs within the industry to attract new talent to the workforce
Identify projects that focus on infrastructure, roadway, and traffic operations improvements to improve geometric design, mobility and circulation, and unclog bottlenecks	Increase public education on the freight industry and the impact it has on the economy
Reduce the amount of freight traffic on neighborhood roads and local streets	Construct new facilities to accommodate the increase in freight traffic and volumes
Increase in funding sources to implement freight-related projects	Alleviate congestion to make the network more reliable for deliveries
Lessen freight traffic impacts on land use and infrastructure	Adopt policies to accommodate the changing marketplace and spatial demands for distributions centers and warehouses
Identify alternative routes and circulation options for trucks	Improve geometric design to reduce damage to trucks

1.4 Report Structure

The report is organized into the following sections:

Section 1: Introduction – Provides study context, report structure, and describes the stakeholder engagement process and findings

Section 2: Vision, Goals, and Objectives – Outlines a freight vision and objectives consistent with the goals of *the Atlanta Region's Plan*

Section 3: Multi-Modal Freight System Review – Presents a summary of individual modal networks within the Atlanta Region

Section 4: Assessment of Performance Measures, Freight Trends, Opportunities, and Needs – Presents freight performance measures, and describes trends affecting freight movement in the metropolitan Atlanta Region, issues, and needs that pose obstacles to goods movement, and opportunities for future investments and initiatives

Section 5: Major Freight Activity Clusters – Details the key freight activity nodes and network performance on key roadways within the region

Section 6: Freight Project Prioritization – Details the screening process for identifying and prioritizing new freight projects for the metropolitan Atlanta Region

Section 7: Strategies and Initiatives – Presents strategic recommendations for freight planning

Section 8: Financing – Describes funding sources that may assist regional freight planning efforts in the future

Appendices

Appendix A – Project Prioritization

Appendix B – Questionnaire Results

Appendix C – ARC County Profiles

2.0 VISION, GOALS, AND OBJECTIVES

The Atlanta Region's Plan sets a theme for Atlanta to "Win the Future," with a threefold vision:

1) Providing world-class infrastructure;
2) Building a competitive economy; and
3) Ensuring the region is comprised of healthy and livable communities.

The *Region's Plan* goes on to state:

Atlanta is one of the world's most dynamic metropolitan areas, competing globally on the strength of our diverse population, robust economy, myriad cultural assets and attractive lifestyles. We will 'win the future' through intensive collaboration that honors and leverages the uniqueness of our communities.

Working in coordination with the FATF and TAQC, this plan sets forth a bold freight vision that embraces *The Atlanta Region's Plan* vision and amplifies it to better incorporate the unique needs of the goods movement and logistics industry. Continuing in the spirit of the "Win the Future" theme, it focuses specifically on Atlanta's role as not only the regional center of the South, but as a rising player in the global market. To this end, our vision for the region's goods movement industry follows.

ARC's Freight Vision

Metropolitan Atlanta will win the future, remaining and growing as the capital of the South by sustaining our stature through industry, trade, and cultural vitality, and by serving the people through enhancement of our role as a global hub for goods, services, and enterprise.

Atlanta already functions as the most significant freight center in the South – based not only on total GDP and employment, but also because of locational advantage as a distribution hub, functioning as the midpoint of the region with direct linkages to the container port at Savannah. To this end, the region operates as one of the most critical inland hubs for distribution throughout the country, serving as a logistics center not only for the South, but areas far beyond.

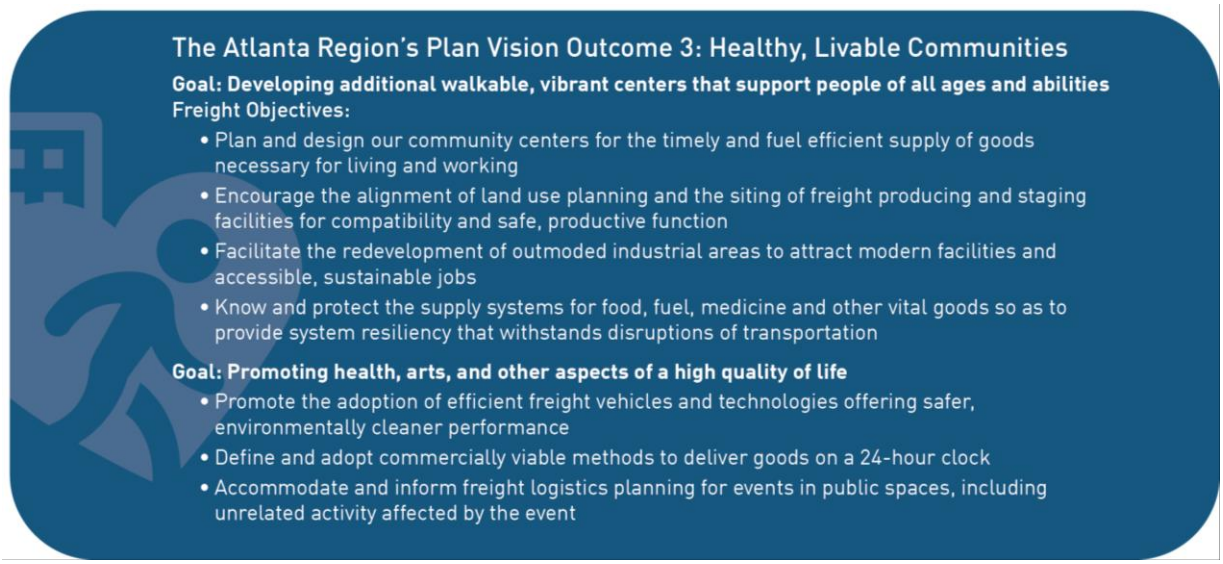
This plan also embraces the six goals of *The Atlanta Region's Plan* of which it is a part, and that aim to improve and expand Atlanta's infrastructure to increase the visibility of the region and compete in the global economy. Figure 2-1 shows the vision and goals as specified in *The Atlanta Region's Plan*. While not freight-specific, every one of the six goals is inherently linked to Atlanta's goods movement and logistics activity. *The Atlanta Region's Plan* document identifies an initial freight objective tied to the goal of a comprehensive network: that the Atlanta Region will ***support the reliable movement of freight and goods***. As shown in Figure 2-2, Figure 2-3 *and* Figure 2-4,this plan enlarges the objectives for freight by defining a further eighteen, all of them tied to *The* Atlanta Region's Plan goals and drawing out the facets of freight they contain. The six goals of *The* Atlanta Region's Plan are detailed below, with associated freight objectives alongside each goal.

Figure 2-1: The Atlanta Region's Plan – Vision and Goals

Figure 2-2: Goals and Freight Objectives - Competitive Economy

Figure 2-3: Goals and Freight Objectives - World Class Infrastructure

Figure 2-4: Goals and Freight Objectives - Healthy, Livable Communities



3.0 MULTI-MODAL FREIGHT SYSTEM REVIEW

Over 151 million tons of freight moved into, out of, and around the Atlanta Region in 2013. As Table 3-1 illustrates, the vast majority of these freight flows are handled by motor carriage. Approximately 83 percent of the tonnage was carried exclusively by truck and nearly 17 percent was moved by rail. Less than one percent of the freight tonnage in the Atlanta Region is moved by air cargo. By direction, just over 71,000 tons of freight was shipped into Metro Atlanta in 2013. Almost 40,000 tons were shipped out of the region and nearly 41,000 tons moved internally within the metropolitan area.

Of the commodities that comprise the 151 million tons of freight with one or more endpoints in the Atlanta Region, Secondary Shipments (i.e. deliveries from warehouse and distribution centers as well as drayage movements) account for approximately 21 percent of the total. Drayage refers to a truck pickup or delivery to a seaport, inland port, airport, or intermodal terminal as part of a larger freight movement. Often, it occurs within a single urban area, whereas deliveries from distribution centers can range over several hundred miles. The significant presence of Secondary Shipments in the Atlanta Region is likely due to the several rail intermodal terminals located within the region.

Other commodity groups that account for a significant share of freight tonnage in Metro Atlanta include Nonmetallic Minerals and Clay, Concrete, Glass, and Stone. Both of these commodity groups consist of dense, heavy items that are usually shipped less frequently but in large quantities. Together those commodity groups, along with Secondary Shipments, comprise nearly 50 percent of the total tonnage in the region.

Table 3-1: Freight Flows (tonnage) in the Atlanta Region

Direction	Inbound	Outbound	Local	Total	Percent of Total
Truck	54,222,761	31,406,110	40,274,889	125,903,760	**83%**
Rail	16,825,270	8,202,260	179,200	25,206,730	**17%**
Air	107,077	110,312		217,389	**<1%**
Total	71,155,108	39,718,682	40,454,089	151,327,878	**100%**
Percent of Total	**47%**	**26%**	**27%**	**100%**	

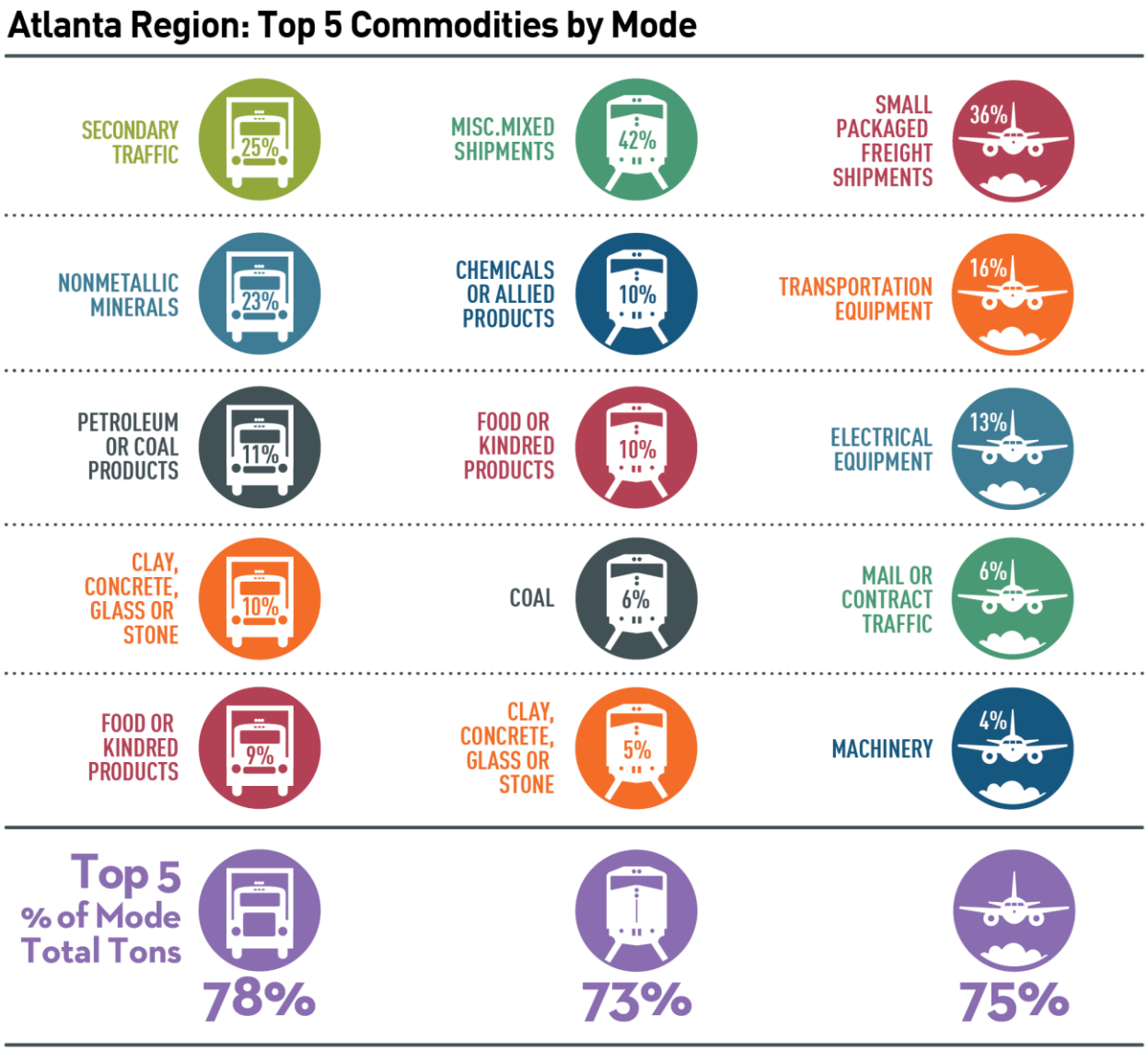
Source: 2013 Transearch Database. (Note: Numbers may not sum to total due to rounding.)

Freight activity in the Atlanta Region will grow as the region's population grows and as manufacturing, warehousing and distribution center activity continues to expand. Based on the forecast from the federal Freight Analysis Framework version 3.5, total freight in the Atlanta Region will grow by 76 percent between 2013 and 2040. Using this growth rate and the Transearch 2013 data, it was calculated that total freight in the Atlanta Region will climb from 151 million tons in 2013 to 266 million tons in 2040.

Metropolitan Atlanta's highway system is the primary mode by which most goods are moved into, out of, and within the region. **Error! Not a valid bookmark self-reference.** displays the top five commodities on the basis of 2013 tonnage carried by trucks in the Atlanta Region, as well as the top five commodities by rail and air. The percentage of modal tonnage represented by each commodity is noted in the icons, and the total for the top five is reported at the bottom. In every case, the top five commodities account for about three-quarters of the volume. Among the trucked commodities, Secondary Shipments (distribution and drayage movements) are the highest by total tonnage at nearly 32 million tons – approximately 25 percent of total truck flows. Drayage movements are closely followed by Nonmetallic Minerals at just over 29 million tons, which equals just over 23 percent of total truck flows. The third and fourth highest commodity groups are Petroleum and Coal Products and Clay, Concrete, Glass and Stone, respectively 11 percent and 10 percent of truck flows. The prevalence of these commodity groups on the Atlanta Region's highway system can have important implications for congestion and pavement damage as three of the top

five - representing 44% of the tonnage - are dense, heavy materials that can disproportionately contribute to roadway deterioration.

Table 3-2: Atlanta Region Commodity Distribution (tonnage) by Mode



Source: 2013 Transearch Database.

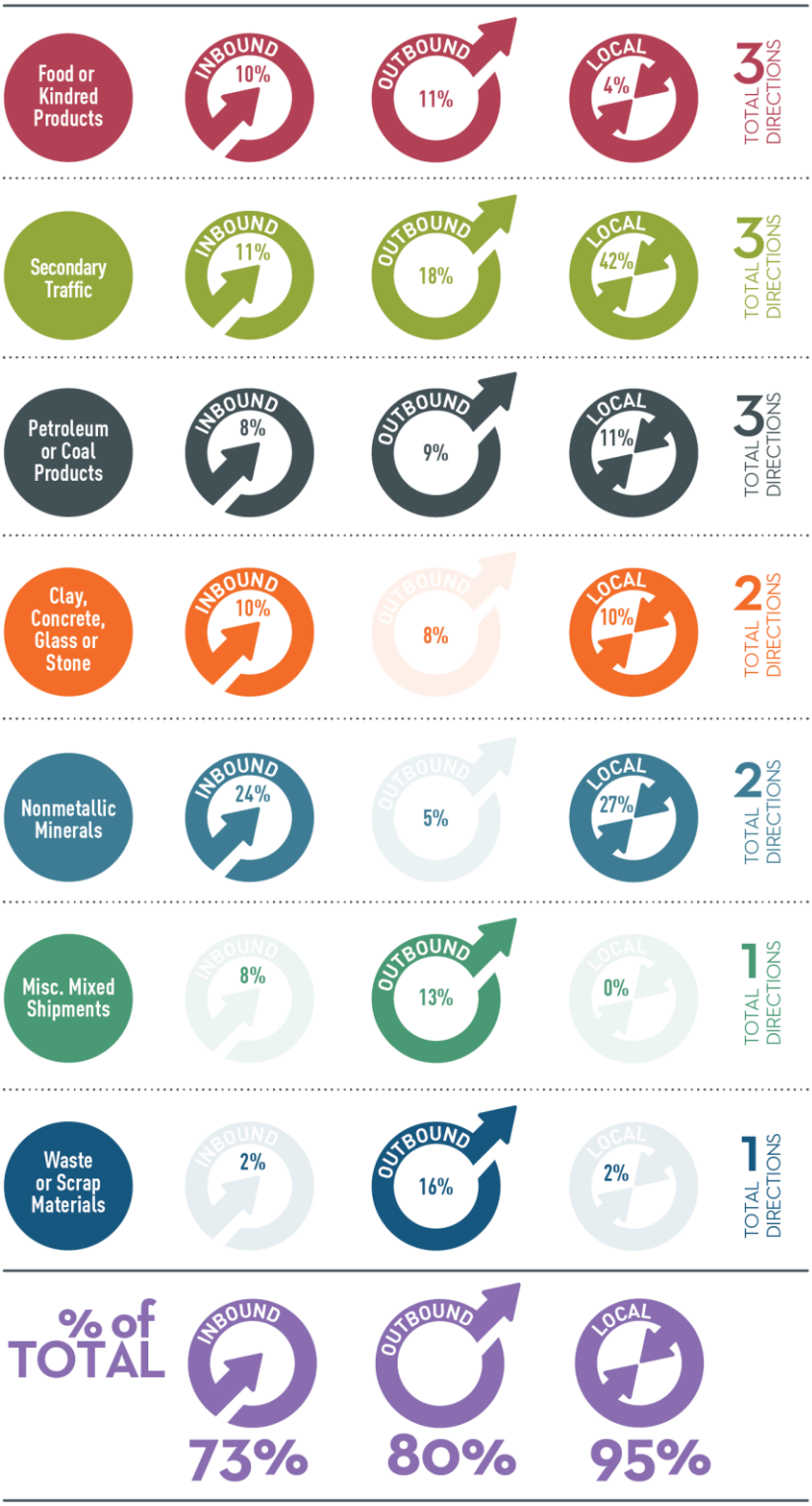
Note: Secondary traffic refers to warehouse & distribution traffic. Additionally, it includes truck pickup and delivery for rail and air modes. Miscellaneous Mixed Shipments is a catch-all category principally used for rail intermodal freight, where containers and trailers are shipped without identification of contents.

The top seven commodities in the Atlanta Region account for 81 percent of the total tonnage. Between them, they also account for all of the top five commodities for each direction of travel: inbound, outbound, and local (Table 3-3). The Table highlights the top five in each direction by showing them in darker colors: thus Food is a top commodity in every direction of travel, whereas Waste is a top commodity just in the outbound direction. (The bottom of the Table also shows the percentage of the region's total tonnage in each direction that is captured by its seven top commodities, ranging from 73 percent of inbound to 95 percent of local.) As indicated above (in Table 3-1), inbound is the region's predominant direction of travel at 47 percent of tonnage, reflecting metropolitan Atlanta's large consumer base. The key inbound commodities are food, fuel (petroleum), and goods from warehouses (secondary traffic), plus construction aggregates (nonmetallic minerals and clay, concrete, glass and stone) – all of them

characteristic of a consumer market. As a major distribution hub, warehouse goods are important in all directions, and are the largest component of local traffic.

Table 3-3: Atlanta Region Commodity Distribution (tonnage) by Direction

Atlanta Region: Top 5 Commodities by Direction



Source: 2013 Transearch Database.

Note: Secondary traffic refers to warehouse & distribution traffic. Additionally, it includes truck pickup and delivery for rail and air modes. Miscellaneous Mixed Shipments is a catch-all category principally used for rail intermodal freight, where containers and trailers are shipped without identification of contents.

3.1 Trucks

Key truck corridors in the Atlanta Region can be identified by examining truck counts. The highest truck count locations in the region are all located on the interstate highway system demonstrating that it is the workhorse for moving goods by truck. The top truck segments along the region's interstate highway system are:

- I-75 in the northern part of the Atlanta Region just outside of I-285
- I-85 in the northern part of the Atlanta Region just outside of I-285
- I-285 on the "top end" (between I-75 and I-85 on the north side of the region)
- I-285 on the "western wall" (between I-75 and I-85 on the west side of the region)

These locations have the highest truck volumes because they are used for all three primary truck trip types:

- Local trucks that are distributing goods to locations for final consumption;
- Inbound and outbound trucks that are used by Metro Atlanta businesses to trade goods with neighboring states; and
- Through trucks that pass through the Atlanta Region without making any stops.

Figure 3-1 shows daily truck volumes along the entirety of the ASTRoMaP system (which incorporates the interstate highway network). Volumes along the top end of I-285, the southwestern portion of I-285, I-75 North, and I-85 North exhibit among the highest volumes over the longest stretches of roadway. Parts of I-75 South, I-85 South, the Downtown Connector (I-75/I-85), and I-20 East and West all reach the highest volumes over smaller sections of highway. In terms of long haul corridors, I-75 between Atlanta and Chattanooga has the highest truck volumes, followed closely by I-85 between Atlanta and South Carolina. Truck volumes inside I-285 tend to be at the lower end of the top 10 locations indicating that the ban on through truck trips within I-285 works at least reasonably well.

Table 3-4: Top Truck Count Locations on Interstates

Rank (Map ID)	Roadway	County	Location	Truck AADT
1	I-75	Cobb County	North of I-285 at Terrell Mill Road	30,400
2	I-75	Cobb County	South of I-575 Split	24,020
3	I-285	Fulton County	Between I-20 and US 78/278	23,650
4	I-285	Fulton County	North of I-85 near Washington Road	23,472
5	I-85	Gwinnett County	Between SR 140/ Jimmy Carter Blvd. and Indian Trail Road	23,329
6	I-285	Fulton County	Between SR 54/ Jonesboro Road and Forrest Park Road	19,061
7	I-285	Clayton County	Between US 19/ 41 and Conley Road	18,939
8	I-285	DeKalb County	Between SR 10/ 154/ Memorial Drive and Church Street	18,243
9	I-85	Gwinnett County	South of I-85/I-985 Split	17,683
10	I-285	DeKalb County	Between Chamblee-Tucker Road and Henderson Mill Road	17,135

Source: GDOT Office of Transportation Data Geocounts Database, 2014.

Table 3-5: Top Truck Count Locations on the ASTRoMaP Network

Rank (Map ID)	Roadway	Location	Truck AADT
1	SR 316	Between SR 120 and Walther Blvd.	6,192
2	SR 316	Between Cedars Rd and Hurricane Trail	5,040
3	SR 6/Thornton Road	Between I-20 and Pointe Ct.	5,029
4	Fulton Industrial Blvd.	Between Patton Dr. and Marvin Miller Dr.	4,582
5	SR 20/ Buford Dr.	Between Plunketts Rd. and Sudderth Rd. Northeast	4,563
6	US 19/ Old Dixie Hwy	Between I-285 and Southpoint Drive/ Conrad Ave.	4,396
7	Fulton Industrial Blvd	Between Camp Creek Pkwy. and Cascade Rd.	4,276
8	Jimmy Carter Blvd	Between Best Friend Rd. and US 23/ Buford Highway	4,226
9	US 78/ Stone Mtn Pkwy	Between I-285 and Brockett Rd.	4,174
10	Fairburn Industrial Blvd	Between Laser Industrial Ct. and Howell Ave.	4,163

Source: GDOT Office of Transportation Data Geocounts Database, 2014.

3.2 Rail

Railroads have long been central to Metropolitan Atlanta's prosperity and economic vitality. The region grew from a small rail hub, Terminus, into one of the nation's largest regional economies in part due to the strength of rail and other freight operations. There were nearly 50 million tons of rail freight moved into, out of, and within the Atlanta Region in 2013. Inbound movements account for the majority of freight rail tonnage at 67 percent. This is followed by outbound movements at 32 percent. Local movements comprise only 1 percent of total freight tonnage.

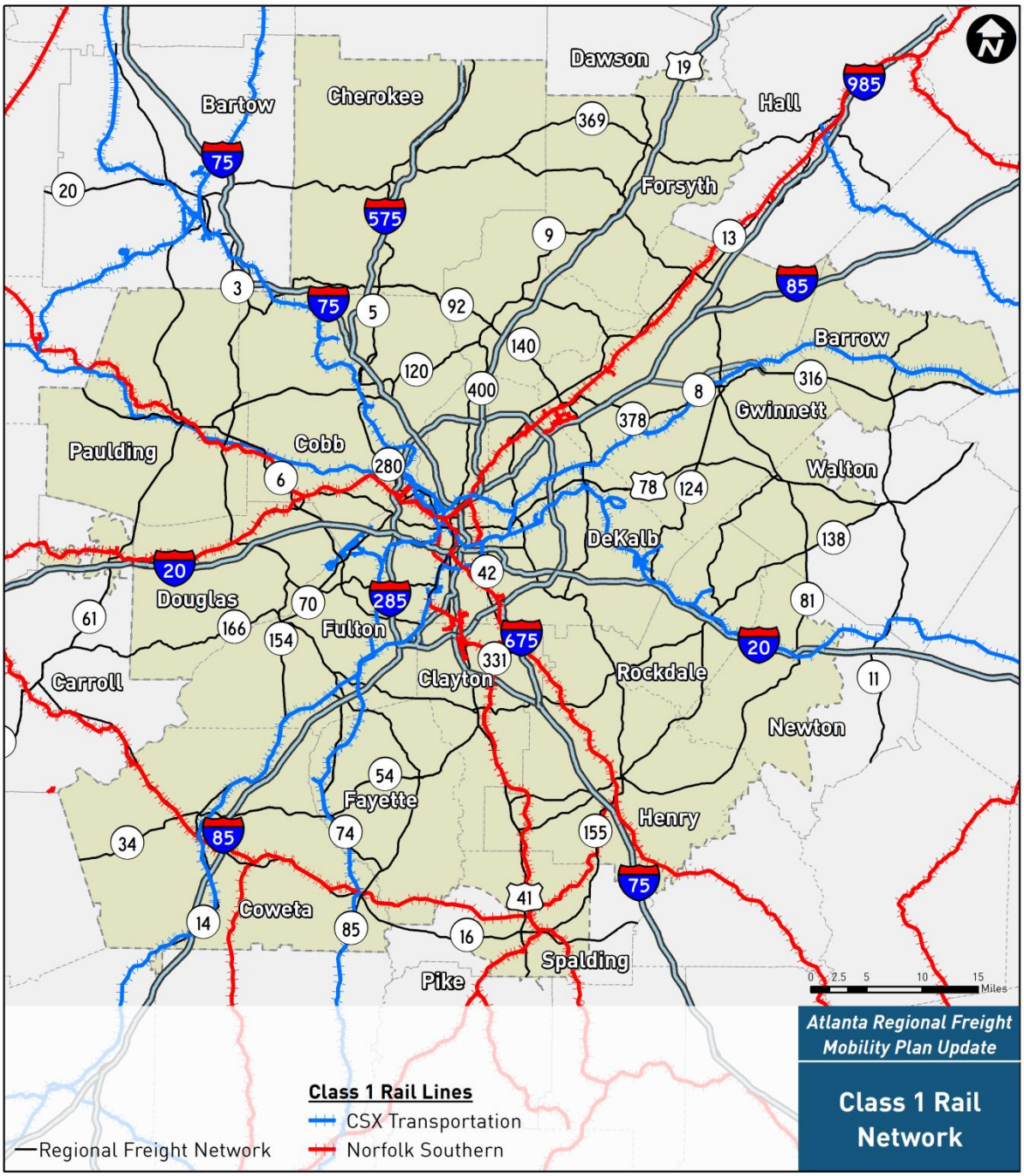
Of the commodities transported by rail in the Atlanta Region, Miscellaneous Mixed Shipments (a catch-all category mainly used for intermodal shipments of containers and trailers), Chemicals, and Food comprise the majority of rail flows by total tonnage. Nearly 21 million tons of rail flows, approximately 42 percent, consist of Miscellaneous Mixed Shipments. Chemicals and Food account for about 5.3 and 4.8 million tons of rail (10 and 11 percent) in Metropolitan Atlanta, respectively. All together, these commodities represent about 62 percent of total rail flows by tonnage.

As illustrated in Figure 3-2, there are currently two Class I railroads, defined as those with annual operating revenues of $250 million or more, in the Atlanta Region – CSX Transportation (CSXT) and Norfolk Southern (NS). Both CSXT and NS have extensive operations in the Atlanta Region including several rail yards throughout the metropolitan area. Together, these two carriers account for approximately 85 percent of commercially owned rail infrastructure in the region.

Figure 3-1: Daily Truck Volumes in the Atlanta Region

Source: Truck Counts: Georgia DOT Geocounts Database

Figure 3-2: Class I Rail Network in the Atlanta Region



Source: Region Rail Network: U.S. Bureau of Transportation Statistics National Transportation Atlas Database

Metro Atlanta is located along CSXT's Southeastern Corridor which links the carrier's major western gateways (i.e. Chicago, St. Louis, and Memphis) with those in the Southeast (i.e. Atlanta and Nashville). It is also located along Norfolk Southern's Chicago-to-Macon corridor which is one of the railroad's most heavily trafficked routes.[1] Together, these lines form an important Southeast to Midwest rail corridor of which Atlanta is the Southeast hub. Importantly, Metro Atlanta is connected to the Port of Savannah via CSXT and NS infrastructure which gives the region direct rail links to the port and the I-95 corridor.

[1] Norfolk Southern 2010 Annual Report.

Intermodal traffic has been a principal source of growth for the rail industry for years. According to the American Association of Railroads (AAR), 2015 intermodal traffic rose by 1.6 percent in terms of units (213,432 containers and trailers) over the same period in 2014.[2] Industry needs in Metro Atlanta center on the intermodal sector, with continuing growth exerting pressure on terminals and lines. The Howell Junction bottleneck identified in both the GDOT Freight and Logistics Plan and State Rail Plan (which are discussed in greater detail in Chapter 4) as the primary improvement required in the region could come under further strain, as larger ships from the expanded Panama Canal arrive in Savannah starting in 2016. Larger trains could follow from larger ships, creating the need for longer sidings to augment capacity. Growth could bring needs for expanded or new intermodal facilities as well.

3.2.1 Rail Yards in the Atlanta Region

There are three primary types of rail yards located within Metropolitan Atlanta (illustrated in Figure 3-3): carload, bulk transfer, and intermodal. Each type of facility is described below:

- **Carload** yards support the transport of "loose car" goods such as metals or gravel. At these yards, other rail cars are detached from the train as they have reached their destination while others are attached to complete their journeys.
- **Bulk transfer** terminals facilitate the transshipment of bulk goods between rail and highway or water. It is distinguished from intermodal because it entails the transfer of commodities from one mode-specific vehicle to another.
- **Intermodal** terminals are facilities that handle the transfer of trailers or containers between highway and rail. It is distinguished from bulk transfer because the vehicle in which commodities are transported may be used across modes. Thus, the entire vehicle may be transferred from one mode to the other as opposed to the commodities inside.

The large carload yards in the Atlanta Region are primarily responsible for the processing and handling of railcars. This includes receiving carloads, classifying railcars by destination, and preparing trains for departure. Tilford Yard is a major hub for CSXT's Southeast operations. Atlanta Yard functions in the same role for NS. In total, there are four major carload yards in Metro Atlanta. The large carload yards are summarized in Table 3-6.

Table 3-6: Large Carload System Yards in Metropolitan Atlanta

Name	Location	Annual Cars Processed	Purpose (Corridors/Markets Served)
CSXT Tilford Yard	Atlanta	Not Given	Atlanta Region, Carolinas to New Orleans, Chicago to Southeast
NS Atlanta Yard	Atlanta	350,000	Southeastern US Hub
NS Doraville Yard	Doraville	100,000	Not Given
NS East Point Yard	East Point	40,000	Not Given

Source: GDOT Statewide Freight and Logistics Plan: Rail Model Profile, 2014.

Bulk terminals in the Atlanta Region, summarized in Table 3-7, receive inbound truck shipments of liquid or dry bulk goods such as chemicals, asphalt, and petroleum products among others. These commodities are transferred to outbound trains most likely destined for markets in the Midwest or on the East Coast. Similarly, commodities destined for the Metro Atlanta Region or other Southeastern markets arrive by train and are transferred to trucks for last-mile delivery. In total, there are six rail/highway bulk terminals in the Atlanta Region. CSXT and NS operate one terminal each while the other four are independently operated serving NS, CSXT, and/or shortline railroads.

[2] American Association of Railroads. January 6, 2016 Press Release. https://www.aar.org/newsandevents/Press-Releases/Pages/2016-01-06-railtraffic.aspx. Accessed April 1, 2016.

Table 3-7: Rail/Highway Bulk Terminals

Terminal Name/ Location	Rail Carriers Served	Loading/ Unloading Spots	Commodities Handled	Services/Equipment Available
CSXT Transflo-Atlanta	CSXT	284	Chemicals, asphalt, foods, plastics, petroleum products	Air compressor, tank trailer cleaning, conveyors, liquid pumps, vacuum blower, truck scale
NS Thoroughbred Bulk Transfer-Doraville	NS	77	Acids, chemicals, foods, plastics, biofuels	Air compressor, scale, blending meters, sampling service, hot water heating system, steam heating, tank trailer cleaning, liquid pumps, containment area, vacuum transfer, blowers, air conveyor
Pax Industries - Norcross	NS	35	Chemicals, plastics	Air compressor, sampling service, vacuum trailer, gravity (trestle)
A&R Transport – College Park	CSXT, NS	100	Plastics	Scale, sampling service, vacuum trailer
Bulkmatic Transport - Doraville	NS	85	Chemicals, foods, plastics, petroleum products	Air compressor, scale, sampling service, hot water heating, liquid pumps, vacuum trailer, blower
SPTS (Trimac) - Fairburn	CSXT	110	Acids, chemicals, plastics, petroleum products	Air compressor, scale, sampling service, blending meters, hot water heating, steam heating, tank trailer cleaning, liquid storage tanks, liquid pumps, vacuum trailer, gravity (trestle)

Source: GDOT Statewide Freight and Logistics Plan: Rail Model Profile, 2014.

There are five intermodal terminals located in the Atlanta Region (Table 3-8). NS has three terminals with one each located in the cities of Austell, East Point, and Atlanta. CSXT has two terminals with one each located in the cities of Fairburn and Atlanta. Combined, the NS and CSXT Intermodal facilities in the Atlanta Region complete more than 900,000 lifts annually.[3]

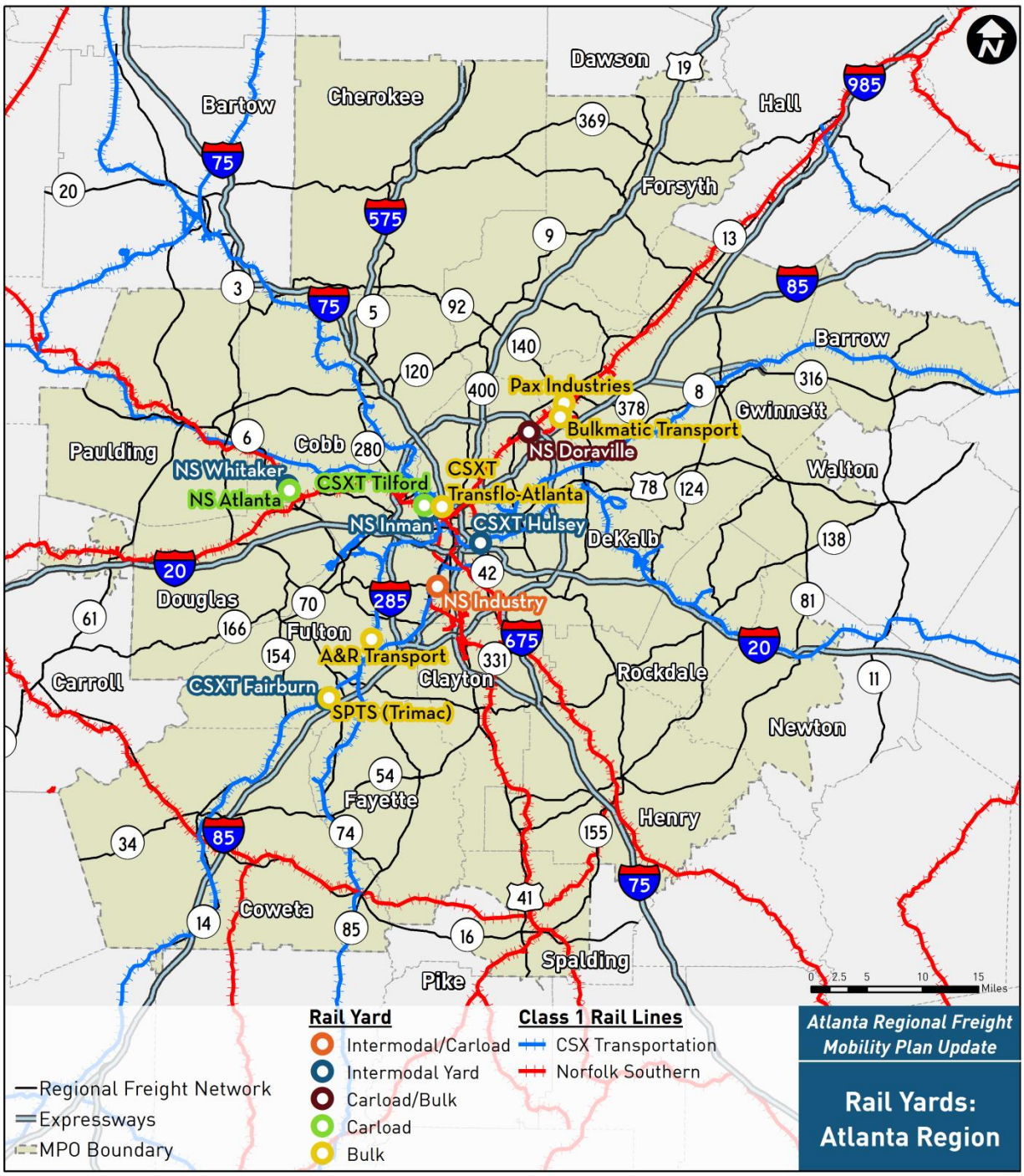
Table 3-8: Intermodal Terminals in Metropolitan Atlanta

Terminal Name	Location	Annual Volume (Lifts)	Number and Type of Cranes	Length of Loading Tracks	Storage/Stack Capacity
Hulsey Yard (CSXT)	Atlanta	125,000 +	4 Taylor side loaders	16,000 feet	1,600 wheeled spots
Fairburn (CSXT)	Fairburn	240,000 +	3 Mi-Jack overhead cranes and 3 Taylor side loaders	25,500 feet	1,300 wheeled spaces with 22,500 feet of storage and lead tracks
Whitaker Yard (NS)	Austell	300,000 +	6 Overhead cranes, 1 Reachstacker	20,600 feet	650 wheeled spaces
Inman Yard (NS)	Atlanta	250,000 +	5 Overhead cranes	16,500 feet	3,563 wheeled parking, 250 stacking spaces
Industry Yard/ East Point RoadRailer (NS)	East Point	N/A	N/A	N/A	N/A

Source: GDOT Statewide Freight and Logistics Plan: Rail Model Profile, 2014.

[3] GDOT Statewide Freight and Logistics Plan: Rail Model Profile, 2014.

Figure 3-3: Rail Yards in the Atlanta Region



Source: Rail Yards: U.S. Bureau of Transportation Statistics National Transportation Atlas Database; Georgia DOT Statewide Freight and Logistics Plan, 2012

3.2.2 At-Grade Rail Crossings

To a degree, rail traffic routed through the Atlanta Region is captured in the daily train volumes observed at grade level crossings. According to the Federal Rail Administration, the top at-grade crossings by total trains (summarized in Table 3-9 and illustrated in Figure 3-4) are primarily located in four of the Atlanta Region's core counties – Cobb, Clayton, Fulton, and Gwinnett. In fact, several high volume at-grade

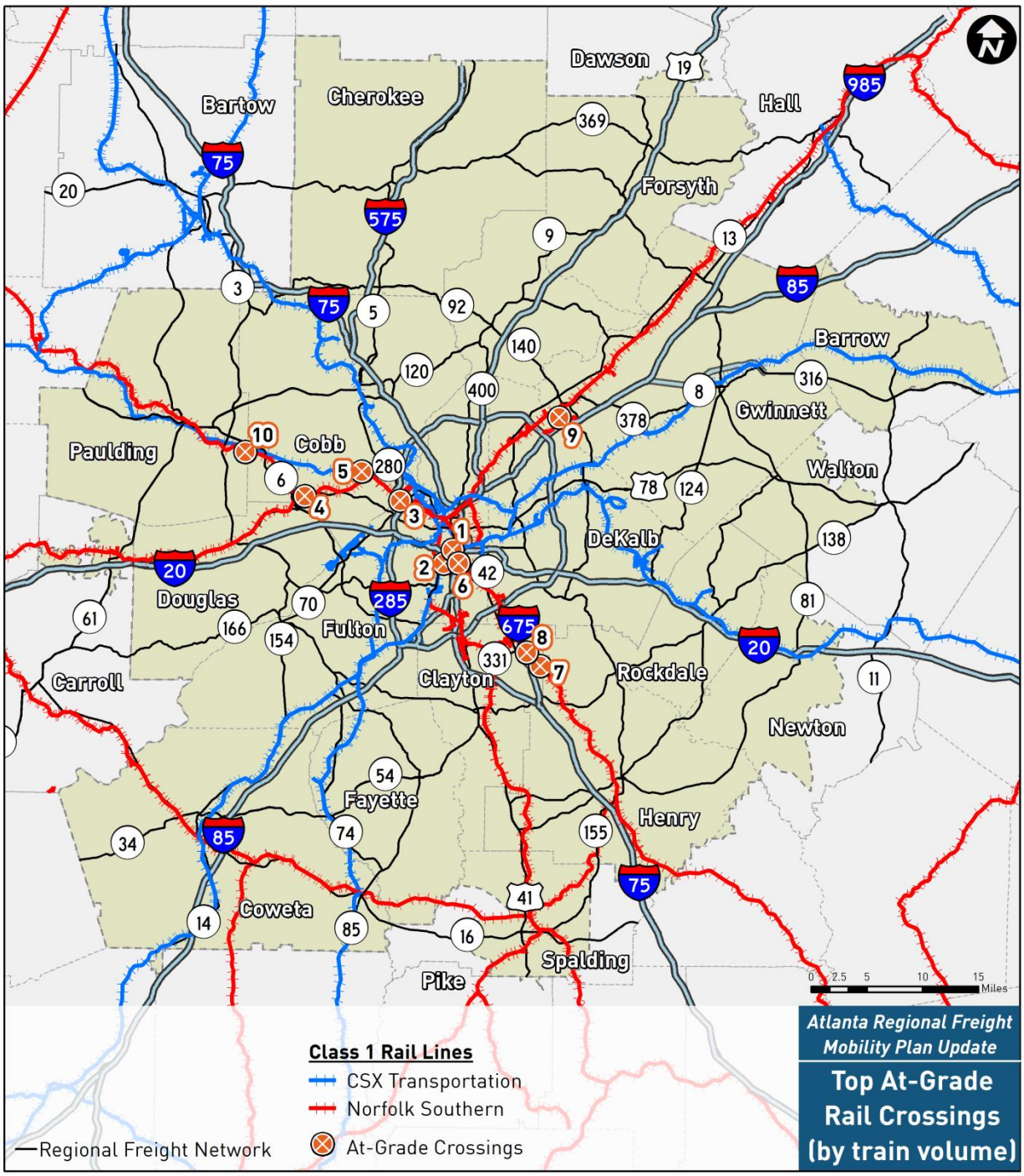
crossings are located in the City of Atlanta, suggesting that there is likely a high level of delay due to passenger vehicle and truck traffic. Only the at-grade crossing along Parrott Avenue in the City of Atlanta is located on a freight intermodal connector. This roadway provides access to the BP oil refinery located near the Norfolk Southern Inman Yard.

Table 3-9: Top At-Grade Crossings by Total Daily Trains

Rank (Map ID)	Street	Location	Truck AADT	Total Trains
1	McDaniel Street	Atlanta, Fulton County	227	70
2	Sylvan Road	Atlanta, Fulton County	189[a]	69
3	Parrott Avenue	Atlanta, Fulton County	81	56
4	Powder Springs Road	Austell, Cobb County	310[a]	56
5	Nickajack Road	Mableton, Cobb County	77	56
6	Fortress Avenue	Atlanta, Fulton County	32	47
7	Bouldercrest Road	Ellenwood, Clayton County	25	47
8	Mil Walk	Rex, Clayton County	39	47
9	Jones Mill Road	Gwinnett County	201	39
10	Angham Road	Powder Springs, Cobb County	5	38

Source: Federal Railroad Administration. Grade Crossing Inventory Database. GDOT Geocounts Database.
Note: Figures with Truck AADT marked with," [a]" denote traffic volumes obtained from the GDOT Geocounts database. Otherwise, traffic volumes are from the Federal Rail Administration's Grade Crossing Inventory database.

Figure 3-4: Top At-Grade Rail Crossings by Train Volumes in the Atlanta Region



Source: Federal Railroad Administration; National Transportation Atlas Database, 2015.

3.3 Air

In 2013, there were 217,389 tons of air cargo moved into and out of the Atlanta Region through Hartsfield-Jackson Atlanta International Airport (HJAIA) according to the 2013 Transearch Database. In terms of total tonnage, nearly 36 percent of this cargo consisted of small packaged items. The next largest commodity category was transportation equipment, which represented approximately 16 percent of total air cargo.

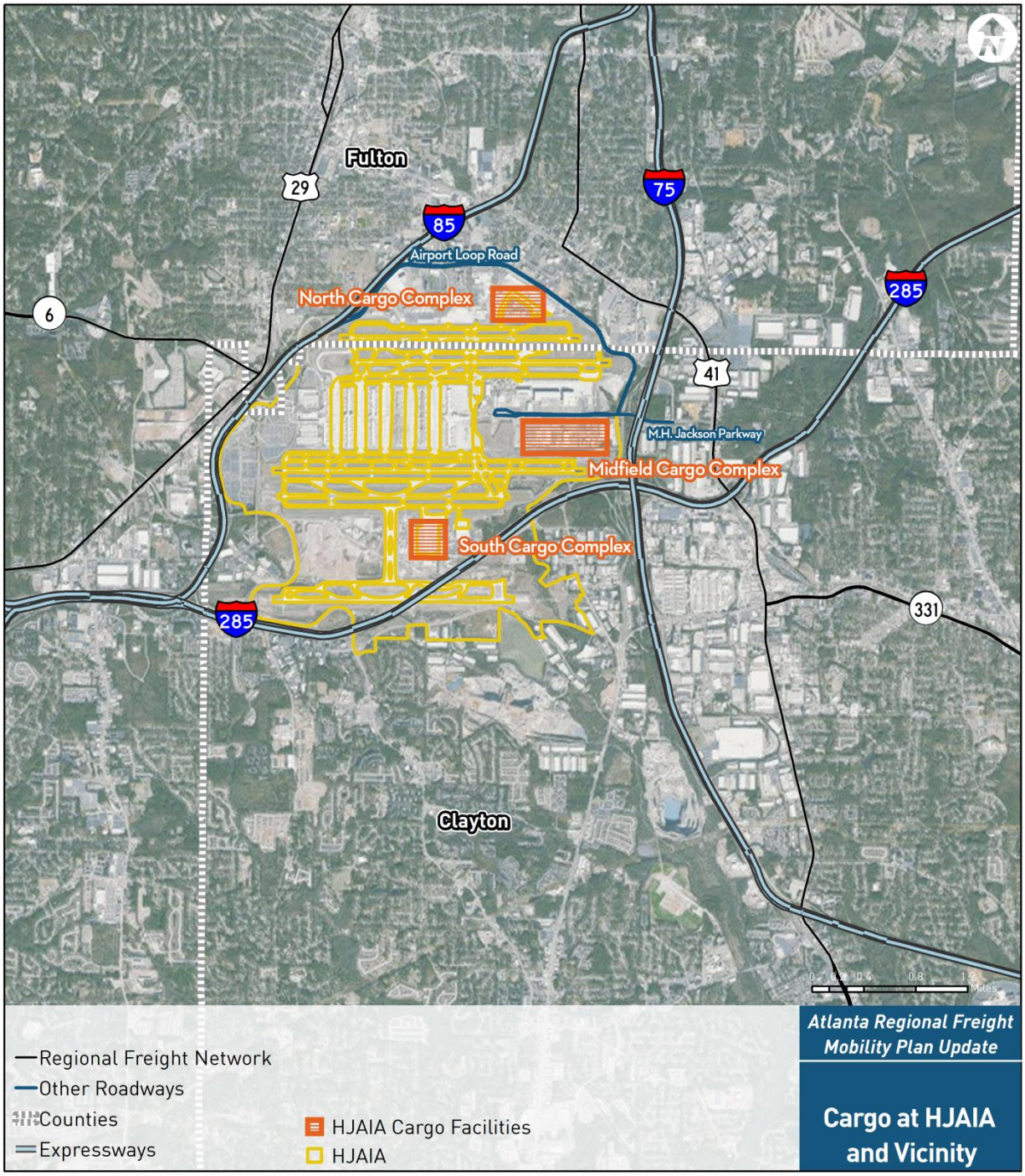
According to the Transearch database, the largest air cargo trading partners in terms of total tonnage are the Los Angeles, San Francisco, New York (excluding Connecticut and New Jersey), and Miami regions. These regions rank in the top five trading partners by total tonnage for both inbound and outbound shipments. The Los Angeles region is the top trading partner in both categories, accounting for 15 percent and 9 percent of total air cargo tonnage for inbound and outbound shipments, respectively. The top trading partners are intuitive given that all of these regions contain hubs for major passenger and/ or cargo airlines. In addition, they are all located at roadway distances greater than 600 miles which makes air transport a more attractive option for the shipment of valuable, time-sensitive goods.

Table 3-10: Top Air Cargo Trading Partners by Total Tons

Origin Region	Tons Inbound to the Atlanta Region	Percent of Total	Destination Region	Tons Outbound from the Atlanta Region	Percent of Total
Los Angeles, CA	16,057	15%	Los Angeles, CA	10,093	9%
Anchorage, AK	6,873	6%	Dallas, TX	9,749	9%
San Francisco, CA	4,315	4%	New York, NY	4,726	4%
New York, NY	4,237	4%	San Francisco, CA	3,936	4%
Miami, FL	4,124	4%	Miami, FL	3,657	3%
All Other Regions	71,471	67%	All Other Regions	78,146	71%
Total	**107,077**	**100%**	**Total**	**110,312**	**100%**

Source: 2013 Transearch Database.

Figure 3-5: Vicinity of Hartsfield-Jackson Atlanta International Airport (HJAIA)



Source: Georgia Department of Transportation

According to the roadway capacity analysis in the HJAIA Master Plan, many of the on-airport and off-airport roadways that provide access to HJAIA currently perform at unacceptable levels of service (LOS) and experience delays that are predicted to worsen. Though roadways near the current cargo facilities, illustrated in Figure 3-5 - specifically Maynard H. Jackson Jr. Boulevard - perform at an adequate LOS from a roadway capacity perspective, the story is different for intersection capacity. The left and right turning movements at the intersection of Airport Loop Road with M.H. Jackson Boulevard/Charles W. Grant

Parkway currently perform at LOS D through F. By 2031, nearly every movement at this intersection (left, right, and through) will perform at LOS D through F.

The challenge this could pose is nominally less of a concern because HJAIA plans to shift cargo operations to the south side of the airport in order to develop new gates east of the international terminal. Under this plan, Riverdale Road would become the primary access route, as it is now for some cargo, and it is not yet clear how access and performance should best be managed. HJAIA is making a strategic push to capture more air freight and has attracted several new carriers in recent months. If greater market penetration combines with normal growth, and if on-line retail continues to push up package volumes, the access pressures at the consolidated location could be substantial. Since air cargo is time sensitive and dependent on aircraft schedules, it tends to be bound to peak periods that press against capacity limits. There is clear need for a comprehensive access study that considers the south side consolidation, the traffic outlook, and the alternative routes.

3.4 Port of Savannah

Savannah is the 4th largest US container port in terms of total throughput and the second largest on the East Coast, behind New York/New Jersey.[4] In addition, The Port of Savannah has grown to become the second busiest US container exporter.[5] Annually, about 13.27 million tons of containerized goods are exported through the port. In addition, recent figures indicate that total volumes are improving at the Port of Savannah even as inflated volumes due to 2014 West Coast cargo diversions return to normal. October 2015 twenty-foot equivalent units (TEUs) were up 3 percent over the value reported during the same period in 2014.[6]

Savannah is one of Metro Atlanta's most important trading partners as the Port of Savannah serves as the primary international gateway for the region. Nearly half of the region's imports by truck begin their domestic journey in Savannah. Over 100,000 loaded trucks travel between the Atlanta and Savannah (Chatham County) regions annually, which amounts to just over 400 trucks per day. In addition, three intermodal trains travel back and forth between the regions on a daily basis.

In addition, over 1.6 million tons of goods shipped into the Atlanta Region in 2013 originated in the Savannah Region according to the Transearch database. The largest share of total inbound tonnage from the Savannah was transported on truck (55 percent). Intermodal rail carried 43 percent of goods inbound to the Atlanta Region from the Savannah Region, a far larger share than total rail (i.e. intermodal plus carload) exhibits for all inbound shipments across the Atlanta Region (about 24 percent). Outbound shipments from the Atlanta Region to the Savannah Region show similar modal shares with 61 percent for trucks and 37 percent for intermodal rail. Total rail outbound shipments regionwide are about 21 percent. The fact that intermodal rail has a such a high share of total tonnage in both directions when compared to the rail share across all trading partners highlights its importance for facilitating trade between the Atlanta and Savannah Regions.

Savannah will benefit from completion of the expansion of the Panama Canal in 2016, as larger ships in the Asian trade can cross to the Atlantic. There is a great deal of competition for this traffic among southeastern ports, but Savannah can reasonably expect to win a sizeable share, in part because of its relationship to the regional distribution hub of Atlanta. The Panama Canal expansion will affect the gateways for trade but not necessarily the volume of trade. Thus the effect on Atlanta will be more traffic

[4] Georgia Ports Authority, The Port of Savannah Fact Sheet, http://www.gaports.com/Portals/2/More/PortOfSavannah_April2015_PR.pdf, Accessed November 23, 2015.
[5] Georgia Ports Authority, http://www.gaports.com/ PortofSavannah.aspx, Accessed November 23, 2015.
[6] http://www.gaports.com/Media/PressReleases/TabId/379/ArtMID/ 3274/ArticleID/42/October-container-volumes-up-3-percent-at-GPA.aspx

on highway and rail routes from Savannah and the distribution facilities they serve best, but less Asian trade traffic arriving by rail from the Pacific coast.

Important to operations at the Port of Savannah are Georgia's inland ports at Cordele and Chatsworth. Inland ports are specialized facilities located along rail lines that are developed to serve the freight rail intermodal transportation network. They are often linked to seaports and offer services such intermodal transfers and international trade processing, among others. Distribution centers and warehouses are often co-located with inland ports, sometime on site.[7]

The Cordele Inland Port is connected to the Port of Savannah via a 200 mile link along the Heart of Georgia and Georgia Central railroads. Likewise, the Appalachian Regional Port which is being developed near Chatsworth will connect North Georgia and Savannah via rail. The inland ports offer a competitive alternative to an all-truck-dray to the Port of Savannah and their target markets: southwest Georgia, south Alabama, and western Florida for Cordele;[8] and North Georgia, portions of Alabama, Tennessee, and Kentucky for Appalachian Regional.[9] Effectively, these two inland ports will significantly expand the catchment area of the Port of Savannah allowing it to better compete in other parts of the Southeast.

Table 3-11: Atlanta Region-Savannah Truck and Train Flows

Mode	Between Atlanta and:		
	Port of Savannah	Remainder of Chatham County	Chatham County
Loaded Trucks per Year (2013)	71,532	31,967	103,499
Loaded Trucks per Day (2013)	286	128	414
Total Trucks Annual (2013)	162,500	72,750	235,250
Total Trucks per Day* (2015)	650*	291*	941*
Intermodal Trains per Day** (2016)	3	0	3

Source: 2013 Transearch Database; *2015 Draft GDOT Truck Survey; GDOT OTD; Consultant analysis; ** GA Ports Authority.
Note: Data represent both directions of traffic. Daily figures based on a 250 workday year.

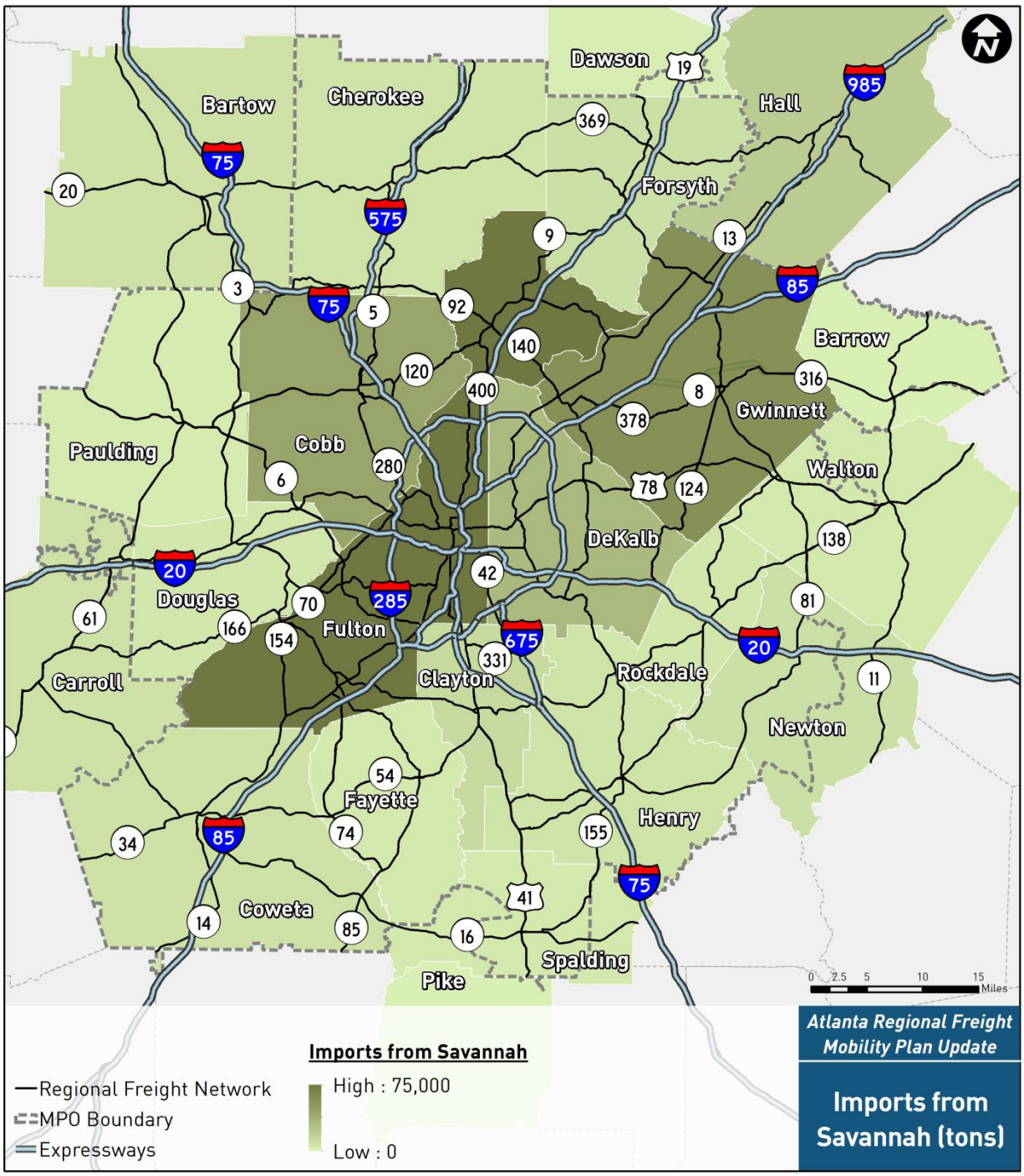
Table 3-12: Atlanta Region-Savannah Region 2013 Total Flows by Tonnage

	Savannah Region-to-Atlanta Region		Atlanta Region-to-Savannah Region	
Mode	Tons	Percent of Total	Tons	Percent of Total
Truck	881,050	55%	737,760	61%
Intermodal Rail	685,360	43%	450,200	37%
Carload Rail	35,480	2%	18,120	2%
Air	6	<1%	2	<1%
Total	**1,601,897**	**100%**	**1,206,082**	**100%**

Source: 2013 Transearch Database.

[7] Journal of Commerce. Inland Ports. http://www.joc.com/rail-intermodal/inland-ports. Accessed December 21, 2015.
[8] Georgia Ports Authority. www.gaports.com/IntermodalRail/CordeleInlandPort.aspx. Accessed November 23, 2015.
[9] Georgia Ports Authority. http://www.gaports.com/Media/PressReleases/tabid/379/xmmid/1097/xmid/10652/xmview/2/Default.aspx. Accessed November 23, 2015.

Figure 3-6: Counties in Metro Atlanta Receiving Imports by Truck from Savannah



Source: 2013 Transearch Database

4.0 ASSESSMENT OF REGIONAL PLANS AND FREIGHT TRENDS

This section of the report describes regional plans and global trends affecting freight movement in the Atlanta Region. Together with the following chapter, it identifies issues and needs that pose obstacles to goods movement, and opportunities for future investments and initiatives. More specifically, this chapter:

- Assesses existing regional and sub-regional freight plans;
- Describes global trends impacting freight movement in the Atlanta Region, such as the deepening of the Port of Savannah in response to the widening of the Panama Canal;

Metropolitan Atlanta is an important node in the global supply due to its proximity to the Port of Savannah and the presence of HJAIA. Furthermore, these same assets, along with the convergence of two Class I rail lines (NS and CSXT), two major north-south interstate highways (I-75 and I-85), and a major east-west interstate highway (I-20) make Metropolitan Atlanta the freight hub of the Southeast. Markets from Chicago, IL to Miami, FL can be reached in a single day's drive. Global trends affecting freight movements within and through Metro Atlanta include a growing worldwide consumer population, shifts in the locations of manufacturing centers (particularly US firms near-shoring facilities to Mexico), and the widening and deepening of the Panama Canal, among others.

4.1 Assessment of Existing Plans

There have been a number of planning initiatives related to freight conducted since the 2008 Atlanta Regional Freight Mobility Plan. These studies have touched on all modes and levels of geography – local, regional, and statewide. This section of the report reviews those plans and highlights their main conclusions. The studies include:

- ARC Atlanta Regional Freight Mobility Plan, 2008
- ARC Atlanta Strategic Truck Route Master Plan (ASTRoMaP), 2010
- Georgia Department of Transportation (GDOT) Freight and Logistics Plan Update, 2013
- GDOT State Rail Plan, 2015
- Cargo Atlanta: A Citywide Freight Study, 2015
- University Transportation Center (UTC): Freight Movement, Port Facilities, and Economic Competitiveness, 2014
- Hartsfield-Jackson Atlanta International Airport 2014 Master Plan
- South Fulton Comprehensive Transportation Plan, 2013
- Fulton Industrial Boulevard LCI/Master Plan, 2013
- State Route 6 (SR 6) Truck Friendly Lanes
- ARC Regional Transportation Plan Update, 2011 and 2014

4.1.1 ARC Atlanta Regional Freight Mobility Plan, 2008

ARC's 2008 Atlanta Regional Freight Mobility Plan is the foundation upon which this report is built. The 2008 plan established a baseline understanding of freight in the region by examining present and future freight flows, conducting stakeholder outreach, and identifying freight bottlenecks among other contributions. Objectives included:

- Facilitation of an understanding of the importance of freight mobility to the region's economy and quality of life;
- Development of a dialogue between public decision makers and private sector freight stakeholders regarding freight needs and strategies;
- Integration of freight considerations in the public planning processes at all levels;

- Identification of a regional subsystem that is recognized as being essential to continued regional growth; and
- Development of a goods movement action plan that is data driven and stakeholder informed.

The culmination of the Atlanta Regional Freight Mobility Plan was a set of strategies for the improvement or maintenance of speed, reliability, and freight movement in the region:

- Institutional and Policy Strategies
  - Concerns associated with the public understanding of freight movement needs
  - Incorporated a regional based approach
- Infrastructure Strategies
  - Planned physical system improvements
- Operational Improvement Strategies
  - Targeted public and private sector improvement initiatives
  - Shortest implementation requirements

Associated with each of the strategies were a set of recommendations that addressed the institutional and policy aspects necessary to promote freight mobility while mitigating its negative impacts. These recommendations are related to funding, economic competitiveness, land use planning, transportation planning, private sector engagement, and data collection among others.

4.1.2 ARC Atlanta Strategic Truck Route Master Plan (ASTRoMaP), 2010

ARC's 2008 Atlanta Regional Freight Mobility Plan was the catalyst for the ARC's 2010 Atlanta Strategic Truck Route Master Plan (ASTRoMaP). A key objective of the 2008 plan was to identify a regional freight transportation subsystem that is recognized as being essential to continued regional economic growth. The ASTRoMaP network was derived from the Regional Freight Priority Highway Network which was broadly composed of Interstates and state routes crossing the region.

In developing the ASTRoMaP network, the primary focus was placed on facilitating cross-town truck movements between economic centers through a grid network spanning the entire region. Potential routes for inclusion on the ASTRoMaP network were scored according to a set of quantitative and qualitative attributes. Quantitative attributes included physical characteristics such as truck volumes, functional classification, lane width, shoulder width, and bridge clearances, among others. Qualitative attributes included support or opposition from stakeholders (public, private, and communities), compatibility of surrounding land uses, and environmental justice concerns.

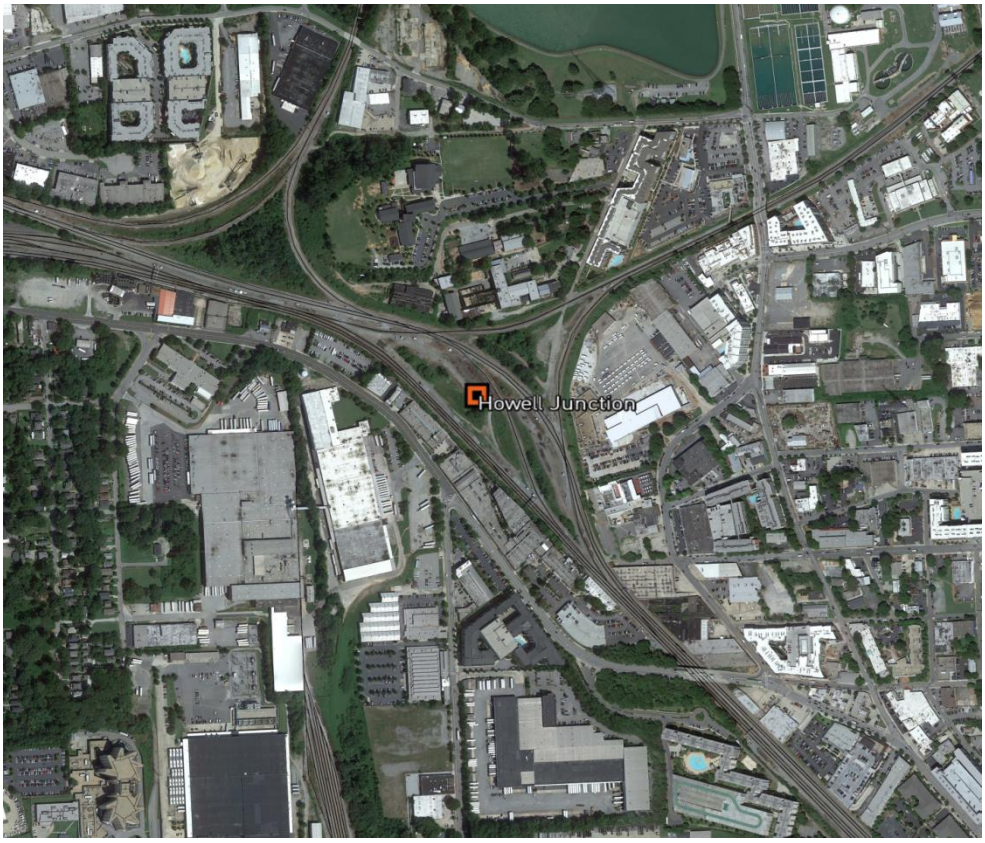
The final result of the ASTRoMaP study was the designation of the final regional freight transportation subsystem. In addition to the identification of the system the study also provided a set of recommended projects to address portions of the designated network that did not meet optimal expectations for attracting or conveying truck traffic. Also, the ASTRoMaP study provided design guidelines for roundabouts, signage guidelines, and recommendations for addressing at-grade crossings.

4.1.3 Georgia Department of Transportation (GDOT) Freight and Logistics Plan Update, 2013

The GDOT Statewide Freight and Logistics Plan assessed the State's multimodal freight needs and provided a strategy for addressing those needs. For each mode, the GDOT Statewide Freight and Logistics Plan recommended a set of improvements and estimated the economic return on those investments. The project deemed the most important on a statewide level was the Savannah Harbor Expansion project. Given that the Port of Savannah is critical to Metro Atlanta's economy, the harbor expansion project is likewise the most important maritime project related to the region.

Rail recommendations centered on expanding line haul capacity via double tracking and also on adding capacity to intermodal terminals. The GDOT freight plan concluded that the NS line that connects Metro Atlanta to the Port of Savannah is presently a bottleneck and is likely to grow worse in the future. Rail capacity throughout the Atlanta Region must be increased in order to keep up with growth. Corrections to bottlenecks such as Howell Junction (Figure 4-1) in Northwest Atlanta are called for.

Figure 4-1: Howell Junction



Source: Google Earth.

Four of the five strategic highway corridors identified in the GDOT state freight plan are based in the Atlanta Region: Atlanta-Savannah, Atlanta-South Carolina, Atlanta-Tennessee, and Atlanta-Alabama. Highway improvement projects in the GDOT Statewide Freight and Logistics Plan primarily consist of adding lanes on long-haul corridors and improving interchanges.

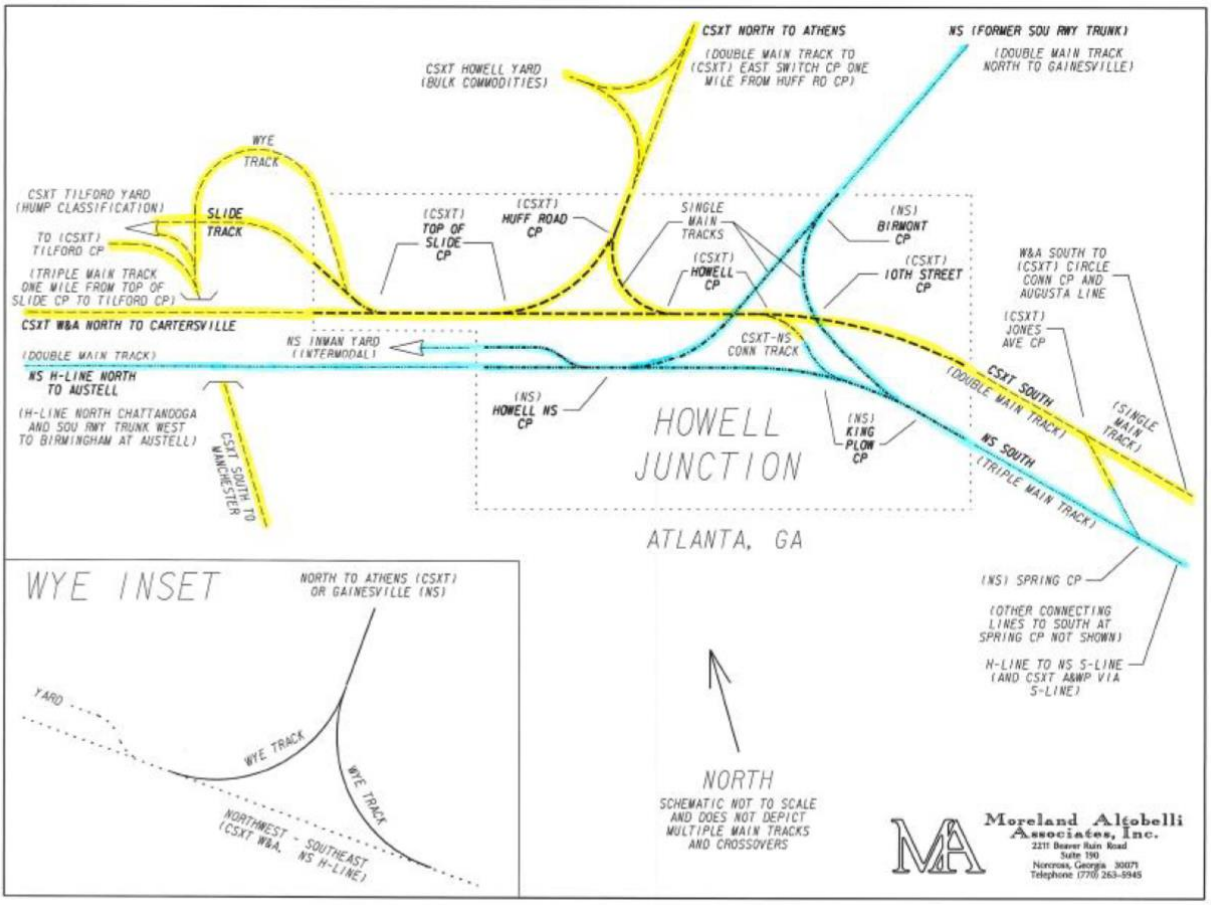
GDOT's air cargo strategy consists of supporting the expansion of cargo facilities at HJAIA. HJAIA has continued to add freighter operations in addition to belly cargo options. According to HJAIA's master plan the expansion of cargo operations will continue as part of a long-term strategy.

4.1.4 GDOT State Rail Plan, 2015

The GDOT State Rail Plan was developed for the purpose of guiding the state's rail freight and passenger transportation planning activities and project development plans through the year 2040. It describes the state's existing rail network and rail-related economic impacts, estimates future growth, assesses current needs and recommends future investments. The primary need related to Metro Atlanta identified in the rail plan was relief for the Howell Junction bottleneck. Howell Junction, located in northwest Atlanta, is among the most congested railroad junctions in the southeast U.S. It is utilized by both of the region's Class I rail carriers, Norfolk Southern (NS) and CSX Transportation (CSXT), and also by Amtrak.

In this location, an NS main line intersects a CSXT main line at a CSXT-controlled crossing point. Moreover, the NS line reduces from double track to single track in this section, and this same single track carries Amtrak Crescent service as well as NS trains. Additionally, some CSXT lines near the crossing are on a steep grade that can slow traffic into the crossing. The GDOT State Rail Plan estimated that about 24 NS and 36 CSXT trains traverse this difficult junction on a daily basis, which often results in heavy delays. Some are intermodal trains whose volume is apt to grow from increasing trade through Savannah and other southeastern ports; others carry commodity traffic whose outlook (such as declining demand for coal) is more mixed. A map of the junction from the GDOT Rail Plan appears in Figure 4-2.

Figure 4-2: Howell Junction



In addition to experiencing significant train volumes, the proximity of Howell Junction to other rail nodes presents challenges. Howell Junction is located near two major rail yards – NS Inman Yard (which is an intermodal yard) and CSXT Tilford Yard (which is a classification yard) – and an Amtrak station. As Atlanta is a major terminal for both NS and CSXT, many trains are originated from these yards which are partially located within Howell Junction. The proximity of the Amtrak station to Howell Junction causes delay too as freight trains must share capacity with passenger trains. Furthermore, the most recent iteration of proposed commuter service via the Multi-Modal Passenger Terminal would exacerbate congestion in Howell Junction by requiring passenger trains to cross over the CSXT line to the NS line.

Though the state rail plan does not offer a specific solution for Howell Junction, it does suggest that a grade separation or bypass might be feasible options upon further study. However, these would be major undertakings. The state rail plan identifies some challenges of a grade separation or bypass:

- At least a 33 foot differential in elevation must be established to grade separate the rail lines;

- Howell Junction is enclosed by the Huff Road, Howell Mill Road, and W. Marietta Street overpasses limiting the room for a bypass or grade separation; and
- The Marietta Blvd. overpass is within two-thirds of a mile of Howell Junction.

Despite the freight intensity of the area, its proximity to residential neighborhoods could further constrain the ability to undertake construction, and could raise its cost.

A project to address this bottleneck conceivably could qualify for federal support, such as funding under the new FASTLANE competitive grant program described later in this report. However, an important question is how urgent Howell Junction improvements would be to railroad operators, compared to other demands on their capital. While the operation obviously is constrained, it has been that way for very many years and could be regarded as a suboptimal situation they nevertheless can manage. Howell Junction arguably is a more sensitive location for NS than for CSXT, partly because CSXT controls the flow of traffic, and more importantly because this NS single line track through the crossing is one of only two connections between the eastern and western lines of the entire Norfolk Southern system south of Tennessee (the other connection is the route through Columbus, GA). CSXT has more connections, both within the Atlanta region and elsewhere in the south.

To resolve the question for the purposes of this plan, discussions were held with representatives from both railroads. NS and CSX executives acknowledged Howell Junction as an active bottleneck in their system. They have participated with GDOT in review of the subject and appear willing to continue to do so. Nevertheless, the two railroads do not judge the junction to be an urgent concern today and they are not pressing for redress. Neither railroad views Howell Junction as a priority capital improvement, and both railroads prefer to direct their funds elsewhere for at least the next five years. Thus any public undertaking for Howell Junction would not find eager financial partners among the railroads for some time to come. CSX and NS certainly face pressure from traffic growth, notably in the intermodal business where they are benefitting from east coast container imports and running bigger and longer trains. One carrier pointed to the general absence of double track lines in the southern rail network and indicated that more long sidings are required to provide capacity for these trains (sidings are a partial substitute for double tracking, much like periodic passing lanes are helpful on two lane roads). Without citing specific improvements, the carrier generally believed rail and road upgrades would become needed to support intermodal operations. The implication simply was that railroad ability to make do with Howell Junction for now did not mean other projects would not arise.

4.1.5 Cargo Atlanta: A Citywide Freight Study, 2015

The Cargo Atlanta study provided a baseline assessment of freight and goods movement within the City of Atlanta. The goal of the study was to develop solutions to better accommodate the needs of freight and goods movement while adapting to the changing neighborhood dynamics transforming Atlanta. The study's objectives centered around two themes: mobility and livability.

The goals of the City of Atlanta's freight study were to:

- Strengthen the opportunities for carriers, the communities served by freight and the neighborhoods connected to freight;
- Improve the City of Atlanta's transportation infrastructure to meet increases in freight and goods movement demand;
- Improve the economic efficiency of the City's freight network;
- Increase investment in system improvements for truck movement throughout the City of Atlanta;
- Develop strategies for reducing community impacts from freight movement; and
- Identify truck routes within the city.

The result of the Cargo Atlanta freight study was a set of project and policy recommendations. Recommended projects primarily consisted of roadway widenings, adding capacity to intersections, and in some cases providing new connections. Of the five policy recommendations in the Cargo Atlanta study, three of them related to land use. Specifically these policies sought to annex industrial parcels into the City of Atlanta, promote industrial uses around HJAIA, and to purchase obsolete industrial properties for environmental remediation and redevelopment. The other two policy recommendations related to developing a truck bypass around the City of Atlanta and discouraging trucks from using a portion of Marietta Road that traverses a residential area.

4.1.6 National Center for Transportation Systems Productivity and Management Study on Freight Movement and Economic Competitiveness from the Megaregion Perspective

This study focuses on the regional and national impacts of port-related freight movement. It lays the groundwork for regional planning activities at the megaregion scale. Planning on a regional scale is critical to capture the economic benefits that the expansion of the Panama Canal has the potential to generate. Research conducted to-date included developing multiple scenarios of growth related to the Panama Canal. Additionally, regional economic impacts related to each of the scenarios has been developed using the Impact Analysis for Planning (IMPLAN) model. The IMPLAN model predicts the local economic impacts (e.g. jobs created, additional revenue generated, etc.) given a change or event in economic activity. This includes, but is not limited to, the local economic impacts of transportation infrastructure investments.

The study analyzes the impacts the Panama Canal expansion is projected to have on megaregions in the US. It estimates the changes in mobility, safety, operations, and pavement condition from the traffic impacts that will be generated from the expansion of the Panama Canal. The results of the expansion have implications for the practice, policy, and study of transportation planning. The primary audiences are state and metropolitan transportation planners and engineers, policy makers at all levels of government, public and private entities in logistics including port authorities, economic developers and academics who focus on transportation and regional economic development.

4.1.7 Hartsfield-Jackson Atlanta International Airport 2014 Master Plan

As it relates to freight, the Hartsfield-Jackson Atlanta International Airport Master Plan guides future airport growth and development to accommodate the predicted increase in air cargo. Though domestic cargo volumes at HJAIA are still growing, the rate of growth has slowed over time. Thus, the HJAIA Master Plan predicts only modest growth in domestic air cargo over the next 20 years – 1.8 percent annually. However, international air cargo growth at HJAIA has been much stronger. The Master Plan predicts that international air cargo growth will range from 3 to 5.6 percent annually through the year 2031. The overall growth in air cargo demand will be accommodated at new and expanded landside cargo facilities.

Other cargo-related developments in the vicinity of HJAIA are being explored as part of the Atlanta Aerotropolis Alliance initiative. The Aerotropolis initiative seeks to leverage HJAIA's assets to attract more businesses that could benefit from proximity to the airport. A key component of the initiative is to pursue logistics companies given the predicted growth in air cargo and to target underutilized land around HJAIA for logistics-oriented development. Proposed developments include both distribution and manufacturing facilities. The predicted growth and proposed development initiatives could significantly increase truck traffic around HJAIA.

4.1.8 South Fulton Comprehensive Transportation Plan, 2013

The South Fulton Comprehensive Transportation Plan (CTP) is the guiding transportation vision document for Fulton County and the seven municipalities in South Fulton County: Chattahoochee Hills, College

Park, East Point, Fairburn, Hapeville, Palmetto, and Union City. The CTP provided a funding framework and prioritized project list for supporting transportation planning and programming policy decisions. Similar to other sub-regional planning initiatives, the CTP took inventory of the existing conditions in South Fulton County, conducted a needs assessment, and provided recommendations.

The South Fulton CTP made a number of project and policy recommendations that support freight mobility. Policy recommendations largely centered on protecting and promoting goods movement activities within the Fulton Industrial Boulevard, CSX Transportation Fairburn Intermodal Yard, and HJAIA sub-areas. These policy recommendations included:

- Fulton Industrial Boulevard – Focus on preserving and protecting the area as industrial and improve the efficiency of goods movement.
- CSXT Fairburn Intermodal Yard – Redesign the SR 74 and I-85 interchange and understand any plans to increase operations at the intermodal yard and how it may impact truck traffic operations in the sub-area.
- HJAIA – Redesign the I-285 and Camp Creek Parkway (SR 6) interchange and improve safety along SR 6.

4.1.9 Fulton Industrial Boulevard LCI/Master Plan, 2013

The Fulton Industrial Boulevard (FIB) Master Plan was conducted to address the challenges this corridor has faced as an aging economic center. The plan established a vision for the area's future and outlined the steps for achieving that vision. It included a comprehensive set of recommendations for transportation improvements, land use and organizational needs, economic development, and design/aesthetic treatments. Particular focus was given to the I-20 Gateway which is the primary point of access to FIB.

Several policy- and infrastructure-oriented recommendations were made as part of the FIB master plan. Some of the policy oriented recommendations included:

- Adoption of the plan by the Fulton Industrial CID Board and its incorporation into the Fulton County Comprehensive Plan.
- Create a Fulton Industrial Business District Overlay District.
- Establish the area between Martin Luther King Jr. Boulevard and Patton Drive as the "I-20 Gateway District" in the Comprehensive Plan and overlay district zoning.
- Create a tax allocation district in order to make the redevelopment of the I-20 interchange feasible.

Likewise, some of the infrastructure-oriented recommendations included:

- Pursue a package of short- and mid-term freight mobility improvements including targeted intersection improvements that address medians and turning radii, traffic signal timing, and pedestrian improvements;
- Implement landscape improvements in coordination with transportation improvements;
- Improve the fiber optic network, telecom service and rail service through cooperation with public and private partners; and
- Encourage the use of sustainability features (e.g. green roofs, water harvesting, etc.) as facilities are developed or redeveloped.

4.1.10 State Route 6 (SR 6) Truck Friendly Lanes

SR 6 is a major regional thoroughfare that stretches east from the City of Dallas in Paulding County to HJAIA in Clayton County, and west from the City of Dallas to the Alabama-Georgia state line (concurrent with US 278). The SR 6 corridor is heavily used by both passenger vehicles and trucks. The SR 6 Truck Friendly Lanes study examined the feasibility of adding a third "truck friendly" lane along SR 6 from its

interchange with I-20 to the NS Austell Intermodal Yard in Cobb County. In addition to adding a lane the project would improve key intersections along the corridor, integrate the intermodal facility into the ITS system, increase overhead signage along the corridor, and address rollover crashes exiting the intermodal yard onto US 278/SR 6.

4.1.11 ARC Regional Transportation Plan Update, 2011

The Regional Transportation Plan (RTP) is a comprehensive guide on the region's transportation needs as identified by the communities comprising the ARC region, public stakeholders, and private stakeholders. It contains both short- and long-term transportation strategies to improve the mobility of the region's transportation system.

Generally, the primary objective is to develop a framework for facilitating and enhancing freight mobility and goods movement in the region, improving the region's economic competitiveness, and minimizing environmental and community impacts. Specifically, the freight policies in the 2011 update to the region's RTP are as defined in the ARC's 2008 Freight Mobility Plan and 2010 Atlanta Truck Route Master Plan. In addition, freight policy in the 2011 RTP, and as updated in 2014 and 2016, is aligned with state freight policy as set by the Georgia Statewide Freight and Logistics Plan and national freight policy as set by the federal transportation funding bill, MAP-21.

4.2 Global Trends

An ongoing FHWA study has identified the following five key global logistics trends impacting US freight flows:

1. Continued globalization and increasing global consumer population;
2. Global manufacturing shifts, including near-shoring/resourcing;
3. Emergence of e-commerce fulfillment centers;
4. New sources of domestic oil and gas;
5. Widening and deepening of the Panama Canal.[10]

This section summarizes the impact of these global trends on freight flows in the Atlanta Region.

4.2.1 Continued Globalization and Increasing Consumer Populations

Growing populations outside the US are coinciding with rising incomes in many developing countries. Combined, these forces create significant increases in consumer spending at new locations around the world. In China, consumer spending rose from just more than $500 billion in 2001 to an estimated $3.3 trillion in 2013. China has now surpassed Japan to be the second-largest consuming economy in the world. During the same period, consumer spending in India has grown from $370 billion to more than $1.3 trillion. Similarly, Brazil's consumer spending has risen from $351 billion to more than $1.3 trillion between 2001 and 2013. This growth in consumer spending impacts international shipping patterns, including opening up a significant number of export markets for the US in general, and the Atlanta Region in particular.

The Port of Savannah has grown to become the fourth largest exporting port in the US in terms of total tonnage of containerized cargo.[11] It is unique among major ports in that it has a relatively even balance of exports and imports from a tonnage perspective. Atlanta's location as the closest major metropolitan region to the Port of Savannah will continue to make growth in exporting industries a significant economic expansion opportunity for the region.

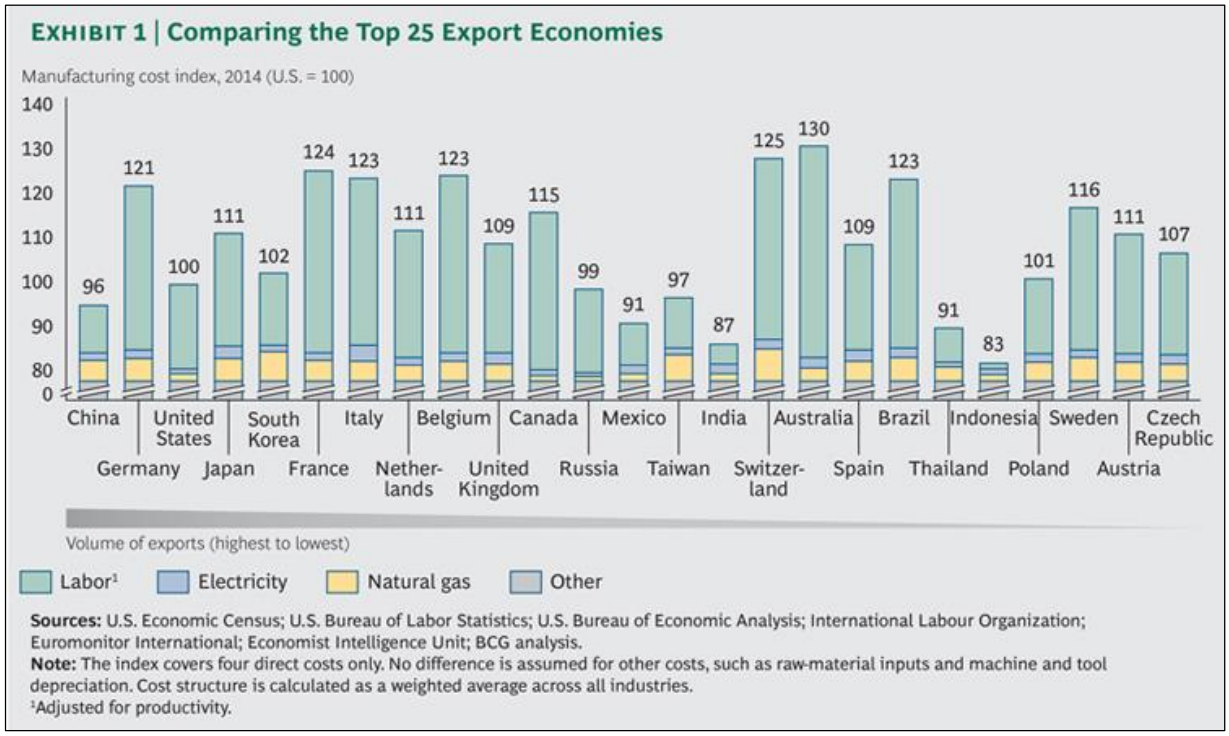
[10] FHWA Intermodal Connector Study Task 3 Report on Existing Conditions, June 2015.
[11] US Census Bureau, Economic Indicators Division. "US Import and Export Merchandise Trade Statistics – Year 2014." USA Trade Online, https://usatrade.census.gov.

4.2.2 Global Manufacturing Shifts

The combination of higher labor costs in China and other parts of Asia along with the corresponding supply chain costs have prompted some manufacturers to reassess their supply chains and bring production work back to Mexico (near-shoring) and the mainland United States (re-shoring). In fact, recent research has found that Mexico now has lower average manufacturing costs than China, and that the US is now cheaper than all but two of the top 10 global export economies (Figure 4-3).[12] Locating production closer to the point of consumption carries other advantages, such as allowing supply chains to be more responsive to changing consumer tastes and the ability to better manage disruptions. Accordingly, over recent years the US has become a more attractive location for high-value manufacturing, as well as industries that are energy-intensive, such as chemicals, steel, and glass.

This development has created an opportunity for the Atlanta Region to expand its economy by leveraging unique freight assets to improve its competitiveness in the manufacturing sector. HJAIA and the Port of Savannah are among the busiest airports and seaports in the US. The presence of HJAIA and the proximity of the Port of Savannah make the Atlanta Region a competitive location for advanced manufacturing, as finished and semi-finished goods can quickly be shipped into and out of the region. In addition, the presence of a highly educated workforce and the Atlanta Region's relatively low cost of living amplify broader cost saving advantages.

Figure 4-3: Manufacturing Cost Index for the Top 25 Export Economies



Source: Boston Consulting Group.

4.2.3 Emergence of E-commerce Fulfillment Centers

As consumers have come to expect products purchased online to be delivered relatively quickly (within a few days), retailers have begun to reposition regional distribution centers and forward-position smaller distribution centers into urban areas. In particular, many retailers offer next-day delivery via overnight air

[12] Boston Consulting Group, 'Cost Competitiveness: A Country View,' September 2014. Manufacturing costs were assessed as a function of manufacturing wages, labor productivity, energy costs, and exchange rates.

packages, which (though highly valued by customers) is expensive. Strategically placed fulfillment centers allow companies to offer next-day services while making it more affordable for customers. Additionally, many retailers are now testing same-day delivery services. This retail trend has come to be known as "multichannel or omni-channel distribution."

In the Atlanta Region, The Home Depot recently opened a new "direct fulfillment center" (DFC) in Locust Grove. The DFC stocks about 100,000 products, nearly three times the number of the average store. This wide selection allows the DFC to increase the number of orders that can be shipped on the same day they are received.[13] The largest retailer in the US, Walmart, is starting to respond to the competitive pressure of Amazon and other e-commerce players with the opening of two new fulfillment centers in the eastern US: one in Bethlehem, Pennsylvania; and the other in Union City, Georgia (located less than 10 miles from HJAIA). The centers, which are 1.2 million square feet each, opened in mid-2015 and will employ around 300 to 400 associates by mid-2016. Walmart's approach to e-commerce is described as a "portfolio" approach. It includes offering delivery, next-day delivery, on-line orders you can pick up at the store, and ship-to-store for local pickup.[14]

The impact of these changes on the Atlanta Region's freight infrastructure is likely to be larger and more numerous freight clusters, increased importance of freight system reliability, and more frequent local truck trips in smaller trucks. For example, an e-commerce fulfillment center typically will require multiple incoming truck shipments per day to maintain inventory. It will also generate significant numbers of smaller package and parcel deliveries to consumers. In addition, the colocation of manufacturing plants and distribution centers with intermodal rail terminals may create new truck traffic on local streets and roads near intermodal rail heads in the western and southern portions of the Atlanta Region.

The portion of the freight network serving intermodal rail facilities will also be impacted as many of the goods shipped by e-commerce utilize rail intermodal movements for shipments with longer delivery times. Companies such as UPS, based in the Atlanta Region, and FedEx Ground often use rail intermodal facilities for the long haul portions of shipments and then trucks for the last mile delivery to fulfillment centers. The freight network in the southern portion of the Atlanta Region that serves air cargo facilities may experience increased volumes for goods with next day or same day delivery requirements.

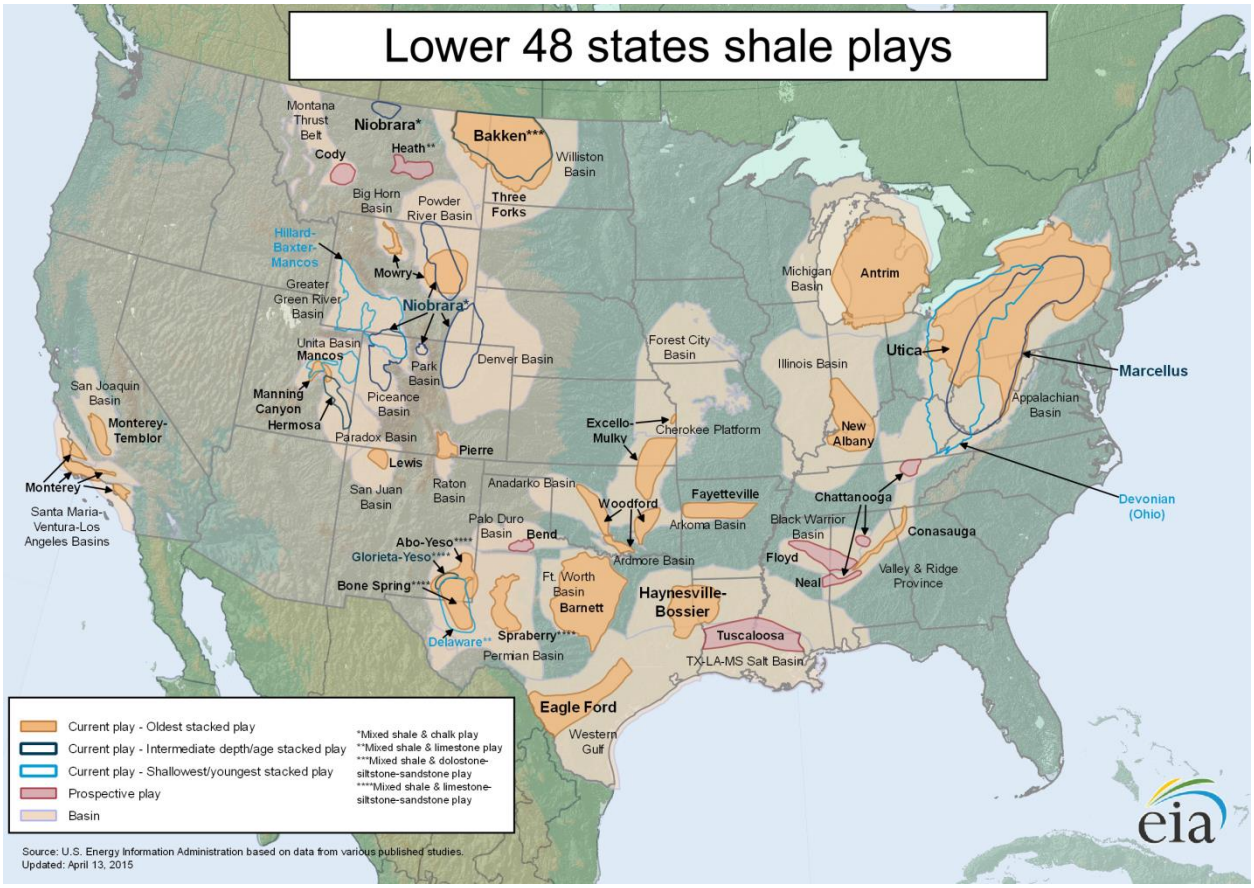
An associated development affecting the character of facility demand is warehouse automation. Robotics, optics and other material handling technology are reducing the traditional reliance on fork lifts, causing warehouse aisles to narrow and ceilings to rise. The effect is much greater storage density per square foot, which translates to smaller facilities than would otherwise be needed, but more freight per acre. The new Walmart fulfillment center cited above reportedly makes significant use of automation; the new Kroger grocery distribution center in Fort Gillem has ceilings reaching 80 feet where 30-plus feet had been typical. While both are million square feet facilities, the technology supports smaller footprints; one retailer encountered by the consultants in another state stated that warehouse automation reduced the size of their requisite footprint by two-thirds. An Atlanta real estate developer contacted for this study confirms this outlook, stating that it is not likely to lead to redevelopment of old properties in the current development cycle but will in the next one, five to seven years out. According to this observer, should Fulton Industrial Boulevard be redeveloped with all new facilities, the freight production in that single cluster would rise 50 to 75 percent. The implications are that close-in districts will become viable for upgrade and growth, and that new demand on existing roadways could expand greatly.

[13]The Home Depot, 'The Home Depot Opens Direct Fulfillment Center to Support Online Business,' press release dated February 10, 2014, http://ir.homedepot.com/phoenix.zhtml?c=63646&p=irol-newsArticle&id=1898575. Accessed on September 16, 2014.
[14]Tech Crunch, "Walmart Invests in E-commerce, Next-Day Delivery Expansions with Two New Fulfillment Centers," October 15, 2014.

4.2.4 New Sources of Domestic Oil and Gas

Domestic production of oil and gas has grown dramatically in recent years due to advances in extraction technologies, including horizontal drilling and hydraulic fracturing, or "fracking." These developments, along with the relatively high price of oil (through the end of 2014) made the extraction of vast amounts of oil and gas in the US economically feasible. Though oil prices substantially declined in 2015, the extraction of shale oil and gas still has reshaped supply chains in certain industries, and has turned the United States into a net exporter of energy. There are no shale locations in the Atlanta Region (Figure 4-4). Therefore, the primary impact of the shale boom in the Atlanta Region is the subsequent lower fuel costs for truck drivers and lower energy costs for high energy consuming local businesses. These impacts are similar to those felt throughout the US.

Figure 4-4: Shale Plays in the Contiguous US



Source: US Energy Information Administration.

4.2.5 Widening and Deepening of the Panama Canal

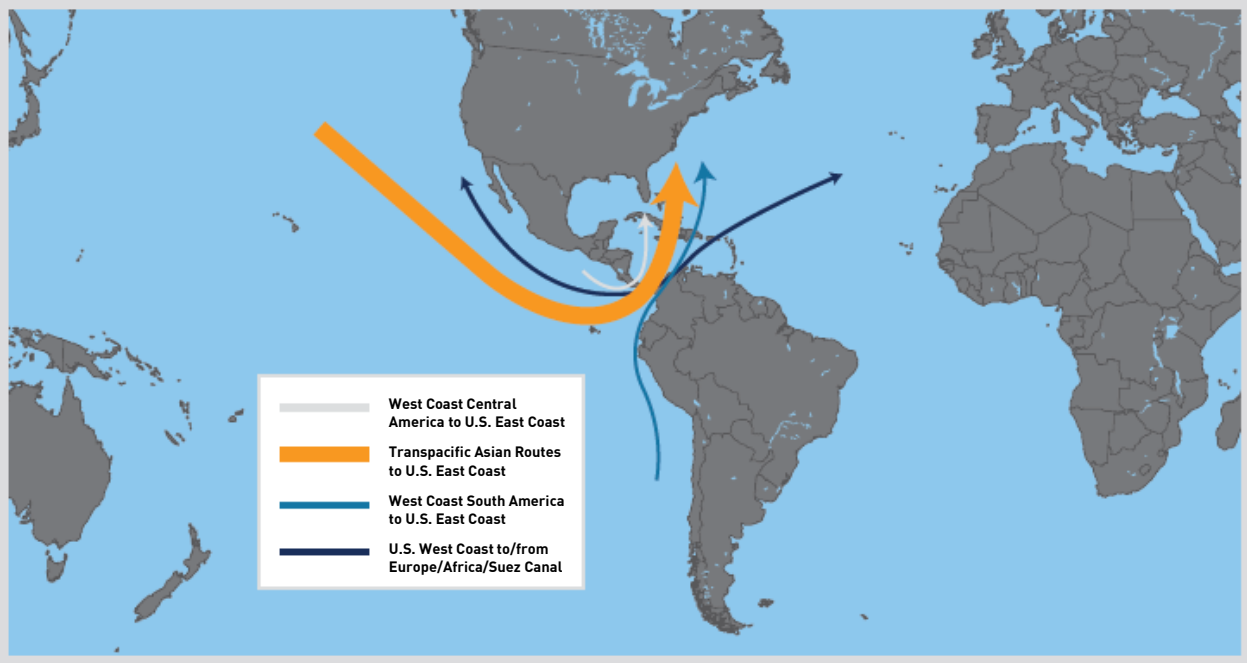
An expansion of the Panama Canal is due to be completed in 2016, doubling the Canal's capacity and allowing the transit of much larger ships that will lower the average per unit cost of ocean shipping. The expansion has generated great expectations about impacts on shipping volumes and other effects on port and inland infrastructure as well as economic development opportunities that could result.

Impacts may occur from two related developments. First are the direct physical impacts resulting from use of much larger ships, increasing in capacity from 5,000 twenty-foot-equivalent containers (TEUs) to over 13,000 TEUs. These much larger ships will require deeper port channels and berths, larger cranes, and more short term storage and handling, among other requirements. Since fewer ships will be needed

to carry the same cargo, use of these larger ships will also mean fewer port calls from larger ships, potentially changing carriers' calling patterns, especially on the US East Coast.

The second major impact is that use of larger ships will reduce per-unit shipping costs due to economies of scale, especially on longer-distance and high-volume trade lanes where economies of scale are largest. Figure 4-5 shows the major trade routes (by volume) that transit the Panama Canal.

Figure 4-5: Panama Canal Principal Trade Routes



Source: Parsons Brinckerhoff, Panama Canal Expansion Study, June 2012.

The figure shows that the United States is the largest market served by the Panama Canal, with about two-thirds of cargo tonnage transiting the Canal either originating from or destined to the United States. Thus the biggest impacts that may result from transportation cost reductions would likely occur on this trade route, especially in container trade.

Northeast Asia–US trade is dominated by US imports of manufactured consumer goods from China. Since the US exports a much smaller volume to Northeast Asia than it imports, container vessels are more fully loaded eastbound to the US and carry many empty containers westbound back to Asia. As a result, container vessel deployments on the Northeast Asia–US trade lane are heavily based on US demand for imports.

The potential impact of transportation cost reductions is the focus here.

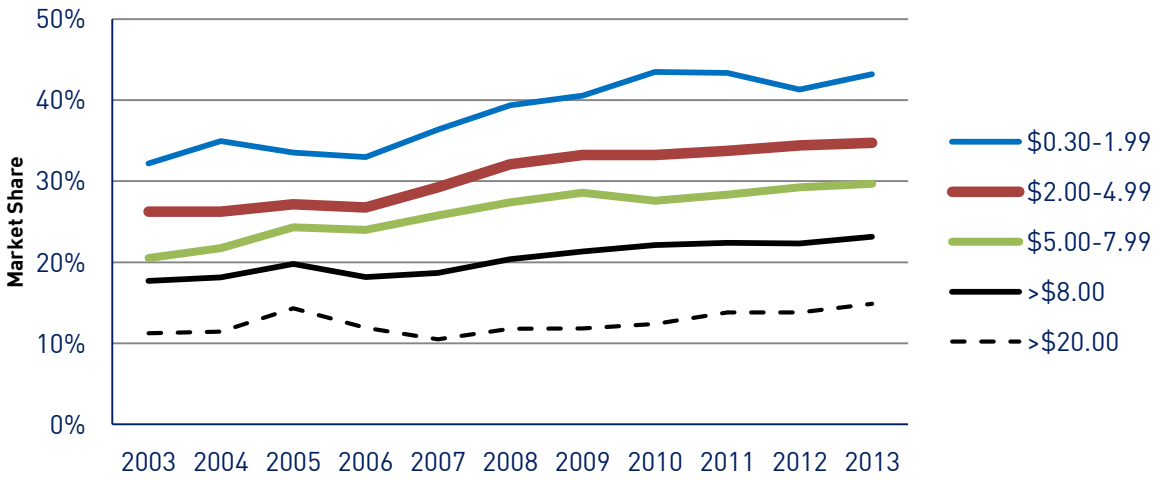
- How much will reduced transportation costs affect shipper decisions, shifting volumes of goods from Northeast Asia to the US through the West Coast to Panama Canal routes?
- If there are such shifts, will the Atlanta Region be affected?
- If so, what will be the effects on the Atlanta Region?

Multiple factors may affect the magnitude of potential coastal shifts in container volumes.

4.2.5.1 Market Segments by Product Value and Destination Region

A principal factor of potential coastal shifts is that container flows are not homogenous and undifferentiated. They are an aggregate of thousands of commodities moving from specific origins to specific destinations. Many commodity or geographic market segments are in fact not susceptible to possible shifts. Relatively high value products are likely to be shipped by quicker routes rather than less expensive ones. The figure below shows that East Coast market shares for lower-value products are much higher than those of high-value products (Figure 4-6 depicts East Coast shares of the nation for individual product value segments and thus would not sum to 100%). As shown in the figure, the East Coast share for lower-value products (those with values of $1.99 per kg. and lower) rose from 32% in 2003 to 43% in 2013. At the high end of the product value spectrum, products with a value of $8 or more had much lower East Coast shares in 2003 (18%) rising to 23% in 2013. Within this higher-value segment, products with a value of over $20/kg had even lower East Coast shares, 11% in 2003 increasing to 15% in 2013.

Figure 4-6: East Coast Market Share of Container Imports from NE Asia (2013 Product Value - $/kg)



Source: US Census Bureau International Trade data and Parsons Brinckerhoff analysis

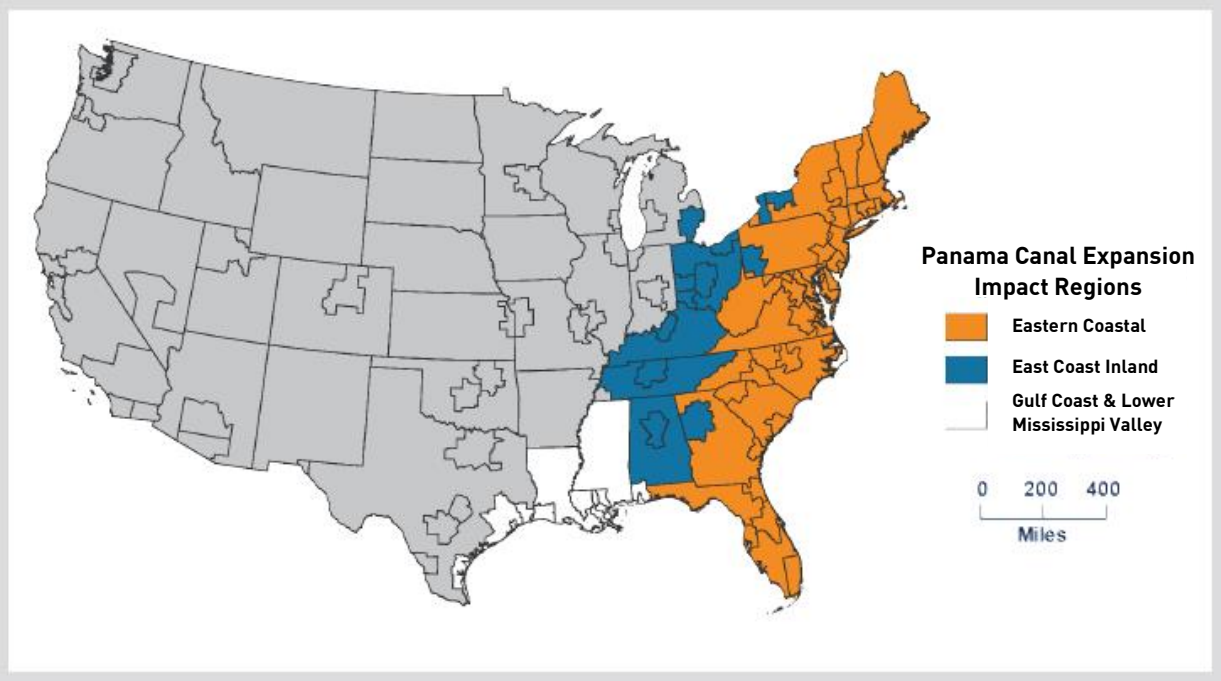
In the US, there is only a small subset of geographic areas that are destinations for Northeast Asian goods where the total cost of transportation, including land and ocean legs, could result in a reduction in total transportation costs.

According to the US DOT and Maritime Administration Panama Canal Expansion Study Phase I Report (November 2013), the principal region where Panama Canal (or Suez) routing is already well established is the US Eastern Coastal region (shown in orange in Figure 4-7). This encompasses US East Coast states from Maine to Florida, except the inland metropolitan areas of Rochester, Buffalo, Pittsburgh and Atlanta.

The East Coast Inland region (shown in blue in Figure 4-7) stretches from western New York and Detroit south to Ohio, Kentucky, Tennessee and Alabama. This region, which currently receives a mix of West Coast and East Coast traffic, could be affected by the Canal expansion, with more reliance on East Coast ports.

Metropolitan areas along the US Gulf Coast and states in the Lower Mississippi Valley (shown in white in Figure 4-7), like those in the East Coast inland region, could be affected by lower transportation costs resulting from Panama Canal expansion.

Figure 4-7: Panama Canal Expansion Impact Regions



Source: Parsons Brinckerhoff, Panama Canal Expansion Study, June 2012

4.2.5.2 Eastern Coastal Region

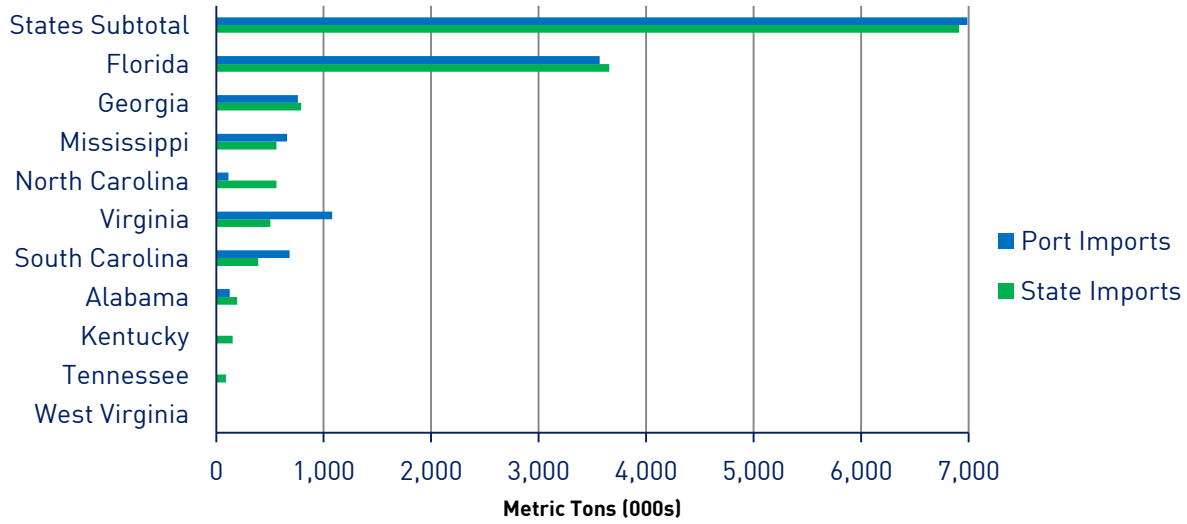
US Census Bureau data on US imports by port and state supports the conclusion that the Eastern Coastal region is where Panama Canal and Suez Canal services are well established. For containerized imports from Northeast Asia, in the six coastal states from Virginia south to Alabama, imports through state ports and into these states are roughly balanced at just over 6- thousand metric tons, as shown in Figure 4-8.

Among individual states, imports are relatively balanced between Georgia ports and the State of Georgia. The gateway ports of Norfolk and Charleston have surpluses of port imports over state imports while Florida, North Carolina, and Alabama all have state imports exceeding those states' port imports – an imbalance that ports in nearby states could be filling.[15]

This suggests that, on balance, aggregate containerized imports into these states from Northeast Asia may largely be transported through these states' ports and, conversely, that for imports through Norfolk, Charleston, Savannah, and Florida ports, the ports' hinterland is largely confined to these six coastal states.

[15] Census data do not connect imports by destination state with imports by port of entry. However, when states receive more volume than their local ports handle (a deficit), and ports in nearby states handle more volume than their home states receive (a surplus), there is a suggestion that ports with surplus are supplying neighboring states with deficits. This is not definitive: although Savannah and Georgia volumes are approximately balanced, Savannah handles some cargo for other states, and Georgia receives some from other ports. The general point is that the Southeast is broadly balanced, so to the extent that that the region receives cargo from elsewhere in the country, the region's ports are sending cargo elsewhere as well.

Figure 4-8: Containerized Imports from Northeast Asia in 2014 (thousands of metric tons)



Source: US Census Bureau Foreign Trade Data and Parsons Brinckerhoff analysis

4.2.5.3 Inland Coastal Region and the Atlanta Region

According to the MARAD study, goods from Northeast Asia moving through West Coast ports are transported inland as far east as upstate New York, Pittsburgh, Ohio and Atlanta. This is largely due to faster transit times and competitive transportation costs provided by intermodal rail service from West Coast ports to these major US markets.

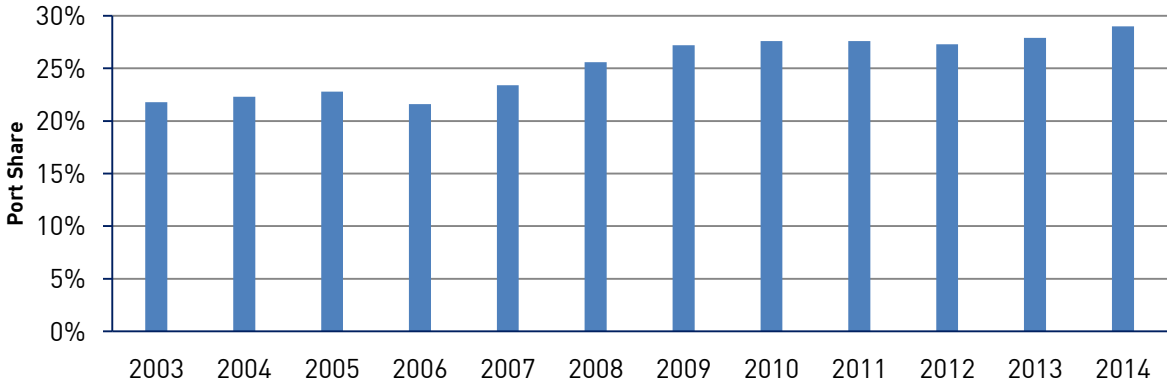
The study also concludes that the Inland Coastal region is the principal region where lower costs could result in some shifting towards Panama Canal routes, especially when supported by complementary development of inland rail and other infrastructure that may further reduce relative transit times and costs.

The study highlighted the Atlanta Region as being the largest single metropolitan market area in the region at three percent of all US imports from Northeast Asia.

4.2.5.4 Remaining Potential for Shifts

A second major factor that could affect the potential for shifts between coasts and resulting East Coast port volumes is that significant volumes have already shifted over the past decade, and this may limit the potential volumes that may be susceptible to further shifts. As shown in Figure 4-9, East Coast shares of container imports from Northeast Asia increased from the 22% level in 2003 and 2004 to 28% in 2010 through 2013, with the most rapid rise in 2007 to 2009. Some of this shift may be attributed to congestion and labor issues occurring on the West Coast in 2004 and 2006, with importers modifying their supply chain and distribution strategies to minimize the potential for future disruptions. Similar issues on the West Coast likely explain the additional shifts in coastal market shares in 2014 (to 29%) and into early 2015.

Figure 4-9: East Coast Port Shares of Container Import Tonnage from Northeast Asia



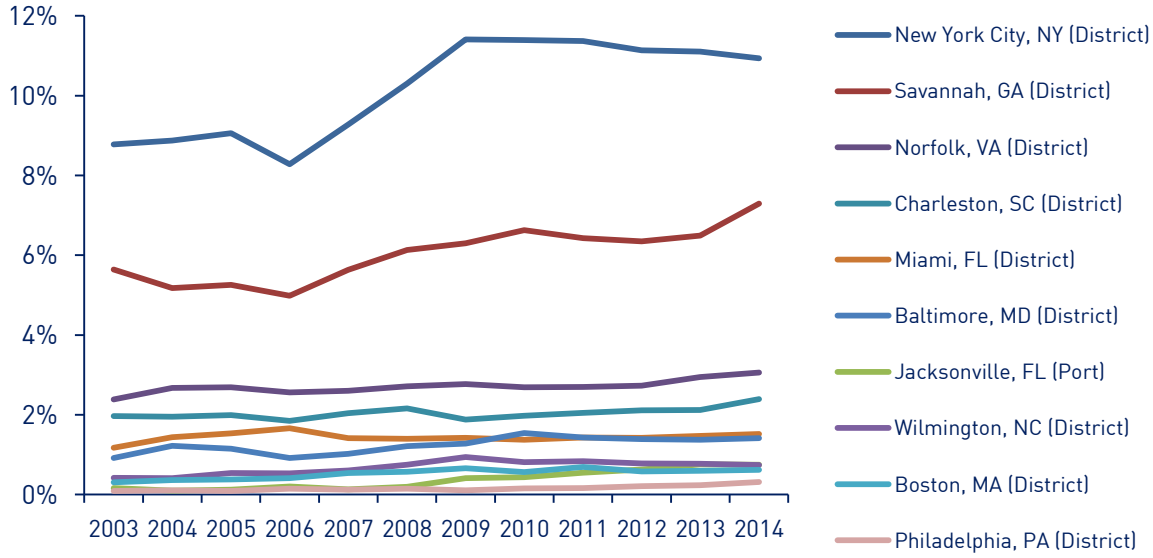
Source: US Census Bureau Foreign Trade Data and Parsons Brinckerhoff analysis

It is important to note that the shift in coastal shares of container imports from Northeast Asia has been uneven by port. As shown in Figure 4-10, between the relatively low point in 2006 and 2010 the Port of New York and New Jersey's share increased by over 3%, or half of the total shift in coastal share. However, since 2010 the Port's share has decreased by 1%.

In comparison, the Port of Savannah's share grew more slowly and has risen in 2014 accounting for most of the coastal increase in 2014. Savannah's container port twenty-foot equivalent (TEU) volumes have continued to grow in 2015, 14% year-to-date in 2015 through October. Whether these recent increases represent a short-lived phenomenon resulting from West Coast congestion issues is unclear.

The historical shifts described here have all occurred in the decade preceding expansion of the Panama Canal. The questions are how much potential there is for remaining shifts and whether or not any continuing shifts in 2016 and beyond can be attributed to Canal expansion or instead to continuing desires by importers to revise their supply chain designs to mitigate future risks.

Figure 4-10: East Coast Port Shares of Container Import Tonnage from Northeast Asia



Source: US Census Bureau Foreign Trade Data and Parsons Brinckerhoff analysis

4.2.5.5 Transportation Cost Reductions

A third major factor that will affect shifts in coastal volumes is the relative reduction in ocean transportation costs that will result from using bigger ships. However, while gross reductions will occur, it is net cost savings passed on to beneficial cargo owners and consumers that will affect short-term routing decisions and longer-term revisions to supply chains.

Gross savings per container could amount to several hundred dollars per TEU. However, these cost savings will be retained, at least in part, by the ocean carriers who have been investing billions of dollars in ever-larger container ships. In addition, some costs savings are likely go to the other participants in the ocean, port and inland transportation system that have been investing in infrastructure to attract and accommodate large ships. The Panama Canal Authority itself is one such participant, and the tolls the Canal Authority will charge are likely to be commensurate with the benefits the expanded Canal brings to world shipping. Another major participant is US western railroads, who have made major investments in transcontinental corridor capacity additions and should be expected to price their services to protect their investment.

A final component of the cost factor is that it is relative costs that matter. Much larger ships from Asia will also be deployed on the Transpacific trade lane, calling on North American West Coast ports, which will also reduce costs but not require tolls for going through the Panama Canal. Indeed, some of these ships will exceed the size that the expanded Panama Canal can accommodate: the 18,000 TEU vessels that began calling on North American West Coast ports in 2016[16] are about one-third larger than the capacity of the new Panama Canal locks. It is the relative reductions in costs that may ultimately affect coastal and port shares of containerized goods imported from Northeast Asia.

Volume Impacts on the Atlanta Region

Based on the information presented, it appears that the Atlanta Region may be one of the areas in the United States that could experience some impacts from Panama Canal expansion. However, these impacts are not likely to mean increased volumes moving into the Atlanta Region as a result of increased consumption. Nor are there likely to be major shifts in the movement of goods to inland regions (e.g. through Savannah to Memphis). What could occur is that East Coast ports experience some increases in volumes destined to the Atlanta Region, by rail or truck, which would otherwise have arrived by rail from the West Coast. This may result in some regional shifts in desired warehouse and distribution locations, and this impact would be focused on lower-valued goods.

4.2.5.6 Summary of Panama Canal Expansion Impacts

Aggregate container volume impacts resulting from Panama Canal expansion are likely to be minimal and gradual for many commodities, ports and transportation corridors and may be indiscernible from a continuation of shifts occurring over the past decade.

The Atlanta Region is one of the areas in the US that could be affected most from expansion impacts. However effects will most likely be seen not in an increase in the volumes of imports arriving in the region, but rather in the transportation patterns by which they arrive, such as increased imports through Savannah and other East Coast ports rather than by rail from the West Coast. In short, a) the consumption of imports may not change much at the national or the regional level; but, b) the routing of imports could change, with more goods entering through Savannah and other regional ports; and c) distribution centers closer to these ports could see their volume rise.

[16] http://www.lloydsloadinglist.com/freight-directory/news/CMA-CGM-to-deploy-six-18000teu-ships-on-transpacific/65764.htm

4.2.6 Summary of Impacts of Global Trends on Atlanta Freight Flows

Table 4-1 summarizes the impacts of the six global trends above on freight movement in the Atlanta Region. Combined together, the trends indicate that freight movement will continue to grow at a robust pace and that the region will have the need to accommodate much more freight traffic over the long term planning horizon.

Table 4-1: Global Trends Impact on Metro Atlanta Freight Movement

National/ Global Trend	Impact on Atlanta Metropolitan Region
Continued Globalization, Increasing Global Population	• Increased opportunities for economic expansion by international exports. • Increased importance of HJAIA and Port of Savannah.
Global Manufacturing Shifts, Including Near-Shoring/Reshoring	• Additional opportunities to expand the region's economy through leveraging unique global-scale freight assets.
E-commerce Fulfillment Centers	• Larger and more numerous freight clusters. • Increased importance of freight system reliability. • Smaller and more frequent truck trips, including more home deliveries. • Automation bringing redevelopment of close-in industrial districts in coming years, with more demand on existing roadways.
New Sources of US Oil and Gas	• Cheaper diesel fuel and energy for manufacturing.
Panama Canal Expansion	• Increased flows from Savannah to Metro Atlanta on truck and rail. • Altered truck and rail flows through Metro Atlanta to other locations in the Southeast and Mid-South.

Source: FHWA Freight Intermodal Connectors Study; Consultant analysis.

5.0 ASSESSMENT OF PERFORMANCE MEASURES, OPPORTUNITIES, AND NEEDS

Beyond global trends, there are a number of local trends affecting freight movements within and through the Atlanta Region. A major issue at the local level is the effect land use decisions have on goods movement on the strategic freight network. Manufacturing firms, warehouses, distribution centers, intermodal facilities and other freight-intensive land uses tend to be clustered due to local zoning laws. In addition, many of the opportunities to support these locations are related to capitalizing on the region's freight assets in order to spur economic development. However, in order to achieve such benefits the region must also address corresponding performance needs, notably operational and spot capacity expansions on the freight network to accommodate demand.

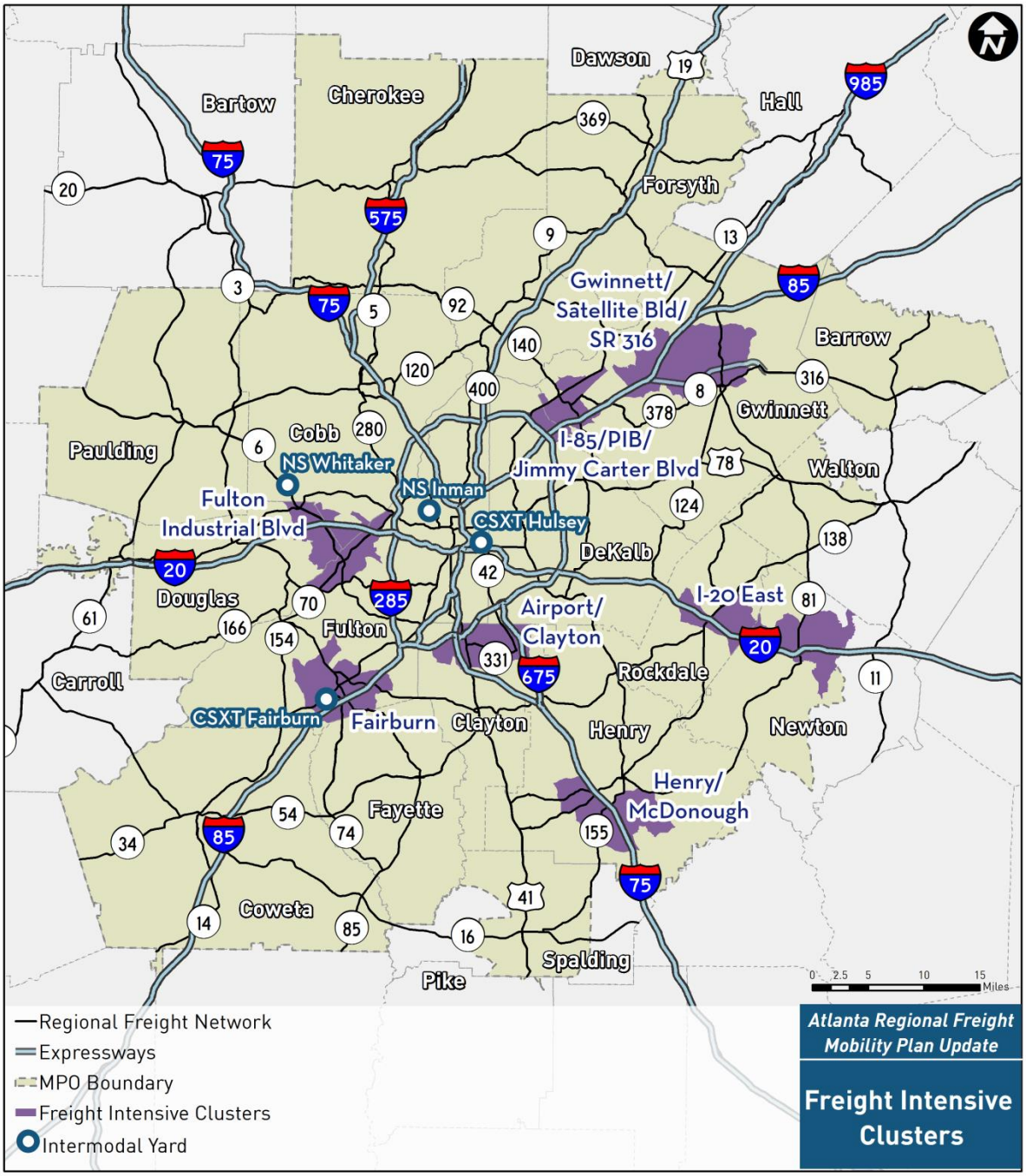
This chapter accordingly examines the performance of the roadway system and its multimodal linkages in the Atlanta Region. It begins with identification of the major clusters of freight activity in the region, which ties back to the discussion of modes and trends in prior chapters, and sets the stage for performance assessment by defining the key locations and connections the freight system must serve. It then presents a review of best practices for the composition of freight performance measures and recommends a set of such measures for the region. Next, it assesses regional freight performance according to a number of these measures that are critical to user needs, specifically in the dimensions of accessibility, mobility, reliability, and safety. It does this by analyzing performance on the ASTRoMaP network as it reaches and connects between the major activity clusters; in other words, it analyzes performance on the core roadway freight system in service to the primary centers of the freight-related economy. Next, it examines conditions and performance on intermodal connectors that link to rail, air, and pipeline facilities, and it concludes with a summary of trends, needs and opportunities from this and the previous chapter. The needs and opportunities to improve freight flow provide a foundation for the identification and prioritization of freight projects, which is the subject of Chapter 6.

5.1 Major Freight Activity Clusters

Much of Metro Atlanta's freight activity is centered on one of the region's freight clusters:

- Airport/Clayton
- Fairburn
- Fulton Industrial Blvd.
- Gwinnett/Satellite Blvd./SR 316
- I-20 East
- I-85/PB/Jimmy Carter Blvd.
- McDonough/Henry Co.

Figure 5-1: Freight-Intensive Clusters



Source: Georgia Power Company. Consultant analysis.

Metro Atlanta's major freight clusters generate and attract disproportionately large volumes of freight, primarily trucks. This is because they contain a significant share of the region's manufacturing and warehousing/distribution facilities. By square footage, the seven clusters are estimated to contain just over one-third of the region's manufacturing facilities and half of its warehousing/distribution facilities. The clusters are shown in Figure 5-1. The majority of them are outside of I-285 although several are along the perimeter. Tables 5-1, 5-2 and 5-3 show the amount of square footage and number of firms within each of the seven clusters for warehouses and distribution centers, manufacturing facilities, and vacant industrial

properties, respectively. Figures 5-2, 5-3, and 5-4 show the locations of each of these types of facilities in the region using heat maps.

Warehouses and distribution centers are the largest facility type in the region. The leased amount of warehouse and distribution center space in the Atlanta Region is nearly 130 million square feet. This compares to 75 million square feet of manufacturing facilities and 18 million square feet of vacant industrial property.

Warehouses and distribution centers, summarized in Table 5-1, also exhibit the largest amount of clustering in the region. More than 45 percent of these facilities (based on square footage) are located in the top five clusters. The Fulton Industrial Boulevard Cluster is the largest of these and it is home to approximately one-sixth of the entire warehouse and distribution center capacity in the Atlanta Region. The McDonough/Henry Cluster and I-85/PIB/Jimmy Carter Blvd Cluster are second and third largest with 13 percent and 6 percent of the region's warehouses and distribution centers. The McDonough/Henry Cluster features by far the largest warehouse and distribution centers with an average size of nearly 543,000 square feet. The other clusters generally have average sizes between 200,000 and 300,000 square feet.

Nearly 30 percent of the region's manufacturing facilities are located within the top five clusters, as summarized in Table 5-2. The I-20 East Cluster is the largest of these with 12 percent of the total leased manufacturing facilities in the Atlanta Region. Fulton Industrial Boulevard and I-85/PIB/Jimmy Carter Boulevard are the next largest clusters for manufacturing facilities with 8 percent and 5 percent, respectively. Manufacturing facilities tend to be relatively small with an average square footage of 76,000 compared to 308,000 square feet for warehouses and distribution centers.

As Table 5-3 illustrates, the Fulton Industrial Boulevard Cluster has the highest percentage of vacant properties both by square footage and number of buildings. In total, there are 36 vacant industrial properties in this cluster with more than 3.6 million square feet of space. This is more than the next four clusters combined and it represents 20 percent of all of the vacant industrial properties in the region. The Airport/Clayton Cluster is the next largest location of vacant properties with 14 vacant industrial properties covering 1.7 million total square feet. The sizes of the vacant properties are relatively small averaging over 100,000 square feet in the largest clusters and 50,000 square feet throughout the region. This indicates that they are best suited for manufacturing activities and not likely to be future locations of large warehousing and distribution center operations, barring redevelopment.

An examination of truck GPS data reinforces the notion of clustering of freight activity in the Atlanta Region. Figure 5-5 shows the trip ends of trucks in the Atlanta Region based on truck GPS data collected for the GDOT Freight and Logistics Study. The Fulton Industrial Boulevard Cluster, Airport/Clayton Cluster, and McDonough/Henry Cluster are prominent truck trip end locations based on this data.

The locations of large developments in the Atlanta Region can also be tracked by analyzing trends in Developments of Regional Impact (DRI) applications. Under the Georgia Planning Act, development projects that are likely to have an impact beyond the host government's jurisdiction are subject to review through the DRI program. Table 5-4 shows that 38 percent of these locations are within the region's existing freight-intensive clusters, particularly Fulton Industrial Boulevard and Fairburn. This shows that there is a strong tendency for major industrial facilities to co-locate with other industrial activities.

Table 5-1: Locations of Warehouses and Distribution Centers

Cluster	Leased Area (Sq. ft.)	Percent of Total Leased Area	No. of Firms	Average Facility Size
Fulton Industrial Blvd.	21,860,200	17%	83	263,376
McDonough/Henry	17,364,802	13%	32	542,650
I-85/PIB/Jimmy Carter Blvd.	7,699,134	6%	38	202,609
Airport/Clayton	6,607,929	5%	22	300,360
Fairburn	6,136,180	5%	14	438,299
Gwinnett/Satellite Blvd./SR 316	3,895,954	3%	15	259,730
I-20 East	2,893,500	2%	11	263,045
Subtotal	***66,457,699***	***51%***	***215***	***324,296***
Remainder of Region	63,419,366	49%	206	231,052
Total	**129,877,065**	**100%**	**421**	**308,497**

Source: Georgia Power Company. Consultant analysis

Table 5-2: Locations of Manufacturing Firms

Cluster	Leased Area (Sq. ft.)	Percent of Total Leased Area	No. of Firms	Average Facility Size
I-20 East	8,866,434	12%	50	177,329
Fulton Industrial Blvd.	5,727,596	8%	70	81,823
I-85/PIB/Jimmy Carter Blvd.	3,736,728	5%	60	62,279
Gwinnett/Satellite Blvd./SR 316	3,276,135	4%	38	86,214
Fairburn	2,130,230	3%	13	163,864
McDonough/Henry	1,776,677	2%	14	126,906
Airport/Clayton	1,209,191	2%	18	67,177
Subtotal	***26,722,991***	***36%***	***263***	***109,370***
Remainder of Region	47,938,838	64%	710	64,898
Total	**74,661,829**	**100%**	**973**	**76,734**

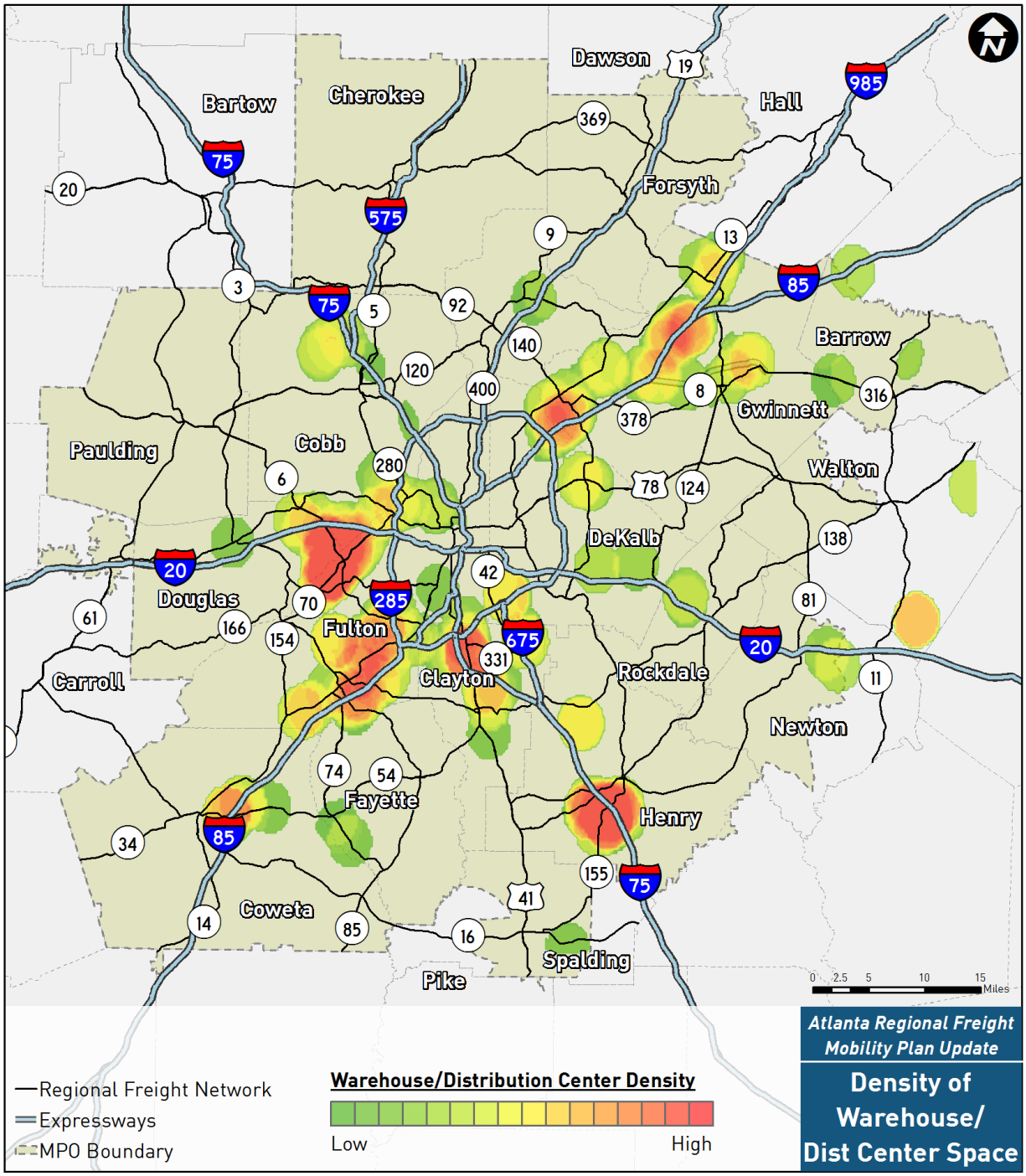
Source: Georgia Power Company. Consultant analysis

Table 5-3: Locations of Vacant Industrial Properties

Cluster	Leased Area (Sq. ft.)	Percent of Total Available Area	No. of Bldgs.	Average Facility Size
Fulton Industrial Blvd.	3,640,437	20%	36	101,123
Airport/Clayton	1,699,085	9%	14	121,363
I-20 East	1,252,198	7%	23	54,443
Fairburn	1,240,341	7%	8	155,043
McDonough/ Henry	1,144,820	6%	9	127,202
I-85/PIB/Jimmy Carter Blvd	553,825	3%	22	25,174
Gwinnett/Satellite Blvd/SR 316	342,673	2%	6	57,112
Subtotal	9,873,379	53%	118	91,637
Remainder of Region	8,619,465	47%	249	28,967
Total	**18,492,844**	**100%**	**367**	**50,389**

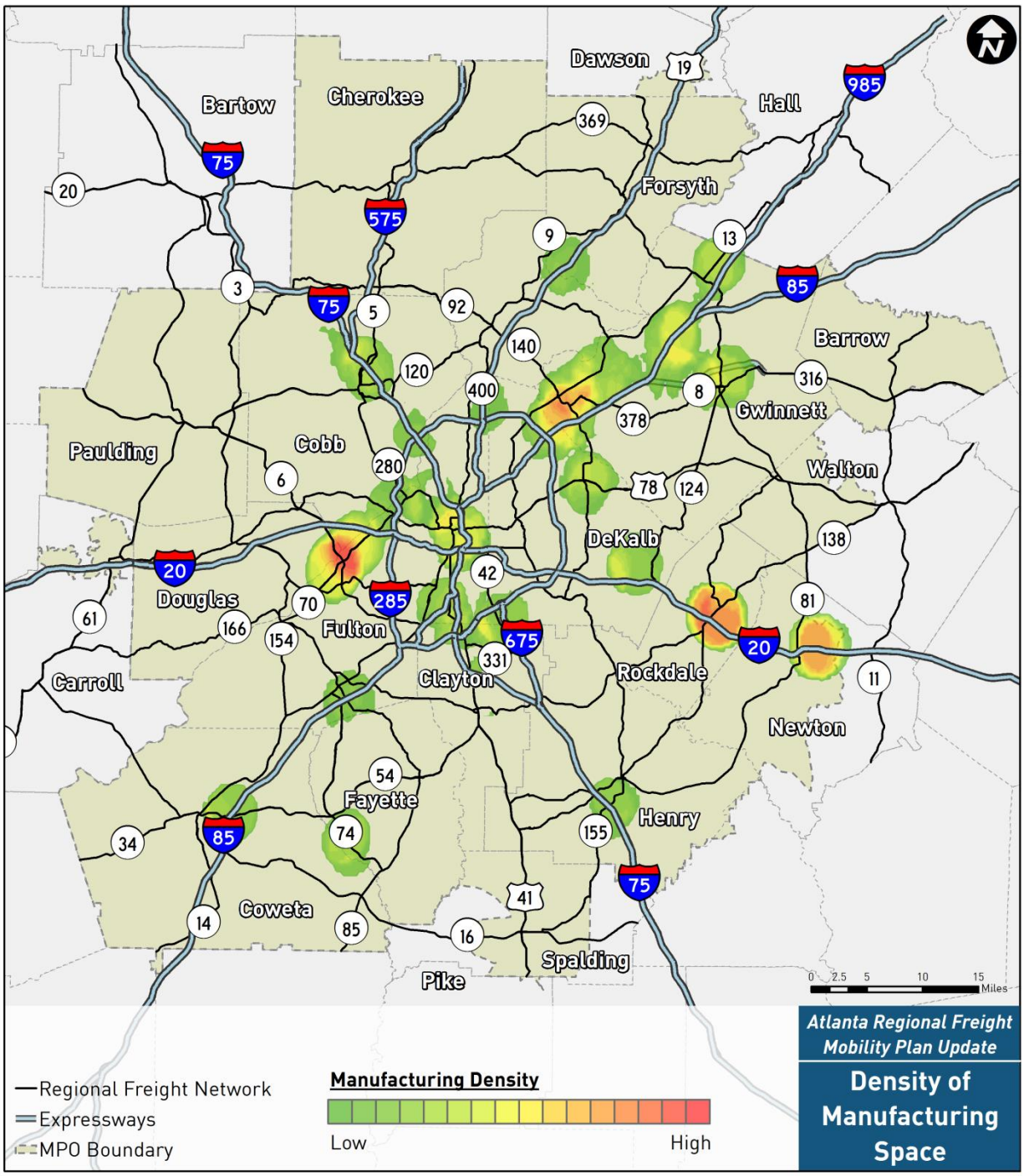
Source: Georgia Power Company. Consultant analysis

Figure 5-2: Density of Warehouse Space in the Atlanta Region



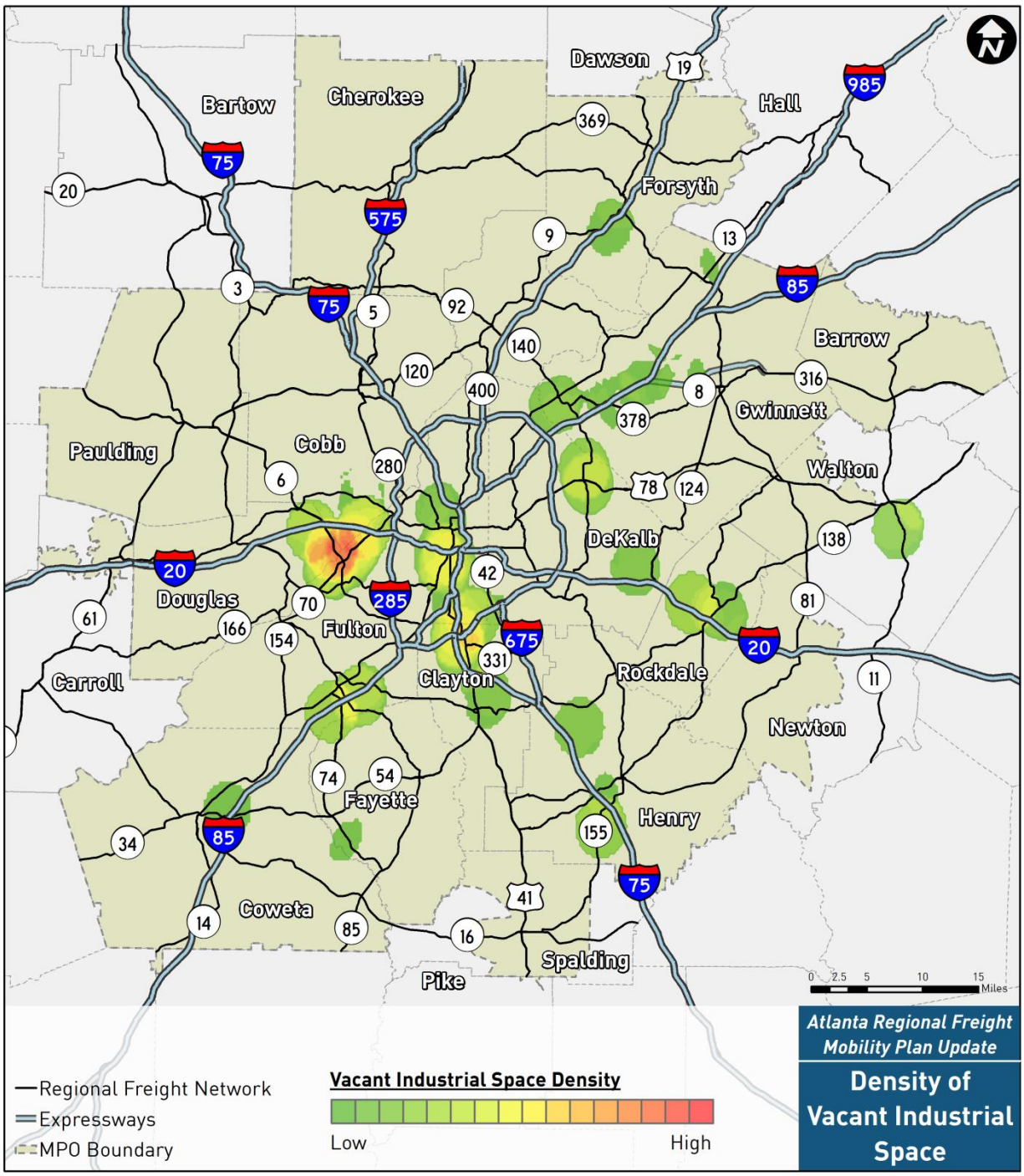
Source: Georgia Power Company. Consultant analysis

Figure 5-3: Density of Manufacturing Space in the Atlanta Region



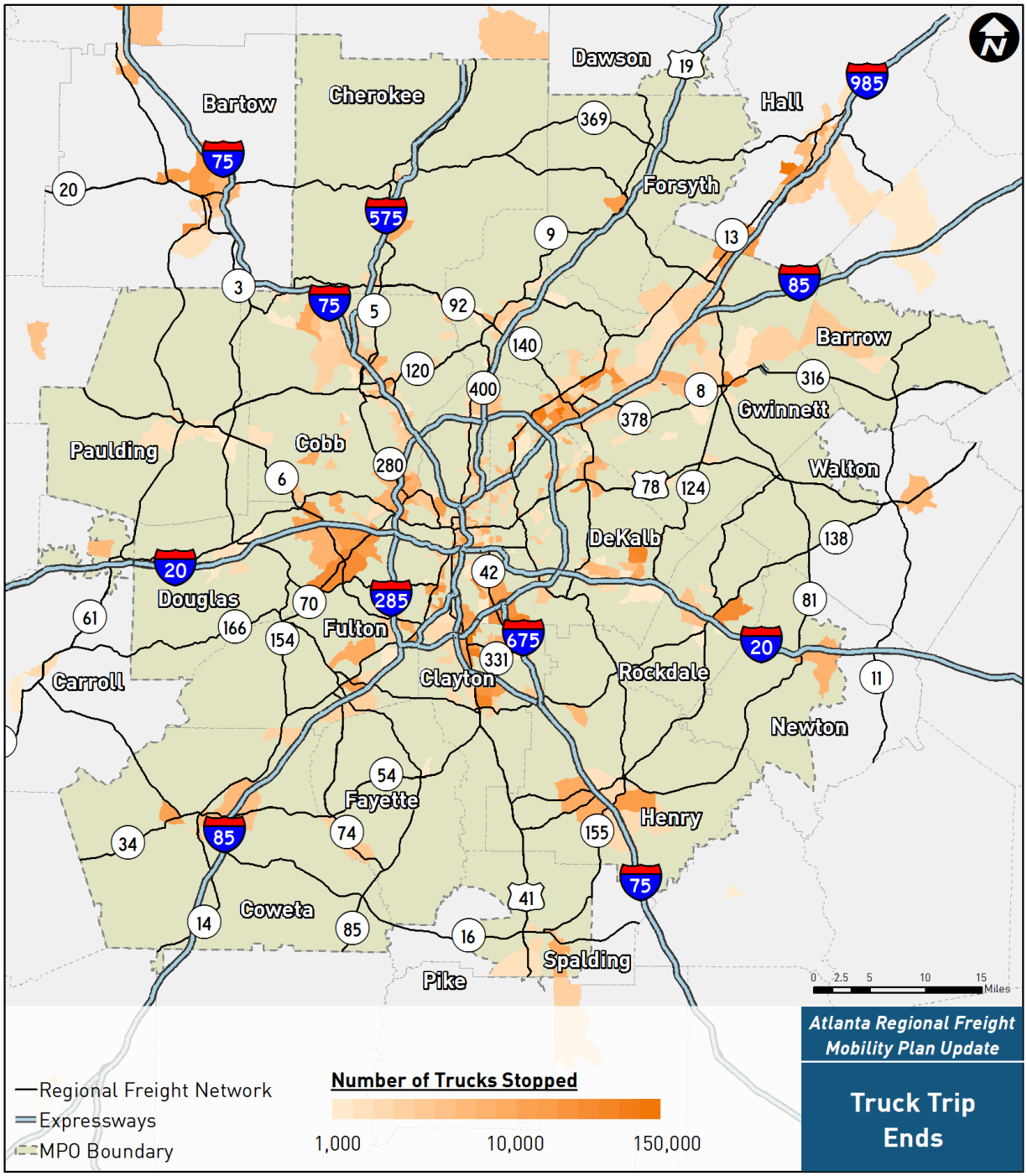
Source: Georgia Power Company. Consultant analysis

Figure 5-4: Density of Vacant Industrial Space in the Atlanta Region



Source: Georgia Power Company. Consultant analysis.

Figure 5-5: Truck Trip Ends in the Atlanta Region



Source: Georgia DOT Freight & Logistics Plan, 2012.

Table 5-4: Locations of Industrial Developments of Regional Impact, 2000-2014

Cluster	No. of Applications	Percent of Total
Fulton Industrial Boulevard Cluster	11	10%
Fairburn Cluster	12	11%
McDonough/Henry Co. Cluster	6	6%
I-85/PIB/Jimmy Carter Blvd. Cluster	4	4%
Airport/Clayton Cluster	3	3%
Gwinnett/Satellite Blvd./SR 316 Cluster	3	3%
Kennesaw/Barrett Pkwy. Cluster	1	1%
Other Clusters (I-20 East, Alpharetta, etc.)	0	0%
Other Locations in Atlanta Region	66	62%
Total	**106**	**100%**

Source: Atlanta Regional Commission. Consultant analysis

5.2 Highway Freight Performance Analysis

Performance measures provide the basis for which the operations of the freight network can be analyzed and improved. The intent of this analysis is to obtain results that will strengthen the overall position of the goods movement industry, support targeted investments of limited resources, address issues most critical to users, and guide policy decision making. This section and those following set forth the analysis of freight performance, beginning with an organizational approach, then reviewing national best practices for freight performance measurement, recommending a set of measures for Metro Atlanta, and applying key measures to highway performance in the region. Next, the modal content of the analysis is broadened by examining the conditions and performance of intermodal connectors. These are the roadways linking to rail, air and pipeline facilities, and they are the portions of the multimodal freight network whose performance can be most influenced by ARC. Finally, the findings on performance are tied back to the discussion of marketplace trends for summary observations on needs and opportunities.

A pragmatic way to organize performance analysis is to focus on travel from major regional points of origin to major regional destinations, and to structure the set of origins and destination so that they cover the geography of the region within a reasonable number of pairs. The freight clusters and Region Centers shown above in Figure 5-1 and described in detail in Section 5.1 provide a means to accomplish this. In the analysis, four region centers - Alpharetta, Buckhead, Kennesaw/Barrett Parkway, and Region Core – serve as destinations for freight traffic that begins in one of the seven freight-oriented clusters. Region centers represent areas of significant commercial activity, as determined by total employment, in the metropolitan area, and are important freight destinations – especially for consumer goods.

The manufacturing/distribution clusters were chosen not only because of specific transportation or freight-related characteristics, but also to provide representative coverage of the region's transportation network. The intent was also to provide a manageable number of clusters, thus the clusters are not intended to reflect exhaustive coverage of the region.

Similarly, Region Centers were not only chosen because they represent a significant share of the Atlanta Region's population and commercial activity but also because they provide representative coverage of the region's transportation network. Thus, the chosen Region Centers facilitate the analysis and yield a big-picture view of freight performance, particularly the reliability of freight travel across the Atlanta Region during peak periods. Other commercial centers – such as Perimeter Center and Cumberland – were not

included because nearby region centers (namely Kennesaw/Barrett Pkwy. and Alpharetta) provide network coverage of those areas.

For the purposes of measuring mobility and accessibility performance, the 11 clusters (shown in Table 5-5) have been grouped into origins (Manufacturing and Distribution) and destinations (Region Centers and Distribution).

Table 5-5: Atlanta Region Freight Clusters

ORIGINS: Manufacturing & Distribution	DESTINATIONS: Region Centers & Distribution						
	Region Core	Buckhead	Kennesaw/ Barrett Pkwy	Alpharetta	Airport/ Clayton Co	McDonough/ Henry Co	Gwinnett/ Satellite Blvd./SR 316
Fulton Industrial Blvd.							
I-85/PIB/JC Blvd.							
I-20 East/Conyers/ Covington							
Fairburn/Camp Creek							
Airport/Clayton							
McDonough/Henry							
Gwinnett/Satellite Blvd./SR 316							

Each cluster type was chosen based on specific levels of activity:

- Region Center: Total employment, as representative of commercial activity
- Distribution: Coverage (square footage) of warehousing and distribution center facilities
- Manufacturing: Coverage (square footage) of manufacturing facilities

For purposes of the analysis, manufacturing-oriented freight clusters function solely as origins and Region Centers function as solely as destinations. Distribution-oriented freight clusters serve dual roles, functioning as both origins (supplying Region Centers) and destinations (receiving goods from manufacturing-oriented clusters) in the analysis. Though in reality flows do travel in both directions for all cluster types (for example, trucks return empty or bring back unwanted goods), the purpose of this analysis is to examine the accessibility of originating freight clusters to receiving points.

5.3 Freight Mobility Performance Measures – National Practices

Table 5-6 illustrates the freight-related performance measures that have been used or recommended in selected MPOs in the US. Additional MPOs were contacted but did not provide additional information regarding freight performance measures, or in many cases were waiting to see what proposed federal regulations might require. This table should be viewed with some caution. Some of the MPO references cite the regional transportation plan and thus the number of measures is quite limited (see, for example, Portland METRO and San Diego's SANDAG). The remaining references are from area-wide freight studies and thus are much more comprehensive in terms of alternative modes and metrics that are used. The evaluation criteria used in the 2008 ARC Freight Plan are also presented to illustrate the types of issues and concerns the previous plan was aimed at (although not technically performance measures, evaluation criteria are related to what is important to decision-makers and thus provide some sense of the categories of issues that need to be monitored).

Table 5-6: MPO Freight Performance Measures

MPO	Freight Plan	Performance Measures Framework
ARC (Atlanta)	2008 Atlanta Regional Freight Mobility Plan[17]	The following were evaluation criteria used to assess alternative strategies and projects and as such are not really performance measures. However, they are related enough to give a sense of what impacts/outcomes were considered to be important as they relate to system performance. • Truck/Rail Diversion • Highway Congestion/Delay • Rail Congestion/Delay • Travel Time/Reliability • Freight Trip Times • Truck Traffic Peak/Off-Peak Shares • Freight Vehicle Miles of Travel • Freight Vehicle Hours of Travel • Safety • Truck Emissions • Community Impacts • Land Use Impacts - Transport Corridors • Land Use Impacts - Intermodal/Warehouse/Distribution Facilities • Regional Economic Output/Competitiveness • Jobs/Economic Opportunity
CMAP (Chicago)	2010 Regional Freight System Planning Recommendations Study[18]	**CREATE Project Completion** • An additional 10 projects by 2015 • All 71 CREATE projects by 2030 (Older report, unclear if they were adopted.) **Reduction in Railroad Grade Crossing Delays** • 10,000 hours/weekday by 2015; 5,500 hours/weekday by 2040 **With regard to freight accessibility, the following measures are proposed:** • Arterial road network accessible to legal freight vehicles • Intermodal facilities with NHS roadway, rail access • Major generators within X miles or minutes of interstate, four-lane highway, or intermodal facility • Percent of goods moved with option of more than one modal choice • Track-miles with 286-pound railcar capacity rating

[17] http://documents.atlantaregional.com/transportation/freight/Freight_Mobility_Plan_Final_Report_Feb%206_%202008.pdf

[18] http://www.cmap.illinois.gov/documents/10180/21431/Freight_chapter.pdf/6804d3a9-cd94-4f49-b23b-e1d70f9fb8aa

MPO	Freight Plan	Performance Measures Framework
MTC (Bay Area)	2014 Alameda County and MTC Regional Goods Movement Plans[19]	Specific measures have not been defined, but six general goal areas have been determined. The recommended performance measures are included below. The plan includes detailed descriptions for how to quantify each of them. **Environmental Impacts** • Tons of GHG emissions • Tons of $PM_{2.5}$ emissions • Tons of NO_x emissions • Freight Impacts, such as light, noise pollution, safety, air pollution and encroachment on specific, adjacent communities most affected **Travel Time** • Buffer time index on freight (truck) routes **Freight-Related Crashes** • Truck-involved crashes and crash rates (including crashes with bikes/peds) • Crashes at at-grade rail crossings **Freight Infrastructure Conditions** • Bridge conditions ratings • Freight (truck) highway and arterial routes pavement conditions ratings **Freight Resiliency** • Addresses freight system vulnerability to major service disruptions due to major natural or other events **Use of Innovative Technologies** • Use of ITS and innovative technologies, such as zero-emission technologies **Travel Time Delay** • Travel time delay on freight (truck) routes • Travel time delay on railways, terminals, ports, airports **Multimodal Connectivity and Redundancy** • Freight routes access from/to locations with significant freight activities • Access to rail lines, terminals, ports, and airports from/to locations with significant freight activities **Coordinate with Passenger Systems** • Freight system element shared use with passenger system and addresses passenger/freight conflicts **Compatibility with Land Use Decisions** • Locations and corridors with significant freight activities in proximity to non-compatible land uses currently and in the future **Economic Contribution** • Jobs and output generated (including co-benefits of public health strategies)

[19] http://files.mtc.ca.gov/pdf/rgm/3A_Performance_Measures.pdf

MPO	Freight Plan	Performance Measures Framework
NCTCOG (Dallas-Ft. Worth)	2013 Freight System Inventory[20]	**Truck** • Number and severity of truck-involved incidents • Volume/Tonnage of freight shipped/moved • Trends of trucking costs • Commodity flows • Travel time and reliability • Pavement conditions • Level of Service (LOS) • Estimated congestion levels • Bridge conditions • Employment • Number of trucks by type **Rail** • Number, severity, and locations of incidents • Number of at-grade crossings • System condition and performance • Freight rail yields • Freight rail revenue ton miles • Freight rail volumes • Value • Employment • Location of abandoned track **Air** • Number of air cargo carriers • Freight volumes • Value • Employment • Carrier route miles **Pipeline** • Oil/Natural gas movement • Number of pipeline incidents • Number of hazardous materials incidents • Volume moved **Intermodal** • Lift capacity • Terminal capacity • Number of TEUs, containers, or rail cars • Storage capacity (onsite) • Pavement conditions on links to facilities • Average distance between terminals and regional shipping points **All Modes** • Hazardous materials incidents • Cost per ton-mile • Fuel consumption per ton-mile
Portland METRO	2014 Regional Trans Plan[21]	Freight reliability – By 2040, reduce vehicle hours of delay per truck trip by 10 percent compared to 2010.
PSRC (Seattle)	2010 Regional Freight Strategy[22]	Freight data analyses were done in four areas: truck values of time, operating costs, speeds, and performance measures.

[20] http://www.nctcog.org/trans/goods/freight/documents/FreightNorthTexas2013.pdf
[21] http://www.oregonmetro.gov/sites/default/files/RTP-2014-final.PDF
[22] http://www.psrc.org/assets/4886/Appendix_J_-_Freight_Strategy_-_FINAL_-_August_2010.pdf

MPO	Freight Plan	Performance Measures Framework
Savannah CORE MPO	Technical Memorandum Performance Measures[23]	**Highway** • Combination Truck Miles Traveled • Truck Miles Traveled • Travel Time Reliability • Combination Truck Average Travel Speed • Vehicles Per Lane Mile **Aviation** • Tonnage **Rail** • Tonnage **Seaport** • Tonnage • Truck Equivalent Units
SCAG (Los Angeles)	2013 Comprehensive Regional Goods Movement Plan and Implementation Strategy[24] [25]	Freight plan does not discuss performance measures explicitly. However, LRTP does present performance measures that could be applied to freight. These are: **Mobility and Accessibility** • Truck delay by facility type (highway, arterials). Excess travel time resulting from the difference between a reference speed and actual speed **Safety and Health** • Collision/accident rates by severity by mode. Accident rates per million vehicle miles by mode (all, bicycle/pedestrian, and fatality/killed) **Environmental Quality** • Criteria pollutants emissions: CO, NO_x, $PM_{2.5}$, PM_{10}, and VOC • Per capita greenhouse gas emissions (CO_2) **Economic Well Being** • Number of jobs added to the economy as a result of improved transportation conditions which make the region more competitive • Total number of jobs supported in the economy as a result of transportation Expenditures • Gross regional product due to transportation investments and increased competitiveness **Investment Effectiveness** • Ratio of monetized user and societal benefits to the agency transportation costs **System Sustainability** • Cost per capita to preserve multimodal system to current and state of good repair conditions
SANDAG (San Diego)	2050 Transportation Plan[26]	• Daily truck hours of delay • CO_2 emissions for all vehicle types (daily pounds per capita)

[23] http://www.thempc.org/documents/Transportation/Freight%20Transportation%20Plan/TechMemo/TM%20-%20Performance%20Measures%20[Draft%20to%20CORE%20MPO]%20_03252014__withWykodaComments.pdf
[24] http://www.freightworks.org/DocumentLibrary/CRGMPIS%20-%20Final%20Report.pdf
[25] http://rtpscs.scag.ca.gov/Documents/2012/pfinal/SR/2012pfRTP_PerformanceMeasures.pdf
[26] http://www.sandag.org/uploads/2050RTP/F2050rtp_all.pdf

In general, Table 5-6 presents freight performance measures in the following six major categories.

Category	Description/Examples
Usage	Generally defined as the number of ton-miles or value of commodity transported. This measure is not really a performance measure per se in that it does not indicate the conditions faced in moving from one location to another, but in a broader sense usage measures indicate the level of activity and a surrogate contribution of such use to the economy.
	Examples: Volumes and ton-miles transported.
Operating Performance	Metrics relating to the conditions faced in freight movement. These are usually focused on truck movements on highways.
	Examples: Speeds, travel times, and trips under different levels of service and delays.
Reliability	Includes door-to-door on-time performance, risk of temporary or sustained disruption, possibility that a service may not be available within a given planning horizon, risk of losing connectivity or service due to reliance on a single mode, etc.
	Examples: Travel time index (TTI), highway travel time reliability, and number/duration of highway closure events; port and airport delivery reliability and number/duration of closure events, which should be available from ports and airports; and rail delivery reliability (train arrivals and departures versus schedule) and number/duration of closure events.
Accessibility	Measures relating to the degree to which key locations (e.g., distribution centers, intermodal yards, major retail locations, etc.) are reached within certain travel time contours.
	Examples: Travel time index
Safety	Focuses on crash and incident data for highways, airports, ports, railroad, and pipeline modes.
	Examples: For highways, safety measures usually include truck-involved crashes and crashes at highway/rail crossings.
Environment	Measures relating to freight-related environmental impacts.
	Example: Air quality measures

5.4 Freight Mobility Performance Measures for the ARC Region

Using the national practices outlined above, a series of criteria for selecting the recommended performance measures was developed in coordination with ARC staff, and included:

- Availability of data today to formulate performance measures, and likelihood that such data will be available in the future.
- Relationship to the physical performance or economic value of freight movement.
- Linkage to freight goals and objectives.
- Emphasis on those performance metrics that can be influenced by public sector action or investment.
- Ability to be predicted in plan horizon years.
- Degree to which the measure is comprehensible and understandable to those not having technical background on freight movements.

This list highlights the basic foundation for the performance measure list. The measures are intended to be technically correct, but at the same time understandable to the range of groups and individuals often found in freight planning.

As with the goals and objectives discussed in Section 2.0, a series of performance measures was developed to relate to *The Atlanta Region's Plan* goals. Performance measures are focused directly on specific goals where a direct link to the goods movement industry is evident. Thus, not every goal from *The Atlanta Region's Plan* has an associated performance measure – for instance, the plan goal "Secured, long term water supply," while important to the long-term success of the region, has no relevant freight-related performance measure attached to it. The performance measures set forth in the following sections are directly linked to the freight objectives discussed in Sections 2.1, 2.2, and 2.3 above. As in those sections, the key goals laid out in *The Atlanta Region's Plan* are detailed below in green, with the performance measures related to each shown alongside each goal.

5.4.1 *The Atlanta Region's Plan* Objective 1: Competitive Economy

Goal	Performance Measures
Building the region as a globally recognized hub of innovation and prosperity	▪ Accessibility measure – Number of cluster locations within travel time sheds (detailed further in Section 5.5) ▪ Mobility measure – Speeds on designated strategic freight network (detailed further in Section 5.5) ▪ Ton-miles and tons by value transported by trucks, rail and air
Developing a highly educated and skilled workforce, able to meet the needs of 21st Century employers	▪ Number of logistics-related jobs

5.4.2 *The Atlanta Region's Plan* Objective 2: World Class Infrastructure

Goal	Performance Measures
Ensuring a comprehensive transportation network, incorporating regional transit and 21st Century technology	▪ Accessibility measure – Number of cluster locations within travel time sheds (detailed further in Section 5.5) ▪ Mobility measure – Speeds on designated strategic freight network (detailed further in Section 5.5) ▪ Highway reliability on regional truck route system: 95% Buffer Time Index ▪ Number of truck/auto crashes ▪ Number of highway/rail crossing crashes ▪ Subjective assessment on implementation of connective vehicle technologies (e.g. number of locations where "smart infrastructure" technology has been installed)

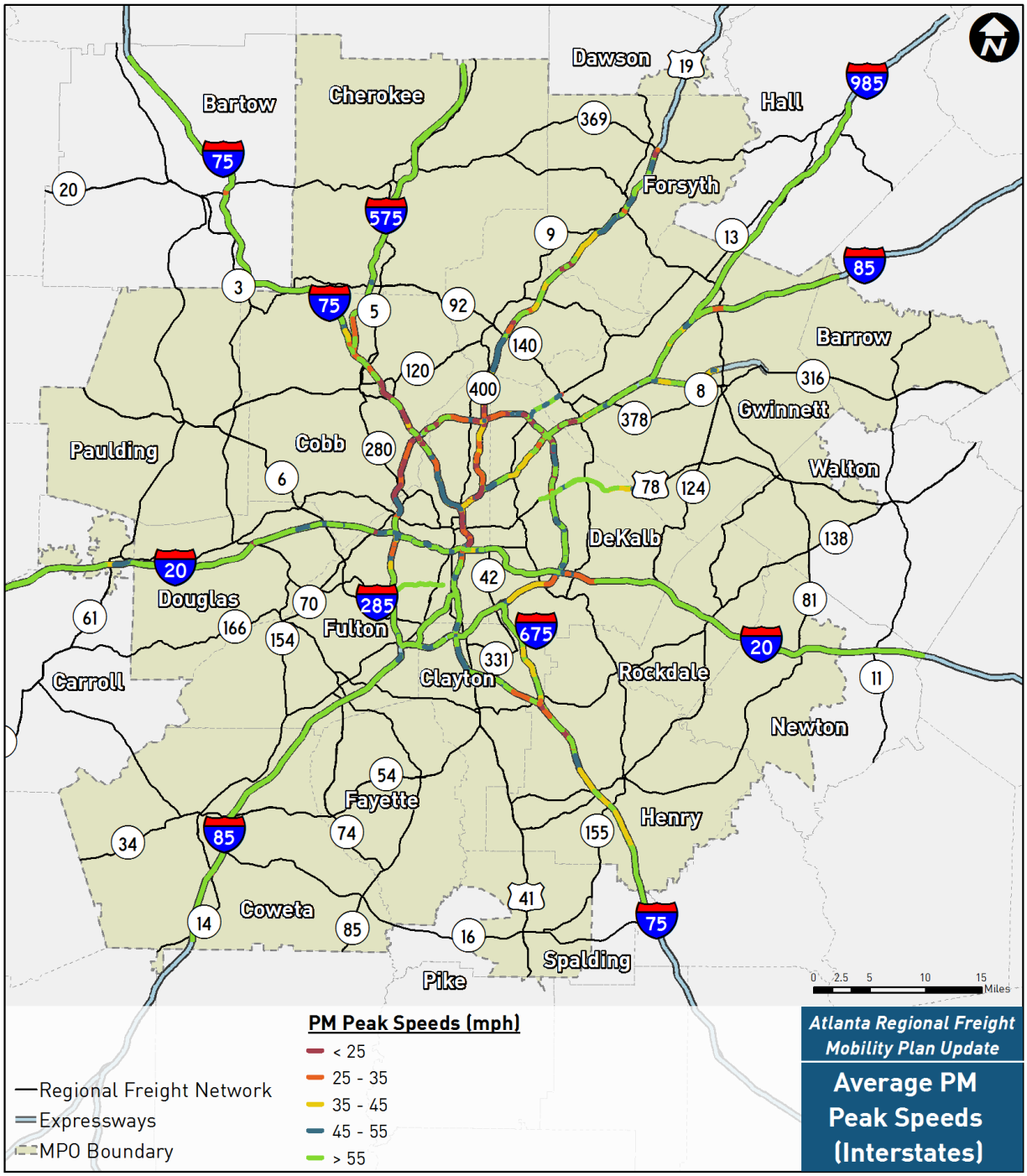
5.4.3 *The Atlanta Region's Plan* Objective 3: Healthy, Livable Communities

Goal	Performance Measures
Developing additional walkable, vibrant centers that support people of all ages and abilities	▪ Percent of LCI program studies and projects considering freight movement
Promoting health, arts, and other aspects of a high quality of life	▪ Estimated freight-related NOx and PM2.5 emissions ▪ Estimated freight-related GHG emissions (which doubles in part as a fuel efficiency measure)

5.5 Mobility and Accessibility Measures

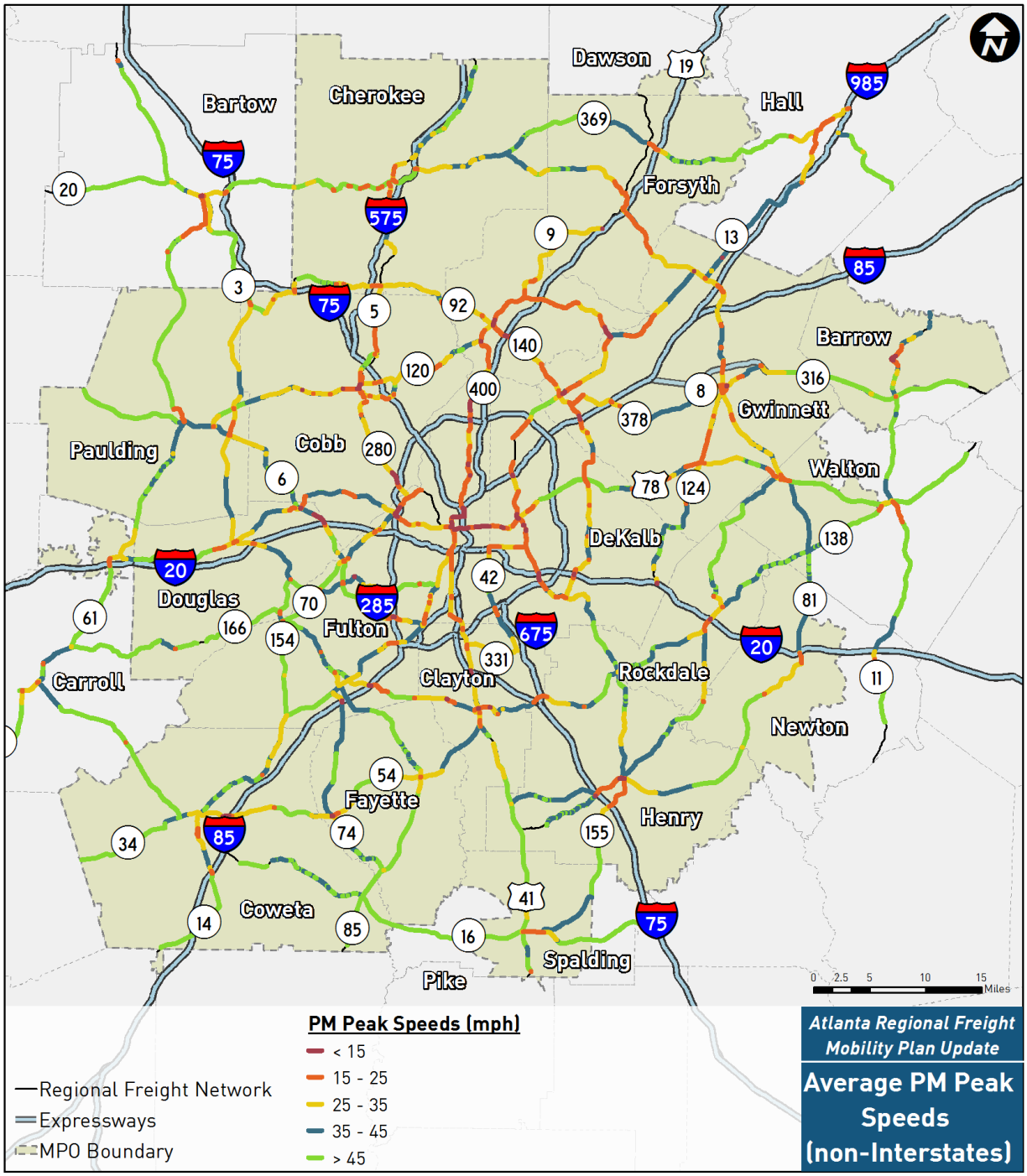
Mobility (speed and reliability) and accessibility (travel sheds) are two key performance measures that can directly identify operational functionality and needs for the region's highway network. Origin/Destination cluster pairs were used as a starting point for measuring performance with respect to speed, reliability, and travel sheds. For the purpose of our analysis, origins are freight activity clusters, while destinations are commercial activity clusters. For these measures, illustrative examples of the appropriate analysis have been included in the following sections.

Figure 5-6: Average Speeds on the Interstate Highways



Source: INRIX

Figure 5-7: Average Speeds on Non-Interstate ASTRoMaP Network



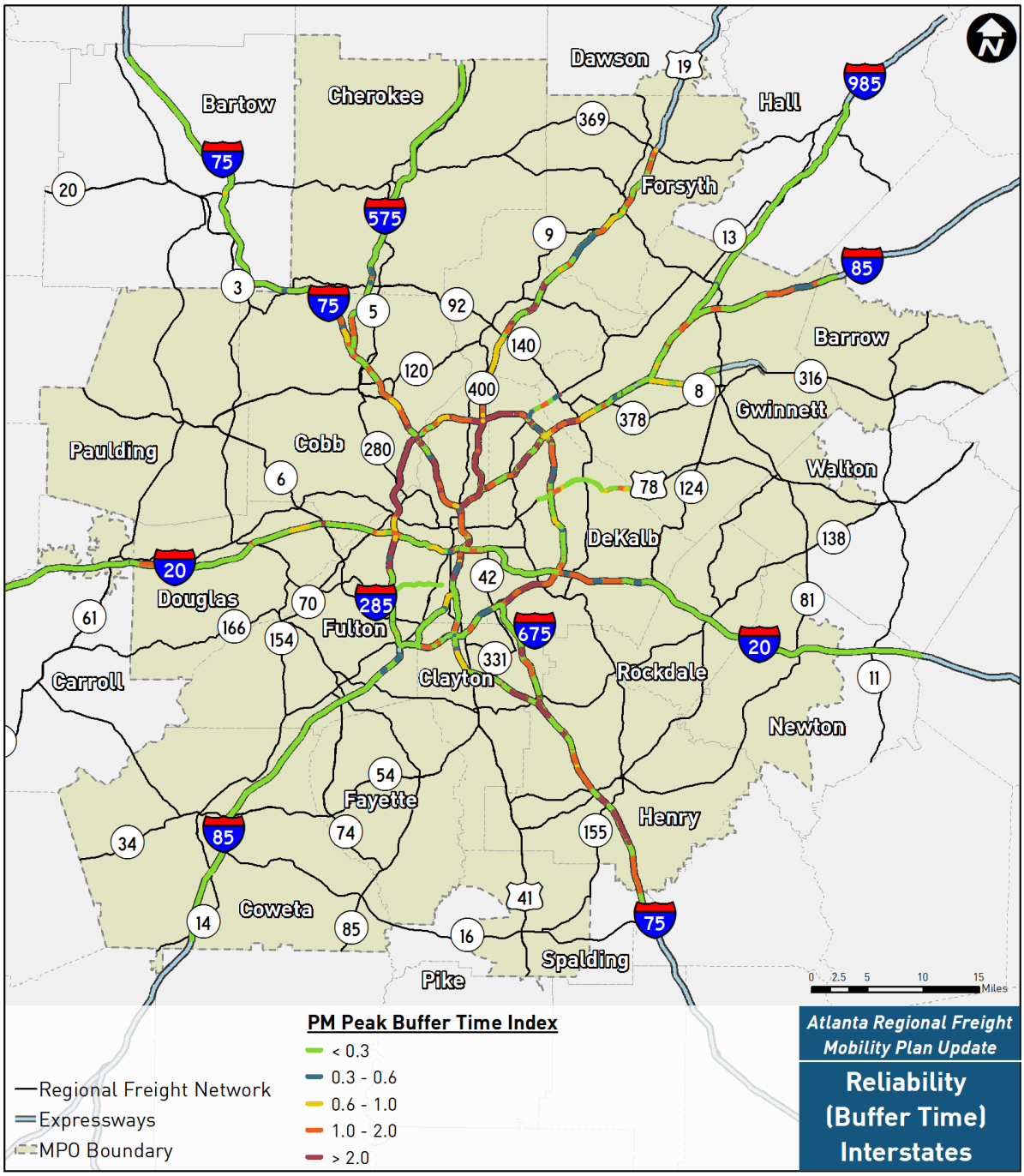
Source: INRIX

Average peak period speeds in the Atlanta Region were examined by analyzing key freight corridors between 5:00 P.M. and 6:00 P.M. during weekdays using INRIX GPS speed data. Figures 5-7 and 5-8 show the speeds on the interstate and non-interstate portions of the ASTRoMaP network, respectively. The most congested locations in the region are similar to the locations with the highest truck volumes. These include I-75 and I-85 in the northern portion of the region outside of I-285, the top end of I-285, and the I-285

western wall. Therefore, congestion has a significantly negative impact on truck operations. Conversely, truck traffic is a significant contributor to the levels of congestion in the region.

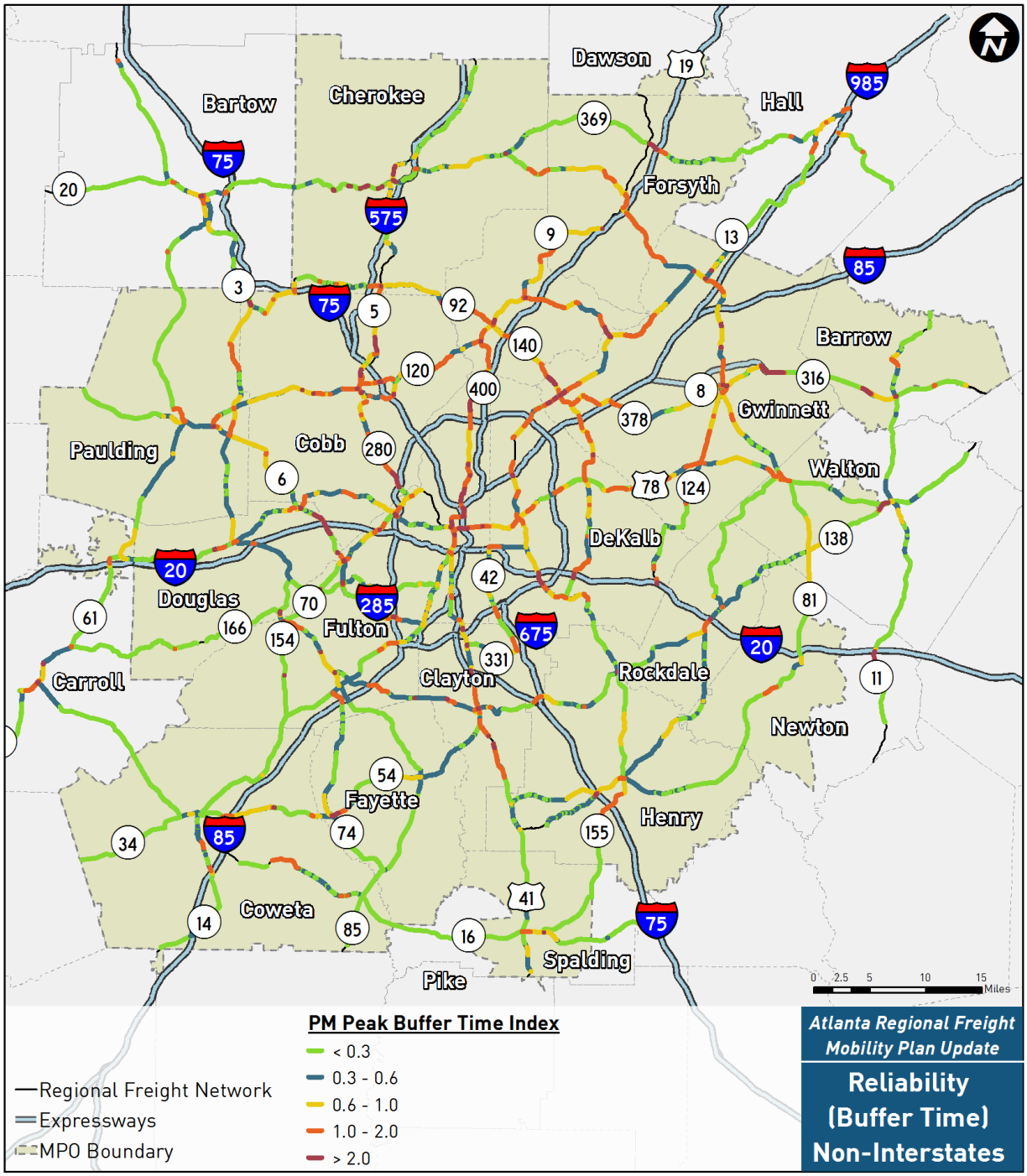
Figure 5-6 also shows that there are very few portions of the non-Interstate ASTRoMaP network that are able to achieve 45 mph during the peak afternoon commute period. Speeds at many locations do not exceed 25 mph. Similarly, Figure 5-7 shows that the portion of the Interstate system in the northwest urban core of the region is among the most congested in the region. Congestion can therefore be seen to have a negative impact on the delivery of goods throughout the region.

Figure 5-8: Reliability on the Interstate Highways



Source: INRIX

Figure 5-9: Reliability on Non-Interstate ASTRoMaP Network



Source: INRIX

In addition to speed, peak period reliability was examined using the buffer time index. The buffer time index is a measure of trip reliability that expresses the amount of extra "buffer" time needed to be on time for 95 percent of trips. In other words, this is the time you would need to add to the average travel time so that you are only late for 1 trip out of 20. The buffer time index can be expressed as a ratio or as a percentage. For example, a buffer time index of 1.5 (or 150%) means that for a trip that usually takes 30 minutes, you should add 45 minutes (30 minutes x 1.5) to your planned trip time, for a total trip time of 75

minutes. The buffer time for this trip is the additional 45 minutes. The higher the buffer time index, the greater the amount of time that needs to be added to the trip. Since freight carriers have tight service commitments to their customers, the buffer represents the extra time they must build into their schedules as a matter of course. From an economic perspective, it equates to lost productivity.

Figure 5-8 and Figure 5-9 show maps indicating the buffer time indexes for the Interstate and non-Interstate portions of the ASTRoMaP network. Reliability on the interstate highways is the worst of all of the segments in the Atlanta Region. Generally, the locations of the worst reliability mirror the locations of the worst congestion described in the previous section. I-75 in Henry County and I-85 in northern Gwinnett County in particular, exhibit very poor reliability. These are important locations to highlight, because from the shipper's perspective, their scheduling and their costs are more related to their expectations about buffer time than it is to average congestion.

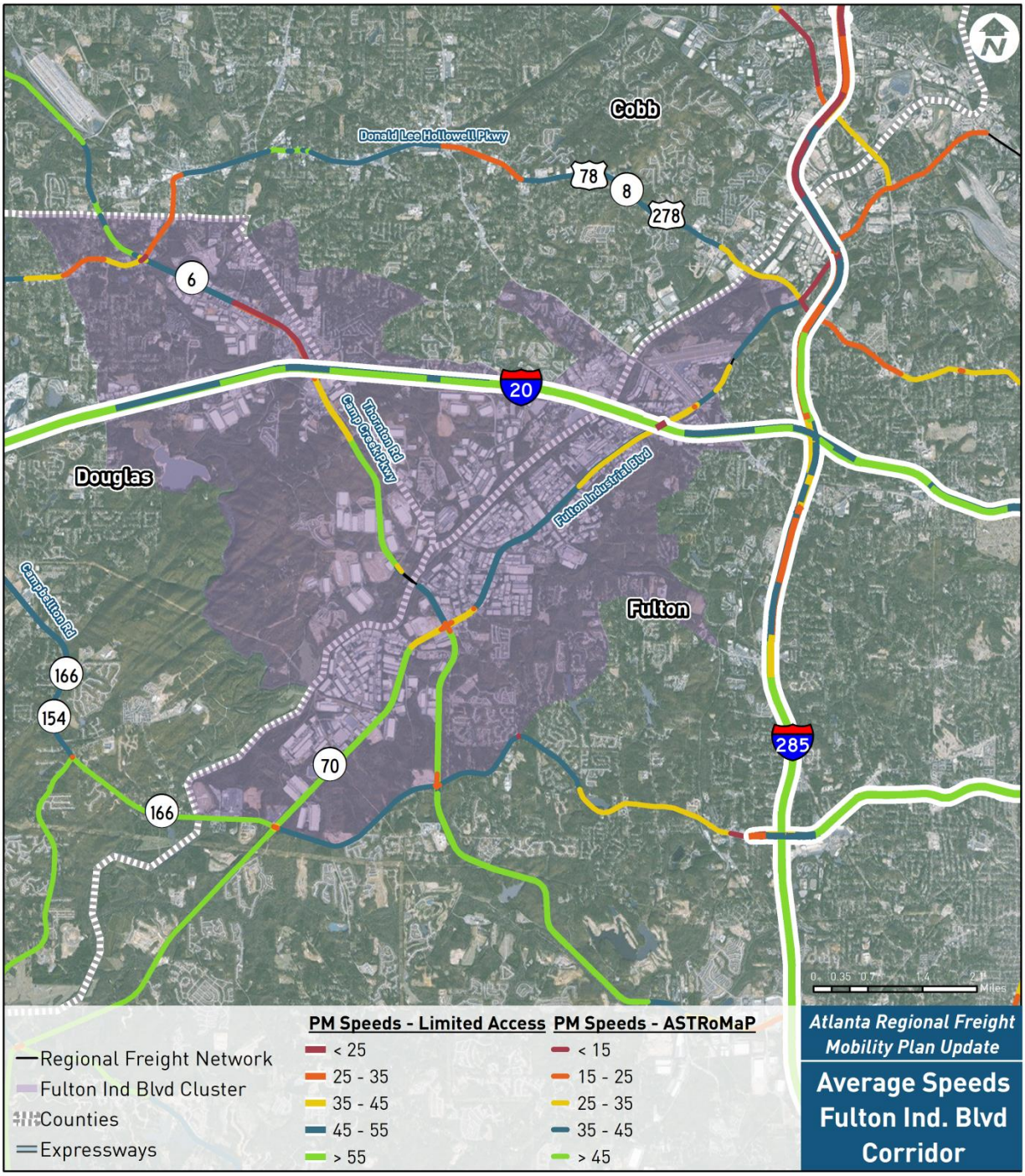
For the non-Interstate ASTRoMaP network the map shows that there are very few locations having a buffer index less than 0.3. This means that there are few locations where you would not need to add at least 30 percent to the average travel time to reach the destination on time 95 percent of the time. This is illustrative of not just high levels of congestion, but also high levels of unreliability on the road network.

5.5.1 Speed Performance in Key Clusters

Fulton Industrial Boulevard Cluster

The most truck-intensive portion of Fulton Industrial Boulevard is the 4-mile stretch between I-20 and SR 6 where truck volumes exceed 4,000 per day and industrial facilities are densely packed on the west side of the roadway. Figure 5-10 shows that speeds along this portion of Fulton Industrial Boulevard do not exceed the 35 to 45 mph range and that much of the corridor operates at speeds below 35 mph. The intersection of Fulton Industrial Boulevard and SR 6 has speeds between 15 and 25 mph during congested periods.

Figure 5-10: Average Speeds in the Fulton Industrial Blvd. Cluster



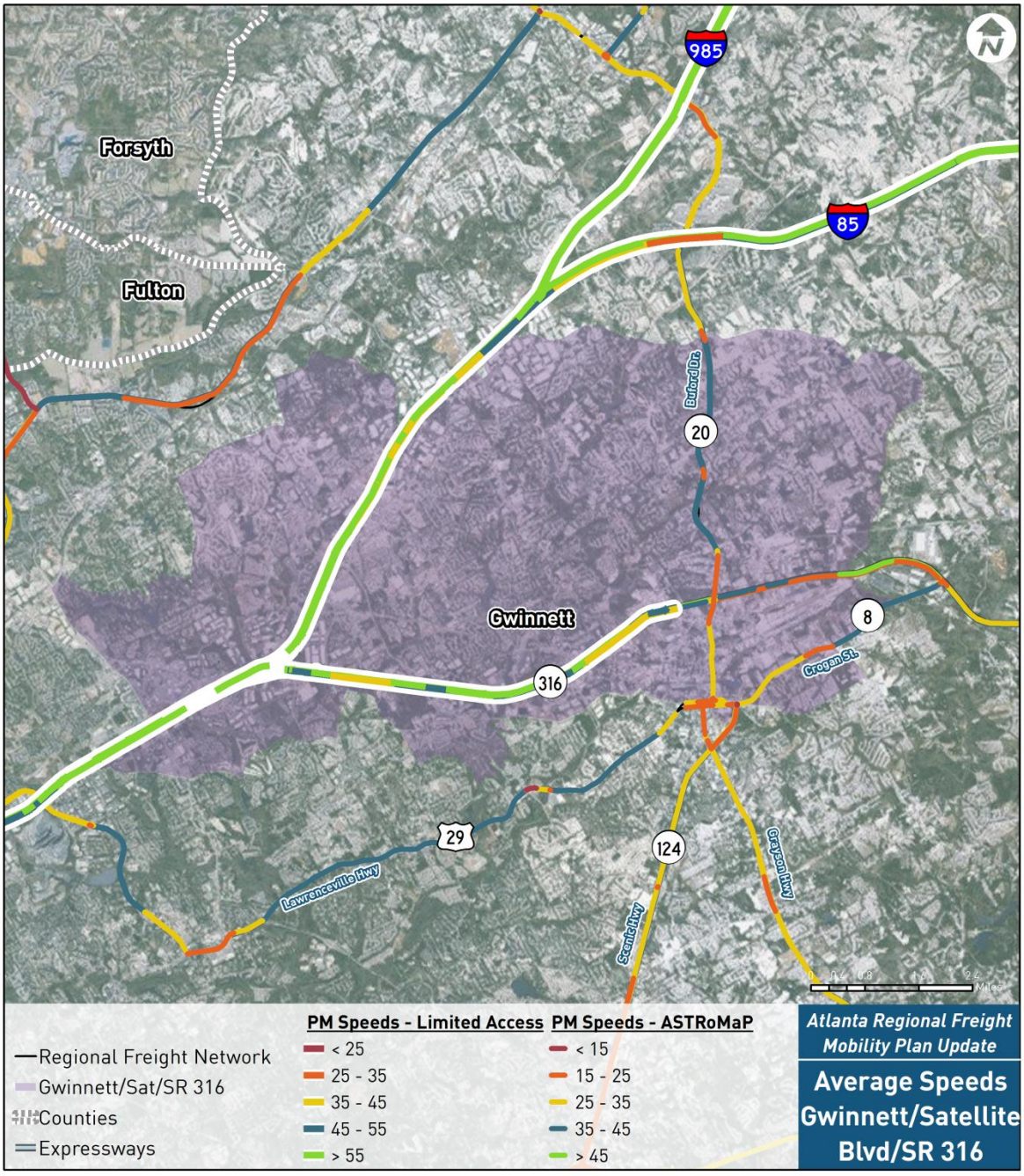
Source: INRIX

SR 316 Cluster

Trucks operating in the SR 316 cluster experience significant delay during the PM peak at the intersection of SR 316 with US 29 (Figure 5-11). Congestion is generally heaviest for eastbound vehicles, which is the peak direction of traffic. In addition, there are ongoing interchange construction projects at Collins Hill Road and SR 20/ Buford Drive that will ultimately improve access to and within the SR 316 cluster.

The SR 316 cluster exemplifies the interrelationship between truck activity and regional congestion as freight-intensive land uses are proximate to commercial and population centers. This results in significant overlap in truck corridors with the highest truck volumes and the region's most congested roadways. There are major generators of passenger trips (i.e. Gwinnett Medical Center, multifamily residential developments, and commercial retail) and truck trips (i.e. the Publix Super Market Distribution Center and Home Depot Distribution Center) along SR 316. Though not located directly on SR 316, there are several industrial developments located nearby (south of SR 316 and east of SR 20/Buford Drive) along Hosea Road, Seaboard Industrial Drive, and Industrial Park Drive. These developments are likely to generate truck trips that utilize SR 316 to access I-85 and other parts of the Atlanta Region.

Figure 5-11: Average Speeds in the Gwinnett/Satellite Blvd./SR 316 Cluster



Source: INRIX

I-85/PIB/Jimmy Carter Boulevard Cluster

Figure 5-12 shows that trucks traveling along SR 140/ Jimmy Carter Blvd. experience consistently slow speeds between I-85 and Peachtree Industrial Blvd. SR 13/ Buford Highway exhibits even slower speeds during the evening peak period. Over 4,000 trucks use Jimmy Carter Boulevard daily to access the many manufacturing and warehouse facilities concentrated in this cluster.

Figure 5-12: Average Speeds in the I-85/PIB/Jimmy Carter Blvd. Cluster

Source: INRIX

McDonough/Henry Cluster

Figure 5-13 illustrates truck speeds in the McDonough area of Henry County. Much of this cluster's industrial development is located along SR 155 west of US 23. Speeds are consistently slowest along this portion of the SR 155 corridor. Other roadways within this cluster with primarily industrial developments include King Mill Road/Industrial Blvd., US 23, Thoroughbred Road, Westridge Pkwy., and Avalon Pkwy., among others. All of these roadways connect to SR 155. Thus it is likely that many truck trips generated from these developments use SR 155 to access I-75 and other parts of the Atlanta Region.

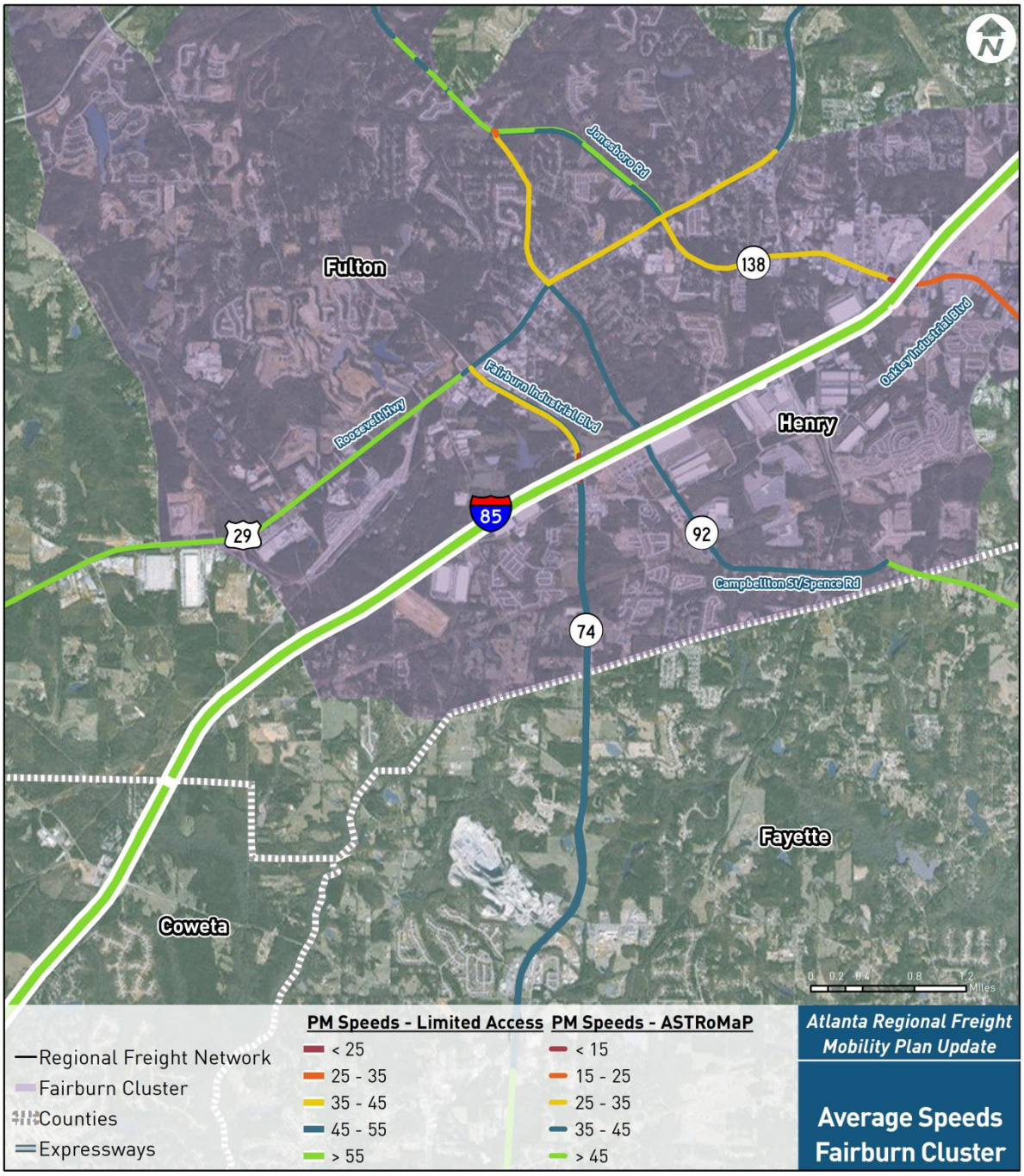
Figure 5-13: Average Speeds in the McDonough/Henry Cluster

Source: INRIX

Fairburn Cluster

SR 74/ Fairburn Industrial Boulevard connects US 29/Roosevelt Highway with I-85 and is an important route for trucks accessing the CSXT intermodal facility. In addition to the intermodal yard, there are several industrial developments along Oakley Industrial Blvd. and Bohannon Road that likely utilize SR 74/ Fairburn Industrial Boulevard as a primary truck route. As shown in Figure 5-14, delay is most pronounced along eastbound SR 74 near its interchange with I-85 during the evening peak period. Nearly 4,170 trucks travel along this portion of SR 74/ Fairburn Industrial Boulevard daily.

Figure 5-14: Average Speeds in the Fairburn Cluster

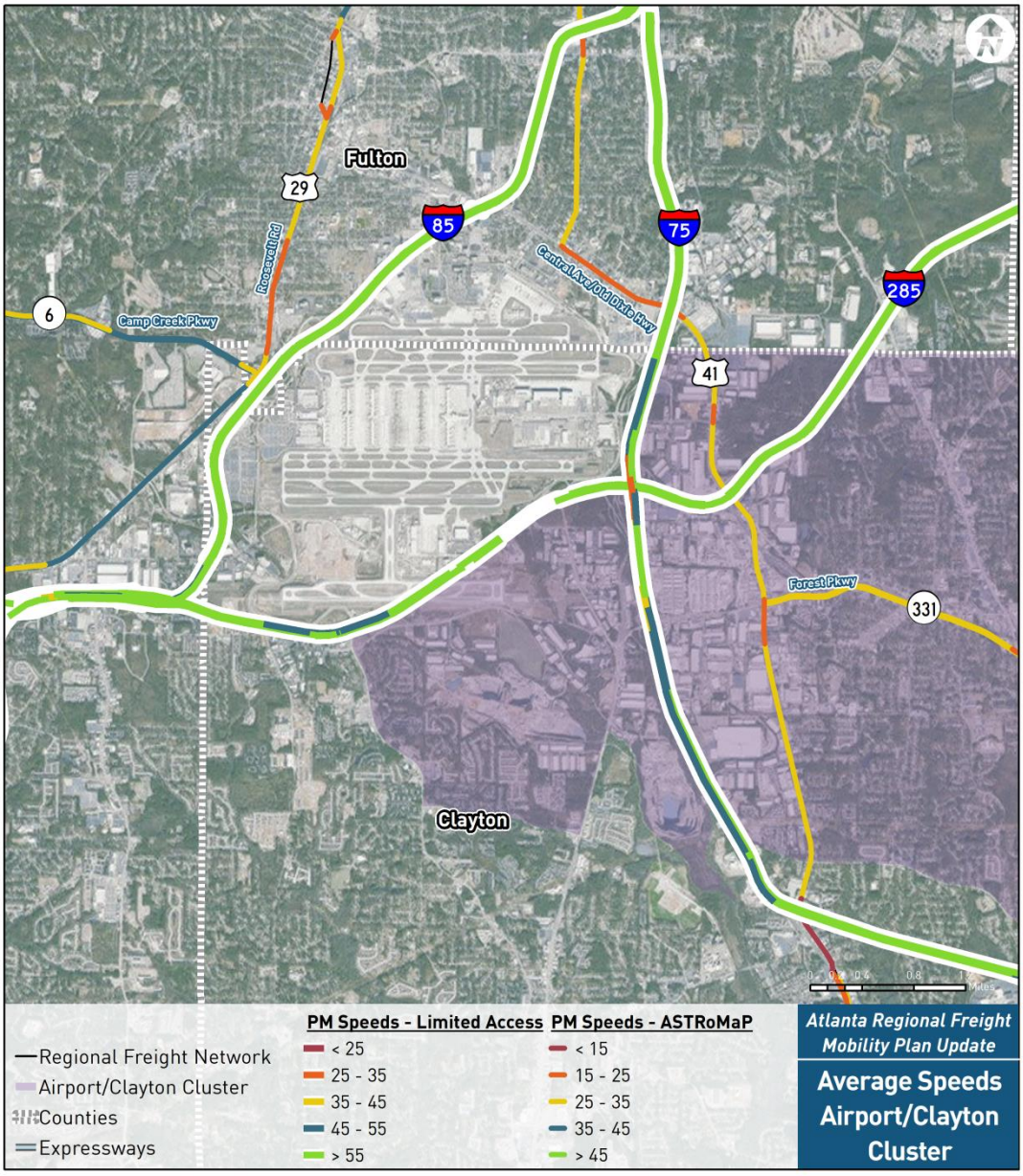


Source: INRIX

Airport/Clayton Cluster

US-29/Roosevelt Highway and US-41/Central Ave./Old Dixie Highway are important north-south routes that connect HJAIA to burgeoning warehouse/distribution clusters in the southern portion of Metro Atlanta (i.e. south Fulton County, north Clayton County, and Henry County). Similarly, SR 6/ Camp Creek Parkway and SR 331/Forest Parkway provide east-west connectivity to many of those same areas. In addition to providing access to other parts of the Atlanta Region, all of these roadways have significant industrial developments that are either located directly on these routes or on adjacent roadways. Many of the truck trips originating or terminating at these facilities are likely to utilize US 29/ Roosevelt Highway and US 41/ Central Ave./ Old Dixie Highway. Figure 5-15 illustrates that the worst delay is along US 29 and US 41 in Fulton County. Also, I-75 at its interchange with I-285 is heavily delayed though performance on I-285 is relatively good.

Figure 5-15: Average Speeds in the Airport/Clayton Cluster



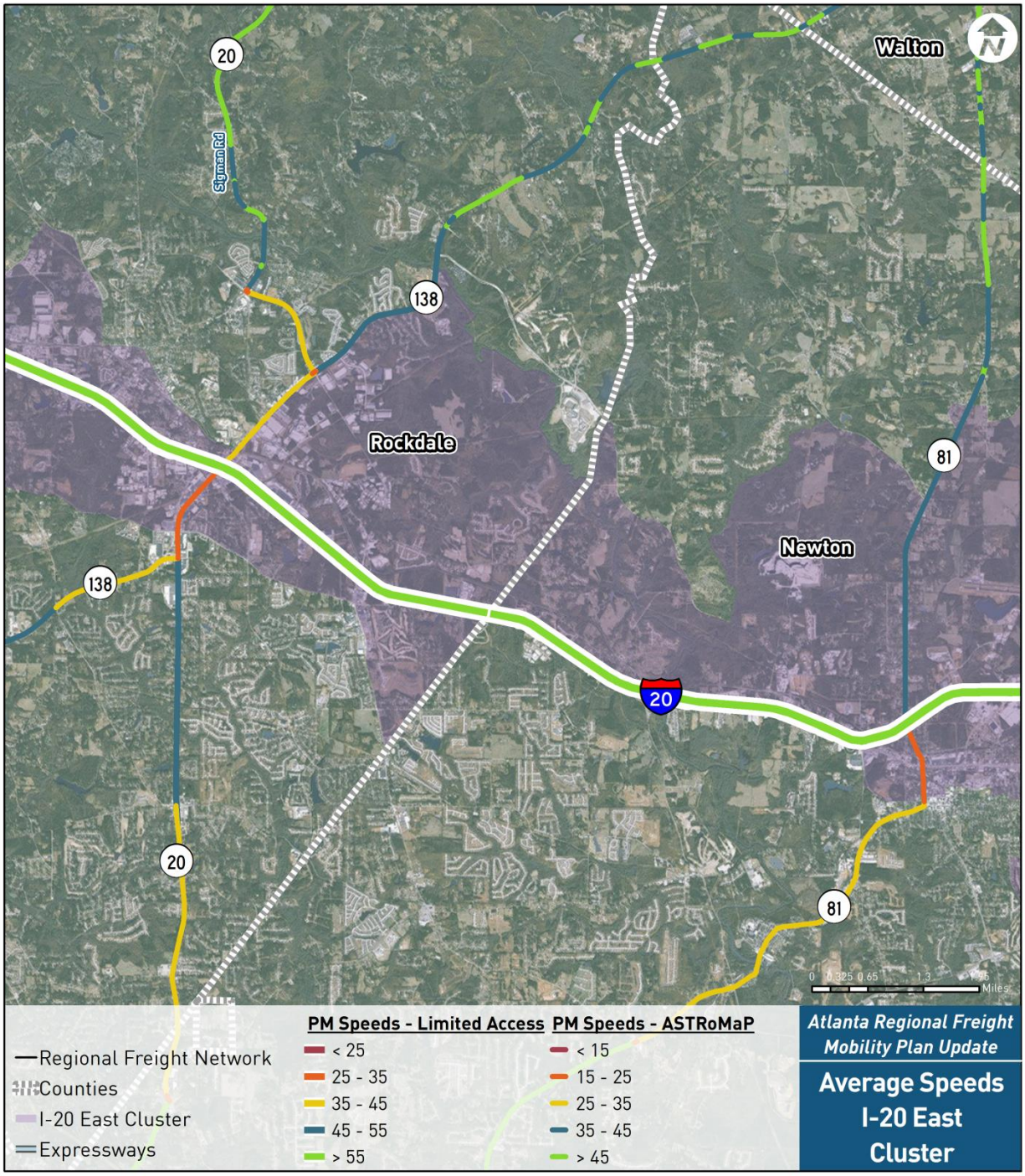
Source: INRIX

I-20 East Cluster

Figure 5-16 illustrates that speeds in the I-20 East Cluster which includes Rockdale County and portions of DeKalb and Newton Counties are consistently slowest along north-south routes in the cluster. SR 124, SR 20, and SR 138 all experience significant congestion during peak periods. Particularly, the combined route of SR 20/SR 138 experiences very slow speeds relative to other roadways. Delay is most pronounced along this route south of I-20 near its interchange.

Much of the industrial development in the I-20 East cluster is located north of I-20 along Old Covington Road and also along SR 138 (generally between Old Covington Road and SR 20/Sigman Road). However, there is also significant industrial development south of I-20 and west of SR 138 along Parker Road. For the industrial developments north of I-20, SR 138/SR 20 is their primary access point to I-20 and much of the Atlanta Region. Though those developments along Parker Road have an alternative route to reach the core of the Atlanta Region (Dogwood Drive to West Avenue and on to I-20), SR 138/SR 20 is their primary route to exit the region.

Figure 5-16: Average Speeds in the I-20 East Cluster



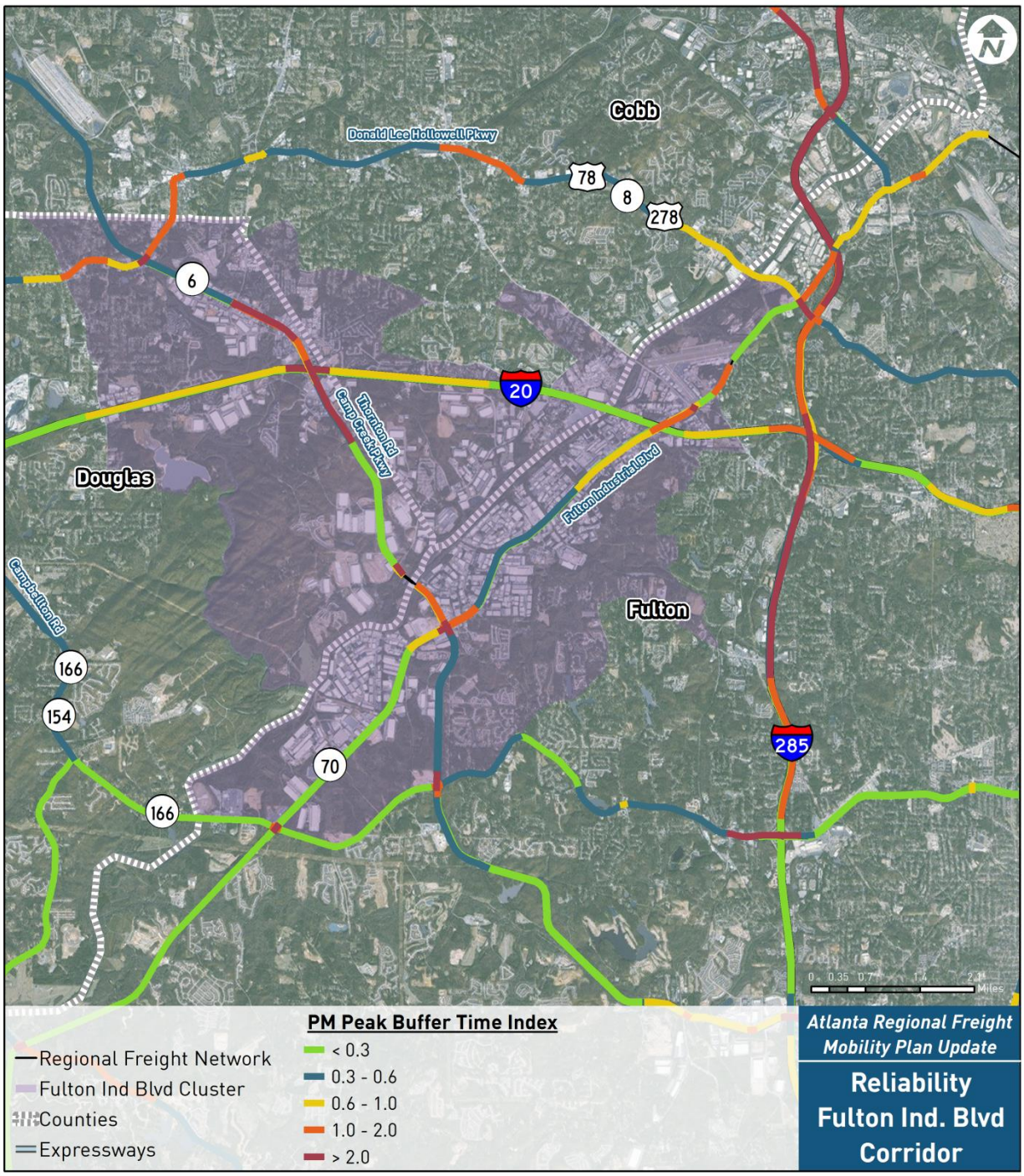
Source: INRIX

5.5.2 Reliability Performance Results in Key Clusters

In the Fulton Industrial Boulevard Cluster (Figure 5-17), the buffer time index is above 1.0 on most of the roadways. This indicates that you would need to at least double the average trip travel time to be on time for 95 percent of the truck trips in this cluster. The Gwinnett/Satellite Blvd./SR 316 Cluster (Figure 5-18) also has high levels of unreliability, although slightly less than the Fulton Industrial Boulevard Cluster. There are several segments with buffer time indexes between 0.6 to 1.0, and several others that are above 1.0. Similarly, the I-85/PIB/Jimmy Carter Boulevard Cluster has relatively high levels of unreliability with some segments along Peachtree Industrial Boulevard having buffer time indexes over 2.0 indicating that you would need to triple the expected travel time along those segments (Figure 5-19).

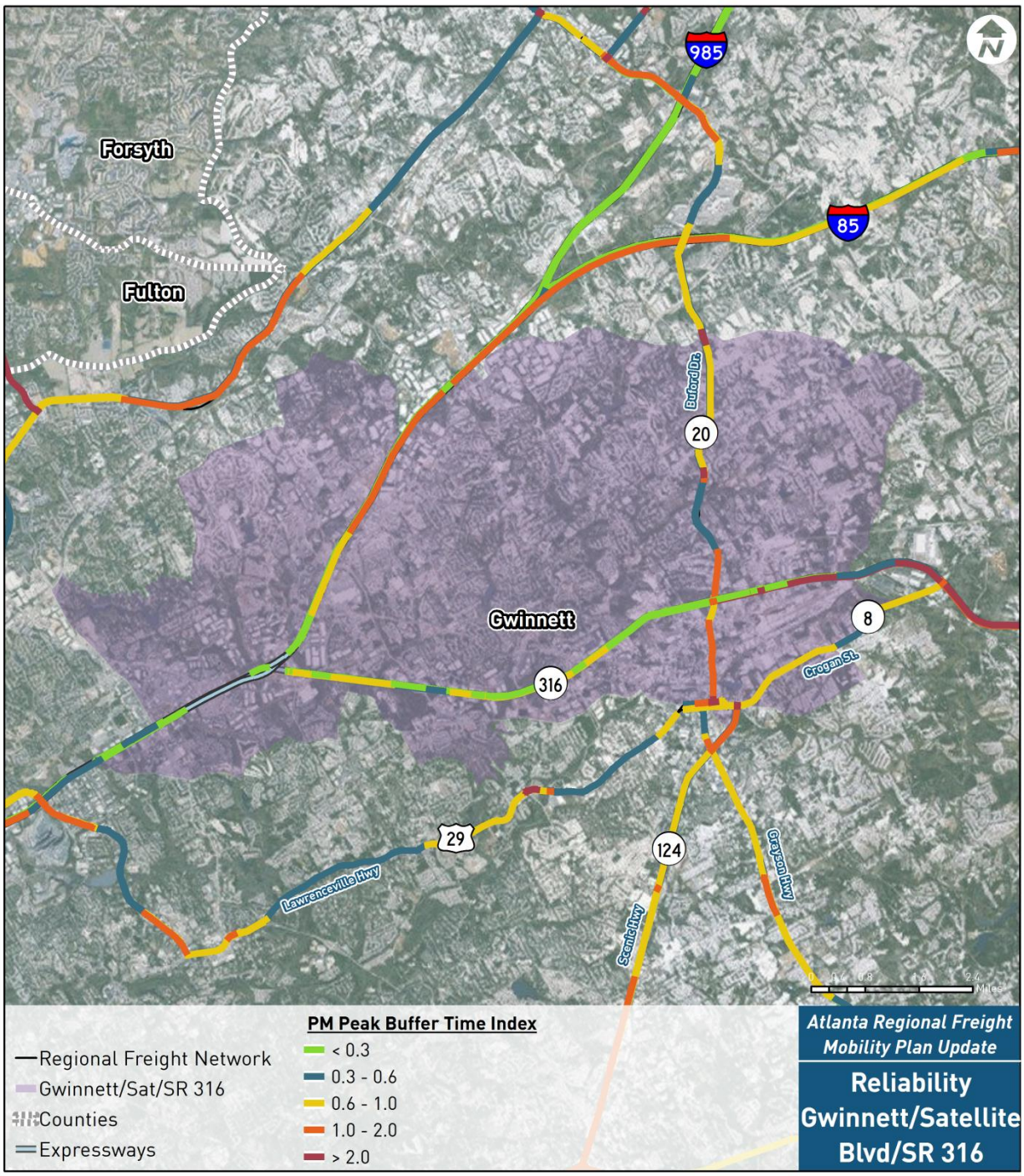
The McDonough/Henry (Figure 5-20), Fairburn(Figure 5-21), Airport/Clayton (Figure 5-22), and I-20 East Clusters (Figure 5-23) have a mix of poor performing segments such as Highway 155 in McDonough and Fairburn Industrial Boulevard in the Fairburn Cluster. However, there are also some relatively high performing segments such as GA-20 in Henry County west of I-75 and US-29/Roosevelt Highway in the western side of the Fairburn Cluster.

Figure 5-17: Reliability in the Fulton Industrial Blvd. Cluster



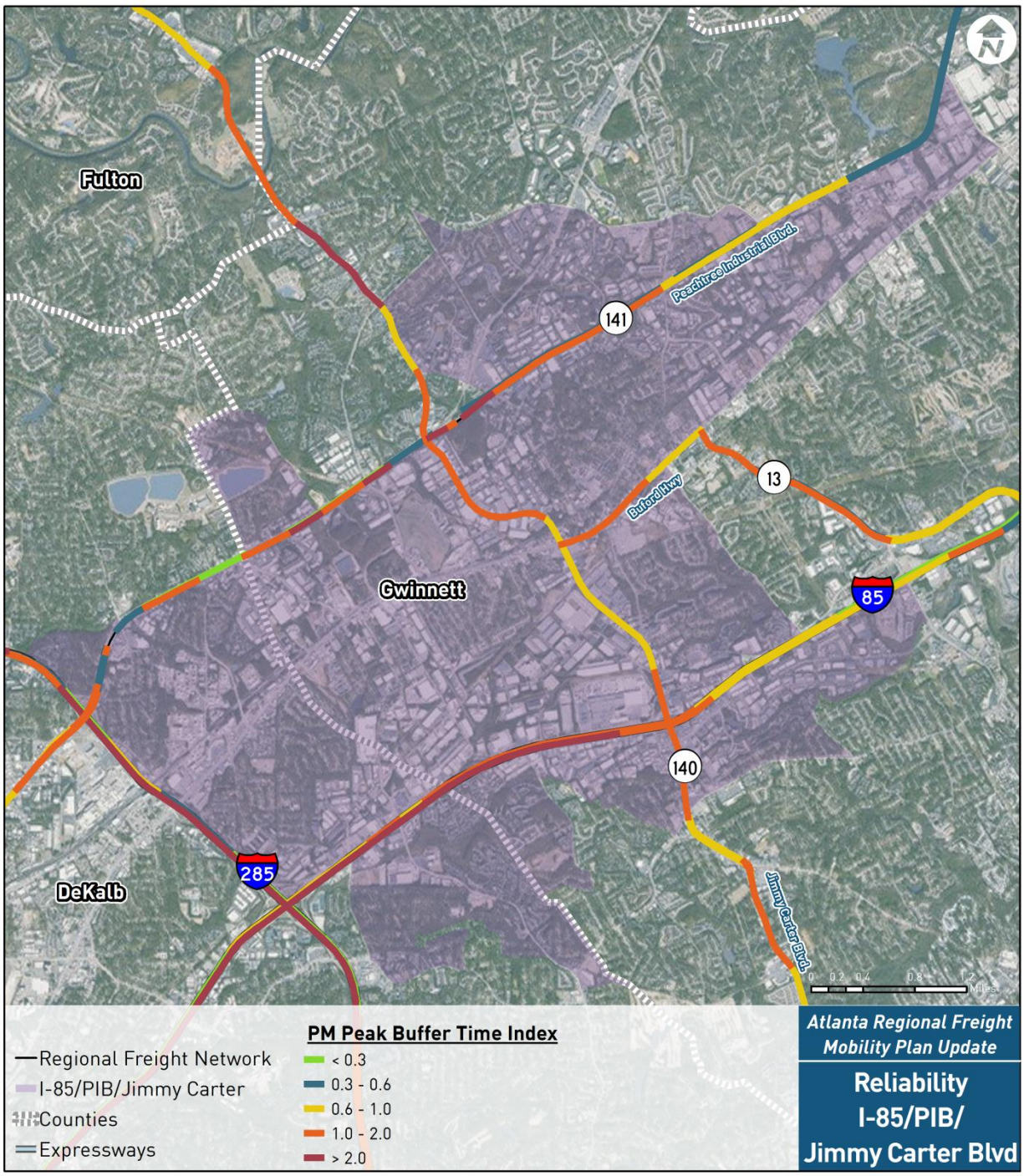
Source: INRIX

Figure 5-18: Reliability in the Gwinnett/Satellite Blvd./SR 316 Cluster



Source: INRIX

Figure 5-19: Reliability in the I-85/PIB/Jimmy Carter Blvd. Cluster

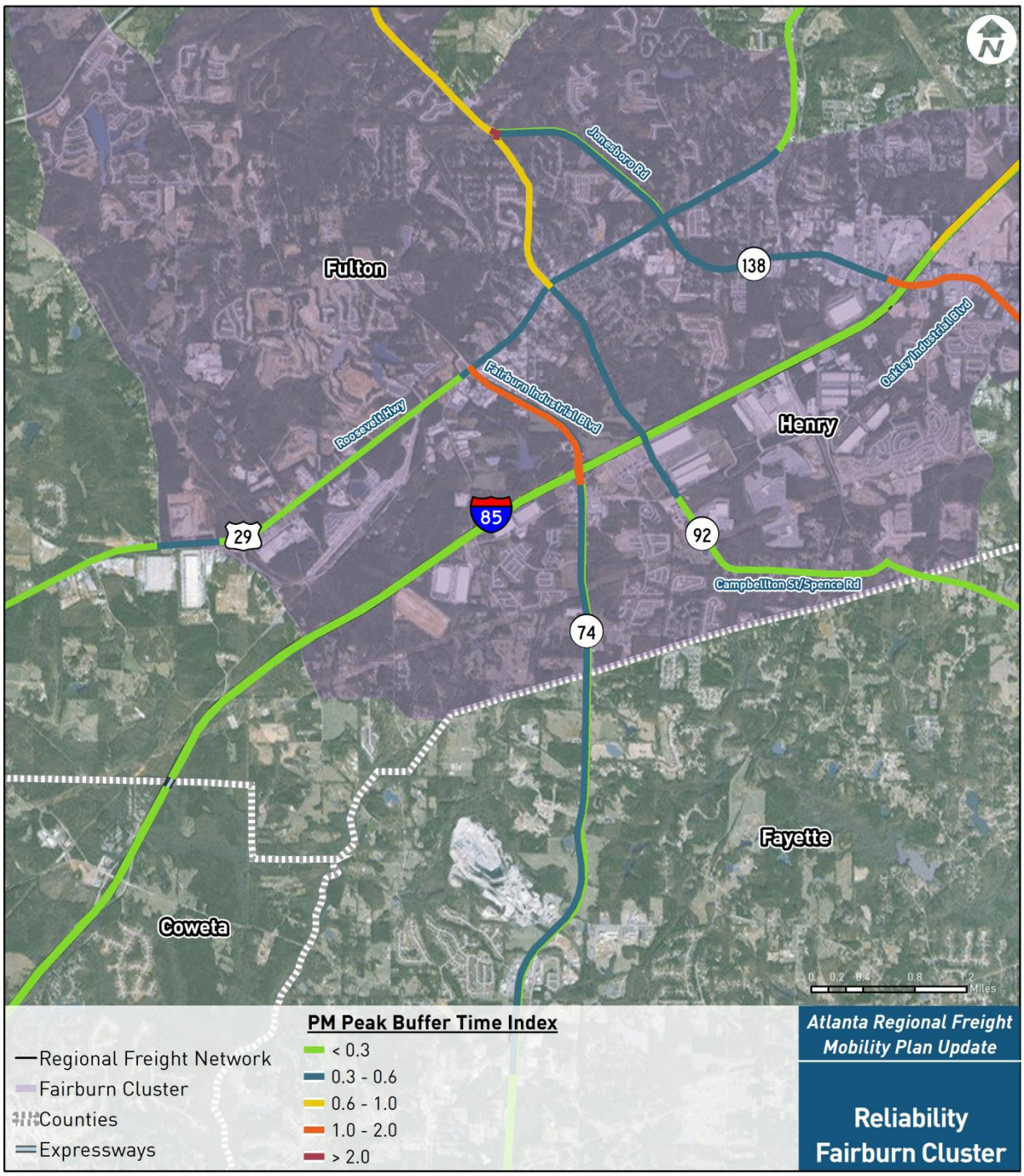


Source: INRIX

Figure 5-20: Reliability in the McDonough/Henry Cluster

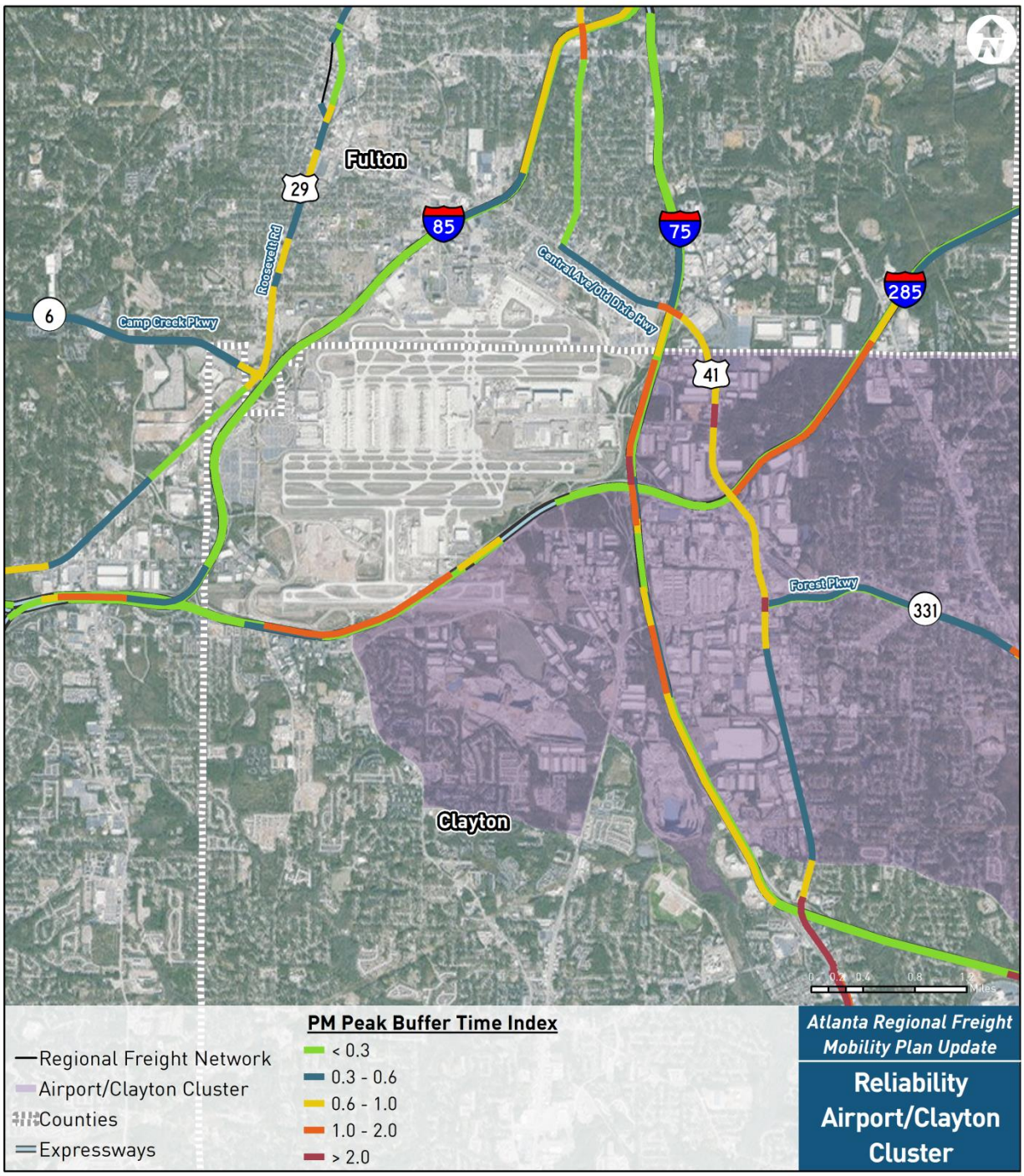
Source: INRIX

Figure 5-21: Reliability in the Fairburn Cluster



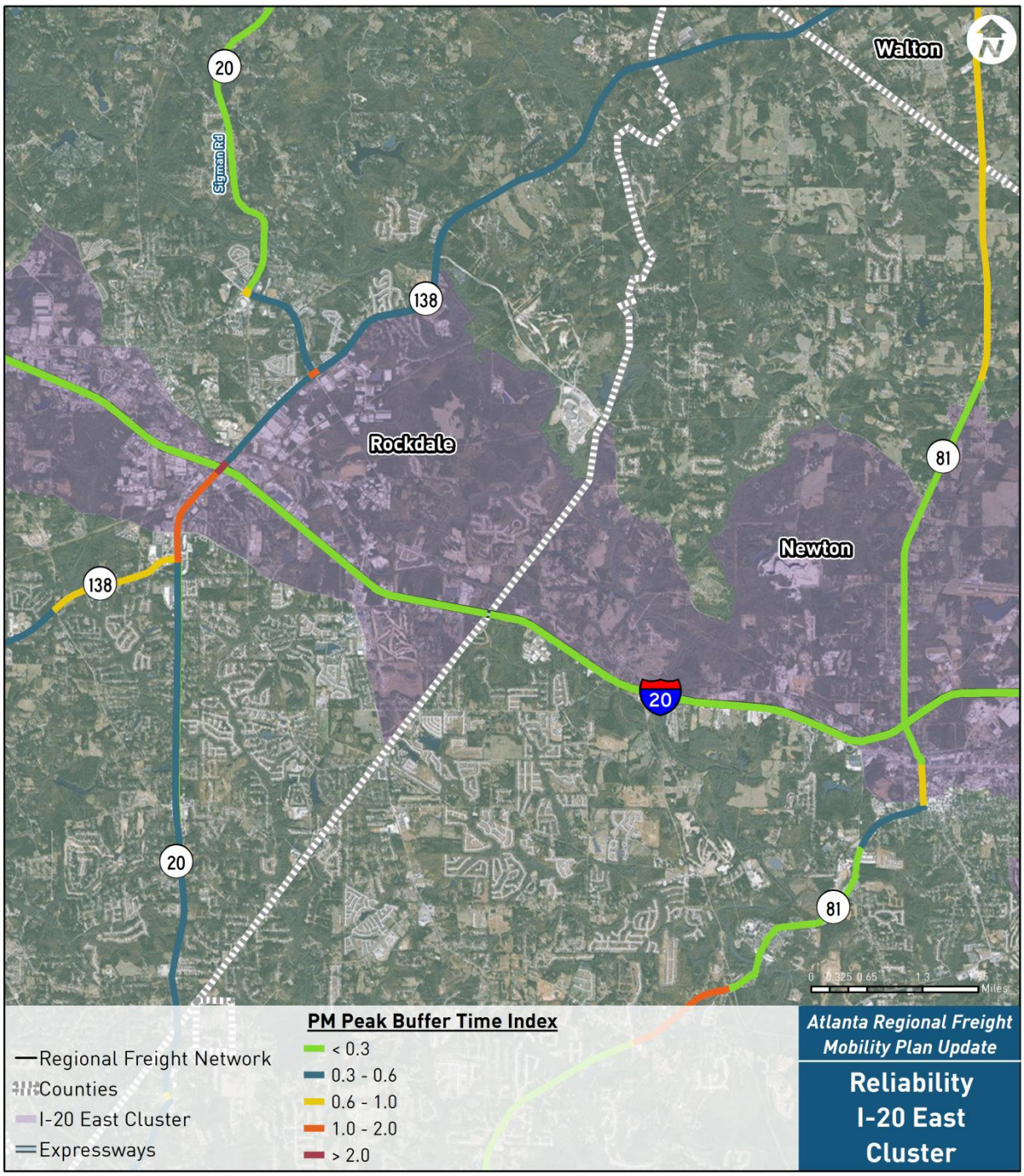
Source: INRIX

Figure 5-22: Reliability in the Airport/Clayton Cluster



Source: INRIX

Figure 5-23: Reliability in the I-20 East Cluster



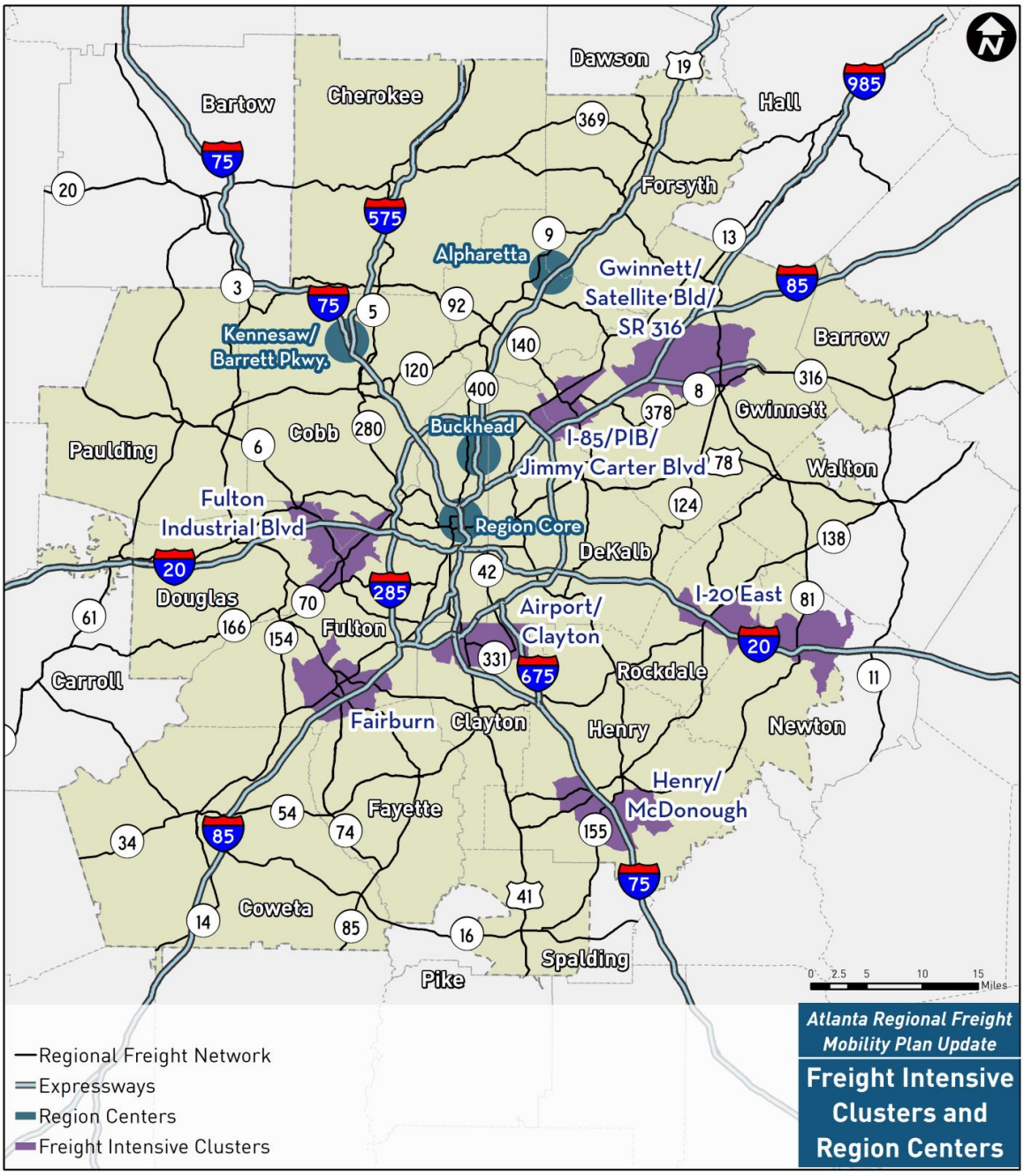
Source: INRIX

5.5.3 Travel Shed Results

Accessibility focuses on the "connectivity" of the transportation system, which includes not only those that transport freight, but also those that receive and originate such movements. The intent is to gauge over time how the economic sector is being served by the freight system. For the sake of our analysis, this determines how many of the destinations are within a 60 minute travel time from a specific cluster with 95% reliability. The accessibility measure also doubles as a productivity measure, because its value

is associated with the number of trips (or "turns") a truck and driver can accomplish in a standard eleven hour work day. The 95% Buffer Time Index (a performance measure cited above) offers a similar window onto the productivity of the regional truck route system. Productivity is especially important because it has a direct influence on operating costs, which are a principal determinant of supply chain competitiveness and a central concern of freight system users.

Figure 5-24: Freight Intensive Clusters and Region Centers



Source: Consultant Analysis

As with the speed and reliability performance measures, average peak period speeds in the Atlanta Region were examined by analyzing key freight corridors between 5:00 P.M. and 6:00 P.M. during weekdays using INRIX GPS speed data. These data provided the project team with an estimate of the average 60 minute travel

shed during a typical weekday PM Peak Hour. Though travel sheds change with the chosen peak period (e.g. morning, midday, or evening) and the time frame of the analysis (e.g. 1 month, 3 months, etc.), this analysis based on the evening peak yields a picture of regional accessibility during perhaps the most challenging operating period. Thus, the results can be viewed as the ceiling to challenged reliability on the Atlanta Region's network. Freight Intensive Clusters and Regional Centers are identified in Figure 5-24.

The results (summarized in Table 5-7) indicate that, among the clusters included as part of this analysis, the Region Core and Buckhead clusters are generally the most reliably accessed areas of Metro Atlanta. Airport/Clayton also is reliably accessed from many clusters. This is intuitive since these areas are among the most centrally located in the region. On the opposite end of the spectrum, the Kennesaw/Barrett Parkway cluster is the least reliably accessed cluster of the areas included as part of this analysis. Gwinnett/Satellite Blvd./SR 316 also is not very reliably accessed from most of the other clusters during the evening peak. Again, this is intuitive given that these clusters are located at the northern end of the core metropolitan area and generally experience significant levels of congestion.

Table 5-7: 1-Hour Travel Sheds at PM Peak

	DESTINATION						
ORIGIN	**Region Core**	**Buckhead**	**Kennesaw/ Barrett Pkwy**	**Alpharetta**	**Airport/ Clayton**	**McDonough/ Henry**	**Gwinnett/ Satellite Blvd/SR 316**
Fulton Industrial Blvd	✓	⊘	⊘	⊘	✓	⊘	⊘
I-85 /PIB/ Jimmy Carter Blvd	✓	✓	⊘	✓	⊘	⊘	✓
I-20 East	✓	✓	⊘	⊘	✓	✓	⊘
Fairburn/Camp Creek	✓	✓	⊘	⊘	✓	⊘	⊘
Airport/Clayton	✓	✓	⊘	⊘	✓	⊘	⊘
McDonough/ Henry	⊘	⊘	⊘	⊘	✓	✓	⊘
Gwinnett/ Satellite Blvd/SR 316	⊘	✓	⊘	✓	⊘	⊘	✓

Note: The ✓ symbol indicates that the given destination cluster can be reached reliably within 1 hour of travel time. The "⊘" symbol indicates that it cannot be reached reliably within 1 hour of travel time.

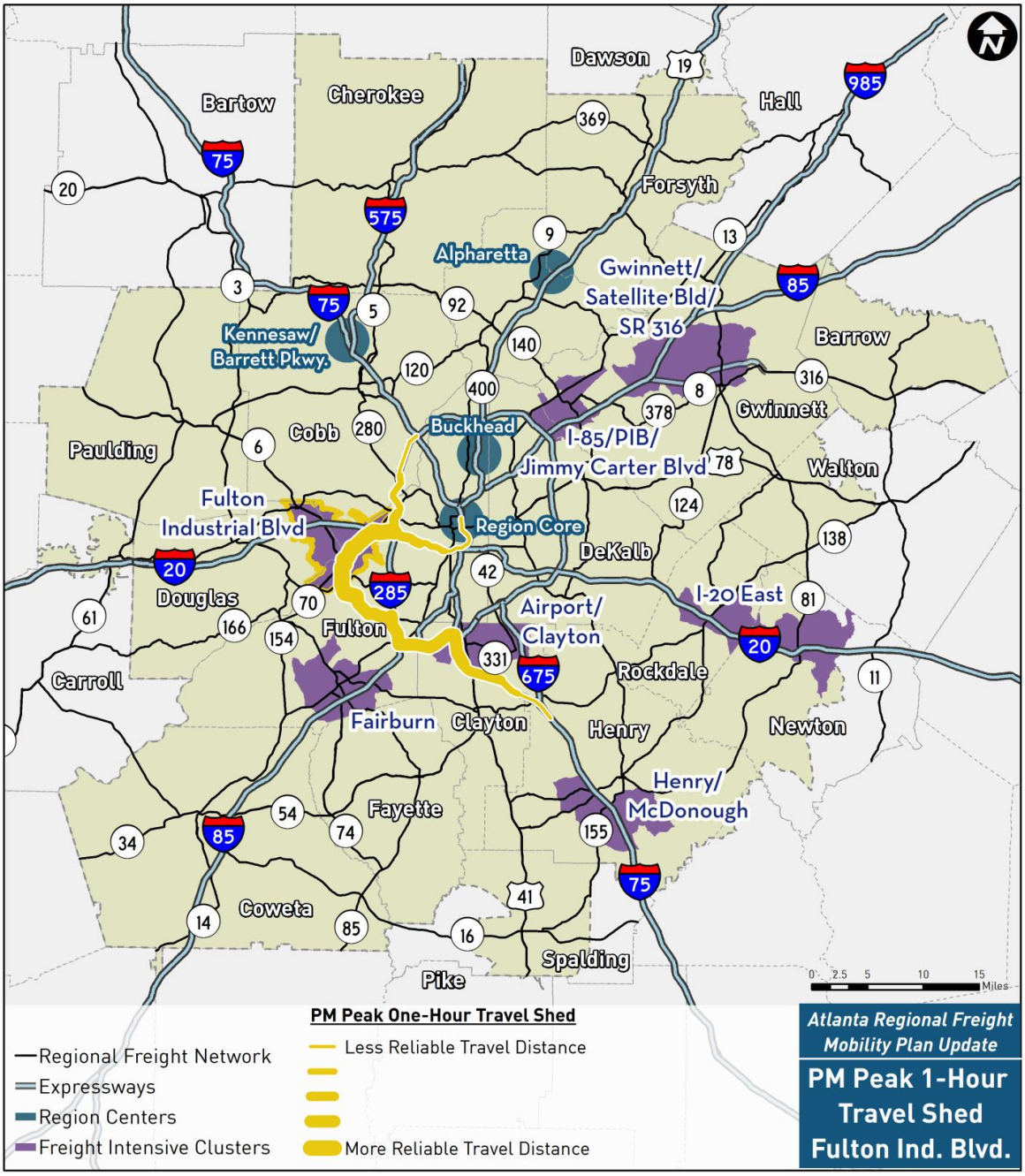
Figure 5-25 illustrates the average 60 minute travel shed for vehicles originating in the Fulton Industrial Boulevard cluster. This indicates that on a typical weekday, vehicles can reach only the Region Core or Airport/Clayton clusters within 60 minutes, while other key clusters require a lengthier trip. The situation in the McDonough/Henry County cluster (Figure 5-26) shows similar patterns – with only the Airport/Clayton cluster accessible within a typical 60 minute weekday trip.

The Airport/Clayton and Fairburn Clusters have similar levels of accessibility to the Region Centers as shown in Figures 5-27 and 5-28, respectively. From both clusters, it is possible to reliably reach the Region Core and Buckhead with 60 minutes of travel time. However, it is not possible to reach Region Centers north of the top end of I-285 (i.e. Kennesaw/Barrett Pkwy., Alpharetta, and Gwinnett/Satellite Blvd/SR 316).

Likewise, the Gwinnett/Satellite Blvd/SR 316 and I-85/PIB/Jimmy Carter Blvd. clusters have similar levels of accessibility to other clusters as shown in Figures 5-29 and 5-30. Intuitively, from these clusters it is possible to reach most of the Region Centers located in the northern portion of the Atlanta Region but not those south of I-20.

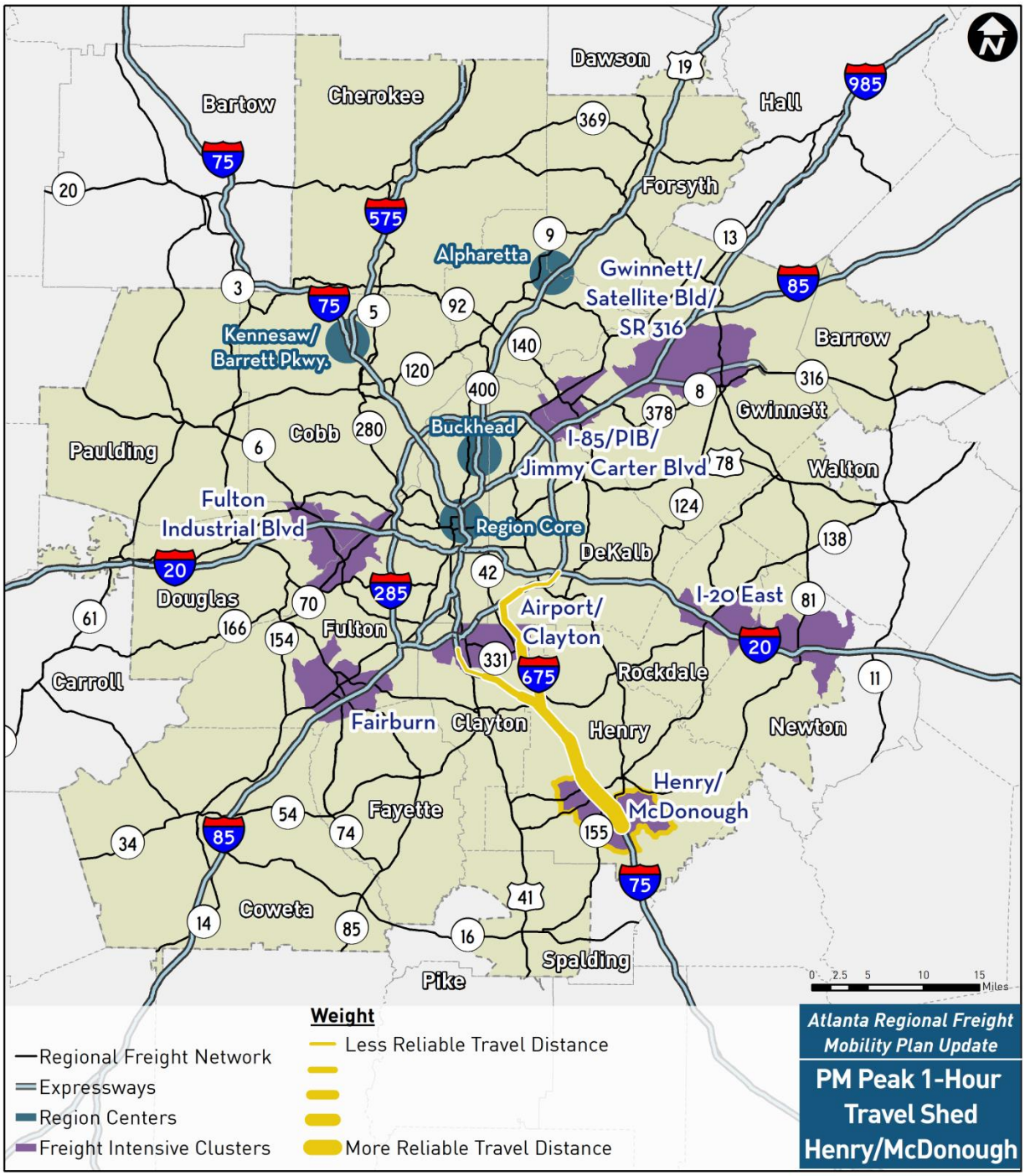
Lastly, the I-20 East Cluster benefits from relatively reliable travel times on I-20 as it can reach the urban core of the region (i.e. Region Core and Buckhead) and destinations south of I-20 (i.e. Airport/Clayton and McDonough). However, unreliable travel times on the eastern wall of I-285 (i.e. between I-20 and I-285) make it difficult to reliably reach northern Region Centers during peak periods.

Figure 5-25: Fulton Industrial Boulevard 60 Minute Travel Shed (PM Peak)



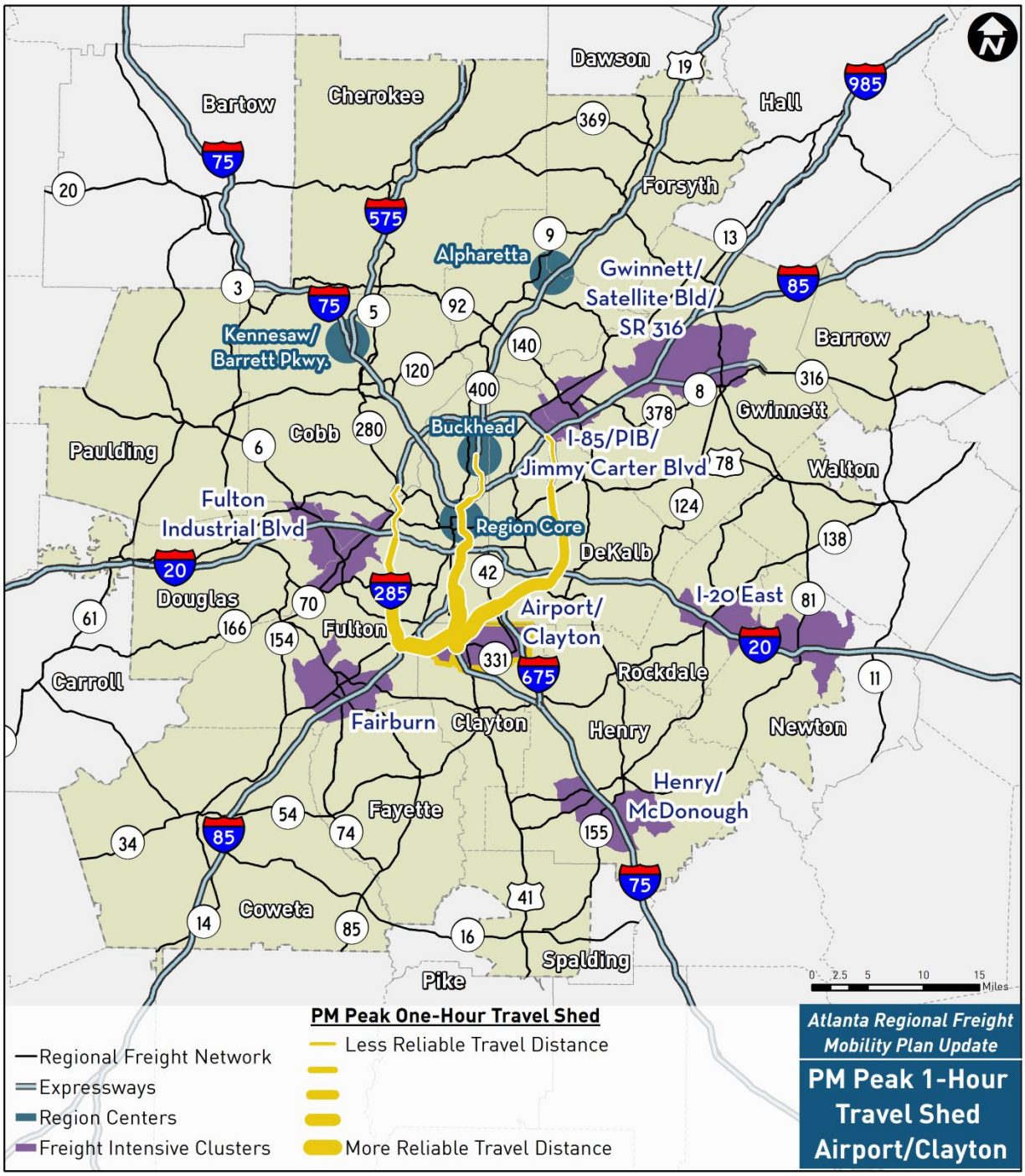
Source: INRIX; Consultant Analysis

Figure 5-26: McDonough/Henry 60 Minute Travel Shed (PM Peak)



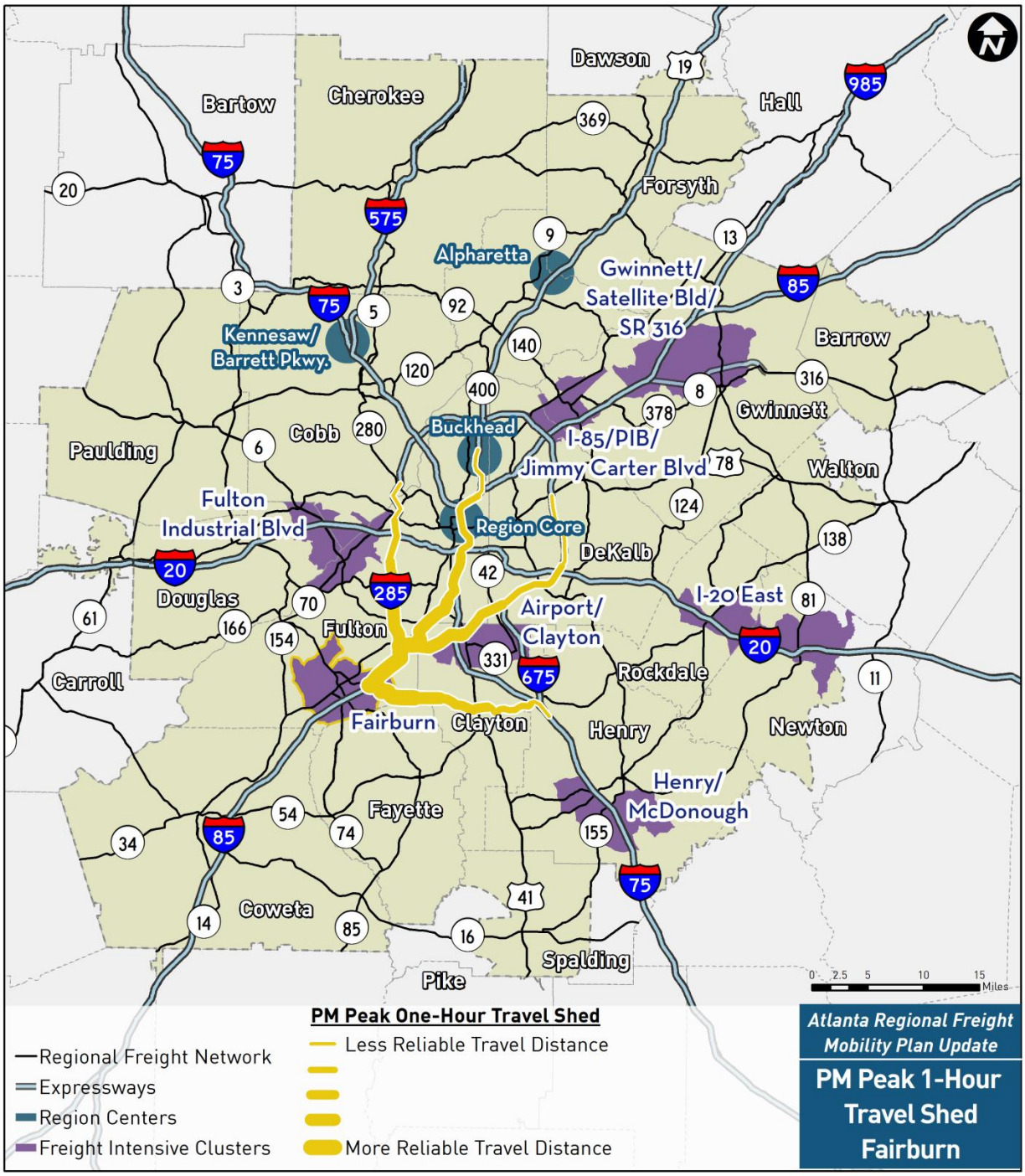
Source: INRIX; Consultant Analysis

Figure 5-27: Airport/Clayton 60 Minute Travel Shed (PM Peak)



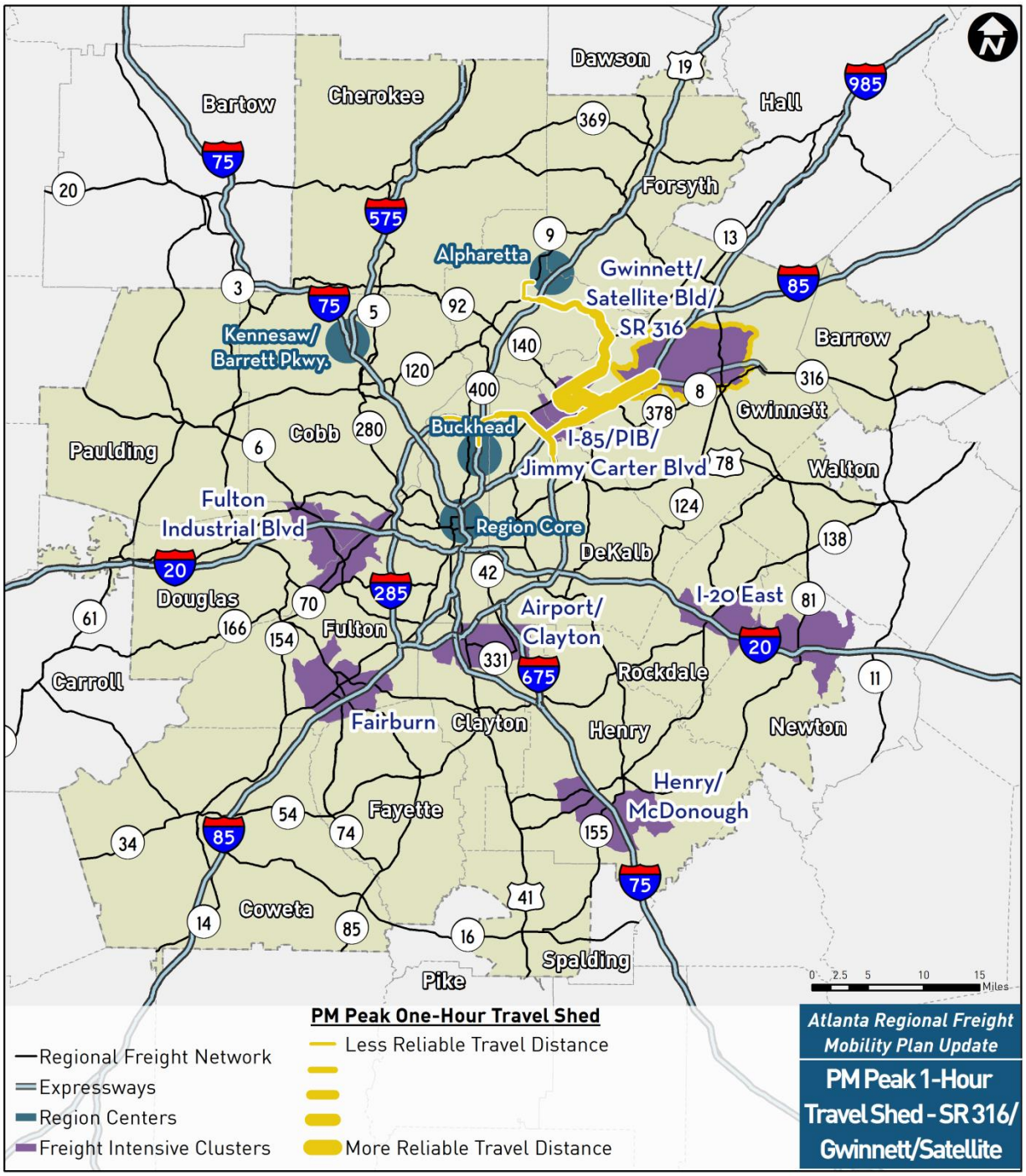
Source: INRIX; Consultant Analysis

Figure 5-28: Fairburn 60 Minute Travel Shed (PM Peak)



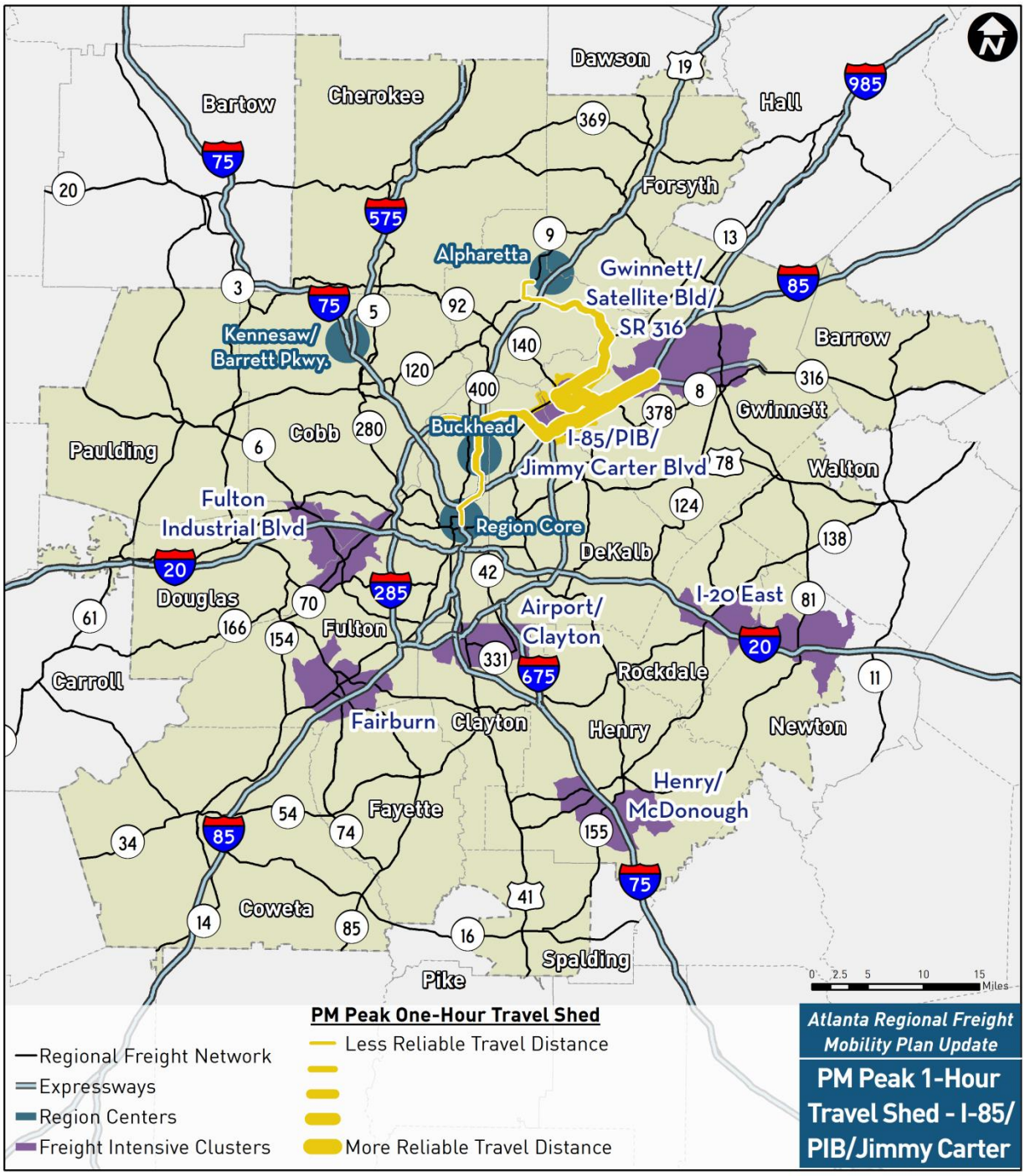
Source: INRIX; Consultant Analysis

Figure 5-29: Gwinnett/Satellite Blvd/SR 316 Creek 60 Minute Travel Shed (PM Peak)



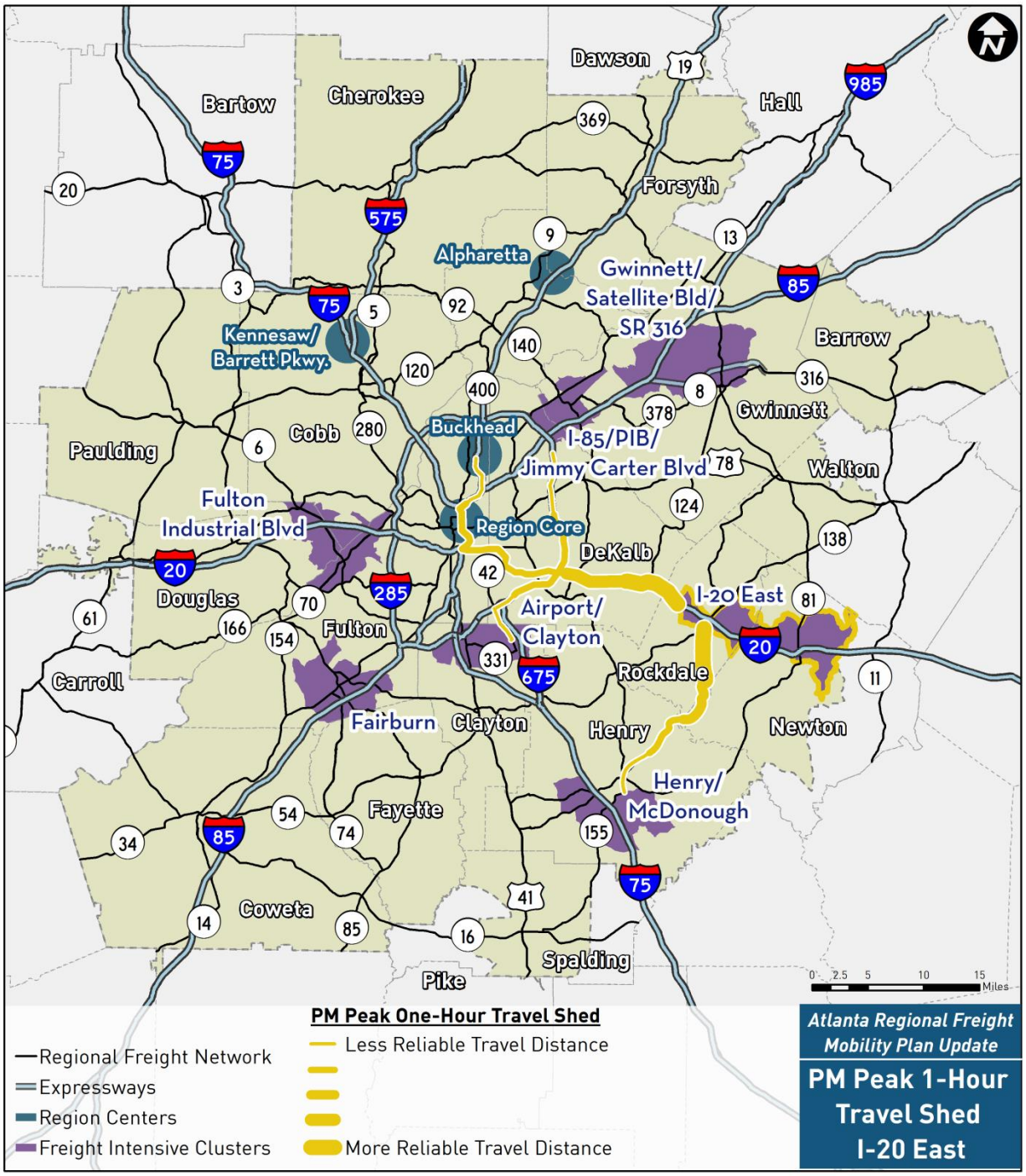
Source: INRIX; Consultant Analysis

Figure 5-30: I-85/PIB/Jimmy Carter Blvd. 60 Minute Travel Shed (PM Peak)



Source: INRIX; Consultant Analysis

Figure 5-31: I-20 East 60 Minute Travel Shed (PM Peak)



Source: INRIX; Consultant Analysis

5.5.4 Truck-Involved Crashes

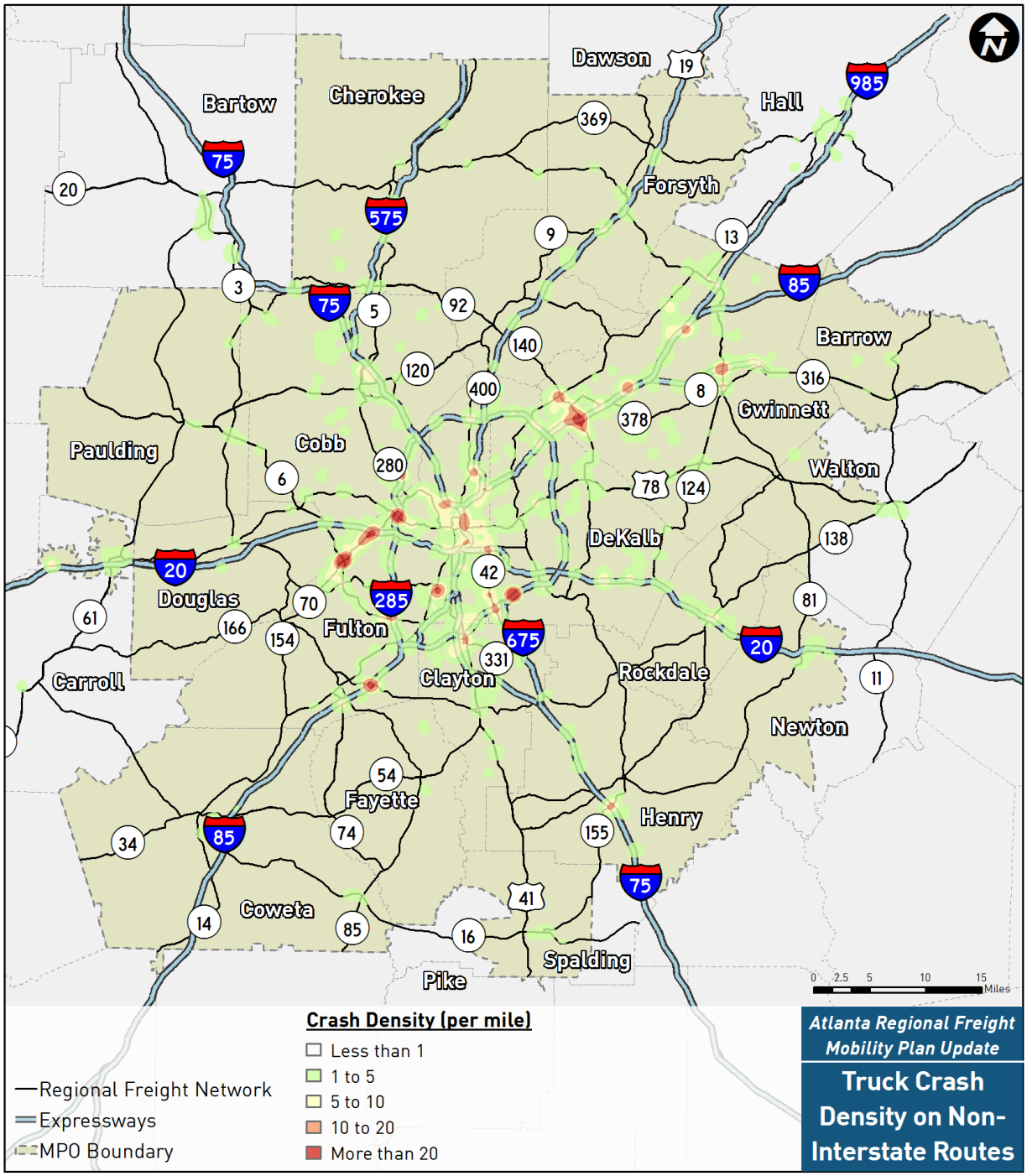
In 2014, there were 8,597 truck-involved crashes in the Atlanta Region, which accounts for less than 5% of total number of crashes in the Atlanta Region. 1,226 of these crashes involved injuries. 4,944 of the region's truck-involved crashes (58 percent) occurred on the ASTRoMaP network, including the region's interstate highways. Table 5-8 lists the number of crashes along the length of a given corridor within a county in the Atlanta Region. Table 5-8 also lists the freight related crash rates estimated as number of freight related crashes per 100 Million Truck Miles Traveled per year. It shows that many of the high truck crash locations in the region are also located within freight-intensive clusters. Most notably, Fulton Industrial Boulevard which is located in the cluster that has the most square footage of manufacturing and warehousing development also features the highest number of crashes with 106 in 2014. Overall crash incidence for non-interstate highway and interstate highway locations is illustrated in Figure 5-32 and Figure 5-33, respectively.

Table 5-8: Truck-Involved Collisions on the Atlanta Region's Strategic Truck Network (2014)

County	Road	From	To	# of crashes	Crash Rate
Fulton	Fulton Industrial Blvd	SR 166 (Fairburn Rd/Campbellton Rd)	Donald Lee Hollowell Pkwy	106	2884
Gwinnett	Jimmy Carter Blvd	SR 141 (Peachtree Industrial Blvd)	US 78/Stone Mountain Pkwy	62	1850
Fulton	Camp Creek Parkway	Fulton Industrial Blvd	I-85	58	2080
Fulton/ DeKalb	US 23/Moreland Avenue	Memorial Dr	Forest Parkway	57	2561
Fulton	Donald Lee Hollowell Pkwy	Fulton Industrial Blvd	US19/Northside Dr	53	3403
Gwinnett	SR 20 (Buford Dr)	Peachtree Industrial Blvd	US 29	39	1095
DeKalb	Bouldercrest Rd/Fayetteville Rd	Flat Shoals Rd	I-285	39	4157
Clayton	US 19/Tara Blvd	I-75	GA 138 (North Ave)	33	1117
Henry	SR 155 (Zack Hinton Pkwy)	SR 81 (Keys Ferry St)	Westridge Parkway	14	1019
Clayton	Forest Parkway	SR 54 (Jonesboro Rd)	SR 42 (Park Dr)	12	967

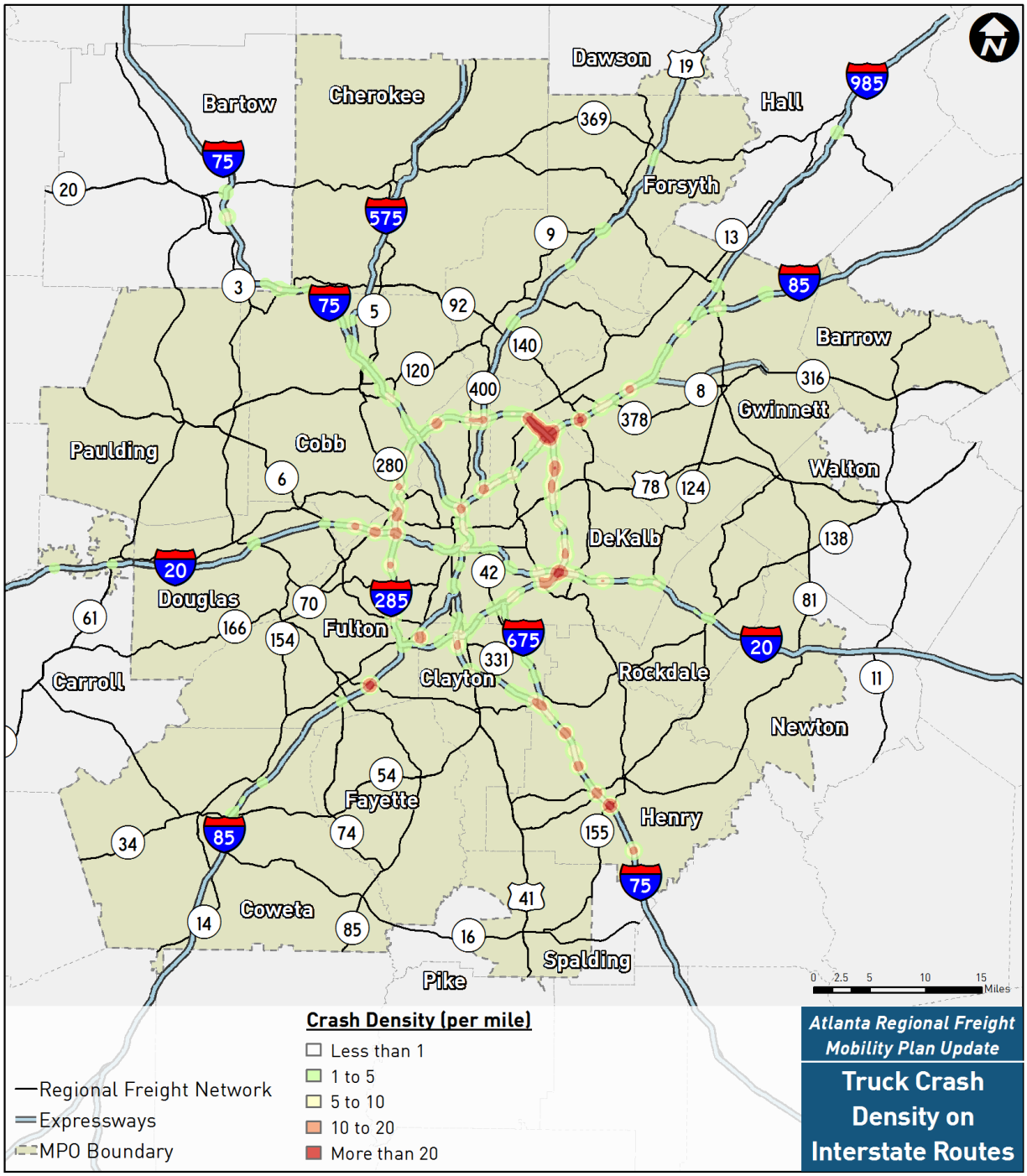
Source: Georgia Crash Database; ARC Travel Demand Model, Consultant analysis.

Figure 5-32: Truck Crash Incidence – Non-Interstate Highways



Source: Georgia DOT; Consultant Analysis

Figure 5-33: Truck Crash Incidence –Interstate Highways



Source: Georgia DOT; Consultant Analysis

5.6 Condition and Performance of Freight Intermodal Connectors

There are 32 freight intermodal connectors located in the Atlanta Region (Table 5-9).[27] Freight intermodal connectors are considered to be NHS designated connectors serving airports, rail/truck terminals, port terminals (not applicable to the Atlanta Region), and major pipeline terminals. Several of the intermodal connectors exhibit poor pavement conditions as indicated by high International Roughness Index (IRI) values. IRI measures the smoothness of pavement and is an indication of the overall condition of the roadway. Values exceeding 220 are considered poor.[28] This is important for freight operations as poorly maintained roadways have the potential to damage cargo and vehicles. There are several connector roadways across the Atlanta Region that either exceed or come very close to this threshold.

Pavement conditions on the freight intermodal connectors generally range from Poor to Fair based on IRI values. The following ranges of IRI values determine the rating a section of pavement on a non-interstate roadway receives:

- Very Good – Less than 60;
- Good – 60-94;
- Fair – 95-170;
- Mediocre – 171-220
- Poor – Greater than 220.

Connectors serving rail/truck terminals tend to fare better than all others and have an overall rating of Fair, as shown in Table 5-10. In the Atlanta Region, many of these roadways are important routes for passenger traffic as well. Thus, it is possible that these routes receive more frequent maintenance due to their importance in carrying both types of traffic. The intermodal connectors for HJAIA also perform relatively well as they have an overall rating of Mediocre. Connectors to pipeline terminals are in the worst shape with a Poor overall rating. However, it should be noted that Bolton Road in the northwestern portion of the City of Atlanta serves as both a pipeline and rail/truck terminal connector and is included in the summary statistics for pipeline connectors.

When viewed by functional classification (Table 5-11) there is a clear trend of smaller capacity roadways having poorer pavement conditions. Local roads have a very high overall IRI value and are generally in Poor condition. Major Collectors and Minor Arterials, on the other hand, are in Fair condition though Major Collectors just barely meet the criteria. Principal Arterials are in the best condition and are rated Good overall.

A similar trend is evident when pavement conditions are viewed by ownership (Table 5-12). Cities and other municipalities own a large share of the region's freight intermodal connectors by number and length. However, these connectors exhibit the poorest pavement conditions. Though counties only own a small share, they too have freight intermodal connectors that are in Poor condition. Freight intermodal connectors owned by the state are in the best condition and have a Good overall rating. These findings suggest that ownership and functional classification play a big role in the level of maintenance received by intermodal connectors.

[27] Intermodal connectors are counted by unique route ID in the 2013 HPMS and 2015 FHWA NHS GIS databases.
[28] FHWA Conditions and Performance Report, 1999.

Table 5-9: Freight Intermodal Connectors in Metropolitan Atlanta

County	Facility	Roadway
Clayton	HJAIA	M.H. Jackson Blvd. (East of NLVR)/ Charles Garrett Pkwy.
		M.H. Jackson Blvd. (West of NLVR)
		Outer Loop Road
	NS Forest Park Yard	Forest Pkwy.
		Springdale Road
Cobb	NS Austell Yard	SR 6 Spur/ Garrett Memorial Highway
DeKalb	Doraville Colonial & Plantation Pipeline	Longmire Way
		Winters Chapel Road
Fulton	Hartsfield-Jackson Atlanta International Airport	Airport Loop Road (City of College Park)
		Airport Loop Road (City of East Point)
		Airport Loop Road (City of Hapeville)
	BP Oil Refinery	Parrott Ave.
		SR 70/ Bolton Road
	CSX Hulsey Yard	Boulevard
	CSX Howells Yard	Chattahoochee Ave.
		Howell Mill Road
	CSX Fairfax Industry Yard	Fairburn Industrial Blvd.
		McLarin Road
		McLarin Road (Ramp onto EB Fairburn Industrial Blvd.)
	NS Inman Yard	James Jackson Pkwy.
		SR 70/ Bolton Road (same as BP Oil Refinery connector)
		Marietta Road
	NS Industry Yard	Lakewood Ave.
		Sylvan Road
Spalding	Trans Montaigne Pipeline Terminal	Atlanta Road (North of Beatty St.)
		Atlanta Road (South of Beatty St.)
		McIntosh Road
		Tower St./McIntosh Road
	NS Griffin Yard	5th St. (City of Griffin)
		SR 16 (East of Barrow Road)
		SR 16 (West of Barrow Road)

Source: FHWA 2013 HPMS Database; FHWA 2013 HPMS Universe Database; FHWA NHS GIS Database. (Note: Average values are weighted by roadway length.)

Table 5-10: Pavement Conditions by Facility Type

Facility	No. of Connectors	AADT	AADTT	Avg. IRI	IRI Rating
Major Airport	7	14,571	1,075	176	Mediocre
Major Pipeline Terminal	8	11,453	984	226	Poor
Major Rail/Truck Terminal	17	13,680	1,717	143	Fair

Source: FHWA 2013 HPMS Database; GDOT Geocounts Database; FHWA NHS GIS Database. (Note: Average IRI and traffic volumes are weighted by roadway length.)

Table 5-11: Pavement Conditions by Functional Classification

Facility	No. of Connectors	Length (mi)	AADT	AADTT	Avg. IRI	IRI Rating
Local	10	5	1,083	112	331	Poor
Major Collector	6	5	11,743	790	167	Fair
Minor Arterial	14	14	13,366	1,387	126	Fair
Principal Arterial - Other	2	4	11,808	1,303	87	Good

Source: FHWA 2013 HPMS Database; GDOT Geocounts Database; FHWA NHS GIS Database. (Note: Average IRI and traffic volumes are weighted by roadway length.)

Table 5-12: Pavement Conditions by Ownership

Facility	No. of Connectors	Length (mi)	Avg. IRI	Rating
City or Municipal Agency	23	12	257	Poor
County Highway Agency	3	2	222	Poor
State Highway Agency	6	14	81	Good

Source: FHWA 2013 HPMS Database; FHWA NHS GIS Database. (Note: Average IRI is weighted by roadway length.)

Another important aspect of both conditions and performance are the volumes experienced by freight intermodal connectors. Intuitively, airport connectors experience the heaviest volumes with just over 14,500 vehicles daily as HJAIA serves both passenger and freight traffic. Connectors serving rail/truck terminals are close behind with nearly 13,700 vehicles daily and also experience the highest truck volumes. Roadways connecting into pipeline terminals have the lowest daily volumes at nearly 11,500 vehicles daily. Nearly 1,000 trucks travel on pipeline intermodal connectors on a daily basis. When considered in conjunction with IRI values, the data suggests that the connectors with higher volumes likely receive more attention and thus funding to maintain their pavement.

As expected, freight intermodal connectors with higher functional classifications carry the most passenger and truck traffic on a daily basis. Principal arterials carry on average about 14,500 vehicles of which about 1,700 are trucks daily. Minor arterials are close behind with just over 13,000 vehicles daily of which nearly 1,300 are trucks. Local roads carry the fewest vehicles.

5.6.1 Condition and Performance of Freight Rail Intermodal Connectors

In Metro Atlanta, intermodal connectors serve eight different freight rail intermodal facilities: Norfolk Southern's Forest Park, Austell, Inman, Industry, and Griffin Yards; and CSX Transportation's Hulsey, Howells, and Fairburn/Fairfax Industry Yards. Five of the eight intermodal terminals are located in Fulton County. Of the remaining three one each is located in Clayton, Cobb, and Spalding Counties. Though the FHWA database lists eight different intermodal terminals, only four appear to be actively used as intermodal terminals: Norfolk Southern's Austell and Inman Yards and CSX Transportation's Hulsey and Fairburn Yards. As summarized in Table 5-13, average speeds on intermodal connectors at six of these locations where data is available are illustrated in Figures 5-34 through 5-39. (Due to data-related

limitations, average speed could not be calculated for the portions of roadways that are officially designated intermodal connectors for the Norfolk Southern Austell and CSX Howells Yard facilities.)

Of the intermodal connectors, SR 74/Fairburn Industrial Blvd. in Fulton County experiences the highest truck volumes with over 3,000 trucks per day utilizing the roadway. Other intermodal connectors with relatively high truck volumes include SR 6 Spur/Garrett Highway in Cobb County and SR 331/Forest Parkway and Springdale Road in Clayton County. All of these roadways carry over 2,000 trucks per day according to information in the GDOT Geocounts and FHWA Highway Performance Monitoring System (HPMS) databases. In addition to experiencing high truck volumes, many of these roadways also experience relatively high passenger vehicle volumes as well. For instance, Howell Mill Road has a total daily volume of over 33,000 vehicles near I-75 while Forest Parkway has 25,700 total vehicles. The high volumes of total vehicles highlight the interrelationship between freight activity and regional congestion.

Regarding the condition and performance of the intermodal connectors, overall the roadways have pavement that is in Fair condition. Their combined weighted (by roadway length) average IRI value is 143. The connectors in poorest condition are mostly located in Fulton County: Chattahoochee Avenue, Boulevard, Howell Mill Road, McLarin Road, Lakewood Avenue, and Sylvan Road. However, Fulton County also contains the most connectors overall and the largest share of the region's population. Forest Parkway in Clayton County and 5th Street in the City of Griffin also have among the poorest pavement conditions.

Based on average speed, intermodal connectors in Fulton County generally have poorer performance relative to connectors in other parts of the region. However, as noted before this is likely due to a larger, denser population than other parts of the Atlanta Region and that most of the region's connectors are in Fulton County. For instance, Boulevard exhibits the slowest speed among the intermodal connectors, which is likely due to this roadway also serving commuters traveling between I-20 and the City of Atlanta and providing connectivity between residential neighborhoods in the City of Atlanta (i.e. Grant Park, Cabbagetown, and Historic Old Fourth Ward) in addition to the CSXT Hulsey Yard.

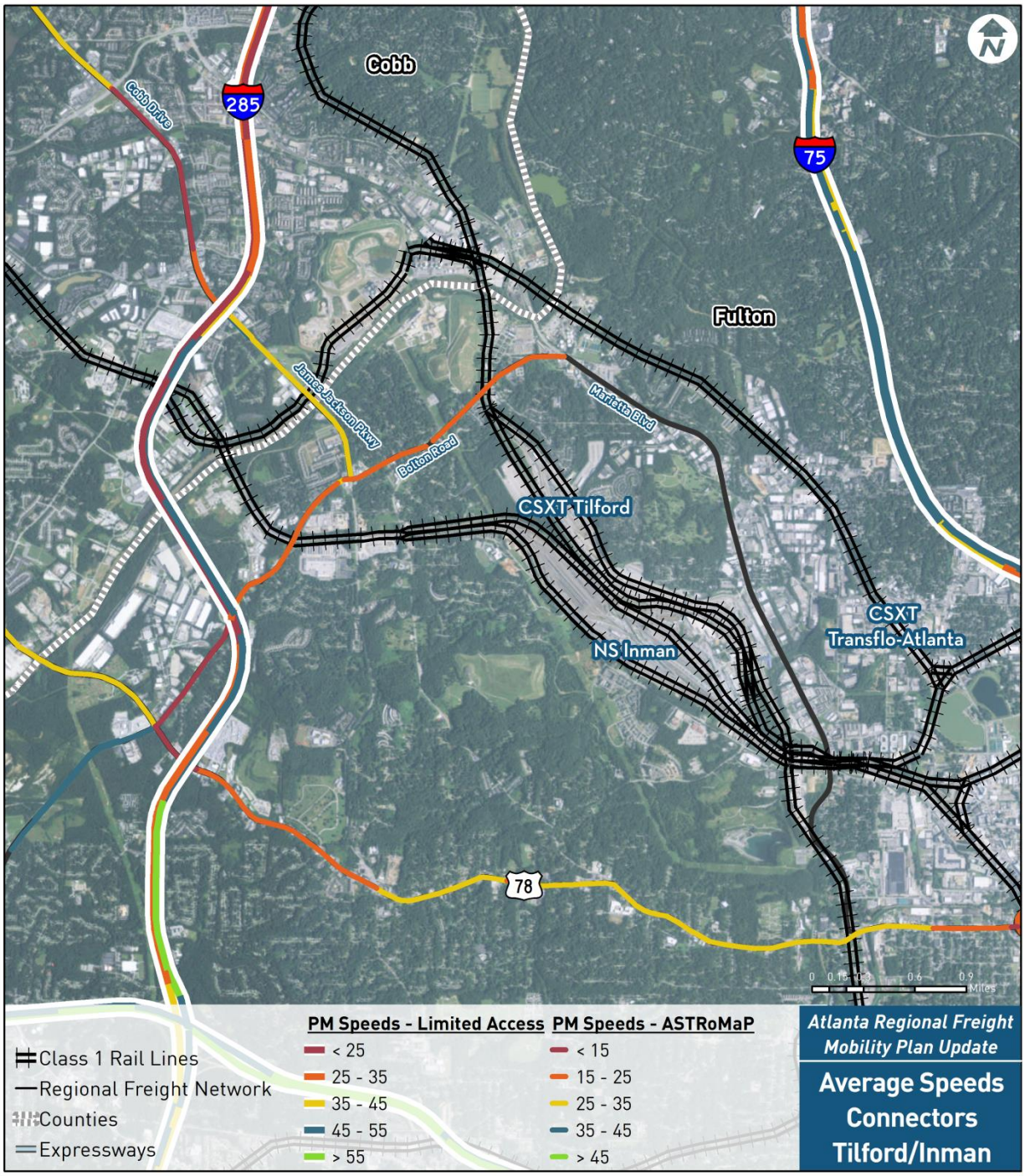
Table 5-13: Rail Freight Intermodal Connectors in Metropolitan Atlanta

County	Facility	Roadway	AADTT	AADT	IRI	Avg. Peak Period Speed[29]	Ave. Free Flow Speed
Clayton	NS Forest Park Yard	Forest Pkwy.	3,312	25,700	219	30	37
		Springdale Road	No data	2,000	No data	No data	No data
Cobb	NS Austell/Whitaker Yard	SR 6 Spur/Garrett Memorial Highway	3,476 [a]	12,100 [a]	125	No data	No data
Fulton	CSX Hulsey Yard	Boulevard	965 [a]	19,300 [a]	334	16	29
	CSX Howells Yard	Chattahoochee Ave.	683 [a]	11,900 [a]	521	No data	No data
		Howell Mill Road	382 [a]	18,800 [a]	216	No data	No data
	CSX Fairburn/Fairfax Industry Yard	Fairburn Industrial Blvd.	4,163 [a]	17,800 [a]	171	32	40
		McLarin Road	No data	2,000	356	No data	No data
		McLarin Road (Ramp onto EB Fairburn Industrial Blvd.)	No data	2,000	No data	No data	No data
	NS Inman Yard and CSX Tilford Yard	James Jackson Pkwy.	949 [a]	14,700 [a]	104	35	40
		South Cobb Drive	893 [a]	12,700 [a]	No data	35	40
		SR 70/ Bolton Road (same as BP Oil Refinery connector)	1,307 [a]	14,500 [a]	No data	24	40
		Marietta Road	No data	2,000	No data	No data	No data
	NS Industry Yard	Lakewood Ave.	No data	1,813	375	No data	No data
		Sylvan Road	940 [a]	12,800 [a]	434	21	45
Spalding	NS Griffin Yard	5th St. (City of Griffin)	No data	2,000	441	No data	No data
		SR 16 (East of Barrow Road)	1,303 [a]	11,800 [a]	68	43	53
		SR 16 (West of Barrow Road)	1,228 [a]	15,600 [a]	No data	43	53

Source: FHWA 2013 HPMS Database; FHWA 2013 HPMS Universe Database; FHWA NHS GIS Database. GDOT Geocounts. (Note: Figures followed by the subscript, [a], denote that traffic volumes were obtained from the GDOT Geocounts database. Otherwise, traffic volumes are from the HPMS database.)

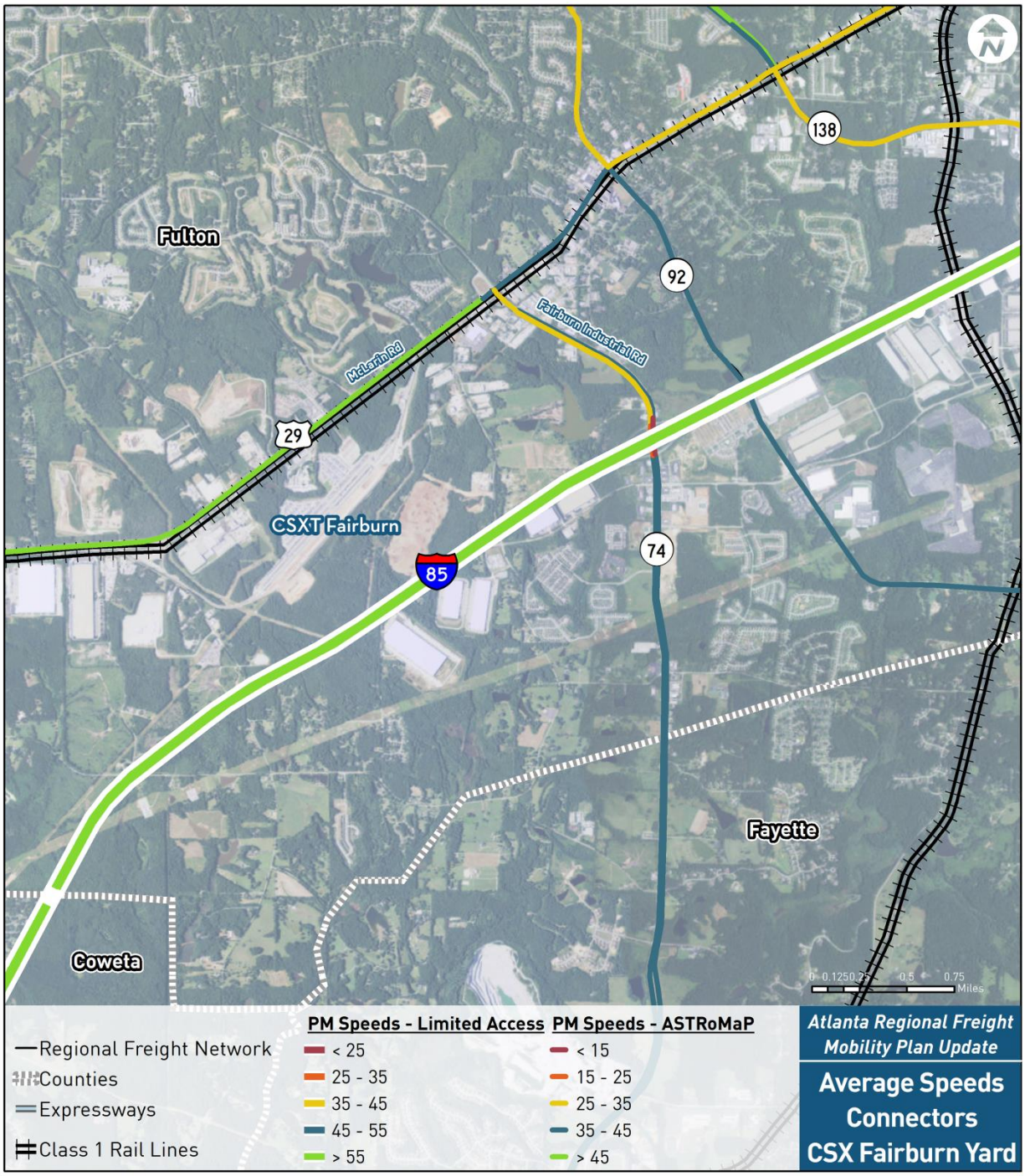
[29] Average speeds were measured over the 5-6 P.M. peak period using INRIX data.

Figure 5-34: Avg. Speeds on Intermodal Connectors at CSXT Tilford Yard, and BP Oil Refinery
April 2015, 5-6 P.M.



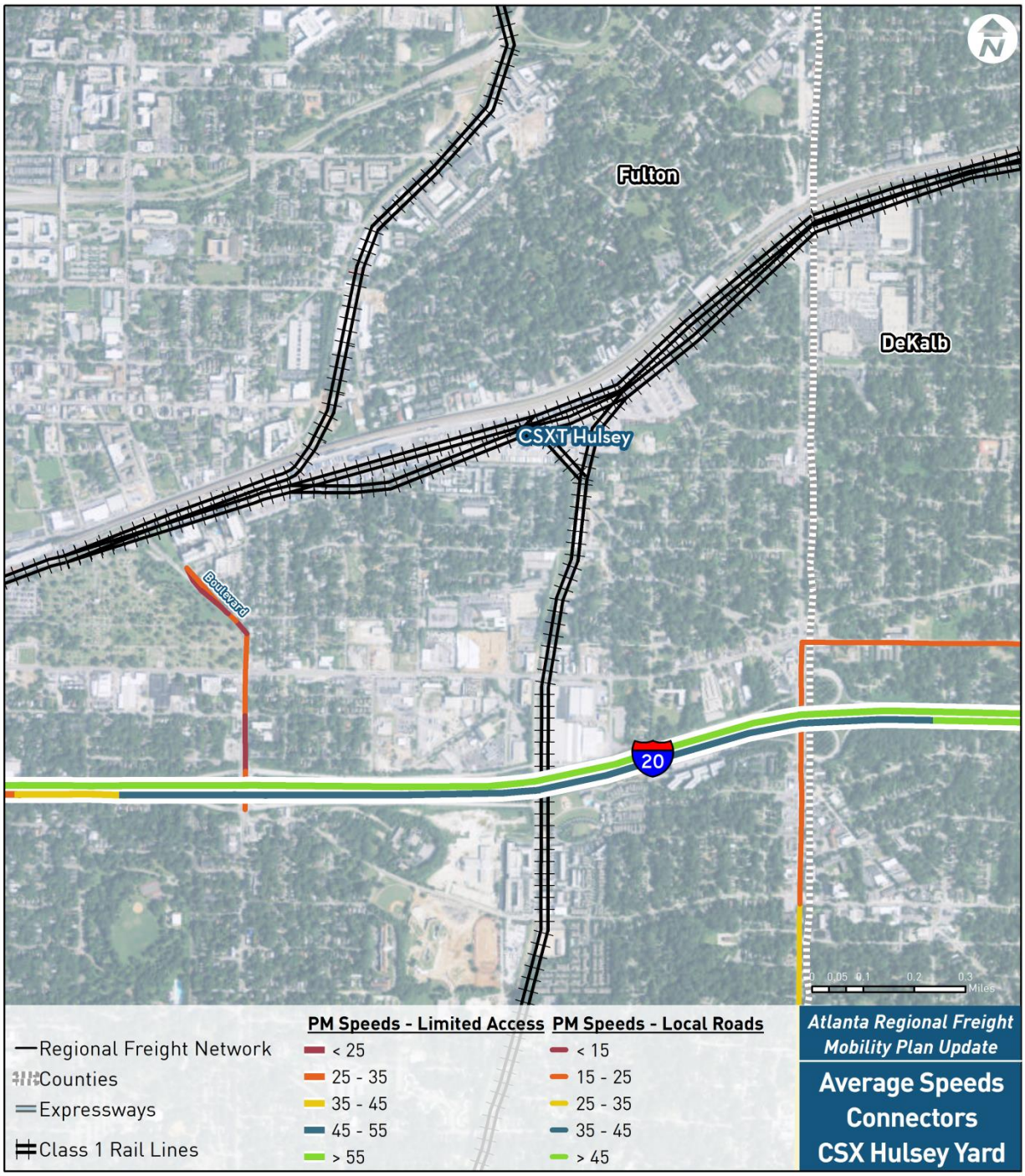
Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

Figure 5-35: Avg. Speeds on Intermodal Connectors at CSX Transportation Fairburn Yard
April 2015, 5-6 P.M.



Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

Figure 5-36: Avg. Speeds on Intermodal Connectors at CSX Transportation Hulsey Yard
April 2015, 5-6 P.M.



Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

Figure 5-37: Avg. Speeds on Intermodal Connectors at NS Forest Park Yard
April 2015, 5-6 P.M.

Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

Figure 5-38: Avg. Speeds on Intermodal Connectors at NS Austell/Whitaker Yard
April 2015, 5-6 P.M.

Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

5.6.2 Condition and Performance of Air Cargo Intermodal Connectors

The only airport-serving intermodal connectors in the Atlanta Region are those located at HJAIA, as shown in Table 5-14. The roadways comprising those connectors are M.H. Jackson Blvd., Outer Loop Road, and Airport Loop Road. By far, M.H. Jackson Blvd. (west of Non-Licensed Vehicle Road, or NLVR) experiences the highest total volumes at nearly 25,000 vehicles daily. M.H. Jackson Blvd. provides access to the M.H. Jackson Jr. International Terminal and HJAIA's air cargo facilities via Cargo Service Road, NLVR, and Airport Loop Road. Though truck volumes were not available for the airport connectors, trucks likely comprise a significant portion of total volume for M.H. Jackson Blvd. and Airport Loop Road in particular.

Regarding the condition and performance of the airport intermodal connectors, M.H. Jackson Blvd. has the poorest pavement conditions as indicated by IRI. This is intuitive given its heavy traffic volumes. M.H. Jackson Blvd. also has the biggest discrepancy between its free flow speed (as indicated by 12 A.M. – 3 A.M. average speed) and its peak hour speed (36 mph versus 23 mph). Airport Loop and Outer Loop Roads generally maintain speeds in excess of 35 mph.

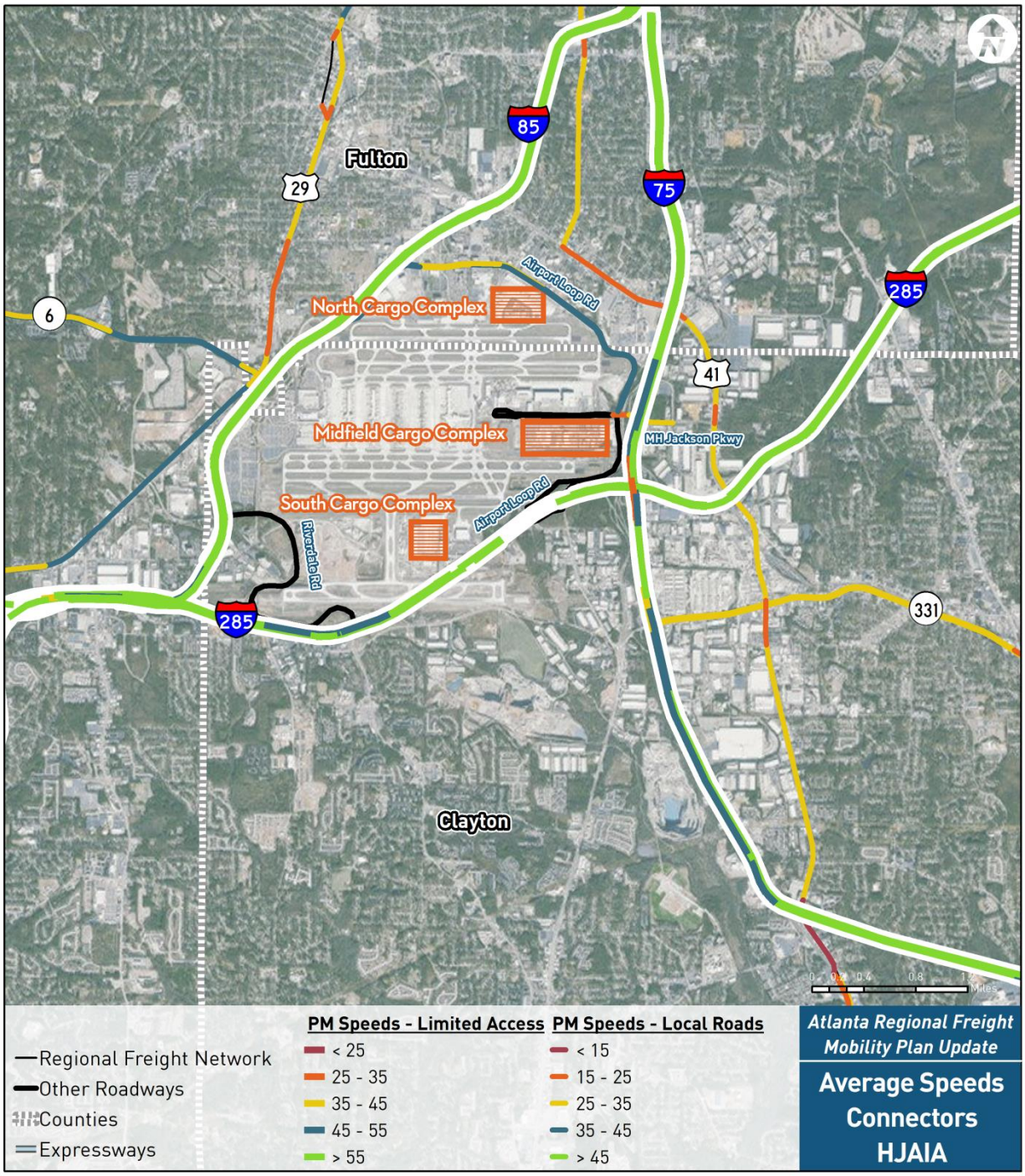
Table 5-14: Air Cargo Freight Intermodal Connectors at Hartsfield-Jackson International Airport

County	Roadway	AADT	IRI	Avg. Peak Period Speed[30]	Average Free Flow Speed
Clayton	M.H. Jackson Blvd. (East of NLVR)/ Charles Garrett Pkwy.	No data	2,000	23	36
	M.H. Jackson Blvd. (West of NLVR)	No data	25,000 [a]	No data	No data
	Airport Loop Road	2,066 [a]	11,480 [a]	35	38
Fulton	Airport Loop Road (City of College Park)	1,149 [a]	14,000 [a]	37	45
	Airport Loop Road (City of East Point)	1,149 [a]	14,000 [a]	37	43
	Airport Loop Road (City of Hapeville)	642 [a]	16,100 [a]	34	41

Source: FHWA 2013 HPMS Database; FHWA 2013 HPMS Universe Database; FHWA NHS GIS Database. GDOT Geocounts. (Note: Figures followed by the subscript, [a], denote that their source is the GDOT Geocounts database.)

[30] Average speeds were measured over the 5-6 P.M. peak period using INRIX data.

Figure 5-39: Avg. Speeds on Intermodal Connectors at HJAIA
April 2015, 5-6 P.M.



Source: INRIX; FHWA 2013 HPMS Database; FHWA NHS GIS Database.

5.6.3 Condition and Performance of Pipeline Intermodal Connectors

Pipeline terminal intermodal connectors in the Atlanta Region (summarized in Table 5-15) are located in DeKalb, Fulton, and Spalding Counties. Of the pipeline intermodal connectors Bolton Road experiences the highest total volumes at just over 13,000 vehicles daily, while Longmire Way in DeKalb County experiences the highest daily truck volumes at nearly 1,400. Some of this truck volume may also be due to the Buford Highway Farmer's Market which is located near the terminal and likely generates significant truck trips.

The roadways serving pipeline intermodal connectors are generally in Poor condition as indicated by IRI values with Longmire Way being in the worst condition. Even McIntosh Road, which is in the best condition among pipeline intermodal connectors with pavement data, would only be rated as Fair. There was very little information on average speeds as only Bolton and McIntosh Roads have data. While there was not much difference between free flow and peak hour speeds for McIntosh Road, the difference is significant for Bolton Road.

Table 5-15: Freight Intermodal Connectors at Pipeline Terminals

County	Facility	Roadway	AADTT	AADT	IRI	Avg. Peak Period Speed[31]	Avg. Free Flow Speed
DeKalb	Doraville Colonial & Plantation Pipeline	Longmire Way	1,366 [a]	6,390 [a]	529	No data	No data
		Winters Chapel Road	No data	7,690 [a]	No data	No data	No data
Fulton	BP Oil Refinery	Parrott Ave.	81	2,000	244	No data	No data
		SR 70/ Bolton Road	1,307 [a]	14,500 [a]	No data	24	40
Spalding	Trans Montaigne Pipeline Terminal	Atlanta Road (North of Beatty St.)	354 [a]	8,850 [a]	No data	No data	No data
		Atlanta Road (South of Beatty St.)	52 [a]	1,300 [a]	No data	No data	No data
		McIntosh Road	122 [a]	4,880 [a]	167	32	36
		Tower St./McIntosh Road	324 [a]	10,700 [a]	225	No data	No data

Source: FHWA 2013 HPMS Database; FHWA 2013 HPMS Universe Database; FHWA NHS GIS Database. GDOT Geocounts. Federal Rail Administration Grade Crossing Inventory Database. (Note: Figures followed by the subscript, [a], denote that their source is the GDOT Geocounts database.)

[31] Average speeds were measured over the 5-6 P.M. peak period using INRIX data.

5.7 Summary of Issues, Trends, and Opportunities for Goods Movement in the Atlanta Region

The key issues affecting goods movement in the Atlanta Region relate to shifts in the global economy; trade with neighboring states; increased overall freight volumes and growth at the Port of Savannah in particular; clusters of industries resulting in freight-intensive land uses; and infrastructure condition and performance within the Fulton Industrial Boulevard corridor. Each of these issues is explained in more detail in the subsections that follow. Importantly, associated with each of these issues are opportunities to address underlying performance and condition needs of the Atlanta Region's freight network and to achieve economic development.

5.7.1.1 Shifts in the Global Economy

Shifts in the global economy related to increasing consuming populations, increasing global trade, and reshoring indicate that global logistics and supply chains could potentially become strained as firms attempt to keep up with demand. As an important node in global supply chains, the Atlanta Region's freight network will shoulder a share of this strain in the form of increased trucking, rail, and air cargo activity. However, this issue also presents a long-term opportunity for Atlanta-based, freight-related companies to expand their customer and supply base. This has the potential to increase employment opportunities, bring down the cost of goods, and increase regional competitiveness in the Atlanta Region.

5.7.1.2 Trade with Neighboring States

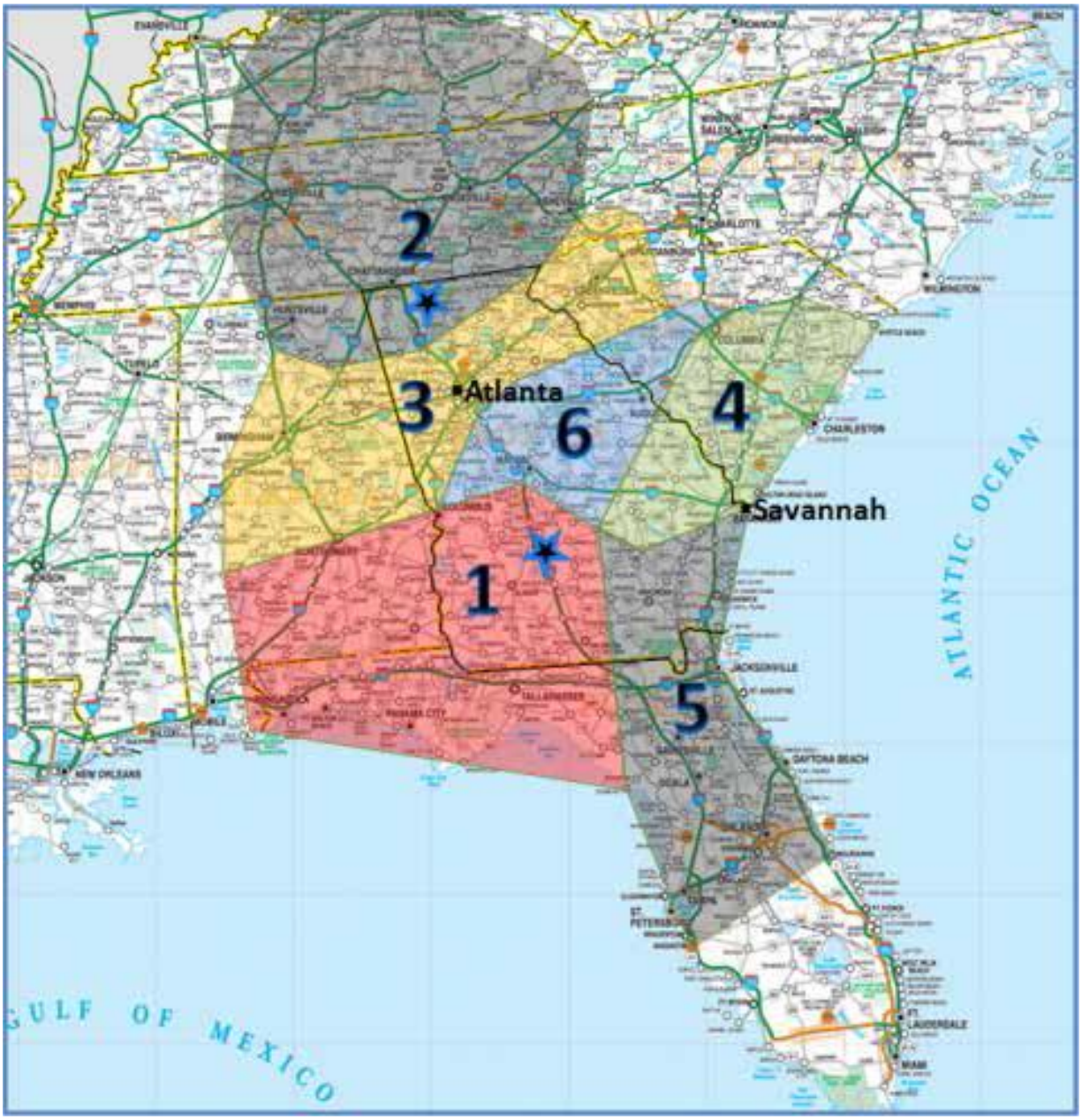
The Atlanta Region facilitates extensive trade between Georgia and neighboring states. As such, the performance of Georgia's long haul corridors is critical to the competitiveness of Atlanta's freight-related businesses. As part of the Project Prioritization portion of the Freight Plan Update, several projects were identified along these corridors that represent an opportunity to significantly improve their performance.

5.7.1.3 Increase Freight Volumes/Growth at the Port of Savannah

Using 2013 base year volumes in the Transearch database and 2040 forecast volumes from the Freight Analysis Framework version 3.5, freight volume in the Atlanta Region is projected to increase by 76 percent across all modes from 2013 to 2040. Given that Savannah is Atlanta's top metropolitan level trading partner the continued strong growth of the Port of Savannah inevitably impacts freight flows in and through the Atlanta Region. Therefore, corridors between the two regions are of particular importance.

To successfully accommodate this growth, significant new infrastructure will need to be built and increased efficiencies from existing freight infrastructure will be needed. To capture outsized growth in freight-related businesses requires going above and beyond the needs indicated by the base scenario. One measure that directly addresses this need is the Network Georgia initiative spearheaded by the Georgia Ports Authority. The purpose of the initiative is to create a network of rail connections that will make the Port of Savannah more accessible to the entire State. The Network Georgia plan divides Georgia and portions of surrounding states into 6 zones as depicted in Figure 5-40: (1) Southwest Georgia, (2) Northwest Georgia, (3) Port Atlanta, (4) I-95 Corridor North, (5) I-95 Corridor South, and (6) Middle Georgia. Of the 6 proposed inland ports as part of the Network Georgia initiative, the Southwest Georgia port (based in Cordele) is open and operating while the Northwest Georgia port (based in Chatsworth) is planned to open in 2018. Importantly, one of the six inland ports will be based in the Atlanta Region, further strengthening the economic relationship between the Atlanta and Savannah regions.

Figure 5-40: Network Georgia Zones



Source: Georgia Ports Authority.

5.7.1.4 Freight-Intensive Land Uses

There are a small set of clusters in the Atlanta Region that serve as the nodes for freight activity. These clusters make up less than 5 percent of the region's overall land area, but account for 51 percent of the region's warehouses and distribution centers, 36 percent of the region's manufacturing facilities, and 45 percent of the region's vacant industrial land. The primary issues facing these clusters are encroachment of residential and non-industrial commercial activities and the condition and performance of the roadways serving these clusters. This challenge presents an opportunity for freight planning efforts in the Atlanta Region to incorporate a focus on goods moving in and out of these clusters. By concentrating on these clusters, a large share of the entire region's industrial base will be reached.

5.7.1.5 Interrelationship between Truck Activity and Regional Congestion

There is a significant overlap in truck corridors with the highest truck volumes and the most congested roadways in the Atlanta Region, highlighting the interrelationship between truck activity and regional congestion. The key long-haul corridors in the Atlanta Region feature significant commuter congestion and the roadways on the ASTRoMaP are similarly congested during peak periods, including the roads leading in and out of the key freight clusters in the region. Truck crashes are most prevalent at interstate interchanges and along I-285, likely due to the weaving and curves that are present at these locations. There is opportunity in the Atlanta Region to redesign intersections, interchanges, and entire roadway corridors to better accommodate both passenger vehicles and trucks. These projects include increasing turning radii, widening lanes, and in some cases increasing capacity.

5.7.1.6 Fulton Industrial Boulevard Corridor

Fulton Industrial Boulevard is a freight corridor of great importance related to goods movement in the Atlanta Region. Features of this corridor include:

- The greatest number of freight facilities
- Some of the region's highest truck volumes off of the interstate system,
- Congested speeds throughout much of the most freight-intensive part of the corridor
- The highest numbers of truck-involved crashes
- Recognition by industrial real estate brokers as the most likely location for continued freight growth in the region
- Already limited expansion opportunities that are decreasing further, as adjacent residential and commercial land uses continue to expand

6.0 FREIGHT PROJECT PRIORITIZATION

6.1 Project Identification

This section of the report describes the process for identifying and prioritizing new freight projects in the Atlanta Region. The process began with the development of a universe of potential projects from a variety of existing studies and plans, followed by a preliminary screening to determine those projects on the initial list that are truly freight-related. Then, a multi-step final screening process was applied to refine and prioritize the list based on feasibility and aptitude to advance the region's freight goals.

6.1.1 Project Identification

The universe of potential freight projects was identified by reviewing multimodal state, regional, and local transportation plans – in particular those highlighted in Section 4.1, as well as through stakeholder discussions conducted as part of the plan update efforts. Generally, the freight projects included in the analysis were identified from the following sources:

- ARC Regional Transportation Plan (RTP)
- ARC Atlanta Regional Freight Mobility Plan, 2008
- ARC Atlanta Strategic Truck Route Master Plan (ASTRoMaP), 2010
- Cargo Atlanta Study
- County Comprehensive Transportation Plans
- SR 6 Corridor Study
- GDOT Statewide Freight and Logistics Plan
- Fulton Industrial Boulevard Master Plan

ARC's 24-member Transportation Coordinating Committee (TCC) consists of transportation staff from ARC's MPO counties, the City of Atlanta, GDOT, and other agencies. A questionnaire was provided to TCC members for their input on the freight plan, including identification of freight projects. In addition, discussions with the ARC Freight Advisory Task Force and one-on-one interviews as discussed in the stakeholder engagement portion of this report were checked as sources of freight projects for consideration.

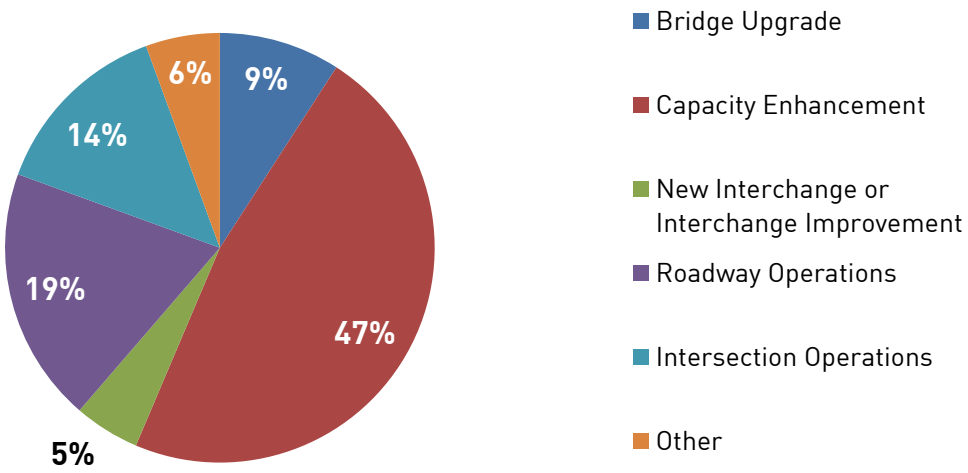
6.1.2 Initial Project List

Based on the project identification process above, a total of 931 projects were included in the initial project list. These projects were then categorized into six major project types including bridge updates, capacity enhancements, new interchanges or interchange upgrades, roadway operations, intersection operations, and other types of projects. The following section and Figure 6-1 summarize these 931 initial projects by project type.

- Bridge Upgrades – These projects replace or refurbish bridges, intersections, and interchanges. These projects comprise about 9 percent of the total.
- Capacity Enhancements – Capacity improvement projects are primarily those that widen roadways and comprise approximately 47 percent of the total projects.
- New Interchanges / Interchange Upgrades – New interchanges are proposed along highways I-75 and I-85. New connections are proposed to I-75 and I-285 in northwest Atlanta. These projects comprise about 5 percent of the total.
- Roadway Operations– Projects that address operations (conversion of high-volume roadways to limited access, adding passing lanes, increase lane widths, incident response, etc.). Operations projects comprise approximately 19 percent of the projects.

- Intersection Operations – Modification of existing intersections through the addition of turn lanes, upgrades to roundabouts or signal-controlled intersections, and/or improvements to turning radii, among others. Intersection Operation projects comprise approximately 14 percent of total projects.
- Other – Projects not otherwise classified are included in the Other category. These projects consist of railroad crossings, air cargo facilities, maintenance, trails, lighting, road diets, and other general project categories. These comprise about 6 percent of the total projects.

Figure 6-1: Initial Projects List by Project Type



6.2 Freight Related Regional Transportation Plan (RTP) Projects

There are a number of freight-related projects already included in the ARC RTP. Major freight related projects were identified from the Transportation Improvement Program (TIP) where construction is programmed to begin in the five-year TIP horizon (2016 – 2021). These projects, summarized in Table 6-1 and illustrated in Figure 6-2, aim to alleviate major traffic issues in the Atlanta Region and will have a positive impact on freight movements. Because these projects have already been subject to the region's overall project prioritization process and are already programmed for construction, they were not subjected to the project prioritization process described in Section 6.3. However, these projects are identified and briefly discussed in this section to highlight their potential impact on freight mobility and reliability within the Atlanta Region.

Table 6-1: Programmed Freight Projects in the 2016-2021 TIP

Road	Location	Description	Notes
I-285	At SR 400 (Turner McDonald Parkway)	I-285 Interchange Reconstruction and Collector/Distributor	There are higher truck volumes on I-285 because it is the designated truck bypass for Downtown Atlanta. It also helps to improve access to the regional centers at Buckhead and Alpharetta.
I-285 East	At I-20 East	I-285 East Interchange Improvements	I-285 E/I-20 E project is situated between Airport/Clayton and I-20 East clusters and it will improve freight mobility between the two. Additionally, there are higher truck volumes on I-285 because it is the designated truck bypass for Downtown Atlanta.
I-285 West	At I-20 West	I-285 West Interchange Reconstruction	The reconfiguration of the I-285/I-20 West interchange in Fulton County will remove existing design deficiencies that cause this interchange to be a bottleneck on the I-285 western wall. This project helps to improve access to the Fulton Industrial Blvd. cluster and will also help northbound freight traffic generated from the Fairburn, Airport / Clayton, and McDonough / Henry County clusters that are destined for locations in north Cobb and Fulton Counties.
I-85 South	At SR 74 (Senoia Road)	I-85 South Interchange Improvements	The I-85/SR 74 interchange is located within the Fairburn cluster and provides direct access to the CSXT Fairburn intermodal yard. Reconfiguring this interchange will provide improved access to that cluster. It will also help freight traffic generated from the Fairburn cluster access the entire region. Existing freight and commuter traffic demand and projected growth in Fayette County show the need for additional capacity at this interchange.
I-285 South	At Bouldercrest Road	I-285 South Interchange Improvements	I-285 S/Bouldercrest Rd Interchange is located near the Airport/Clayton cluster.
I-285 West	At SR 280 (South Cobb Drive)	I-285 West Interchange Improvements	I-285 W/SR 280 interchange provides access to industrial developments and rail facilities in northwest Atlanta and to Riverview Industrial Park in Cobb County.
I-285 West	At SR 6 (Camp Creek Parkway)	I-285 West - Diverging Diamond Interchange	SR 6 (Camp Creek Parkway) is a corridor with relatively high freight activity. The I-285 W/SR 6 interchange is located amidst the Fulton Industrial Blvd., Fairburn and Airport/Clayton freight clusters, and also serves industrial and commercial developments near the interchange.
I-75	From SR 331 (Forest Parkway) to I-285	I-75 Northbound Collector/Distributor Lanes	This collector-distributor lane system is located within the Airport/Clayton freight cluster. It also serves long-haul truck traffic traveling from Clayton County, Henry County, the Savannah Port, and other origins from the south by improving the connection to I-285 and the rest of the region.
I-75 North	At Windy Hill Road	I-75 North - Diverging Diamond Interchange	I-75 N/Windy Hill Road interchange is located just north of one of the major bottlenecks in the Region. It will improve access to freight destinations in the area.

Road	Location	Description	Notes
I-85 North	At SR 324 (Gravel Springs Road)	I-85 North - New Interchange	This new interchange at Gravel Springs Road is located near the Gwinnett/Satellite Blvd./SR 316 cluster and should help to improve access to this sub-area, while also serving as a reliever for commercial truck at the I-85 at SR 20 interchange.
I-85 North	From Hamilton Mill Road in Gwinnett County to SR 211 (Old Winder Highway) in Barrow County	I-85 North Widening	This project is located northeast of Gwinnett/Satellite Blvd./SR 316 cluster. It will improve access to this area and also to the Region itself.
I-85 South	At Poplar Road	I-85 South - New Interchange	The new interchange will serve planned industrial developments in Coweta County, improve access to existing commercial and medical facilities, and serve as a reliever of the I-85 at SR 34 interchange.
Lithonia Industrial Boulevard Extension	From Hillandale Drive to Woodrow Road	Lithonia Industrial Boulevard Extension: Phase III - New Alignment	This project is located near the I-20 East cluster. It is also expected to provide improved access to freight activity near Lithonia Industrial Boulevard.
Sigman Road	From East of Lester Road to Irwin Bridge Road	Sigman Road Widening	Sigman Road is located within the I-20 East freight cluster in Rockdale County. This project will increase capacity along a segment of Sigman Road, implement operational improvements at intersections along this segment, and improve access to I-20 for industrial developments along the corridor.
SR 92 (Hiram Douglasville Highway)	From between Brown and Malone Streets in Douglas County (Terminus of DO-282C) to Nebo Road In Paulding County	SR 92 (Hiram Douglasville Highway) Widening	SR 92 (Hiram Douglasville Parkway) between Malone Streets in Douglas County (terminus of DO-282C) to Nebo Road In Paulding County is located near the Fulton Industrial Blvd. cluster.
US 23	From SR 138 (North Henry Boulevard / Stockbridge Road) to I-675 In Clayton County	US 23 Widening	This project is located between the Henry/McDonough cluster and the Airport / Clayton cluster. It provides additional capacity on a roadway parallel to the congested I-75 and I-675 corridors.

Additionally, the RTP includes several freight related projects as a part of the long-range plan (2022 through 2040):

- I-285 West at I-75 North Interchange Improvements – An additional ramp is planned from I-75 North to I-285 West at this interchange. Interchange improvements at this location will improve access to various freight clusters.
- I-75 near Bethlehem Road in Henry County – A new interchange is planned on I-75 in the vicinity of Bethlehem Road that will help to improve accessibility to and mobility within the McDonough/Henry County freight cluster. This project will serve as a reliever to the congested I-75 at SR 155 (N McDonough Rd) interchange, the primary interchange trucks use at this cluster. It will also serve as a reliever to the I-75 at Bill Gardner Parkway interchange, which has experienced growth in truck traffic in recent years.
- I-85 at Amlajack Boulevard Interchange in Coweta County – A new interchange is planned for construction at this location along I-85 in Coweta County, along with the extension of Amlajack

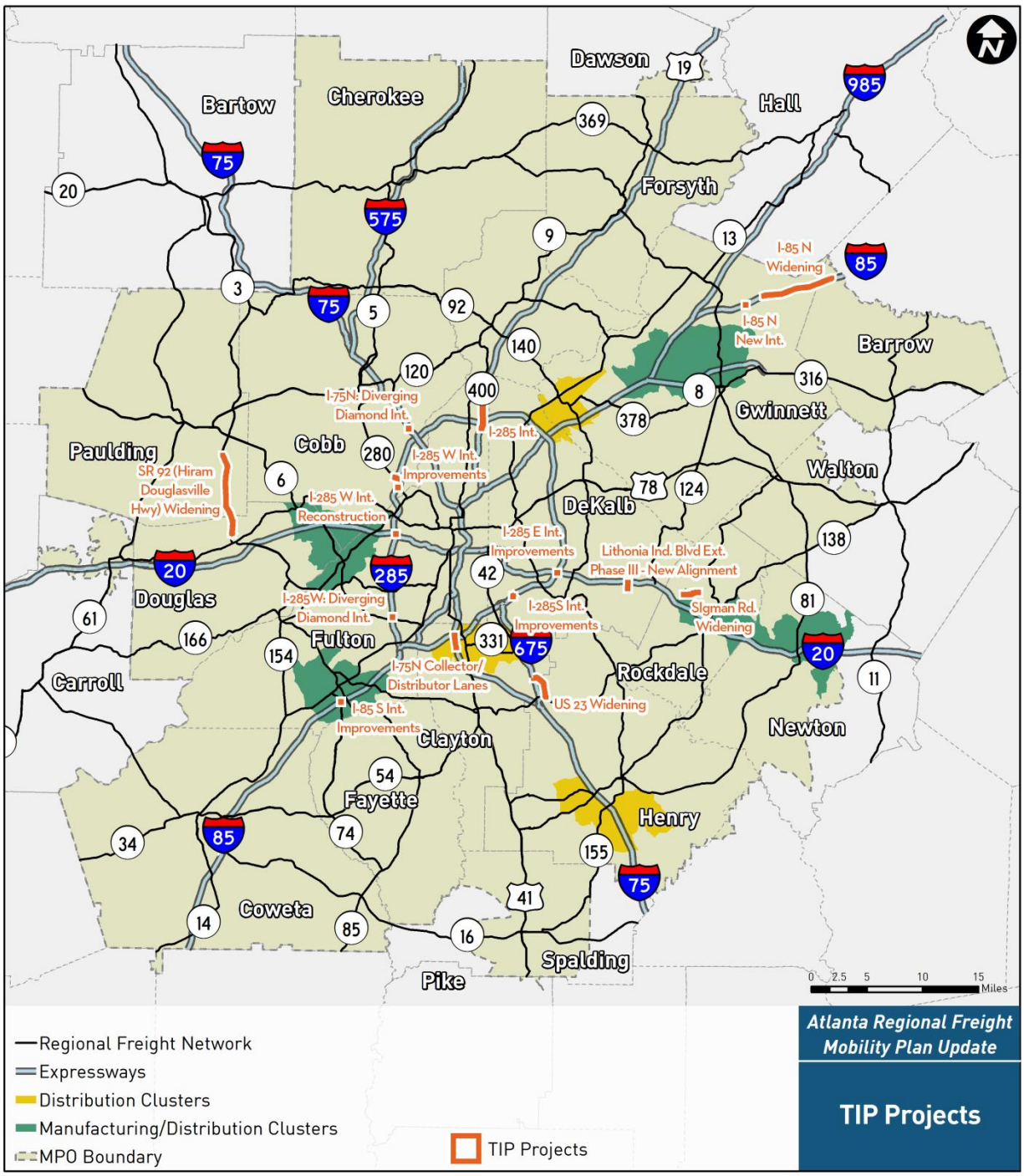
Boulevard. Though it is not in a defined freight cluster, there are existing warehouse/distribution centers along Amlajack Boulevard. This project would serve the existing development and improve access to adjacent land that may spur additional industrial or commercial development. This project will also serve as a reliever to the congested I-85 at SR 34 (Bullsboro Dr.) interchange, which serves industrial and commercial freight traffic as well as commuter traffic.

The new I-75 interchange near Bethlehem Road in Henry County and the new I-85 interchange at Amlajack Boulevard Extension in Coweta County had previously been identified as part of the Aspirations Plan project list in ARC's PLAN 2040 RTP. This meant that a need for the projects was identified in the plan, but that adequate funding had not been identified. Both planned interchanges have been moved into the RTP constrained project list in the Atlanta Region's Plan, which was adopted by ARC in February 2016.

As the freight hub of the Southeast, many of the region's interchanges serve significant freight volumes as is the case with other hubs such as Chicago and Dallas. In addition to the projects prioritized as part of this freight plan update, these programmed projects are an important part of the solution to holistically address the region's freight needs.

Several projects from the ongoing GDOT Revive-285 study, which is exploring a range of operational and capacity improvements on I-285 between I-75 and I-85 north of Atlanta, are a part of the RTP. These projects have a positive impact on freight movement given the high volumes in the corridor. Additionally, non-freight focused projects that impact high-volume corridors, such as managed lanes and transit, influence throughput on major routes by providing commuters an alternative mode choice, thereby providing some potential relief for freight movements.

Figure 6-2: Programmed Freight Projects in the 2016-2021 TIP



Source: ARC, Consultant Analysis

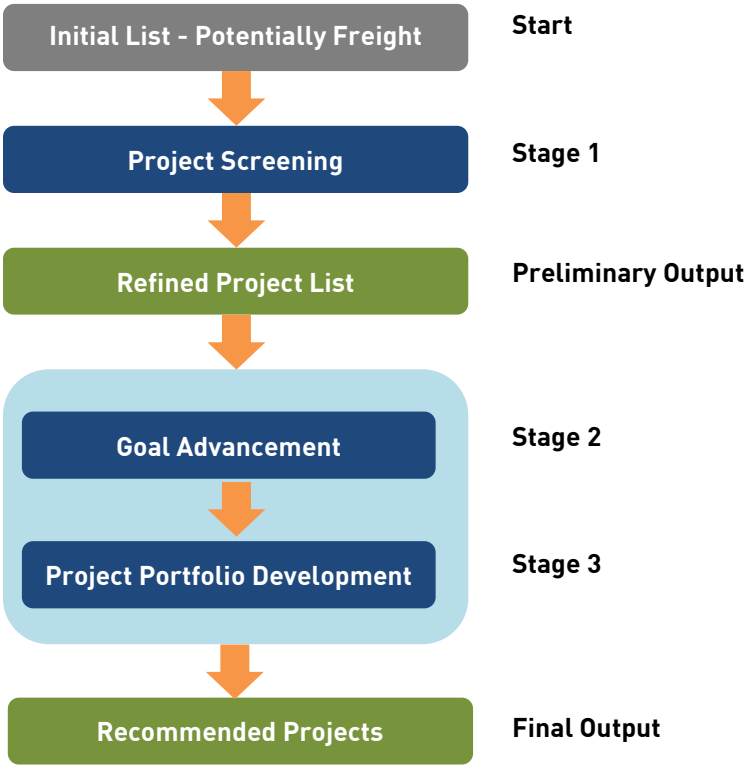
6.3 Project Prioritization Process

The prioritization process refined the 931-project list down to only those projects that are feasible and most relevant to advancement of the region's freight goals. The process consisted of three stages:

- Project Screening
- Goal Advancement
- Project Portfolio Development.

Figure 6-3 displays the three stages of the prioritization methodology. The first stage gauged whether or not a project could realistically be accomplished. It also considered the relevance of projects in improving freight movement in the Atlanta Region. Projects were ranked in the second stage based on the extent to which they would help achieve the regional vision and goals for freight. The third stage, Project Portfolio Development, gauged the composition of projects holistically and categorized the projects in two tiers.

Figure 6-3: Project Prioritization Process



6.3.1 Project Screening

Since the initial list was prepared using multiple sources, it was refined for duplication of projects, and for elimination of projects already programmed in the ARC 2016-2021 TIP. The remaining list of potential freight projects was refined by assessing project relevance and feasibility. The criteria for this assessment are summarized in Table 6-2.

Table 6-2: Project Screening

Dimension	Criterion
Relevance	Identified as a freight project or located on the ASTRoMaP network
Community Support	No major community opposition known, or has strong community support
Financial	No major funding obstacle known (e.g., does not overwhelm budget)

Relevance of projects was assessed using the following factors:

- Routes located on the Atlanta Strategic Truck Route Master Plan (ASTRoMaP) network host most of the freight traffic in the region. Projects were screened for location on ASTRoMaP with a goal of improving mobility on this core network.
- The initial list was filtered based on expected freight benefits. Projects which were not expected to have major impact on freight mobility in the region were not prioritized further.
- Location in the MPO Region was required.
- As some of the projects in the initial list were on the planning horizon from as early as 2008, some were found to be already completed or were under construction. Additionally, the need for some of the projects was already satisfied through other improvements in the area. Projects meeting these criteria were removed from consideration.

Feasibility was considered in light of three factors: the presence of Community Support, or absence of community opposition; Financial Feasibility, in terms of the likelihood of finding funding in light of the normal magnitude of budgets; and Benefit Cost Ratios where available. These were largely qualitative assessments meant to eliminate projects with obvious fatal flaws; they did not need to be definitive assessments since projects were subject to further evaluation in succeeding stages.

6.3.2 Goal Advancement

The second stage, Goal Advancement (Table 6-3), measured the ability of a project to meet the goals identified as part of the Atlanta Regional Freight Mobility Plan Update process: Global Hub, Skilled Workforce, Advanced Network, Vibrant Centers, and Health and Culture. Each project received a score for each of the five goals. Scores were set on a low to high scale using values of 0, 1, 3, and 9 to denote none, low, medium, and high values, respectively. Scores were calculated based on the performance measurement criteria described in Table 6-3. Support to the region's freight clusters and improvement in areas with major performance challenges were principal considerations. To aid multimodal performance, any of the region's major intermodal facilities not already in a cluster (such as the NS Whitaker terminal in Austell) were treated as cluster locations for scoring purposes.

The scoring system allowed for projects that achieve high marks in one goal area to stand out in the overall process. Goal scores were then weighted to produce a composite score for the project. Weights are percentage factors summing to 100%, as presented in Table 6-3. The weighting reflects judgment as to the relative importance of the five goals at the time of this update; they were established by ARC in consultation with the Freight Advisory Task Force (FATF) and can be revisited as needed in the future.

Table 6-3: Goal Advancement

Goal	Weight	Performance Measure Correlation
Global Hub	30%	Projects supporting growth and market access for clusters: • 1 = Not in a cluster; • 3 = In a cluster, not a capacity project; or capacity project outside of clusters; • 9 = In a cluster and a capacity project or bridge replacement to address weight restriction
Skilled Workforce	15%	Projects supporting jobs in manufacturing and distribution clusters. Scoring criteria used is described below: • 1 = Minimal support/not in or adjacent to a freight cluster; • 3 = Adjacent to a freight cluster; • 9 = Within a freight cluster.
Advanced Network	30%	GIS analysis of performance on interstate highways and the ASTRoMaP non-interstate network • Speed less than 25 mph on non-interstate ASTRoMaP or less than 45 mph on interstate highways • Reliability – buffer factor of 0.6 or higher • Crashes – Crash density of more than 5 freight related crashes per mile Scores: 1 = one criteria met; 3 = two criteria met; 9 = three criteria met
Vibrant Centers	15%	Land use composition of project's surroundings was considered as a factor impacting efficacy of a project in improving freight movement in the region. Scores were assigned to projects by their location within the land use categories from the ARC Unified Growth Policy Map (UGPM) as described below. • 0 = Rural, Developing Rural, Regional Important Resources • 1 = Developing Suburbs, Industrial / Logistics Area • 3 = Town Centers, Established Suburbs, Regional Employment Corridors, Maturing Neighborhoods, Community Activity Centers, Recreation Districts, University Districts, Wellness Districts, Redevelopment Corridors, Crossroad Village, Airport Investment Area, Regional Town Centers, Village Centers • 9 = Station Communities (1-mile buffer), Region Core, Regional Centers, Major Retail, LCI areas
Health and Culture	10%	Projects reducing NOx, PM2.5, and/or GHG. Following scoring criteria was used in this process: • Capacity projects =1; • Operations and Interchange projects = 3; • Alternate mode and new technology = 9.

6.3.3 Project Portfolio Development

The third stage of the project identification process is the development of the Project Portfolio (Table 6-4). During this step, projects were reviewed for balance across goals and the region, to assure that multiple goals were advanced, and to assure that effective freight service reaches throughout metropolitan Atlanta. Based on Stage Two scores, projects then were organized into tiers: Tier 1 and 2. The Tier 1 projects become those recommended for investment as funds become available, to combine with projects in the TIP and RTP. Ideally, projects should also be organized into groups, or packages, based on their overall intent and the ability of projects to support one another.

The resulting Tier 1 and Tier 2 project lists will be further analyzed in future RTP and TIP updates. Projects will be further prioritized following the same prioritization process used for the other projects in the RTP/TIP. This process is being updated in 2016 by ARC, GDOT, and GRTA staff, as well as a TCC sub-committee.

Table 6-4: Project Portfolio

Dimensions	Purpose
Balance across goals	Help assure all goals adequately addressed
Balance across region	Help assure broader needs are met throughout region

6.4 Summary of Results

Freight performance in the region was discussed in Chapter 4, while the previous section addressed how freight performance was considered to relate to the vision and objectives of this study. Efficacy of projects in the initial project list was assessed using the prioritization methodology. Results of the prioritization process described above are summarized in this section.

6.4.1 Refined Project List

As a result of the Stage One assessment process, the initial list of 931 projects was refined to a list of 91 projects that would undergo prioritization. Figure 6-4 shows the distribution of these projects by project type. Figure 6-5 shows the 91 projects mapped against the ASTRoMaP Network, which is a factor in the prioritization process. The outcome of that process is described in the next section, and a list of the projects appears there, after their prioritization into tiers.

Figure 6-4: Refined List of Freight Projects by Project Type

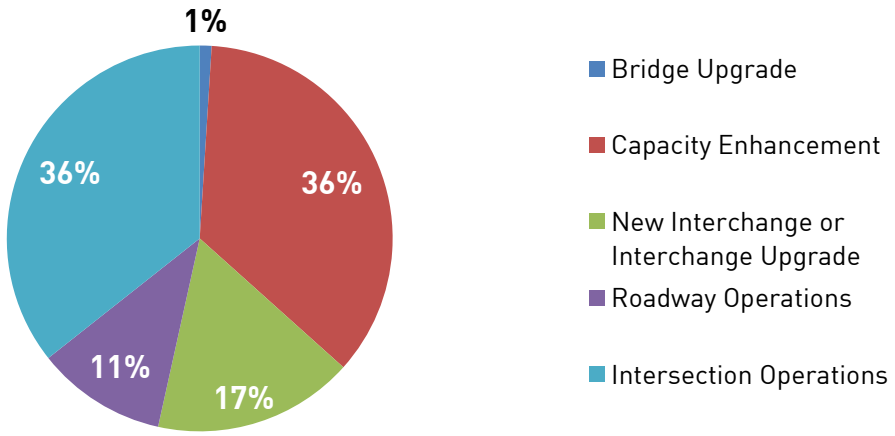
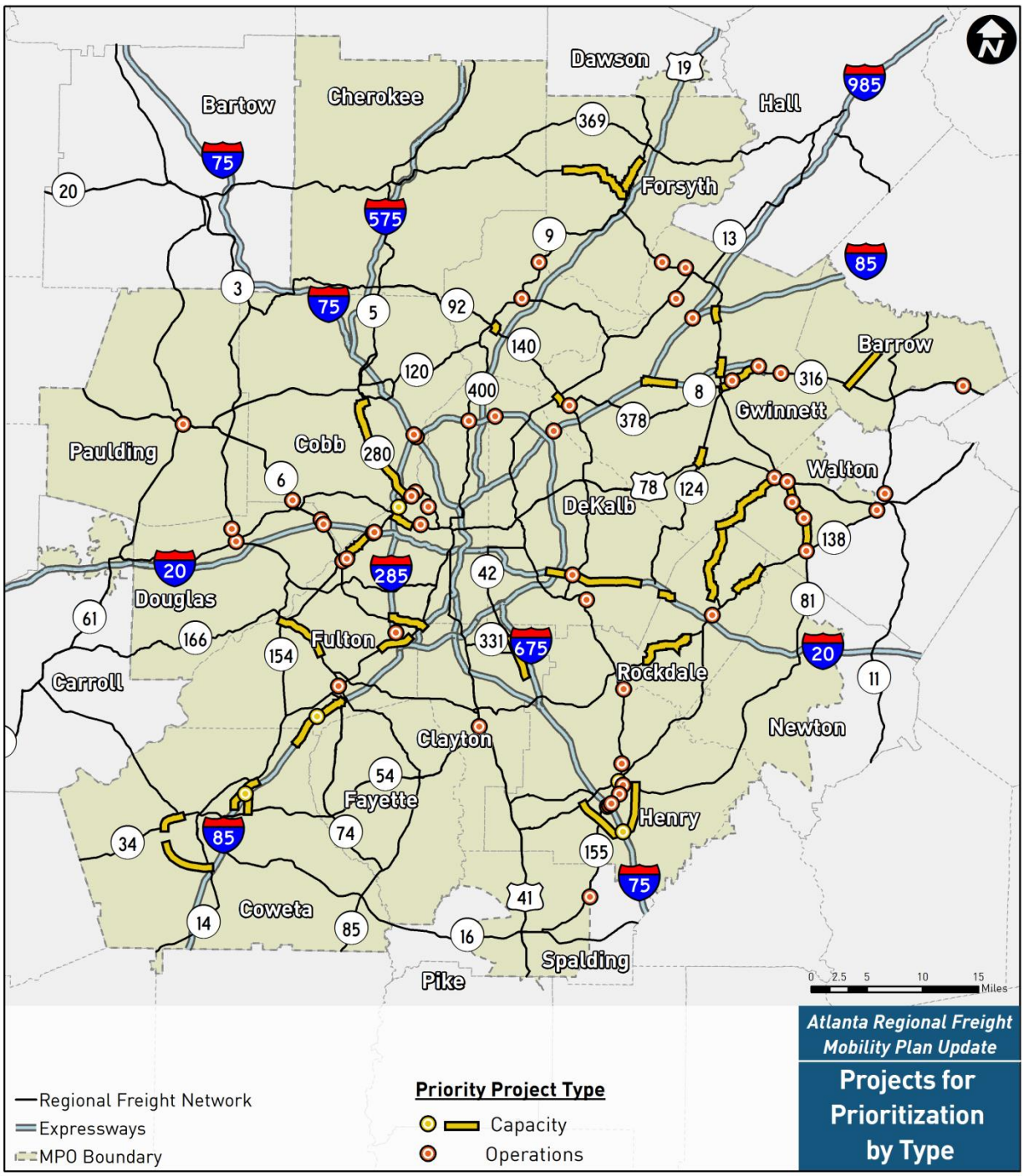


Figure 6-5: Prioritized Freight Projects by Project Type

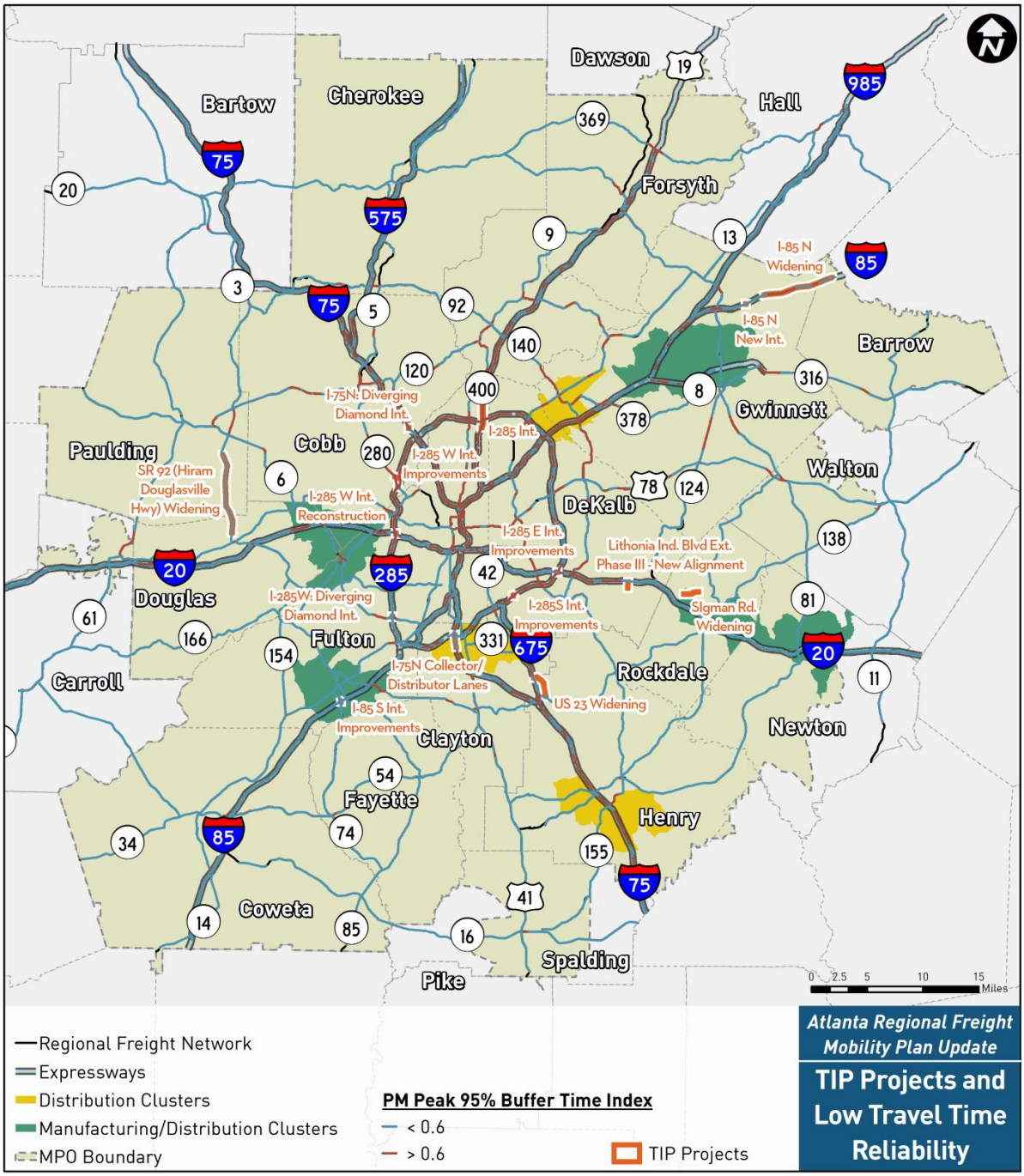


Source: ARC, Consultant Analysis

6.4.2 Goal Advancement and Project Portfolio Development

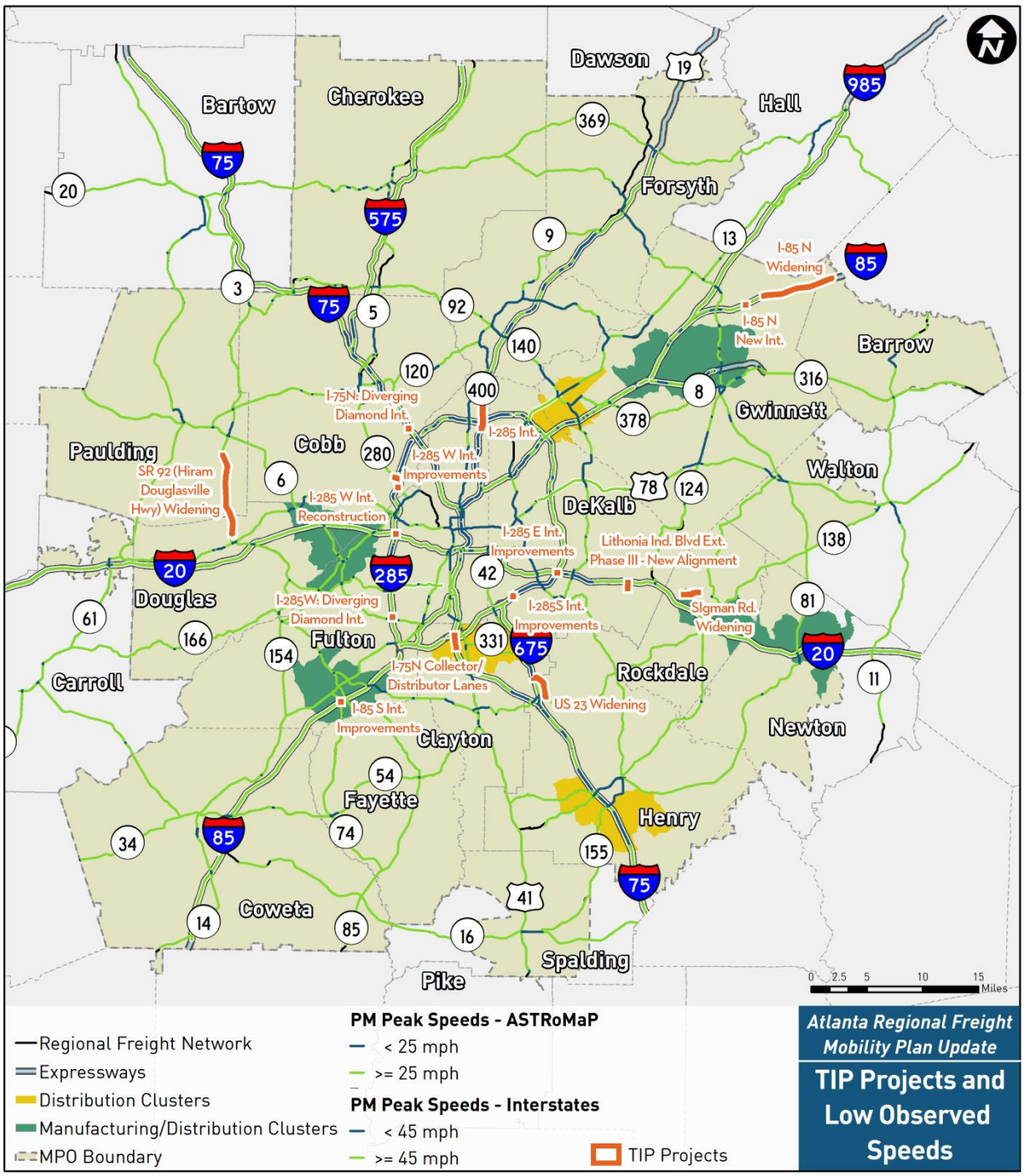
The purpose of this step in the prioritization process is to see how projects fit into the regional solution for improving freight mobility. Programmed freight projects are a major part of this solution as they address some of the major freight mobility challenges in the Region. Figures 6-6 and 6-7 show maps of the programmed freight projects in the Region, depicting them against the backdrops of travel time reliability and travel speed to illustrate how these projects begin to contend with performance issues. However, not all of the issues can be addressed through the currently programmed projects.

Figure 6-6: TIP Projects – Freight Clusters and Low Travel Time Reliability



Source: INRIX ARC, Consultant Analysis

Figure 6-7: TIP Projects – Low Observed Speeds



Source: INRIX, ARC, Consultant Analysis

Projects in the refined list of 91 take another step towards improving the freight mobility in the region by undergoing prioritization. Projects in the refined list were evaluated using performance measures described in Section 6.3. Scores were assigned based on their performance against these measures, and the scores were weighted by goal using the criteria described in Table 6-3. Projects were divided in tiers based on their weighted scores. Projects scoring 14 or above (30% of the maximum possible score) were selected to be in Tier 1. Table 6-5 shows how projects in the refined list perform when compared against

the five goals. Many projects produce a somewhat low total score because they address a particular kind of issue, and because the scoring criteria tends to bring trade-offs: for example, freight districts and vibrant town centers are in different places. The consequence is that projects that do well in multiple categories are the ones that rise to the top; others that score well in fewer categories may simply have a narrower utility and still be worthwhile projects for their purpose.

As the table portrays, projects in Tier 1 perform well on all goals, with average scores between medium and high, except for Health and Culture. As none of the considered projects addressed emissions specifically, projects scored relatively lower on this goal. Table 6-5 also shows the extent to which projects in Tier 1 address such issues as low observed speed, low travel time reliability and high density of freight related crashes. The lists of projects are presented in Table 6-6 and Table 6-7, displaying the components of Tier 1 and Tier 2 in summary form; projects appear in these lists in order of their identifier (ID) number, and are not ranked within the tiers. Additional information on each of the projects can be found in Appendices A-1 and A-2, detailing the Tier 1 and Tier 2 groups, respectively. Figures 6-8 through 6-12 then illustrate how all prioritized projects relate to performance issues by overlaying projects with the factors of travel time reliability, travel speeds, freight related crash density, and locations of land use supporting high freight activity. Finally, Figures 6-13 and 6-14 show the geographical distribution of the projects in Tier 1 and Tier 2.

Table 6-5: Average Scores for Goal Advancement by Project Tiers

Goals / Prioritization Measures	Tier 1: Average Score (52 projects)	Tier 2: Average Score (39 Projects)
Global Hub: Low = 1, Medium = 3, High = 9 (Weight: 30%)	7.7	3.0
Skilled Workforce: Low = 1, Medium = 3, High = 9 (Weight: 15%)	4.6	1.0
Advanced Network: Low = 1, Medium = 3, High = 9 (Weight: 30%)	5.1	0.6
• % of Projects near locations with low observed speed	48%	8%
• % of Projects near locations with low travel time reliability	63%	26%
• % of Projects near high crash locations	60%	5%
Vibrant Centers: Low = 1, Medium = 3, High = 9 (Weight: 15%)	5.3	3.1
Health and Culture: Low = 1, Medium = 3, High = 9 (Weight: 10%)	1.2	1.1

Out of the 52 projects in Tier 1, 16 projects are part of ARC's RTP. Projects such as the I-285/I-85 North interchange improvement and the I-285/I-75 North interchange improvement address some of the existing bottlenecks in the region. Similarly, a proposed new interchange on SR 316 (University Parkway) at US 29 serves the Gwinnett/Satellite Blvd./SR 316 freight cluster. Other projects such as new interchanges at I-75 South at Bethlehem Road and I-85 South at Amlajack Boulevard aim to address both existing freight activity (including recent growth) and future development anticipated in their surroundings. Additionally, widening projects such as the SR 140 (Jimmy Carter Boulevard) capacity project from SR 13 (Buford Highway) to SR 141 (Peachtree Industrial Boulevard) and the SR 70 (Fulton Industrial Boulevard) capacity project from SR 6 (Camp Creek Parkway) to James Aldredge Boulevard improve freight movement by adding capacity in major freight clusters.

In addition to the RTP projects, Tier 1 (illustrated in Figure 6-13) also features important freight investments such as a proposed bridge replacement on Marietta Road in the City of Atlanta. Due to weight restrictions on the existing bridge, freight traffic is currently forced to reroute through adjacent neighborhoods to access the Tilford rail yard. Rebuilding this bridge is expected to improve freight movement in the area and to reduce community impacts by eliminating the need for rerouting.

Also featured in the Tier 1 list are widening projects such as SR 8 (Winder Highway) from SR 124 (Scenic Highway S) to SR 316 (University Parkway) in Gwinnett County. Special care should be taken while widening state routes such as SR 8 (Winder Highway) so as to avoid excessive curb cuts that reduce the efficiency of the roadway and impede the freight movement in the area. Additionally, plans by local governments and the Aerotropolis Atlanta Community Improvement Districts (CIDs) should be considered with regard to the proposed projects in the area, such as the widening of SR 6 (Camp Creek Parkway) from I-285 West to I-85 South. With the recent decision to shift air cargo facilities to the south side of HJAIA, the desires and needs of area stakeholders have changed over time.

As a part of the project portfolio development process, geographical distribution of the projects in the preliminary top tier was assessed. Figure 6-13 shows the geographical distribution of the Tier 1 projects. In combination with the programmed freight projects, areas outside of I-285 along major regional freight corridors have sizable representation. Many projects also appear to serve major freight clusters. Over 30% of the projects were located within major freight clusters, while all projects in the refined projects list were located within 5 miles of major freight clusters. All manufacturing as well as manufacturing / distribution clusters have at least one project within their boundary.

The I-85 South at SR 74 (Senoia Rd) interchange improvement project will improve access for both freight and commuters in Fayette County, as will the proposed new interchange on I-85 South at Gullatt Rd. Projects in Carroll, Cherokee, and Newton counties did not score as high in this process due to relatively low freight activity levels from a regional perspective. However, as freight activity grows in the area, additional freight projects could be considered. The core inside the perimeter also sees fewer Tier 1 projects. Future sub-area studies are one potential solution to improve freight movement in such areas by taking a more localized look at freight needs, including first and last mile issues within the City of Atlanta.

As a part of the Transportation Improvement Program (TIP) for the five year horizon from 2016 to 2021, available funding sources have been committed for the programmed projects. Tier 1 and Tier 2 projects recommended through this plan provide an addendum to this list which should be considered for inclusion as part of the future RTP and TIP updates and the standard process for federal funding. Furthermore, with the recent passage of both the federal Fixing America's Surface Transportation (FAST) Act and the state Transportation Funding Act (TFA) of 2015, it is possible that some of the projects recommended in this plan may be eligible for funding that did not previously exist. (Chapter 8 discusses more details about the federal, state, and local level funding availabilities.) Before selecting candidates for such opportunities, projects should be organized into groups, or packages, based on their overall intent. Through this process, some projects with lower scores may move up in priority based on their combined effect with other projects. As projects are short-listed for specific available funding, their net present value and benefit cost ratios should be calculated so as to compare the efficacy of the options under consideration. While Tier 1 projects are a natural choice to start financial analysis, Tier 2 classification does not mean bad projects. As funding becomes available, Tier 2 projects also should be considered for analysis and possible implementation.

Table 6-6: List of Tier 1 Freight Projects (Unranked)

ID	Road	Location	Description	Project Type	Source
AR-301	US 78	From SR 6 (Thornton Road) To SR 92	US 78 Operational And Safety Improvements In Douglas County	Operations & Safety	ARC Regional Transportation Plan (RTP)
AR-955	I-75 South	At Bethlehem Road	I-75 South - New Interchange	Interchange Capacity	ARC RTP
AR-958	I-285 / I-85 North	At I-285 Eastbound To I-85 Northbound (Vicinity of Pleasantdale Rd Int.)	Revive 285 - I-285 / I-85 North Interchange Improvements	Interchange Capacity	ARC RTP
AR-959	I-75 North / I-285	At I-75 Northbound To I-285 Westbound Flyover Ramp	Revive 285 - I-75 North / I-285 Interchange Improvements	Interchange Capacity	ARC RTP
AR-960	I-75 North / I-285	At I-75 Southbound To I-285 Westbound Flyover Ramp	Revive 285 - I-75 North / I-285 Interchange Improvements	Interchange Capacity	ARC RTP
AR-961	I-85 South	At Amlajack Boulevard (Includes Madras Connector)	I-85 South - New Interchange	Interchange Capacity	ARC RTP
CL-012	US 23 (Moreland Ave)	From Lake Harbin Rd To Anvil Block Rd	US 23 (Moreland Avenue) Widening	General Purpose Capacity	ARC RTP
DK-400	I-285 North	At Ashford Dunwoody Road	Revive 285 - I-285 North Bridge Replacement And Interchange Imp.	Interchange Upgrade	ARC RTP
FN-145	Commerce Parkway Extension	From Old Roswell Road To SR 140 (Holcomb Bridge Rd)	Commerce Parkway Extension - New Alignment	General Purpose Capacity	ARC RTP
FN-AR-203	I-285 North	At SR 9 (Roswell Road)	Revive 285 - I-285 North Interchange Improvements	Interchange Upgrade	ARC RTP
FS-003	SR 70 (Fulton Industrial Boulevard)	From SR 6 (Camp Creek Pkwy) To James Aldredge Bvd	SR 70 (Fulton Industrial Boulevard) Widening	General Purpose Capacity	ARC RTP
FS-017A	I-285 South	At Washington Road	I-285 South Interchange Improvements	Interchange Upgrade	ARC RTP
GW-269	SR 124 (Scenic Highway)	From US 78 (Main Street) To SR 864 (Ronald Reagan Parkway)	SR 124 (Scenic Highway) Widening	General Purpose Capacity	ARC RTP
GW-364	SR 20 (Buford Drive)	From SR 124 (Braselton Hwy) To Hurricane Shoals Rd	SR 20 (Buford Drive) Widening	General Purpose Capacity	ARC RTP
GW-371	SR 140 (Jimmy Carter Boulevard)	From SR 13 (Buford Hwy) To SR 141 (Peachtree Industrial Blvd)	SR 140 (Jimmy Carter Boulevard) Widening	General Purpose Capacity	ARC RTP
GW-394	SR 316 (University Parkway)	At US 29	SR 316 Interchange	Interchange Capacity	ARC RTP

ID	Road	Location	Description	Project Type	Source
Cap-03	Donald Lee Hollowell	From Hamilton Holmes west to I-285	Widen DL Hollowell from two lanes to five lanes to accommodate transit from Hamilton Holmes to I-285 (approx.1.25 miles)	General Purpose Capacity	Cargo Atlanta Study
Cap-05	Huff Road Intersection	From Trabert Road to Huff Road	Design dedicated turn lanes at 17th St and Huff Rd. Eliminate Southbound travel lane on Howell Mill Rd. Redesign Huff Rd to 3-lane road between Marietta Blvd and Howell Mill Rd	Intersection Modification	Cargo Atlanta Study
Cap-07	I-20 East	From Columbia Dr To Evans Mill Road	I-20 East Collector/Distributor Lanes	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-09	I-285 Interchange	I-285 at Bolton Road	Provide a new connection to I-285 south of the Chattahoochee River crossing at Bolton Rd. Redesign the I-285 as a full interchange. Provide direct connection off Atlanta Ind. Way to I-75 via Bolton Rd	General Purpose Capacity	Cargo Atlanta Study
Cap-17	I-85 South	From SR 74 (Senoia Road) To Collinsworth Road	I-85 South Collector Distributor Lanes	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-24	SR 20	SR 155, SR 81	Construct by-pass around city	General Purpose Capacity	ASTRoMaP Study
Cap-25	SR 280 (South Cobb Drive)	From SR 5 (Atlanta Rd) In Cobb County To SR 70 (Bolton Rd) In City Of Atlanta	SR 280 (South Cobb Drive)	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-26	SR 6 (Camp Creek Parkway)	From I-285 West To I-85 South	SR 6 (Camp Creek Parkway) Widening	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-27	SR 8	From SR 124 to SR 316	Widen to four lanes	General Purpose Capacity	ASTRoMaP Study
Cap-29	SR 92	From SR 14 Spur (South Fulton Pkwy) To SR 70 (Fulton Industrial Blvd)	SR 92 Widening	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-30	US 29 (Roosevelt Highway)	From SR 279 (Old National Highway) To SR 14 Spur (South Fulton Pkwy)	US 29 (Roosevelt Highway)	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-31	New Connection	Between SR 20 and SR 81	Improved connection between SR 20 West in the vicinity of Westridge Industrial Pkwy to I-75 at a new interchange and extending east across SR 42 to SR 81 East.	General Purpose Capacity	Stakeholder Input (Survey)

ID	Road	Location	Description	Project Type	Source
Cap-38	SR 316 EB	From I-85 to Sugarloaf Parkway	Auxiliary lane	General Purpose Capacity	Stakeholder Input (Survey)
Op-04	Bolton Road/Marietta Road	Northwest Corridor	Add Northbound left-turn lanes and Eastbound right-turn capacity at Bolton Rd and Marietta Rd intersection	Intersection Modification	Cargo Atlanta Study
Op-05	Bolton Road/ Hollywood Road	Northwest Corridor	Add left-turn lane capacity at the Bolton Road at Hollywood Road intersection and Rebuild Intersection.	Intersection Modification	Cargo Atlanta Study
Op-15	Fulton Industrial Boulevard	Fulton Industrial Boulevard at Cascade Road Intersection Improvement	This project would add a channelized right turn lane from Cascade Rd to FIB eastbound, add a dedicated left turn lane from Great SW Pkwy to FIB eastbound, improve turning radii for all turning movements at the intersection to accommodate WB-65 truck trailers, improve pedestrian facilities.	Intersection Modification	TIP Solicitation
Op-17	I-20	I-20 Eastbound Ramp Intersection Improvements at Fulton Ind. Blvd	Turn radii modifications and median repairs to accommodate larger freight vehicles	Intersection Modification	Fulton Industrial Blvd Study
Op-18	I-20	I-20 Westbound Ramp Intersection Improvements at Fulton Ind. Blvd	Turn radii modifications and median repairs to accommodate larger freight vehicles	Intersection Modification	Fulton Industrial Blvd Study
Op-27	Jimmy Carter Blvd	Jimmy Carter Blvd at Buford Hwy	The Continuous Flow Intersection (CFI) is an innovative and cost effective solution to improve LOS and delays at this intersection. The project will pull out left turns in advance of the intersection, allowing left turns and through movements to happen simultaneously.	Intersection Modification	TIP Solicitation
Op-48	SR 155 (S Zack Hinton Pkwy / N McDonough Rd)	SR 42 (Macon St)	replace signal with roundabout	Intersection Modification	ASTRoMaP Study
Op-64	SR 316 (University Parkway)	Harbins Road	Replace at-grade inter with overpass or diamond	Interchange Upgrade	ASTRoMaP Study
Op-71	SR 6 (Jimmy Campbell Pkwy)	SR 61 (Villa Rica Hwy) to I-85	Widen outside lane in both Directions to 13 feet, with Truck ITS application; ITS truck sensors at 5 locations	Operations & Safety	SR 6 Corridor Study

ID	Road	Location	Description	Project Type	Source
Op-74	SR 8 (E Crogan St)	Hosea Rd	Increase intersection radii	Intersection Modification	ASTRoMaP Study
Op-81	SR 9 (S Main St)	Old Milton Parkway	Add double left-turn lanes/replace with roundabout	Intersection Modification	ASTRoMaP Study
Op-82	SR 92 (Campbelton St)	CSXT RR in Fairburn	Option #1: Redirect trucks approx. 1000 ft to the south of this crossing to the Senoia Rd at-grade crossing over CSXT RailRoad then direct traffic along E. Broad St.to SR 92. Option #2: Redirect traffic to SR 138 to Oakley Ind. Blvd to SR 92. Add Oakley Ind. Blvd to the state route system. Remove portion of SR 92 that crosses the CSXT Railroad in downtown Fairburn from the state route system	Operations & Safety	ASTRoMaP Study

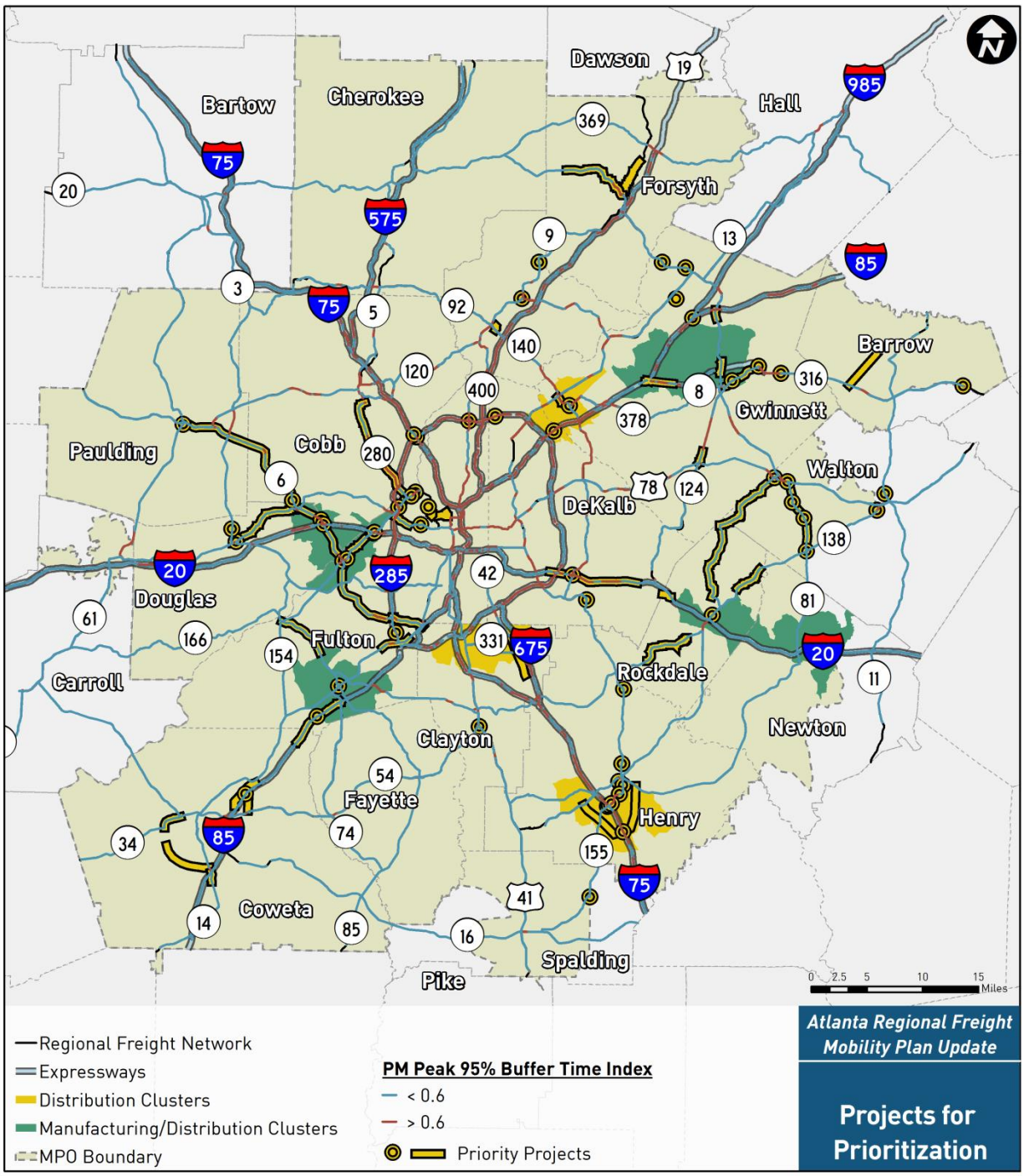
Table 6-7: List of Tier 2 Freight Projects (Unranked)

ID	Road	Location	Description	Project Type	Source
AR-962	I-85 North	At I-985 - New Flyover Ramp	I-85 North	Interchange Capacity	ARC RTP
BA-010	SR 316 (University Pkwy)	At SR 211 (Bethlehem Road)	SR 316 - New Interchange	Interchange Capacity	ARC RTP
FT-001E	SR 9 (Atlanta Road / Pilgrim Mill Road)	From SR 20 (Buford Highway) To SR 306 (Keith Bridge Road)	SR 9 (Atlanta Road / Pilgrim Mill Road): Segment 5 - Widening	General Purpose Capacity	ARC RTP
FT-313	SR 20 (Canton Hwy)	From SR 371 (Post Rd) To SR 400 (Turner McDonald Pkwy)	SR 20 (Canton Hwy) Widening	General Purpose Capacity	ARC RTP
GW-020D	SR 20 (Buford Drive)	From I-85 North To Rock Springs Rd	SR 20 (Buford Drive) Widening	General Purpose Capacity	ARC RTP
RO-235A	Sigman Road Ext./ Hayden Quarry Road	From Dekalb County Line To I-20 At Sigman Road	Sigman Road Extension / Hayden Quarry Road - New Alignment	General Purpose Capacity	ARC RTP
RO-242A	SR 20 (Loganville Highway)	From Sigman Road To Pleasant Hill Road	SR 20 (Loganville Highway) Widening	General Purpose Capacity	ARC RTP
WA-002	SR 20 (Conyers Road / Loganville Highway)	Pleasant Hill Rd In Rockdale County to North Sharon Church Road In Walton County	SR 20 (Conyers Road / Loganville Highway) Widening	General Purpose Capacity	ARC RTP
Cap-16	I-85 South	At Gullatt Road - New Interchange	I-85 South - New Interchange	Interchange Capacity	RTP 2040 - Aspirations Plan
Cap-21	SR 138 (Stockbridge Highway)	From East Fairview Road To Ebenezer Road / Stanton Road	SR 138 (Stockbridge Highway) Widening	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-22	SR 138 (Walnut Grove Road)	From Dennard Road To Miller Bottom Road	SR 138 (Walnut Grove Road) Widening	General Purpose Capacity	RTP 2040 - Aspirations Plan
Cap-28	SR 81	from Loganville to Walnut Grove	Capacity and operational improvements	General Purpose Capacity	Stakeholder Input (Survey)
Cap-32	SR 34 Bypass	From SR 34 (Franklin Highway) to US 27 Alt/SR 16 (Carrollton Highway)	Widening 2 to 4 lanes	General Purpose Capacity	Stakeholder Input (Survey)
Cap-33	Southwest Newnan Bypass	From US 29 to Smokey Road at Ishman Ballard Rd	New 4-lane roadway	General Purpose Capacity	Stakeholder Input (Survey)
Cap-34	Coweta Industrial Parkway Extension	Coweta Industrial Parkway terminus to Amlajack Boulevard Extension	New 2-lane roadway	General Purpose Capacity	Stakeholder Input (Survey)
Cap-36	Amlajack Boulevard Extension	From Amlajack Blvd terminus to Coweta Industrial Parkway	New 2-lane roadway	General Purpose Capacity	Stakeholder Input (Survey)

ID	Road	Location	Description	Project Type	Source
Cap-37	Hollz Parkway Extension	From Hollz Pkwy terminus to Amlajack Blvd Ext.	New 4-lane roadway	General Purpose Capacity	Stakeholder Input (Survey)
Cap-39	West Winder Bypass	From SR 211 to SR 316	Provides two bridges, one over the railroad tracks and the other over SR 316; connect SR 211 to SR 316	General Purpose Capacity	Stakeholder Input (Survey)
Op-03	Bolton Road	Northwest Corridor	Reduce Bolton Road through median widening from 4 lanes to 2 lanes from James Jackson Pkwy to Browntown Road (approx. 3,400 feet)	Operations & Safety	Cargo Atlanta Study
Op-35	SR 13 (Buford Highway)	Between Woods Creek Ln and Roberts Elementary School	Widen Shoulder, add guardrail	Operations & Safety	ASTRoMaP Study
Op-39	SR 138 (MLK Jr Blvd)	At West Spring Street	Intersection Improvement: additional thru lane	Intersection Modification	Stakeholder Input (Survey)
Op-43	SR 155 (Snapfinger Rd)	Browns Mill Road	Lengthen Right turn lane	Intersection Modification	ASTRoMaP Study
Op-45	SR 155 (Snapfinger Rd)	Camp Creek Drive	Add Southbound left turn lane	Intersection Modification	ASTRoMaP Study
Op-46	SR 155 (Decatur Rd)	Ashley Oaks Dr/Pinnacle Lane	Add left turn lanes	Intersection Modification	ASTRoMaP Study
Op-47	SR 155 (S Zack Hinton Pkwy)	Capwelch Dr	Add NB left-turn lane	Intersection Modification	ASTRoMaP Study
Op-49	SR 155 (N McDonough Rd)	Jackson Rd	Replace 4-way stop with roundabout	Intersection Modification	ASTRoMaP Study
Op-52	SR 20 (Cumming Hwy)	West Broad Street/ Sycamore Rd	Left turn lane on SR 20 WB	Intersection Modification	ASTRoMaP Study
Op-53	SR 20 (Cumming Hwy)	Suwanee Dam Road	Add right-turn lanes on EB and WB approaches	Intersection Modification	ASTRoMaP Study
Op-69	SR 54 (Fayetteville Rd)	SR 3 (Tara Blvd)	Improve intersection radii	Intersection Modification	ASTRoMaP Study
Op-73	SR 8 (Veterans Memorial Hwy)	Conners Rd	Add right turn lane and increase radii	Intersection Modification	ASTRoMaP Study
Op-75	SR 8 (E Broad St)	SR 92 (Grady St)	Increase Intersection Radii	Intersection Modification	ASTRoMaP Study
Op-77	SR 81	SR 20 (Conyers Rd), US 78, Tom Brewer Rd, Youth Monrow Rd / Center Hilss Church Rd, SR 138 (MLK Jr Blvd)	Add turn lanes and signal upgrades at key intersections along SR 81 in lieu of complete widening.	Operations & Safety	Stakeholder Input (Survey)
Op-79	SR 9 (Atlanta Hwy)	Grassland Pkwy	Increase Radii, add right-turn lane to SR9 SB	Intersection Modification	ASTRoMaP Study
Op-80	SR 9 (Alpharetta Hwy)	Bethany Bend	Increase SB right-turn radius, add right-turn lane	Intersection Modification	ASTRoMaP Study
Op-83	SR 92 (Campbelton St)	Broad Street	Move utilities and increase intersection radii	Intersection Modification	ASTRoMaP Study

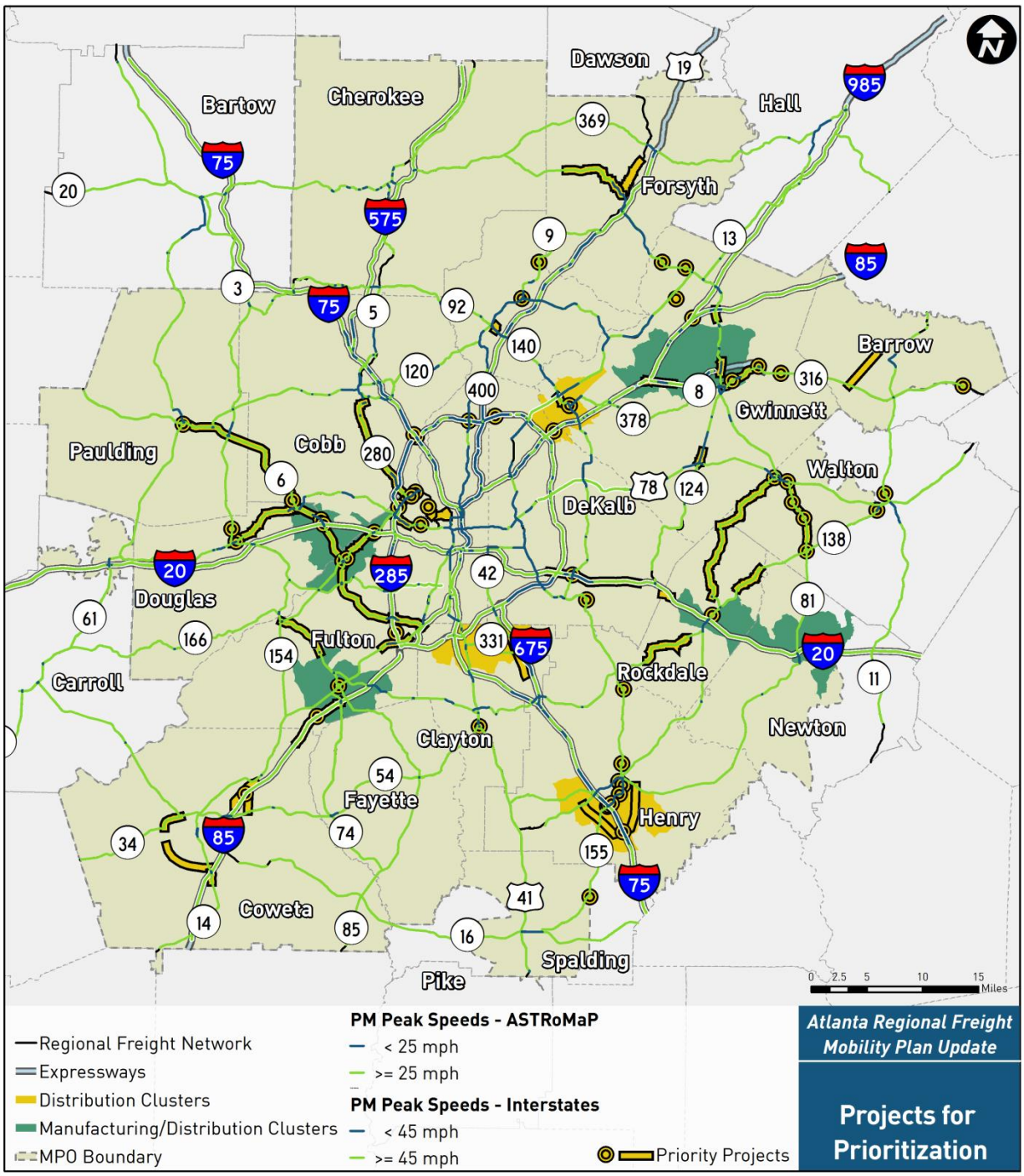
ID	Road	Location	Description	Project Type	Source
Op-89	US 78	Northside to I-285	Add center dual left turn lane	Intersection Modification	ASTRoMaP Study
Op-94	SR 138 (MLK Jr Blvd)	Youth Jersey Rd, SR 11 (N Broad St) / Double Springs Church Rd	Add turn lanes and signal upgrades at key intersections along SR 138 in lieu of complete widening.	Intersection Modification	Stakeholder Input (Survey)
Op-99	US 29 / Alt 27, US 29, Railroad Street, US 29/27A	From I-85 to Airport Road	Operational Upgrade, i.e. safety improvements, shoulder improvements, intersection radii improvements, addition of sidewalks or bike lanes, etc.	Operations & Safety	Stakeholder Input (Survey)
Op-101	SR 61 (Nathan Dean Parkway)	Windale Road	Intersection operational improvements	Intersection Modification	SR 6 Corridor Study

Figure 6-8: Prioritized Projects – Freight Clusters and Low Travel Time Reliability



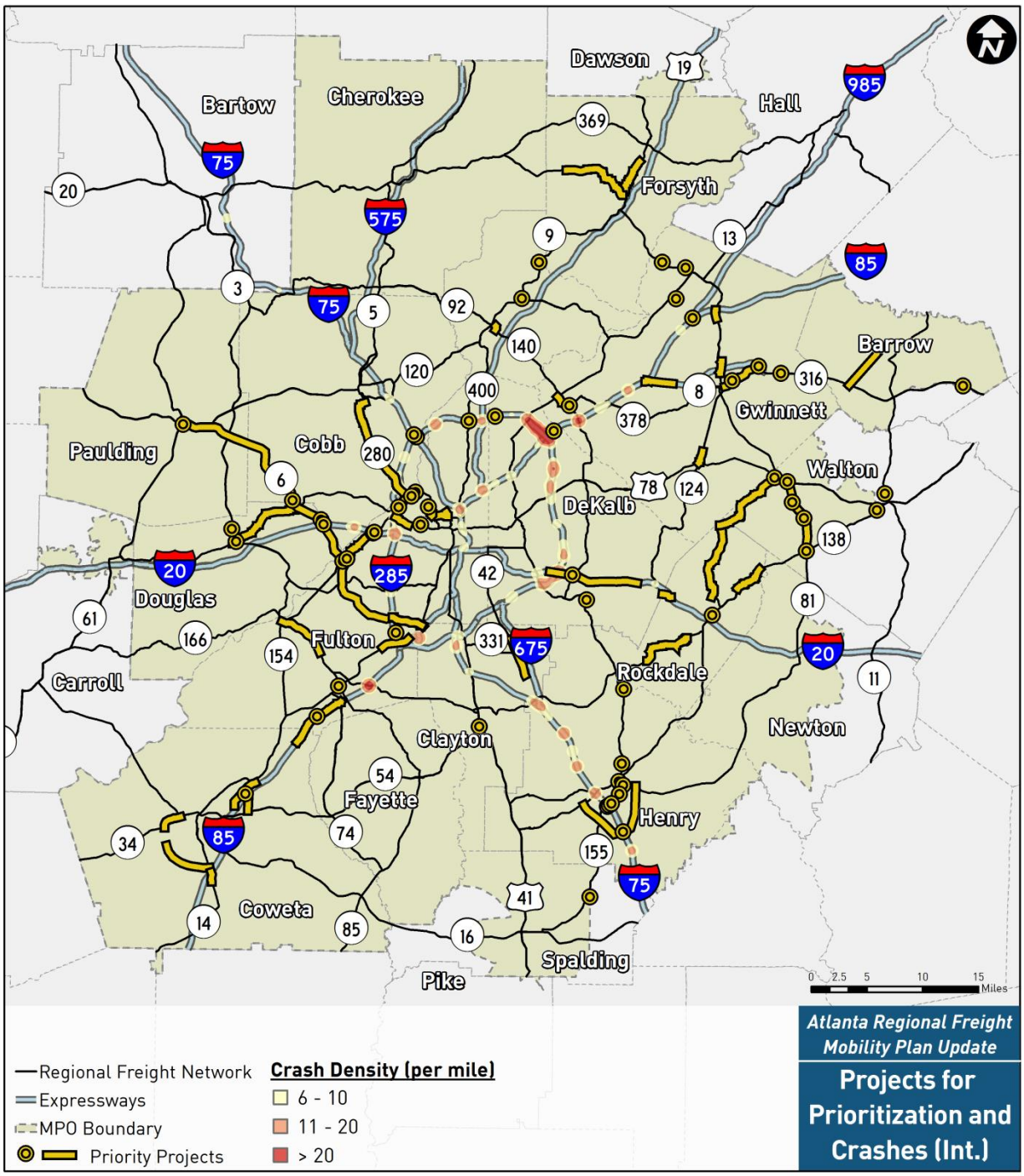
Source: INRIX ARC, Consultant Analysis

Figure 6-9: Prioritized Projects – Low Observed Speeds



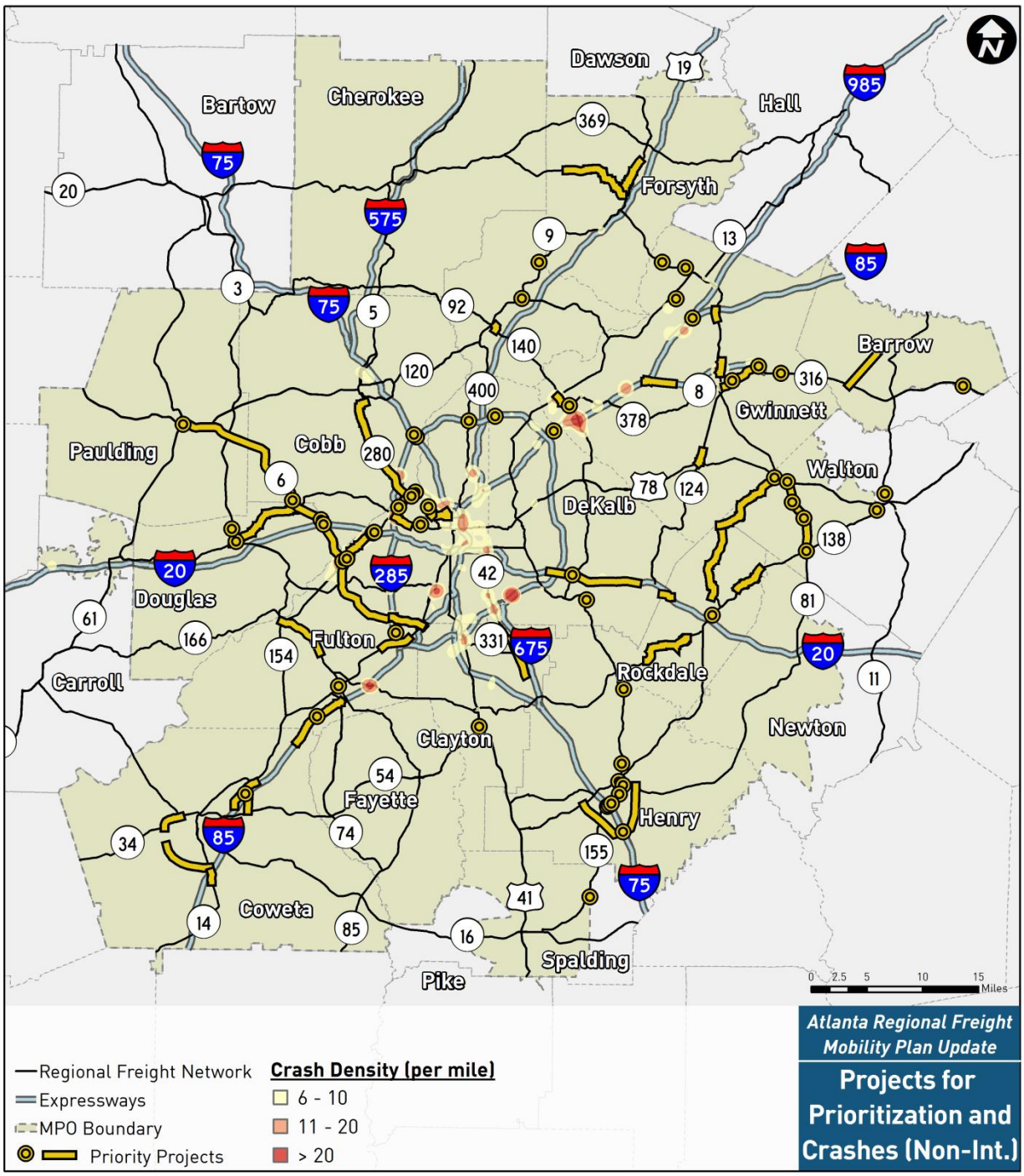
Source: INRIX, ARC, Consultant Analysis

Figure 6-10: Prioritized Projects – Freight Related Crash Density (Non-Interstates)



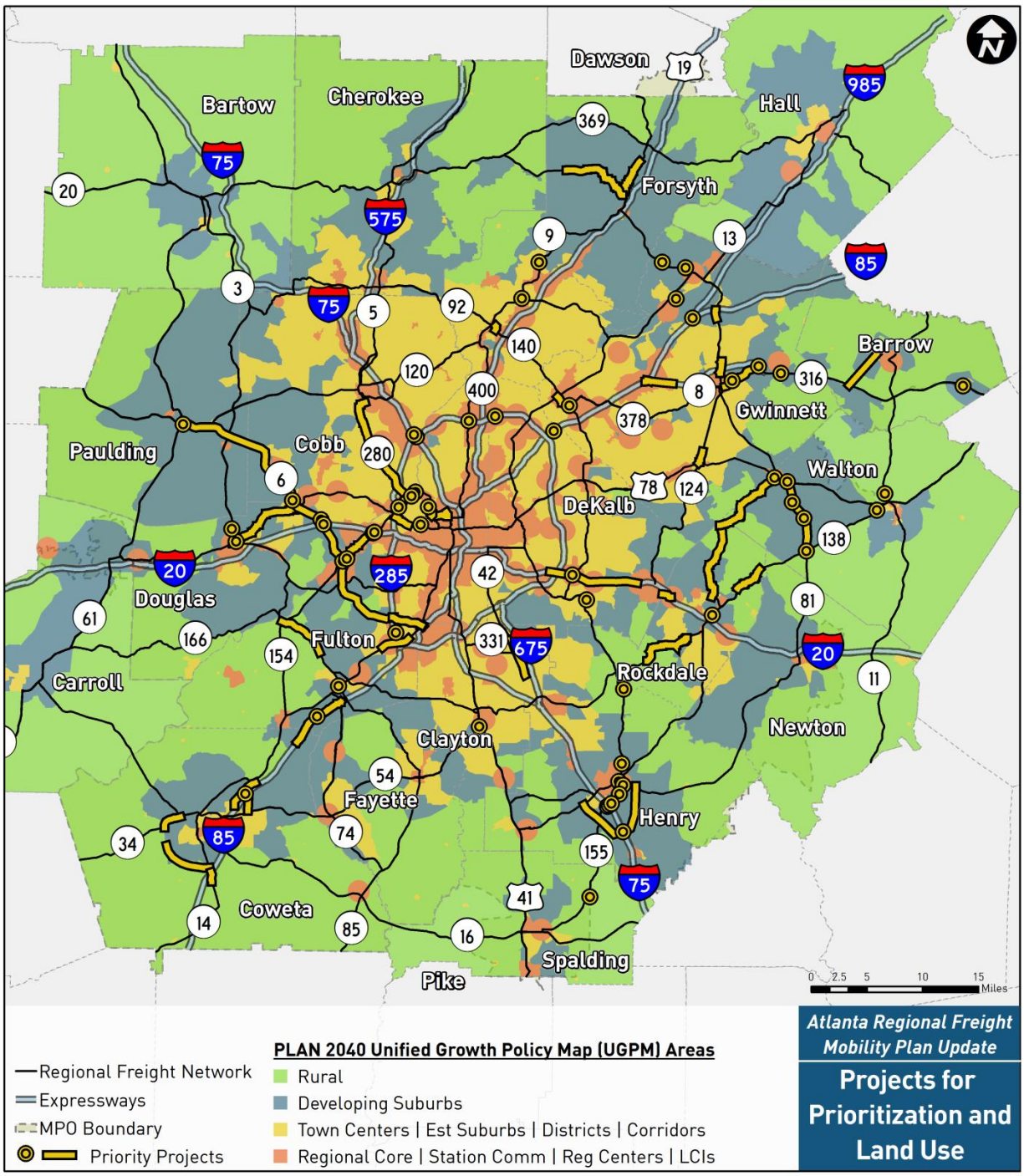
Source: ARC, Georgia DOT; Consultant Analysis

Figure 6-11: Prioritized Projects – Freight Related Crash Density (Interstates)



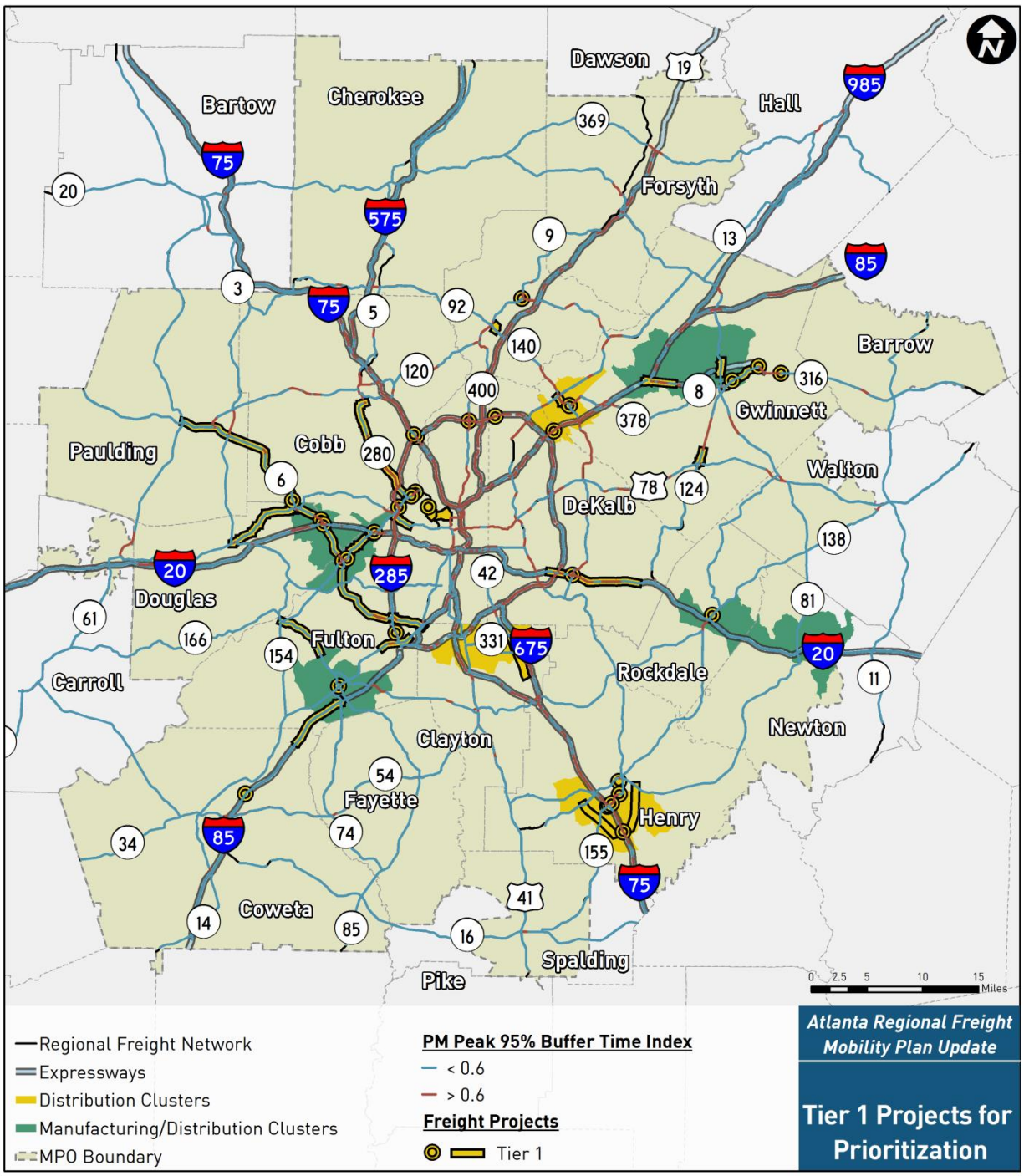
Source: ARC, Georgia DOT; Consultant Analysis

Figure 6-12: Prioritized Projects – Land Use



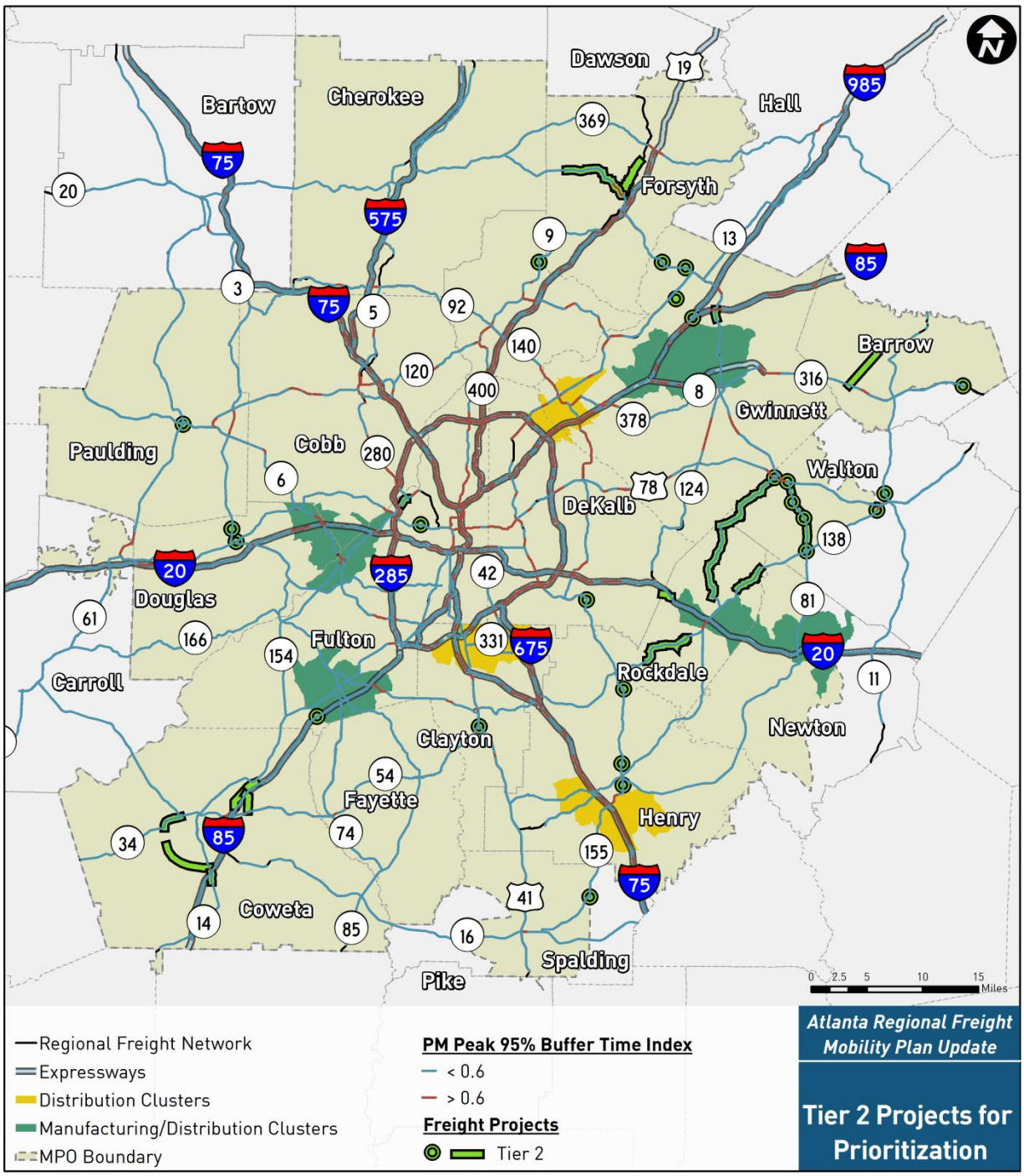
Source: ARC, Consultant Analysis

Figure 6-13: Tier 1 Prioritized Projects



Source: ARC, Consultant Analysis

Figure 6-14: Tier 2 Prioritized Projects



Source: ARC, Consultant Analysis

7.0 STRATEGIES AND INITIATIVES

The Atlanta Region's Plan names four specific freight policies, to which a fifth and overarching policy could be added: *integrate freight into every relevant action the region conducts, and improve its performance*. The fact that the activities and benefits associated with freight pervade the region and help sustain its function was demonstrated in Section 2, where every goal was shown to have facets where pertinent and substantive freight objectives could be articulated.

The previous section identified a range of physical projects, some of them programmed and more of them not, that could advance the performance of freight in Metro Atlanta. Most of them address goals related to the transportation network and the region's position as a hub, with secondary connection to workforce, vibrant centers, and promotion of health and culture. This section recommends a series of potential strategies and initiatives that broaden the scope of the goals addressed. It begins with a set of subarea, corridor and improvement studies designed to diagnose performance solutions in key clusters or essential network components. These are followed by a recommended set of strategic initiatives that range from deployment of technology and alternative fuels, to industrial redevelopment and managing the changes in freight delivery to communities.

While some recommendations may be acted upon by ARC alone or in partnership, others may be undertaken by a variety of public or private organizations in the region, including counties, municipalities, and CIDs. Furthermore, some of these initiatives could be incorporated into the scopes of local transportation plans as part of the Comprehensive Transportation Plan (CTP) Program. The CTP Program provides financial assistance for counties and municipalities to develop joint long-range transportation plans. Freight and goods movement is one of the ten core elements of the CTP Program.

7.1 Subarea, Corridor, and Improvement Studies

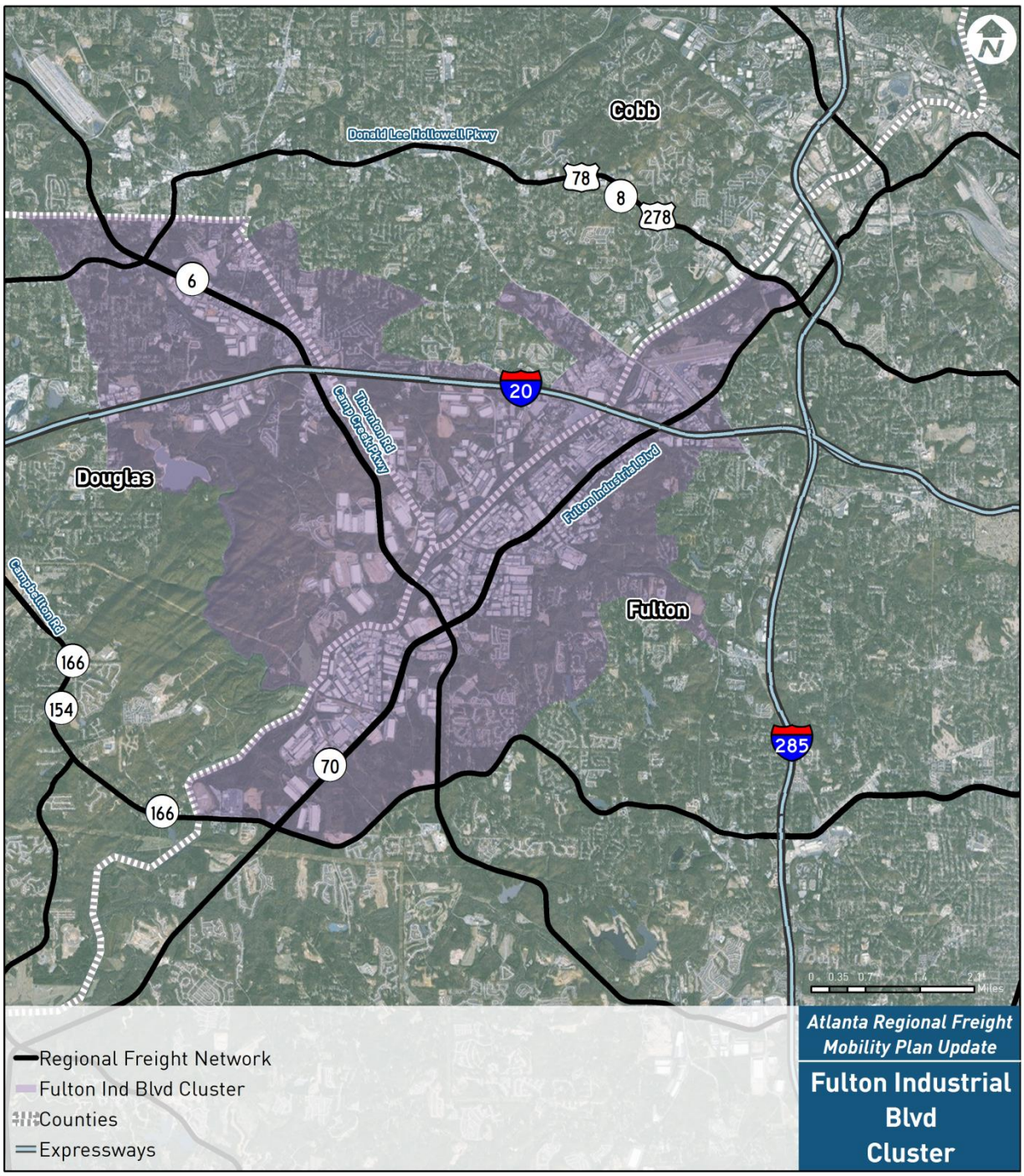
7.1.1 Fulton Industrial Boulevard (FIB) Long-Term Capacity and Use Study

In 2013, the Fulton Industrial CID completed a master plan to guide future public and private investment to improve the aesthetics, safety, mobility, and commercial viability of the Fulton Industrial cluster. This study identified several problematic intersections and associated improvements to these intersections. The study also identified that the service level of this corridor, as shown in Figure 7-1, was projected to be poor in the long term even after expanding the northern portion of the corridor to six lanes. It recommended that a more detailed scoping study be conducted to address specific needed infrastructure improvements along FIB over the long-term.

The Fulton Industrial Boulevard Long-Term Capacity Study would focus on identifying and addressing the long-term freight needs of FIB. This would include collecting necessary data of truck counts and movements along the corridor. It would also project future truck demand on the corridor based on specific growth patterns of nearby existing and planned industrial facilities. The study would develop recommendations that are consistent with forecast truck usage including the potential for truck-friendly lane design, options for additional corridor capacity, and traffic signal design and synchronization that is consistent with truck movements.

- **Purpose:** Develop recommendations to address long-term capacity and use of FIB.
- **Objectives:** Improve freight reliability and productivity, and maximize the economic development opportunity of FIB and nearby locations.
- **Factors:** FIB is the most freight-intensive cluster in the Atlanta Region in regards to manufacturing and warehouse/distribution activity. It also features the most truck-involved crashes of any corridor in the region. The region emerged from the 2009 recession with significant growth and continues to be a location targeted by industrial real estate brokers for locating freight-related facilities.

Figure 7-1: Fulton Industrial Boulevard Cluster



7.1.2 County Freight Cluster and County Subarea Freight Plans

Several counties in the Atlanta Region feature a mix of freight-intensive locations such as manufacturing and distribution facilities along with large commercial centers. This generates a set of truck trip patterns that is not entirely desirable relative to the county's overall growth patterns. Subarea freight plans would start by identifying specific major truck origins and destinations in the county through employment, economic, and land use data. Then, it would identify routes used by these trucks and compare this to the ASTRoMaP network to determine mismatches between the two. The study would then develop a long-term strategy to maximize

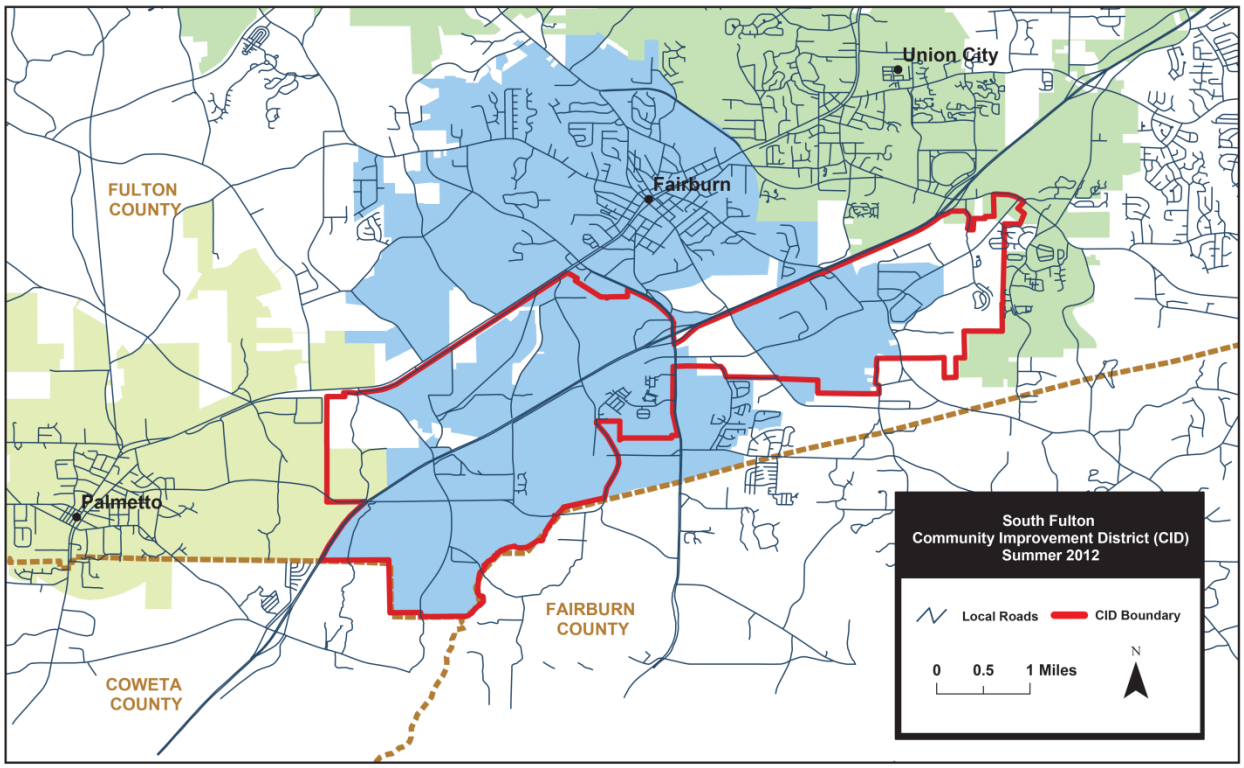
the usage of the ASTRoMaP network in freight-intensive counties, identify specific improvements needed to the network to better serve truck activity, and make recommendations on long-term land use patterns to improve the incorporation of truck activity with other activities in the county.

- **Purpose:** Better understand and manage truck traffic in freight clusters.
- **Objectives:** Improve truck interaction with other uses, freight reliability and productivity, and reduce air emissions.
- **Factors:** Many counties in the Atlanta Region are rapidly growing from both a residential and freight standpoint. Freight facility location has not been harmonized with the location of other types of land uses, so large volumes of trucks often share roadways with other types of vehicles leading to inefficient traffic movements and safety concerns.

7.1.3 South Fulton CID Master Plan

The South Fulton CID Master Plan, which was recommended for funding in the ARC TIP, can be viewed as an example of the type of subarea freight plan recommended in section 7.1.2. The South Fulton CID currently includes several priority projects to provide efficient and safe access to and from I-85 to protect existing businesses and encourage growth of new ones. The CID has reported that local warehouse and distribution operations in the immediate vicinity of the SR 74 and I-85 interchange have indicated significant increases in freight volume in the near future. Over the long-term, South Fulton has several large tracts of undeveloped land located in areas that market the HJAIA, the CSX intermodal facility, and various commercial, manufacturing, education, health care and other resources in the CID area. The goal of this plan would be to develop a transportation plan that is consistent with the long-term growth trajectory of freight-related facilities in the CID, while also taking into consideration the needs of other modes in the CID.

Figure 7-2: South Fulton CID Boundary



- **Purpose:** Develop long-term transportation recommendations to address the rapid growth of freight-related facilities and residences in the South Fulton CID.
- **Objectives:** Maximize economic development opportunity of the South Fulton CID, improve freight reliability and productivity.
- **Factors:** Engineering is already underway for the I-85/SR 74 interchange and Oakley Industrial Boulevard construction. Land use owners have expressed interest in significant expansion of industrial activity in the CID.

7.1.4 GDOT Downtown Connector Operations Study

This study, which was initiated in February 2016 and is currently ongoing, examines a wide variety of options for reducing congestion and improving operations on the Downtown Connector. The range of possible options includes but is not limited to:

1) Very large-scale, innovative, or unconventional ideas, intended to explore these concepts and respond to various inquiries GDOT has received over the years but with recognition that they may not be implementable;
2) Large-scale ideas that are practical, have been shown to be effective elsewhere, and are financially realistic; and
3) Smaller-scale operational improvements that could be implemented in a shorter timeframe.

Some of the solutions that will be considered for this study include:

- Alternate routes (and improvements to alternate routes such as widening I-285 EB and WB);
- Policy changes such as tolls, occupancy requirements, consideration of some type of commuter credits program-which could be used for encouraging the avoidance of trips in the peak periods and the shifting of trips to transit;
- Additional lanes, new collector-distributer lanes, tunnels (under or parallel to the connector), new location surface roadway parallel to the connector, double-decked roadway.

- **Purpose:** Examine options for reducing congestion and improving operations on the Downtown Connector.
- **Objectives:** Improve multimodal capacity utilization, safety, mobility and reliability.
- **Factors:** The Downtown Connector was recently noted as one of the top truck bottlenecks in the US. Improvements to the connector will improve passenger vehicle and freight traffic in the region.

7.1.5 HJAIA Highway Access Study

This study will analyze alternatives for improving connections to the south side of HJAIA given current and future demand via Riverdale Road, taking into consideration route options and all users of the corridor, including commuters, air passengers, freight traffic, local businesses, and residents. Ongoing changes to land use plans and development patterns around the airport and how they impact transportation will also be considered. The study will produce an HJAIA highway access study document as the final product that incorporates cost estimates; analysis and discussion of costs, benefits, and impacts; and some early project alternative development work including preliminary environmental analyses.

- **Purpose:** Develop improved linkages to improve mobility and connectivity to HJAIA.
- **Objectives:** Identify and analyze a range of potential alternatives for improving highway access to HJAIA.
- **Factors:** HJAIA is consolidating air cargo on the south side of the airport and is actively pursuing new market opportunities. Normal growth combined with increased market penetration and rising e-

commerce traffic will produce pressures on access to the consolidated facilities. The time sensitivity of air cargo creates a clear need for a comprehensive access study.

7.1.6 Freight Related Studies from TIP Solicitation and Stakeholder Outreach

Freight-related projects and studies are important locally to address freight movement issues and in order to meet federal requirements. Local governments and agencies face a number of freight issues in their communities and face a multitude of barriers to implementing freight investments to tackle these issues. An identification of local freight-specific transportation policies/projects, issues, and investment initiatives was conducted by review of the list of studies submitted via ARC's Transportation Improvement Program (TIP) solicitation process and through stakeholder input during the update process. Metro Atlanta counties and cities submitted project applications to update the ARC TIP in Spring 2015. The focus areas for the solicitation were:

- New infrastructure projects that are consistent with the Livable Centers Initiative (LCI) program;
- Existing federally funded TIP projects requiring additional federal funds;
- Transportation planning or project feasibility studies; and
- New infrastructure projects or initiatives that support PLAN 2040 Objectives and the Decision-Making Framework.

Additional freight-related projects were identified through an online questionnaire created for city and county transportation staff on ARC's TCC, as discussed previously in Section 1.3, on freight-specific issues impacting local communities.

The studies listed in Table 7-1 were identified by local governments during TIP solicitation as potential priority locations for improvements. This is not a comprehensive list of all of the studies submitted during the TIP solicitation process and may not represent the highest overall transportation priorities within an area.

Table 7-1: Projects Submitted During TIP Solicitation

Submitted Studies	Location
Huff Road Widening and Complete Street Scoping Study	City of Atlanta
Marietta Road Freight Improvement Scoping Study	City of Atlanta
Commerce Drive/Fulton Industrial Circle Realignment Feasibility Study	Fulton County
Moreland Avenue (SR 42) from Cedar Grove Road (SR 54 Connector) to Bailey Street	DeKalb County
South Fulton Multi-Modal Study	South Fulton County
Solomon Street at Searcy Avenue/Spalding Street/High Falls Road	City of Griffin
Hapeville Silent Railroad Crossings	City of Hapeville
Holly Springs Industrial Drive Extension – New Alignment	City of Holly Springs
Holcomb Bridge Railroad Crossing Study	City of Norcross

Note: Studies in bold are the TIP projects recommended by ARC staff for funding.

- **Purpose:** develop and implement projects that address freight issues and needs and leverage opportunities
- **Objective:** address issues related to capacity, safety, mobility, access, operations, noise, and design
- **Factors:** coordination among local jurisdictions, CIDs, etc., to secure funding to implement and construct freight-related projects

7.1.7 At-Grade Railroad Crossings Study

As a region rich in rail, metropolitan Atlanta has many at-grade railroad crossings that can delay passenger vehicle and truck traffic and can pose safety hazards. Addressing them is a priority for some local governments, and as Chapter 3 documents, four counties are the primary location for the largest at-grade crossings, as measured by total trains. The four are Cobb, Clayton, Gwinnett and Fulton counties, with a number of the Fulton crossings situated within the City of Atlanta.

A study should be designed and undertaken to analyze at-grade railroad crossings throughout the region and identify which of them should be the highest priority for grade separation. Railway-highway grade separation projects are eligible for new funding under the federal FAST Act (described at length in Chapter 8 below) under both the freight formula and FASTLANE competitive grant programs, indicating that the means to advance such projects in metropolitan Atlanta may be available.

- **Purpose:** Improve mobility and safety for trucks and passenger vehicles thorough grade separation of railway-roadway crossings.
- **Objectives:** Identify at-grade railroad crossings throughout the region, analyze and prioritize them based on train, truck and passenger vehicle volumes, travel delay and safety concerns, and recommend separation projects with an eye to the utilization of Fast Act funds.
- **Factors:** Projected growth for all affected traffic should be incorporated, as well as any development plans that may exacerbate conditions. Fast Act funding is not automatic: freight formula money is statewide, limited, and has many potential uses, and competitive grants must be won. Railroads normally view grade separation as chiefly a public sector concern, but in locations where growth in high priority intermodal trains is expected and facility expansions are needed, railroad contribution to related crossings might be negotiated.

7.2 Strategic Initiatives

Unlike the subarea improvement studies discussed in Section 7.1, strategic initiatives are programmatic in nature. Instead of detailed studies on specific projects or localized conditions, these initiatives begin the process of addressing broad, wide ranging problems that have not been covered in past plans to the same extent as more typical problems, such as congestion. Examples of regional issues that would receive increased focus include the availability of truck parking and transportation system resiliency. Other issues could be characterized as drivers of change that force the region to view transportation planning from a different perspective. These drivers of change could be disruptive technologies or business models such as autonomous vehicles or a highly increased prevalence of home deliveries from online retailers, among others.

7.2.1 Truck Parking Study

This study would identify short-haul and long-haul truck parking needs in the Atlanta Region. Long-haul parking needs include the needs of truck drivers who travel long distances to facilities in the Atlanta Region and are required to rest before beginning the journey to their next destination. This can involve parking for the time required for a night's sleep in the cab of the truck, unlike short-haul drivers who can sleep at home and whose parking periods thus are briefer.

Emerging short-haul or local truck parking needs are related to the boom in mixed-use centers and the need to ensure that the trucks that are used to construct, service, and relocate people and businesses to these areas are well integrated with the facility and the surrounding environment. This is particularly needed in dense locations such as Downtown, Midtown and Buckhead where truck movements are often restrictive and road/parking design has not accounted for truck activity.

- **Purpose:** Identify and address truck parking needs in the Atlanta Region.

- **Objectives:** Consider short-haul and long-haul truck parking needs along with needs of emerging mixed use facilities.
- **Factors:** Cities and counties must be considered due to the relevance of local codes and zoning ordinance that regulate where trucks can operate, times of operation, and the design of mixed use facilities.

7.2.2 Truck Friendly Lanes

A large percentage of the freight that is moved in Atlanta does so via truck. The number of trucks on metropolitan roadways is expected to increase by 2040. With more trucks on the road network, the likelihood of truck/automobile crashes increases as well. Typically in the Atlanta Region and as documented elsewhere in this report, interstate highways such as I-285 are high truck count corridors serving long haul and local traffic. In addition to the Interstates, some of the Atlanta Region's highest regional truck volumes are located on SR 316, Fulton Industrial Boulevard, and SR 6. High truck traffic volumes mix with automobile traffic and generally lead to high crash incidences on those roads. For example, some of the highest crashes per mile in the region occur on the Fulton Industrial Boulevard corridor between Interstate 20 and Camp Creek Parkway (SR 6); I-285 between I-85 and Peachtree Industrial Boulevard; and I-20 at I-285 on the eastside.

Trucks encounter the same obstacle as commuters: navigating heavily congested roads in the Atlanta Region which hinders freight flows and the movement of passenger vehicles. The prospect of better travel conditions, improved freight safety, reliability, and road network access through advanced and expanded operations upgrades makes lanes that are designed for the needs of trucks a viable option for roadway corridors in the region and fits within the overall context and vision of *The Atlanta Region's Plan*. This initiative has been explored locally through the SR 6 Truck Friendly Lanes project, which builds on the ARC Envision6 Study and is part of the SR 6 Corridor Study recommendation designed to improve safety and regional mobility for Paulding, Cobb, Douglas, and Fulton Counties and their associated municipalities. The elements proposed in the study support truck movements by enlarging existing shoulders to create a 13 foot truck lane, improving wayfinding signage, and providing ITS enhancements which enables green signal time manipulation for better truck progression.

Truck friendly lanes are one strategy for relieving congestion as they increase opportunities for significant improvements in the effectiveness of truck freight, help reduce conflicts between mixed truck and automobile traffic, and lower maintenance costs on general traffic lanes. Moving heavy trucks to designated lanes also improves the comfort and convenience of those traveling in passenger vehicles.

Truck lanes have been successfully applied along I-5 in the Los Angeles metropolitan region. The implementation of truck friendly lanes along corridors such as SR 6 and other high volume roadways could prove to be an important tool for improving freight mobility on congested routes and improving performance between major freight clusters.

- **Purpose:** Move trucks toward more accommodating facilities and away from other mixed-flow traffic, enhance safety, and stabilize traffic flow.
- **Objective:** Enhance safety; stabilize traffic flow; conduct active management of freight performance through monitoring of truck progression.
- **Example Initiative Design:** Address infrastructure, geometric design, wayfinding signage, and ITS enhancement needs.

7.2.3 Cultivation of 21st Century Technology

New technologies in the first decades of the 21st Century are changing the way the freight and logistics industry functions, from its vehicles and the way they interact with the transportation network, to its

facilities and equipment, and the way they interact with the goods they handle. Many derive from the increasing ability of physical objects to sense and adapt to one another without direct human intervention, using information technology to receive and process data and decide adjustments. An underlying characteristic is the ability of sophisticated equipment to become smaller and more compact, which often widens the ways in which it can be used, much as smart phones have put powerful computers in people's pockets and changed how they behave and interrelate with their environment and each other. Much of this technology can be categorized under the general rubric of the Physical Internet, or the "Internet of Things," which underscores the rising ability of objects to recognize and communicate with one another, as well as to act on that information.

These are revolutionary changes that can reconstruct the methods of freight operation, in some cases automating it, in some cases replacing it, and in many cases altering the form of the supply chain facilities it serves. The history of technology development suggests it is foolhardy to predict its ultimate form, and equally foolhardy to ignore its influence.

In 2015, a new Physical Internet Center was created at the Supply Chain and Logistics Institute in the School of Industrial and Systems Engineering (ISyE) at Georgia Tech in Atlanta. This included a new Physical Internet lab focused on technological breakthroughs. According to Georgia Tech's ISyE website, "research in this lab will focus on developing concepts, methodologies, and technologies for creating, optimizing, transforming and enabling businesses, supply chains, and value creation networks to thrive in a fast evolving hyperconnected world." This is intended to bring together the fields of supply chain and logistics, industrial and systems engineering, computer science, and related disciplines. Researchers at the Physical Internet Center plan to work with corporate partners, other academic institutions, and government agencies. Technological changes related to the Physical Internet or the "Internet of Things" may originate from and impact any part of the world, including in the Atlanta Region.

A pragmatic strategy for the Atlanta Region is to monitor the developments that will shift major parameters of the freight and logistics system – elements such as the transportation and communications network, the economic geography, and performance potential – and to be sufficiently engaged in implementation to understand and affect the opportunities and risks. The point is to keep the region economically competitive while not running ahead of the technology. The strategic approach can be termed active monitoring: tracking the trends while developing live experience and a prudent stake in the game. Two initiatives outlined below engage the region at a moderate level in changes to the network and industrial facilities. The two are likely to intertwine over time, and together they establish a platform for cultivating the technology.

7.2.3.1 Freight *CAV Pilot*

Connected and automated/autonomous vehicle (CAV) technology is familiar from the publicity devoted to road tests of driverless automobiles, as well as from the commonplace examples of back-up cameras in late-model cars and smart phone applications that adjust travel routes for current traffic conditions. CAV in fact is a family of technologies that allow vehicles to sense and interact with infrastructure and each other. This makes them safer and more efficient to drive, which in turn allows them to travel closer together. The eventual result is more effective capacity from existing roadways, with computer-aided and potentially driverless vehicles – some of which may have shared use. However, CAV technology is no longer futuristic, and useful forms of deployment can be made now.

This initiative calls for pilot testing of proven devices that would enable equipped trucks to be expedited enroute to delivery, under conditions in which they are likely to be delayed. Deployed on ASTRoMaP corridors linking key freight clusters, the technology could improve freight performance by allowing trucks to travel further dependably – in other words, improving speed, reliability, and productivity. Better freight service adds to the advantage of clusters for attracting and retaining industry, and the technology itself helps the region compete as an advanced logistics hub.

A pilot project could take many forms. As an example, it could focus on urgent air cargo deliveries from the Airport/Clayton cluster. Air freight reaches the cluster in early morning hours from distant locations, arriving by aircraft at HJAIA or by truck at nearby terminals. Deliveries must be made by mid-morning deadlines, requiring trucks to navigate AM peak hour traffic. Because the cargo arrives overnight from elsewhere at various times, the ability to travel across town before the AM peak hour begins is constrained. In short, these are critical shipments for the region's supply chains, facing especially difficult conditions. CAV technology deployed in a pilot could:

a. Report traffic conditions to participating trucks and dispatchers, and identify incipient gridlock;
b. Recommend alternative routes on the ASTRoMaP system;
c. Enable traffic signals on ASTRoMaP routes to recognize participating delivery trucks; and
d. Expedite delivery by lengthening or changing signals to keep the trucks moving.

This example is promising because it is feasible now and addresses a meaningful performance challenge. However, its greater value is as a starting point for the trial of competitively important technology.

- **Purpose:** Develop initial application of CAV technology for freight delivery.
- **Objective:** Clarify benefits and test introduction of emerging technology for safety, reliability, productivity, economic development, resilience, and ultimately for capacity gains.
- **Example Pilot Design:** Partnership with carriers to provide signal priority for safety-enhanced trucks, expediting urgent air cargo to specified clusters, utilizing real-time traffic feeds to activate under gridlock conditions.

Figure 7-3: CAV Pilot - Key Infrastructure System Elements

7.2.3.2 Industrial Property Redevelopment

Factory and warehouse automation incorporates technologies that range from optics and remote sensing to robotics and material handling. They have the proven ability to put greater productive capacity into smaller building footprints. This makes older industrial properties with smaller sites viable in a way that they have not been in recent years. It then becomes possible to leverage their close-in locations for faster, more reliable delivery - at the same time that freight volumes could rise 50-75% from the existing acreage. This creates

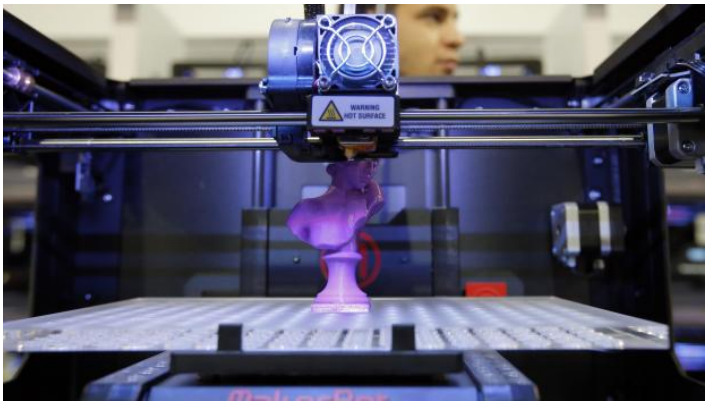
pressure on access routes, but it also reduces travel distances, and high volume clustering can reduce empty travel by freight vehicles as well. The roles of facilities also could change: 3-D printing technology can insert a factory into a distribution center, fabricating products and replacement parts made to order for local demand.

Automated facilities are expensive to establish but inexpensive to operate. As more are built, capital costs should decline, at the same time that companies facing an automated competitor will feel the need to match their abilities. Regions competing for economic development will feel a similar need to upgrade their facility stock. Industry observers expect redevelopment to arise within five to seven years. This initiative makes use of that time frame to drive redevelopment toward such key clusters as Fulton Industrial Boulevard and I-85/PIB/Jimmy Carter Boulevard. Components of the initiative could include assistance with land parcel assembly, development incentives and pre-approvals, and planning of capacity improvements and operational upgrades – some of which might feature CAV operations.

- **Purpose:** Support introduction of factory/warehouse automation and convergence of functions to invigorate and densify close-in industrial clusters.
- **Objectives:** Improve economic competitiveness and effective capacity of land; reduce logistics costs and freight travel distances; create potential platform for cooperative logistics and lateral economies of scale.
- **Example Initiative Design:** Encourage industries and developers to introduce automated, dense footprint facilities to select close-in industrial clusters, utilizing parcel assembly assistance, incentives and pre-approvals, transportation capacity improvements and operational upgrades.

Figure 7-4: Automated Warehouse

Figure 7-5: Industry Property Redevelopment



3D Printing

Robotics

7.2.4 Home Delivery

In late 2015, the online retail giant Amazon.com offered free shipping for the holidays to everyone in America. This took the form of a no-cost 30-day trial of the Amazon Prime membership program. The Prime program and others like it provide free shipping in return for an annual fee. Package delivery companies in Atlanta report that the effect of such programs is to induce online purchases of everyday items, including heavy and bulky products such as pet food and paper goods. Regardless of the success of the Amazon holiday offer (which has not been reported), its deeper purpose was to enlarge and capture the market for home delivery. It reflects an ongoing contest between store-front and online retail in which the distinction between these two distribution channels is blurring, and so-called omni-channel retail is being invented.

Home delivery is a central component of omni-channel, with appeal both to young, car-free urbanites, and aging, less-mobile baby boomers. The more that delivery service can compete with the immediacy of a trip to the store, the more traffic it may capture. Traffic capture is important, because home delivery is expensive. While it mainly replaces diffuse automobile trips with consolidated truck trips, consolidation depends on volume, and the companies who handle the most volume will be the only ones surviving in the market. In addition, home delivery requires very different methods and facilities for staging goods – especially for the growing same-day and one-hour service offerings. As performance profiles in other sections of this Report illustrate, the one-hour delivery range for Atlanta distribution clusters does not come close to covering the region, and more facilities in new locations will be needed.

Just as important, more (and likely larger) trucks will appear in residential neighborhoods. For regional freight planning, this is a two-sided coin. On one side, the clean and safe operation of freight vehicles in areas that are not designed for them becomes paramount, and may create a venue for the application of CAV technologies and alternative fuel vehicles. On the other side, the purpose and necessity of freight carriage becomes plainly visible to residents: trucks no longer are just the impedances on the roadways whose usefulness is obscure; instead, they represent the arrival of the groceries and home goods you and your neighbor ordered and are counting on for tonight.

Because omni-channel retail and productive methods for home delivery are being invented, the shape they will take is not clear. What is clear is that the consequences for distribution and delivery of consumer goods in Atlanta are profound. Consumer convenience is now becoming a performance factor: the ease of a smart phone order with delivery today competes with the ease of a store trip with products one can examine and bring straight home. In both cases, the goods must be immediately available, which means that the reliability of the supply system is essential, and its reliability rests on the location of facilities and the performance of the freight system. Moreover, its failures will be more evident to residents – and voters. If a truck fails to arrive at a store, the store strives to recover and make the problem invisible to customers. If a truck fails to arrive at home, the homeowner is aware of it and may have to handle recovery themselves. As home delivery grows, complaints will grow with it.

This initiative is a way to plan for a changing landscape whose ultimate form is both uncertain and consequential. It calls for a study of home delivery so as to create a framework by which to track its development and influence the way it affects neighborhoods, distribution clusters, and the freight transportation system.

- **Purpose:** Track and assess a profound and costly shift in retail distribution, with large effects on freight patterns and needs.
- **Objective:** Ensure transportation planning keeps pace with change and influences outcomes.
- **Factors:** Track commercial battles for convenience and delivery route volumes, with associated land use and freight network requirements; follow evolving demography of demand; address challenges and opportunities for community integration of freight; monitor citizen sensitivity to reliable delivery performance.

7.2.5 Off-Hours Delivery Pilot

The Atlanta Region's congested roadways are considerably less congested at night. Not only does this allow traffic to move faster and more reliably, but also provides the transportation system with capacity to spare without any new investment. The freight and logistics industry recognizes the advantages: some major retail chains bring in supplies after store hours, and truck fleets that can already begin their work day before dawn in order to reach delivery points ahead of rush hour. More freight activity at night also means less during the day. Even if a fairly small percentage of trucks could shift their hours, it would make a disproportionately large difference to traffic at peak time.

The chief obstacle to change for trucks is the same as for commuters: most places of business only are open during normal business hours. Busy factories can justify night shifts, but for many others, opening the doors at night is expensive and not always secure. Businesses that order goods for delivery tomorrow morning cannot wait until tomorrow evening. Transportation can be less efficient too, because a truck that delivers to twenty customers in a five mile area in the day might have five customers in a ten mile area at night. Nevertheless, the prospect of better travel conditions, more capacity, and daytime traffic relief makes off-hours delivery worth exploring – and it fits with *The Atlanta Region's Plan* policy to create 24-hour communities. This initiative starts the exploration by conducting a pilot study.

- **Purpose:** Develop methods to increase freight deliveries during night hours and other off-peak periods.
- **Objectives:** Improve capacity utilization, freight reliability and productivity, and reduce air emissions.
- **Factors:** Recent precedents are available elsewhere in the US; Atlanta and other cities have experience from traffic management during the Olympic Games; funding could be leveraged through an FHWA matching grant program for urban off-hours pilots.

7.2.6 Resiliency Planning Assessment

The Gulf Coast ice storm of the winter of 2014 was a graphic reminder of how severe weather events can disrupt the regional economy and daily life. Severe weather and security events are another source of disruption in today's world. A basic way to reduce such risks is to reduce the magnitude and duration of the harm they can cause by understanding important vulnerabilities, strengthening associated systems, and improving the speed of recovery.

Certain supply chains are critical to preserving life and livelihood, and to the ability of other supply chains to function. Chief among them is the energy that powers homes, offices, factories, furnaces, refrigerators, and pumps, and fuels the freight vehicles that deliver every kind of goods. Food and health care are other examples - and both groceries and hospitals depend on daily freight deliveries to maintain their operations. This initiative undertakes an assessment of how the Atlanta Region can assure its resilience in times of disruption, preserving lives, health, and economic prosperity. It helps implement *The Atlanta Region's Plan* policy of planning for extreme weather events, and some ARC 2016 planning funds have been dedicated to the topic of resiliency.

- **Purpose:** Understand crucial vulnerabilities to supply chain disruption and plan response.
- **Objective:** Mitigate the effects of disruption on the population, industry, and economy.
- **Factors:** Focus on critical supply chains; identify supply and consumption points, routes and alternates; prepare response strategies, partnerships and roles; draw from best practices employed in other cities.

7.2.7 Alternative Fuels: Support Expansion of Natural Gas Fueling

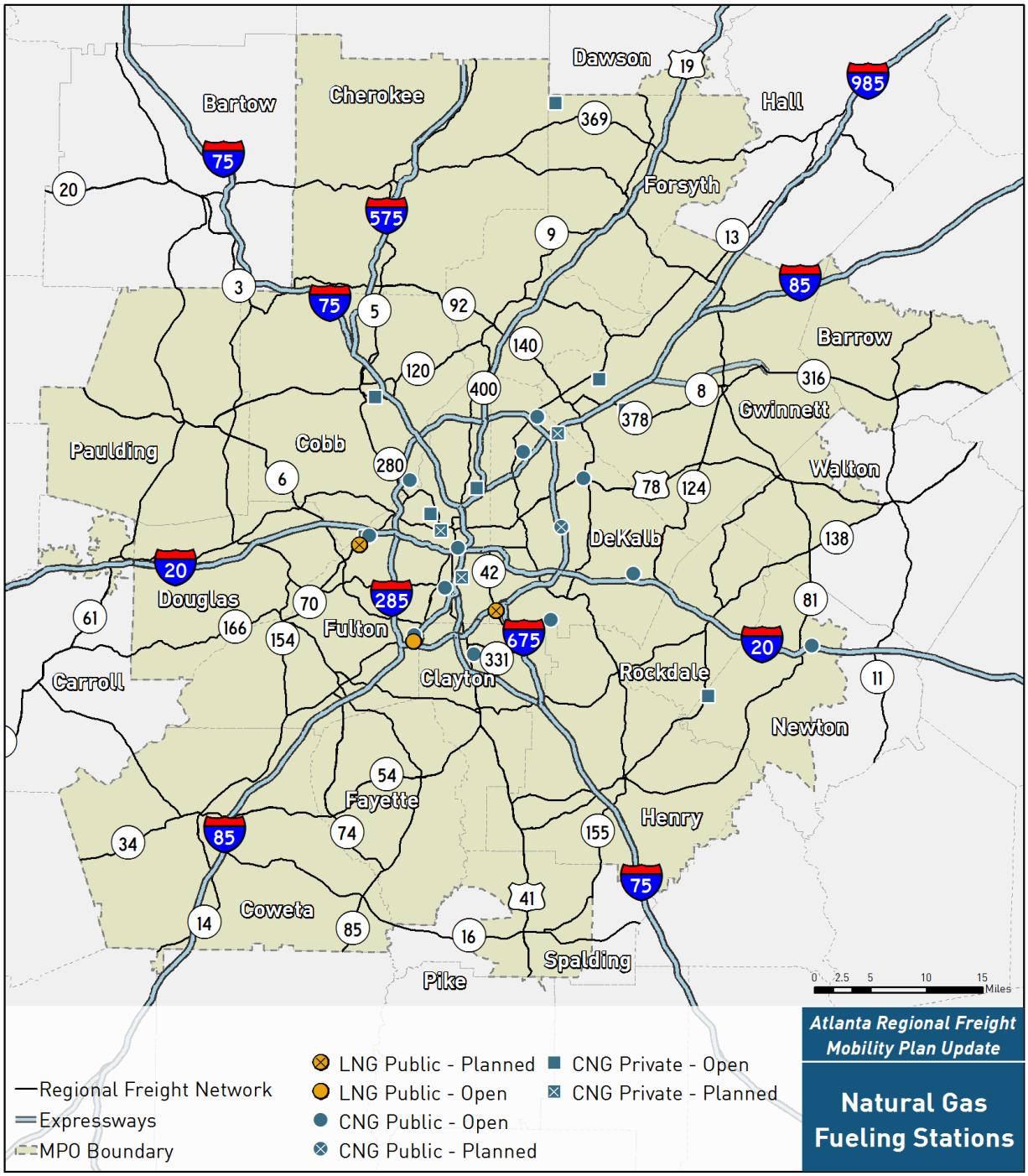
Natural gas is a viable alternative to diesel fuel for freight operations now. It is substantially cleaner than diesel, especially for the criteria air pollutants (CAPs) that pose health risks – notably particulate pollution and nitrogen oxides. Its greenhouse gas profile is mixed: while natural gas burns cleaner than diesel, methane release connected to its production and distribution offset this. Growth in the production of natural gas through hydraulic fracturing and horizontal drilling has made it an abundant domestic resource, and it was a dramatically less expensive fuel until the relatively recent plunge during 2015 in diesel (and gasoline) prices. The conversion of freight fleets to natural gas – and pressure from their customers to do so – has slowed but not disappeared, and few in the industry expect diesel prices to remain low for the long term.

Truck engines may use natural gas in two forms: compressed (CNG) and liquefied (LNG). CNG engines have an operating range of 300-400 miles, making them well suited to regional service. LNG ranges out to 500-600 miles, which suits long haul trucking in interstate operations – including the many trucks that pass through Atlanta enroute to elsewhere. Conversion to cleaner and ultimately cheaper natural gas by the freight industry (railroads as well as motor carriers) is helpful for the acceptance and integration of freight activity in communities, and for the maintenance of a low cost logistics environment that supports Atlanta's position as a global hub. Adoption of natural gas requires gradual substitution for diesel vehicles during normal equipment replacement cycles, as some carriers such as Atlanta's United Parcel

Service have begun to do. It also and critically requires the development of a fueling network. As Figure 7-6 indicates, a small number of CNG fueling stations are located in metropolitan Atlanta (compared to conventional gasoline stations) but do appear in many parts of the region. LNG stations are few and provide little support to interstate trucking. The federal FAST Act calls for development of alternative fuel corridors featuring stations for electric vehicle charging and natural gas fueling (as well as other types) along major national highways, with an aspirational goal of infrastructure being in place by 2020. The strategy for Metro Atlanta is comparable and complementary: the region should assist the federal program to designate corridors that include I-75, I-85, I-20, and I-285, and it should seek expansion of stations along the rest of the ASTRoMaP system – for example, by requiring alternative fuels in approvals of new gasoline stations and truck stops.

- **Purpose:** Enable adoption of practical, cleaner freight fuel.
- **Objectives:** Reduce air emissions and long term freight costs; aid integration of freight in communities.
- **Factors:** Support both CNG and LNG capabilities; proliferation across ASTRoMaP network; coordination with FAST Act alternative fuel corridors program; adoption in rail yards.

Figure 7-6: Natural Gas Fueling Stations



- Number of open/planned LNG/CNG stations in Georgia = 52
- Number of open/planned LNG/CNG stations in Metro Atlanta = 28

Source: US Department of Energy, Alternative Fuels Data Center

8.0 FUNDING

Fiscal constraint is a fact of life. There are four sources of funds for freight projects beyond the core resources on which the ARC region has mainly depended. Two of them are new, the third is a growing option, and availability of the fourth can be improved.

8.1 FAST Act

The federal transportation Fixing America's Surface Transportation (FAST) Act, passed into law late in 2015, for the first time created a funding source expressly and exclusively for freight. There are two important funding sources totaling $10.8 billion nationally over the five year span of the Act: a formula program and a competitive grant program.

Formula: The National Highway Freight Program provides $6.3 billion apportioned to states by formula, which may be used for a wide range of freight projects on a designated highway freight network. Up to 10% of this amount also can be used for intermodal projects involving ports and railways. The apportionment for Georgia works out to an average of $41.3 million per year for five years, totaling $206.5 million.

- The designated highway network in Georgia where formula funds can be used totals 1,520 miles and has three components as defined in the Act. First and largest is the state's portion of the national Primary Highway Freight System (PHFS), which runs 41,518 miles nationwide and in Georgia consists of 1,169 miles, of which 97% are interstate highways and nearly all of the rest are intermodal connectors. The Georgia portion of the PHFS is depicted in Figure 8-1, and the metropolitan Atlanta section in Figure 8-2.
- The two further components of the designated network are to be defined by Georgia, based on formulas in the Act: up to 234 miles of Critical Rural Freight Corridors, and up to 117 miles of Critical Urban Freight Corridors, the qualifications for which are not difficult to meet. The ARC region could have elements of both. Identification of urban corridors in larger MPOs like ARC in fact is given to the MPOs to decide, but since there is a statewide limit of 117 miles, the state presumably adjudicates the final selection. Because all but 130 miles of interstate highways in Georgia are included in the PHFS, the selection of critical rural and urban corridor designations for the most part is apt to focus on non-interstate facilities.
- The non-interstate portions of the 1,300 mile ASTRoMaP network provide a well-defined basis for selection of critical corridors in the Atlanta region. Factors to consider in selection – reflecting FAST Act provisions as well as sensible practice - include truck volume, performance and performance improvement projects, connection and linkage between the region's freight clusters, and capability of providing strong alternatives to interstate highways in cross-town travel.
- GDOT will need to update its state freight plan for compliance with the FAST Act by December 2017. Since the existing state freight plan complied with MAP-21 and new specifications under the FAST Act are not numerous, the requirements for update are fairly limited.
- One new requirement for the update is definition of the critical corridors; another is preparation of a five year investment plan specifying how formula funds will be applied. Projects that lie on the Atlanta portion of the PHFS are eligible for inclusion in the investment plan. Eligible projects from the ARC TIP and from the Tier 1 projects prioritized in Chapter 6 are shown in Figure 8-3; three-quarters of the TIP projects and one-third of the Tier 1 would qualify. (TIP projects already have funding but changing the source of funding seems possible.) Also qualifying will be projects located on critical urban and rural freight corridors, once they are determined. Thus, the definition of critical corridors in the state freight plan update will have an immediate effect on projects eligible for use of formula funds in the investment plan.

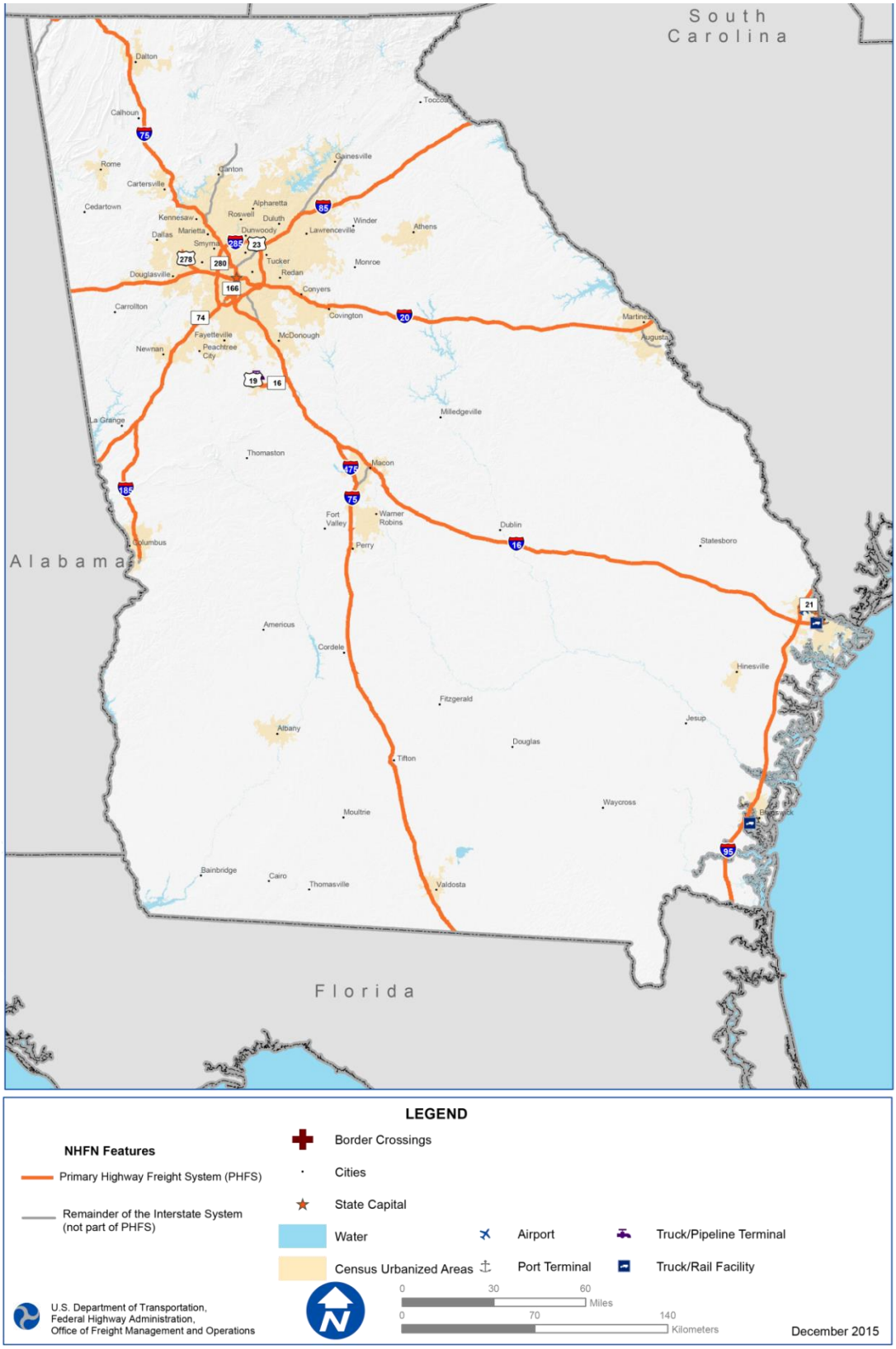
Competitive Grant: The Nationally Significant Freight and Highway Projects Program (NSFHP) provides $4.5 billion for projects of national or regional significance. It is a competitive grant program that is not limited to freight initiatives but is plainly intended to attract them. The inaugural round of grant applications was solicited for submission in April 2016, with $759 million made available nationally. This solicitation coined an alternative name for the NSFHP: Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies, or FASTLANE.

- FASTLANE projects for the most part must cost $100 million or more. Rail and port projects are eligible but are capped at a total of $500 million (affecting their rail and port portions only) over the five years of the FAST Act. There are two further set-asides: 25% of the funds are for rural projects, and 10% of the funds are for small projects, with a minimum project cost that works out to $8.3 million. Grants minimums are $25 million for large projects, and $5 million for small.
- Grant awards will favor multimodal projects and passenger projects that enhance personal mobility and accessibility. The latter includes such freight-relevant considerations as connection to jobs, support to workforce development, and mitigation of negative freight impacts. While the $500 million in rail and port funds are the only portion of FASTLANE that is dedicated to freight, freight improvement is a principal program objective and also should be expected to influence awards. Finally, projects are not required to be multijurisdictional, but the need for a multijurisdictional funding source is another key motivation for the program. Moreover, project selection by US DOT is subject to congressional oversight: the FAST Act establishes a 60-day period during which the Congress may disapprove all or some awards, by joint action of both houses. Awards go into effect if no congressional action is taken. The pragmatic implication of this provision is that projects supported in multiple jurisdictions may have better chances of winning awards simply to assure congressional support.
- The FAST Act creates a National Multimodal Freight Network, incorporating the National Highway Freight Network (NHFN, comprised of the Primary Highway Freight System, the critical urban and rural freight corridors, and the remainder of the interstate system), all Class I railways, major ports and airports, and some other facilities. In Georgia, this network includes CSX and Norfolk Southern rail lines, the ports of Savannah and Brunswick, and HJAIA airport. In favoring multimodal initiatives, FASTLANE awards are not required to consider how projects affect this network, but it is probable that they will.
- To be eligible for FASTLANE, projects must be able to commence construction within 18 months of the obligation of grant funds. In addition, they must be a) a highway freight project carried out on the NHFN; or b) a highway or bridge project carried out on the National Highway System; or c) a rail-highway grade crossing or grade separation project; or d) a freight intermodal, rail or port project. Projects within rail and port facilities must facilitate direct intermodal interchange and improve freight movement on the NHFN. Eligible applicants include individual or groups of: states, MPOs (like ARC) with population exceeding 200,000, local agencies, political subdivisions, ports and special purpose entities.
- Primary selection criteria are economic, mobility, community and environmental, and safety outcomes. Secondary considerations are partnership, innovation, and cost sharing. The federal share is capped at 60% from FASTLANE funds and 80% from all federal sources, but smaller shares will help federal funds go further.
- FASTLANE is a major addition to funds available for freight projects, but it involves nationwide competition. Applications for the 2016 program have been prepared on short notice, with submission deadlines just four months after passage of the FAST Act, and with no prior experience as to how awards will be issued. Future year applications will be substantially different. The 2016 awards will be scrutinized as to the determinants of success – notably as to what proves to qualify for national or regional significance. Projects put forward will be deliberately prepared in content and partnership structure, they may be expressly designed for the program, and they may be targeted to certain years of the five year duration. ARC should make appropriate preparations for the years ahead, both in its

coordination with GDOT and its general approach to partnership. As the freight hub and economic center of the Southeast, metropolitan Atlanta can make a strong case for significance to the region and the country as a whole with projects that reinforce its performance in this role. Some examples of projects in this vein are:

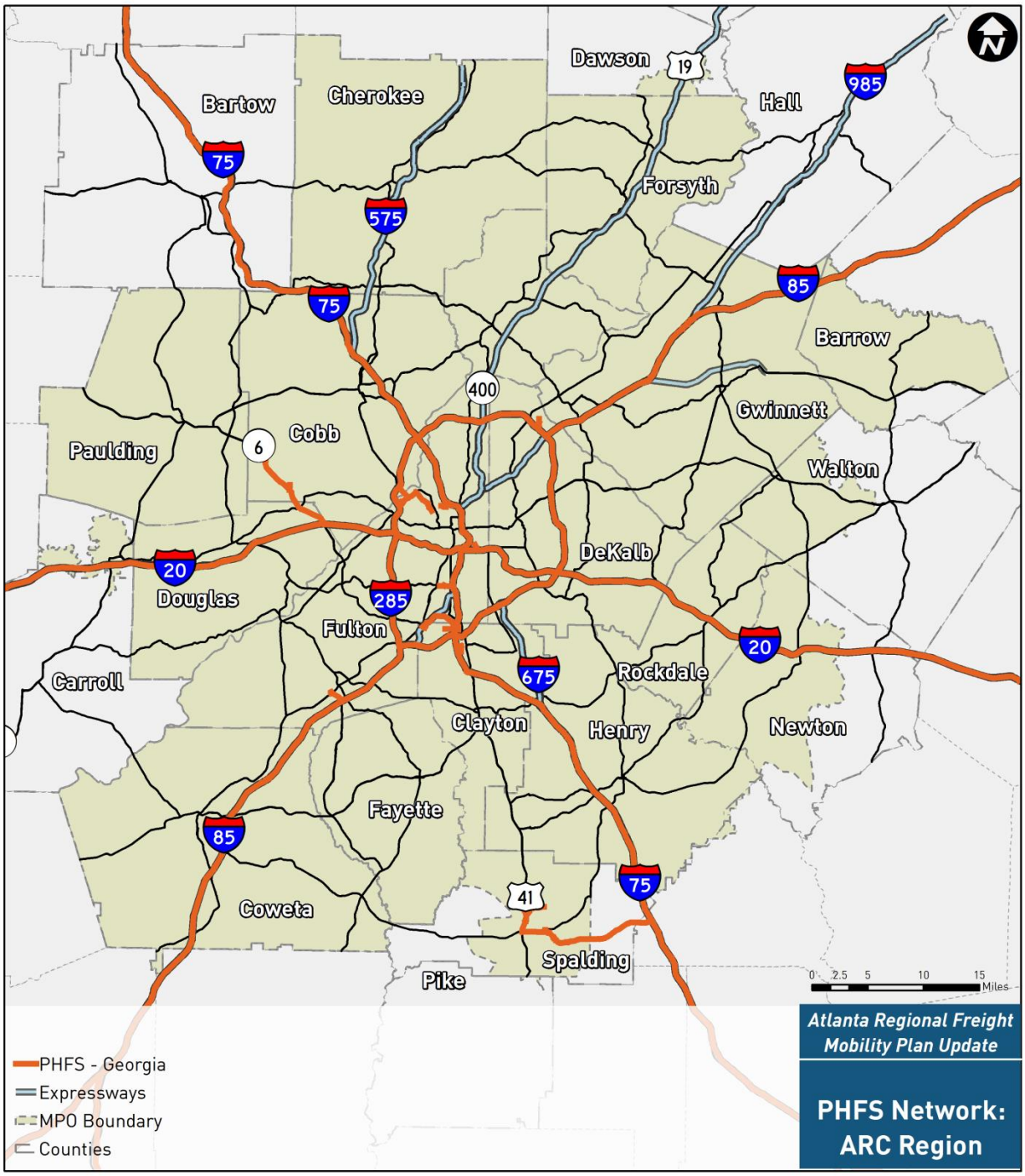
- The new I-75 interchange at Bethlehem Road is a Tier 1 project that appears in the RTP. It qualifies as situated on the NHFN. Its regional significance derives from the position of Henry County as a distribution point for import traffic, due to its location at the turnaround point for trucks operating between the Port of Savannah and Atlanta. Project costs are estimated at $25 million, making this a small project. If it could be tied to a series of improvements between Savannah and Atlanta, and those projects could be packaged as a single corridor initiative focused on trade development, it may graduate to a large project for which more funds are available, and a case for national significance might be made stronger. Stronger yet could be incorporation of CAV applications to raise reliability and safety of truck travel from portside through to Atlanta distribution, clearing urban districts and transiting rural areas along I-16 and I-75.
- The I-285 West/I-20 West interchange has been reported by ATRI as one of the top truck freight bottlenecks in the country, ranked number 26 in their 2015 report. Through freight from Florida, the West and the Midwest converge at this point, because of the restriction of through freight to the perimeter. The Fulton Industrial Boulevard manufacturing and distribution cluster lies adjacent, making this location important for the supply chains of the southeast. All of these factors combine to make a strong case for national and regional significance. A project to reconstruct this interchange and improve access to Fulton Industrial Boulevard is already programmed in the TIP and is slated to receive investment from Georgia's Transportation Funding Act of 2015. GDOT expects the project to reduce travel delay for all traffic by 19%, a quite substantial figure for the large volume of trucks on this route. These further factors mean that the project can meet the requirement to begin construction within 18 months of the obligation of FASTLANE funds, large benefits can be demonstrated, and a substantial contribution for the local share of capital is assured. Since the project already has funding, the effect of a successful FASTLANE application would be to release a portion of that funding for other initiatives.

Figure 8-1: National Primary Highway Freight System in Georgia



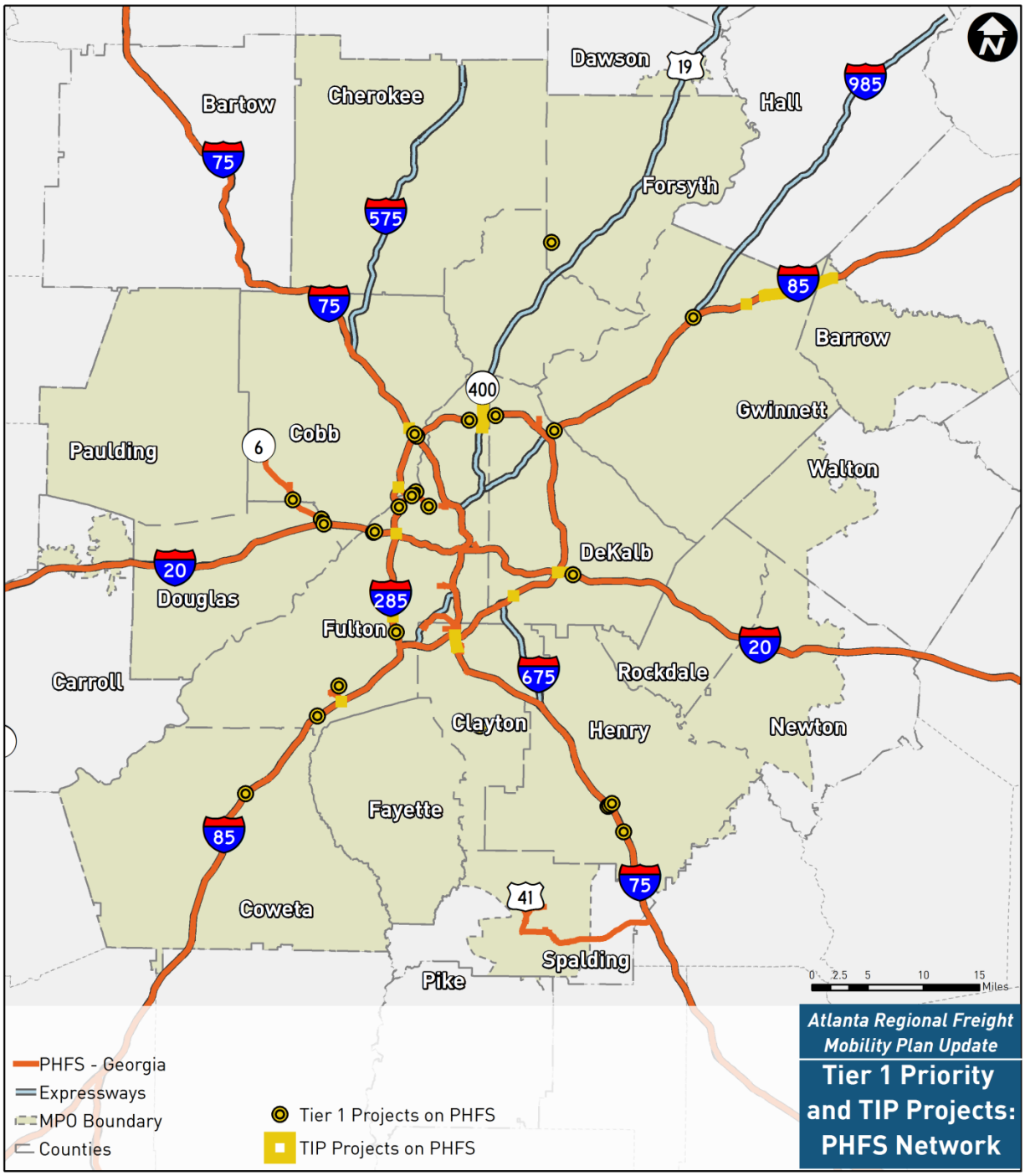
Source: U.S. DOT, Federal Highway Administration

Figure 8-2: National Primary Highway Freight System in ARC Region



Source: U.S. DOT, Federal Highway Administration

Figure 8-3: TIP and Tier 1 Priority Projects on the PHFS



Source: U.S. DOT, Federal Highway Administration, ARC

8.2 TFA 2015

The Georgia Transportation Funding Act (TFA) of 2015 is expected to generate an additional $750 million to-$1.0 billion annually for transportation in Georgia. This revenue increase is derived from fuel-based taxes and several other sources. Detailed further in *The Atlanta Region's Plan* Transportation Element, TFA 2015 is expected to have a marked effect on transportation investment in the state. In addition to its

defined sources of revenue, TFA 2015 authorizes counties and municipalities to establish local gasoline sales taxes up to 3 cents per gallon (reflecting 1% of a maximum pump price of $3.00 per gallon allowed in the calculation), and to enact transportation special purpose local option sales taxes (T-SPLOSTs). While both methods require consensus and action at the local level, they create a mechanism for governments in the ARC region to underwrite projects that otherwise could be beyond their reach. Although none of the funding sources introduced by TFA 2015 are directed to freight, freight projects generally are eligible applications.

In January 2016, Governor Nathan Deal and GDOT representatives released a comprehensive infrastructure maintenance plan made possible through the Transportation Funding Act of 2015. The announcement included an 18-month project list, representing a $2.2 billion investment, and a 10-year list, representing more than $10 billion in investment. These project lists include maintenance/ resurfacing projects, bridge projects, new roadway capacity, and other projects throughout the state of Georgia, including in the Atlanta region.

A unique freight project proposed in this announcement consists of truck only lanes parallel to I-75 from Macon to the southern portion of Henry County. The lanes, as currently proposed, would go northbound only and would not be tolled. The majority of this segment is outside of the ARC region, however the Henry County portion of these lanes are within the Atlanta region. Detailed information about this proposed project was not available during development of the Atlanta Regional Freight Mobility Plan. However, GDOT is conducting further analysis on this and other proposed projects statewide, and ARC will continue to work with GDOT to learn more about the proposed projects in the Atlanta region.

8.3 CID Assessments

The proliferation of Community Improvement Districts is one of the notable developments in Metro Atlanta in recent years. CIDs are a mechanism for funding local public services including transportation systems by means of a limited levy on the assessed value of non-residential real estate. Tax revenues from this source can be leveraged for bonded debt. Although CID tax funding is not a new source of potential revenue, the growth of CIDs means more of the ARC region could have such funds available. CID dollars also could dovetail with new local taxes enabled by TFA 2015, leading to a larger pool of funds for localities that can agree to create them. Like TFA 2015 funds, CID dollars are not focused on freight but can be used for freight applications. Nevertheless, CIDs with significant freight activity who have embraced this role may raise funds with freight purposes in mind; examples of this are the South Fulton and Boulevard CIDs.

8.4 Public Private Partnership (P3)

Opportunities for partnership with the private sector are available in freight, and have had notable applications in railroad projects and commercial development. They typically involve a division of project risk between the public and private parties, and a definition of benefits to both sides. Revenue streams to the private partner are a basic requirement. In rail projects, this can be met from freight charges, in real estate from rents, and in road projects from user fees such as tolls.

The timeline for project implementation has a crucial effect on the prospects for success. Private costs of capital run between seven and eight percent, according to a prominent national developer. If a project drags out five years or more before it begins to earn returns, the compounded cost of capital makes it uncompetitive with alternative investments that earn returns faster. The implication is that public projects with extended timelines cannot attract private funds. Provisions in the FAST Act for federal permitting improvement and acceleration of project delivery address this problem at the national level, and similar actions locally such as ARC's project implementation task force would improve the regional

outlook. Private participation in FASTLANE applications also may strengthen the case for national significance and economic importance, as well as improving the competitiveness of the cost share profile.

APPENDIX A

Appendix A-1 - Tier 1 Freight Projects (unranked)

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
Cap_09	Fulton	I-285 Interchange	I-285 at Bolton Road	Provide a new connection to I-285 just South of the Chattahoochee River crossing at Bolton Road. Redesign the I-285 as a full interchange. Add a connection to provide direct connection off Atlanta Industrial Way to I-75 via Bolton Road	Roadway / General Purpose Capacity	Cargo Atlanta Study	$ 35,160,000
GW-394	Gwinnett	SR 316 Interchange	At US 29	SR 316 Interchange	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 44,000,000
AR-958	DeKalb	I-285 / I-85 North Interchange Improvements	At I-285 Eastbound To I-85 Northbound Direction (In Vicinity Of Pleasantdale Road Exit)	Revive 285 - I-285 / I-85 North Interchange Improvements	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 24,300,000
Op-04	Fulton	Bolton Road/Marietta Rd	Northwest Corridor	Add Northbound left-turn lanes and Eastbound right-turn capacity on Bolton Road and Marietta Road intersection	Intersection Modification	Cargo Atlanta Study	$ 600,000
Op-17	Fulton	I-20 East Bound Ramp Intersection Improvements	I-20 at Fulton Industrial Boulevard	Turn radii modifications and median repairs to accommodate larger freight vehicles	Intersection Modification	Fulton Industrial Blvd Study	$ 180,000
Op-18	Fulton	I-20 West Bound Ramp Intersection Improvements	I-20 at Fulton Industrial Boulevard	Turn radii modifications and median repairs to accommodate larger freight vehicles	Intersection Modification	Fulton Industrial Blvd Study	$ 190,000
Op-27	Gwinnett	Jimmy Carter Blvd at Buford Hwy Continuous Flow Intersection (CFI)	Jimmy Carter Blvd at Buford Hwy	The Continuous Flow Intersection (CFI) is an innovative and cost effective solution to improving the LOS and delays at this intersection. The project will pull out left turns in advance of the intersection, allowing left turns and through movements to happen simultaneously.	Intersection Modification	TIP Solicitation	$ 1,480,000
Cap_26	Clayton, Fulton	SR 6 (Camp Creek Parkway) Widening	From I-285 West To I-85 South	SR 6 (Camp Creek Parkway) Widening	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 45,670,000
Cap_27	Gwinnett	SR 8	From SR 124 to SR 316	Widen to four lanes	Roadway / General Purpose Capacity	ASTRoMaP Study	$ 38,670,000
GW-364	Gwinnett	SR 20 (Buford Drive) Widening	From SR 124 (Braselton Highway) To Hurricane Shoals Road	SR 20 (Buford Drive) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 16,400,000
GW-371	Gwinnett	SR 140 (Jimmy Carter Boulevard) Widening	From SR 13 (Buford Highway) To SR 141 (Peachtree Industrial Boulevard)	SR 140 (Jimmy Carter Boulevard) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 15,300,000
Cap-38	Gwinnett	SR 316 EB	From I-85 to Sugarloaf Parkway	Auxiliary lane	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 21,900,000
FS-003	Fulton	SR 70 (Fulton Industrial Boulevard) Widening	From SR 6 (Camp Creek Parkway) To James Aldredge Boulevard	SR 70 (Fulton Industrial Boulevard) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 3,770,000

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
AR-959	Cobb	I-75 North / I-285 Interchange Improvements	At I-75 Northbound To I-285 Westbound Flyover Ramp	Revive 285 - I-75 North / I-285 Interchange Improvements	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 10,000,000
AR-960	Cobb	I-75 North / I-285 Interchange Improvements	At I-75 Southbound To I-285 Westbound Flyover Ramp	Revive 285 - I-75 North / I-285 Interchange Improvements	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 28,000,000
Op-93	Fulton	Marietta Rd	Inman and Tilford Yard	Replace bridge due to weight restrictions	Bridge Upgrade	ARC	$ 5,160,000
Cap-31	Henry	New Connection	Between SR 20 and SR 81	Improved connection between SR 20 West in the vicinity of Westridge Industrial Parkway to I-75 at a new interchange and extending east across SR 42 to SR 81 East.	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 121,650,000
CL-012	Clayton	US 23 (Moreland Avenue) Widening	From Lake Harbin Road To Anvil Block Road	US 23 (Moreland Avenue) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 43,494,704
Cap_03	Fulton	Donald Lee Hollowell	From Hamilton Holmes west to I-285	Widen DL Hollowell from two lanes to five lanes to accommodate transit from Hamilton Holmes to I-285, approximately 1.25 miles	Roadway / General Purpose Capacity	Cargo Atlanta Study	$ 16,550,000
FN-AR-203	Fulton	I-285 North Interchange Improvements	At SR 9 (Roswell Road)	Revive 285 - I-285 North Interchange Improvements	Roadway / Interchange Upgrade	ARC Regional Transportation Plan (RTP)	$ 47,900,000
Op-95	Henry	SR 155	I-75	I-75 at SR 155 interchange reconstruction to provide additional through lane capacity on SR 155 and improvements to the I-75 ramps	Roadway / Operations & Safety	ARC	$ 34,300,000
Op-05	Fulton	Bolton/Hollywood	Northwest Corridor	Add left-turn lane capacity at the Bolton Road at Hollywood Road intersection and Rebuild Intersection.	Intersection Modification	Cargo Atlanta Study	$ 1,510,000
Op-105	Fulton	SR 6	Fulton Industrial Boulevard	Intersection operational improvements	Intersection Modification	SR 6 Corridor Study	$ 20,000
Op-15	Fulton	Fulton Industrial Boulevard	Fulton Industrial Boulevard at Cascade Road Intersection Improvement	This project would add a channelized right turn lane from Cascade Rd to Eastbound FIB, add a dedicated left turn lane from Great SW Pkwy to Eastbound FIB, improve turning radii for all turning movements in the intersection to accommodate WB-65 truck trailers, add raised pedestrian refuge islands, add new painted pedestrian crosswalks at the intersection, and add new sidewalk in the remaining SW quadrant that is currently lacking.	Intersection Modification	TIP Solicitation	$ 1,030,000
AR-955	Henry	I-75 South - New Interchange	At Bethlehem Road	I-75 South - New Interchange	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 25,000,000
FS-017A	Fulton	I-285 South Interchange Improvements	At Washington Road	I-285 South Interchange Improvements	Roadway / Interchange Upgrade	ARC Regional Transportation Plan (RTP)	$ 4,500,000

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
Op-92	DeKalb	Wesley Chapel	I-20	Add free-flowing RTL on I-20 WB ramp.	Intersection Modification	ASTRoMaP Study	$ 5,380,000
Cap_17	Coweta, Fulton	I-85 South Collector Distributor Lanes	From SR 74 To Collinsworth Road	I-85 South Collector Distributor Lanes	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 92,030,000
Cap_24	Henry	SR 20	SR 155, SR 81	Construct by-pass around city	Roadway / General Purpose Capacity	ASTRoMaP Study	$ 59,500,000
Op-71	Clayton, Cobb, Douglas, Fulton, Paulding	SR 6	SR 61 to I-85; ITS truck sensors at 5 locations	Widen outside lane in both Directions to 13 feet, with Truck ITS application	Roadway / Operations & Safety	SR 6 Corridor Study	$ 2,440,000
Op-97	Fulton	Marietta Rd	W Marietta Street to CSX RR bridge	Operational improvements to include paved shoulders, a two-way left-turn lane, lighting, to improve truck access to intermodal facilities.	Roadway / Operations & Safety	ARC	$ 6,600,000
Op-98	Rockdale	SR 138	SR 138 at Old Covington Rd	Improve turning radii	Intersection Modification	Stakeholder Input (Survey)	$ 1,080,000
Cap_05	Fulton	Huff Road Intersection	From Trabert Road to Huff Road	Design dedicated turn lanes at 17th Street and Huff Road. Eliminate Southbound travel lane on Howell Mill Road. Redesign Huff Road to 3-lane Road between Marietta Boulevard and Howell Mill Road	Intersection Modification	Cargo Atlanta Study	$ 6,500,000
Op-103	Douglas	SR 6	Oak Ridge Road/Skyview Drive	Intersection operational improvements	Intersection Modification	SR 6 Corridor Study	$ 350,000
Op-104	Douglas	SR 6	I-20	Interchange operational improvements	Intersection Modification	SR 6 Corridor Study	$ 110,000
Op-48	Henry	SR 155	SR 42	replace signal with roundabout	Intersection Modification	ASTRoMaP Study	$ 1,250,000
Op-82	Fulton	SR 92	CSXT RR in Fairburn	Option #1: Redirect trucks approximately 1000 ft to the South of this crossing to the Senoia Rd at-grade crossing over CSXT RailRoad then direct traffic along E. Broad Street to SR 92. Option #2: Redirect traffic to SR 138 to Oakley Industrial Blvd then to SR 92. Add Oakley Industrial Blvd to the State Route system. Remove the portion of SR 92 that crosses the CSXT RailRoad in downtown Fairburn from the state route system.	Roadway / Operations & Safety	ASTRoMaP Study	$ 14,600,000
Cap_25	Cobb, Fulton	SR 280 (South Cobb Drive)	From SR 5 (Atlanta Road) In Cobb County To SR 70 (Bolton Road) In City Of Atlanta	SR 280 (South Cobb Drive)	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 80,730,000
Cap_07	DeKalb	I-20 East Collector/Distributor Lanes	From Columbia Drive To Evans Mill Road	I-20 East Collector/Distributor Lanes	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 67,610,000
DK-400	DeKalb	I-285 North Bridge Replacement And Interchange Improvements	At Ashford Dunwoody Road	Revive 285 - I-285 North Bridge Replacement And Interchange Improvements	Roadway / Interchange Upgrade	ARC Regional Transportation Plan (RTP)	$ 302,000,000

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
Op-96	Henry	SR 155	I-75	Intersection operations improvements on SR 155 at I-75 SB ramps, at I-75 NB ramps, and at King Mill Road.	Roadway / Operations & Safety	ARC	$ 3,300,000
AR-961	Coweta	I-85 South - New Interchange	At Amlajack Boulevard (Includes Madras Connector)	I-85 South - New Interchange	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 50,000,000
GW-269	Gwinnett	SR 124 (Scenic Highway) Widening	From US 78 (Main Street) To SR 864 (Ronald Reagan Parkway)	SR 124 (Scenic Highway) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 39,309,509
Cap_29	Fulton	SR 92 Widening	From SR 14 Spur (South Fulton Parkway) To SR 70 (Fulton Industrial Boulevard)	SR 92 Widening	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 37,070,000
AR-301	Douglas	US 78 Operational And Safety Improvements In Douglas County	From SR 6 (Thornton Road) To SR 92	US 78 Operational And Safety Improvements In Douglas County	Roadway / Operations & Safety	ARC Regional Transportation Plan (RTP)	$ 20,000,000
Op-100	Fulton	SR 6	East of I-285	Changeable message sign	Roadway / Operations & Safety	SR 6 Corridor Study	$ 260,000
Op-64	Gwinnett	SR 316	Harbins Road	Replace at-grade inter with overpass or diamond	Roadway / Interchange Upgrade	ASTRoMaP Study	$ 209,250,000
Cap_30	Fulton	US 29 (Roosevelt Highway)	From SR 279 (Old National Highway) To SR 14 Spur (South Fulton Parkway)	US 29 (Roosevelt Highway)	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 20,260,000
Op-102	Cobb	SR 6	US 278/78	Intersection operational improvements	Intersection Modification	SR 6 Corridor Study	$ 320,000
Op-74	Gwinnett	SR 8	Hosea Rd	Increase intersection radii	Intersection Modification	ASTRoMaP Study	$ 120,000
Op-81	Fulton	SR 9	Old Milton Parkway	Add double left-turn lanes/replace with roundabout	Intersection Modification	ASTRoMaP Study	$ 630,000
FN-145	Fulton	Commerce Parkway Extension - New Alignment	From Old Roswell Road To SR 140 (Holcomb Bridge Road)	Commerce Parkway Extension - New Alignment	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 8,600,000

Appendix A-2 - Tier 2 Freight Projects (unranked)

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
Cap_28	Walton	SR 81	from Loganville to Walnut Grove	Capacity and operational improvements	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 89,310,000
RO-235A	Rockdale	Sigman Road Extension / Hayden Quarry Road - New Alignment	From Dekalb County Line To I-20 At Sigman Road	Sigman Road Extension / Hayden Quarry Road - New Alignment	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 18,088,000
RO-242A	Rockdale	SR 20 (Loganville Highway) Widening	From Sigman Road To Pleasant Hill Road	SR 20 (Loganville Highway) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 96,023,550
GW-020D	Gwinnett	SR 20 (Buford Drive) Widening	From I-85 North To Rock Springs Road	SR 20 (Buford Drive) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 14,281,187
Op-47	Henry	SR 155	Capwelch Dr	Add NB left-turn lane	Intersection Modification	ASTRoMaP Study	$ 270,000
Op-69	Clayton	SR 54	SR 3	Improve intersection radii	Intersection Modification	ASTRoMaP Study	$ 870,000
Op-75	Douglas	SR 8	SR 92	Increase Intersection Radii	Intersection Modification	ASTRoMaP Study	$ 520,000
Op-80	Fulton	SR 9	Bethany Bend	Increase SB right-turn radius, add right-turn lane	Intersection Modification	ASTRoMaP Study	$ 230,000
Op-83	Douglas	SR 92	Broad Street	Move utilities and increase intersection radii	Intersection Modification	ASTRoMaP Study	$ 460,000
Op-03	Fulton	Bolton Road Diet	Northwest Corridor	Reduce Bolton Road through median widening from 4 lanes to 2 lanes from James Jackson Pkwy to Browntown Road, approximately 3,400 feet	Roadway / Operations & Safety	Cargo Atlanta Study	$ 1,990,000
Op-46	Henry	SR 155	Ashley Oaks Dr/Pinnacle Lane	Add left turn lanes	Intersection Modification	ASTRoMaP Study	$ 300,000
Op-52	Gwinnett	SR 20	West Broad Street/ Sycamore Rd	Left turn lane on SR 20 WB	Intersection Modification	ASTRoMaP Study	$ 860,000
Op-77	Walton	SR 81	SR 20, US 78, Tom Brewer Rd, Youth Monrow Rd / Center Hilss Church Rd, SR 138	Add turn lanes and signal upgrades at key intersections along SR 81 in lieu of complete widening.	Roadway / Operations & Safety	Stakeholder Input (Survey)	$ 4,300,000
AR-962	Gwinnett	I-85 North	At I-985 - New Flyover Ramp	I-85 North	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 62,500,000
Op-89	Fulton	US 78	Northside to I-285	Add center dual left turn lane	Intersection Modification	ASTRoMaP Study	$ 23,230,000
Op-39	Walton	SR 138 at West Spring Street intersection improvements	SR 138 at West Spring Street	Additional thru lane	Intersection Modification	Stakeholder Input (Survey)	$ 1,080,000
Cap-39	Barrow	West Winder Bypass project	From SR 211 to SR 316	Provides two bridges, one over the railroad tracks and the other over SR 316; connect SR 211 to SR 316	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 48,360,000
FT-001E	Forsyth	SR 9 (Atlanta Road / Pilgrim Mill Road)	From SR 20 (Buford Highway) To SR 306 (Keith Bridge Road)	SR 9 (Atlanta Road / Pilgrim Mill Road): Segment 5 - Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 11,757,000
FT-313	Forsyth	SR 20 Widening	Fm SR 371 To SR 400	SR 20 Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 180,727,280
BA-010	Barrow	SR 316 - New Interchange	At SR 211 (Bethlehem Road)	SR 316 - New Interchange	Roadway / Interchange Capacity	ARC Regional Transportation Plan (RTP)	$ 19,200,000

ID	County	Road	Location	Description	Project Type	Source	Planning Level Cost
Cap_16	Fulton	I-85 South	At Gullatt Road - New Interchange	I-85 South - New Interchange	Roadway / Interchange Capacity	RTP 2040 - Aspirations Plan	$ 34,300,000
Cap_21	Rockdale	SR 138 (Stockbridge Highway)	From East Fairview Road To Ebenezer Road / Stanton Road	SR 138 (Stockbridge Highway)	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 37,220,000
Cap-36	Coweta	Amlajack Boulevard Extension	From Amlajack Boulevard Termini to Coweta Industrial Parkway	New 2-lane roadway	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 20,080,000
Cap-37	Coweta	Hollz Parkway Extension	From Hollz Parkway Termini to Amlajack Boulevard Extension	New 4-lane roadway	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 31,620,000
Op-43	DeKalb	SR 155	Browns Mill Road	Lengthen Right turn lane	Intersection Modification	ASTRoMaP Study	$ 620,000
Op-35	Gwinnett	SR 13 (Buford Highway)	Between Woods Creek Ln and Roberts Elementary School	Widen Shoulder, add guardrail	Roadway / Operations & Safety	ASTRoMaP Study	$ 550,000
Cap-32	Coweta	SR 34 Bypass	From SR 34 (Franklin Highway) to US 27 Alt/SR 16 (Carrollton Highway)	Widening 2 to 4 lanes	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 15,370,000
Cap-33	Coweta	Southwest Newnan Bypass	From US 29 to Smokey Road at Ishman Ballard Road	New 4-lane roadway	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 92,920,000
Cap-34	Coweta	Coweta Industrial Parkway Extension	Coweta Industrial Parkway terminus to Amlajack Boulevard Extension	New 2-lane roadway	Roadway / General Purpose Capacity	Stakeholder Input (Survey)	$ 18,730,000
WA-002	Walton, Rockdale	SR 20 (Conyers Road / Loganville Highway) Widening	From Pleasant Hill Road In Rockdale County To North Sharon Church Road In Walton County	SR 20 (Conyers Road / Loganville Highway) Widening	Roadway / General Purpose Capacity	ARC Regional Transportation Plan (RTP)	$ 69,886,390
Op-53	Gwinnett	SR 20	Suwanee Dam Road	Add right-turn lanes on EB and WB approaches	Intersection Modification	ASTRoMaP Study	$ 860,000
Op-79	Forsyth	SR 9	Grassland Pkwy	Increase Radii, add right-turn lane to SR9 SB	Intersection Modification	ASTRoMaP Study	$ 330,000
Op-49	Spalding	SR 155	Jackson Rd	Replace 4-way stop with roundabout	Intersection Modification	ASTRoMaP Study	$ 1,160,000
Op-94	Walton	SR 138	Youth Jersey Rd, SR 11 / N Broad St / Double Springs Church Rd	Add turn lanes and signal upgrades at key intersections along SR 138 in lieu of complete widening.	Intersection Modification	Stakeholder Input (Survey)	$ 4,300,000
Cap_22	Rockdale	SR 138 (Walnut Grove Road)	From Dennard Road To Miller Bottom Road	SR 138 (Walnut Grove Road)	Roadway / General Purpose Capacity	RTP 2040 - Aspirations Plan	$ 23,220,000
Op-101	Paulding	SR 61-Nathan Dean Parkway	Windale Road	Intersection operational improvements	Intersection Modification	SR 6 Corridor Study	$ 2,030,000
Op-45	Henry	SR 155	Camp Creek Drive	Add Southbound left turn lane	Intersection Modification	ASTRoMaP Study	$ 340,000
Op-73	Douglas	SR 8	Conners Rd	Add right turn lane and increase radii	Intersection Modification	ASTRoMaP Study	$ 260,000
Op-99	Coweta	US 29 / Alt 27 US 29 Railroad Street US 29/27A	From I-85 to Airport Road	Operational Upgrade, i.e. safety improvements, shoulder improvements, intersection radii improvements, addition of sidewalks or bike lanes, etc.	Roadway / Operations & Safety	Stakeholder Input (Survey)	$ 2,800,000

APPENDIX B

ARC Atlanta Region Freight Mobility Plan Update - Online Questionnaire Raw Results

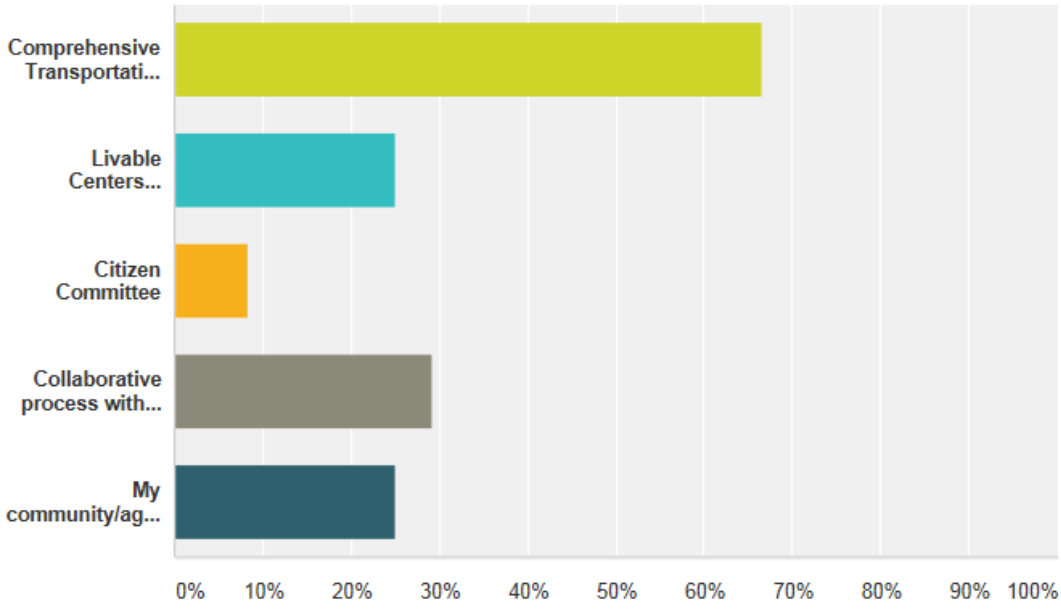
Question 1: Name and Agency

27 total respondents

	Agency
1	Forsyth County
2	Paulding County DOT
3	City of Dallas
4	Fulton County Department of Public Works
5	City of Dunwoody
6	City of Hampton
7	Walton County / Precision Planning, Inc.
8	Coweta County
9	Gwinnett County
10	Cherokee County
11	City of Johns Creek
12	Clayton County DOT
13	City of Snellville – Economic Development
14	Douglas County Department of Transportation
15	Barrow County Board of Commissioners
16	City of Johns Creek
17	City of Norcross
18	Cartersville-Bartow MPO
19	City of Newnan
20	City of Buford
21	Rockdale County DOT
22	Evermore CID
23	City of Stone Mountain
24	City of Locust Grove
25	City of Sandy Springs
26	Henry County Planning & Zoning
27	Henry County DOT

Question 2: If your community/agency currently has freight-specific transportation policies or projects, please indicate how they are identified? (Select all that apply)

Answered: 24 Skipped: 3

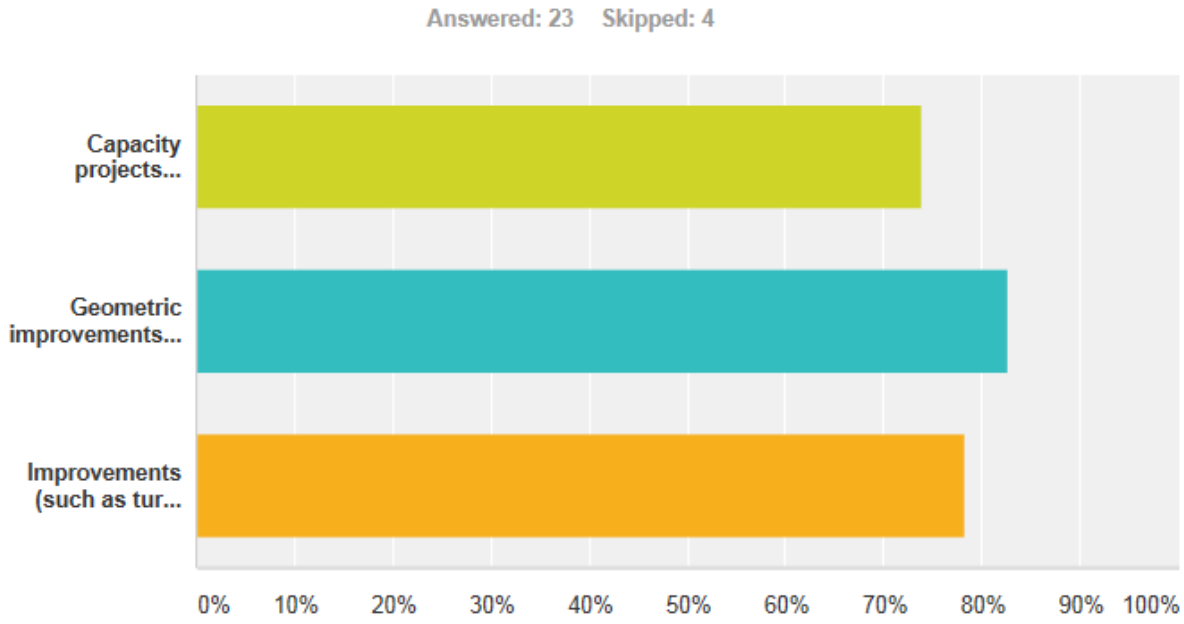


Answer Choices	Responses (%)
Comprehensive Transportation Plan (CTP) process	66.67%
Livable Centers Initiative (LCI) Planning process	25.00%
Citizen Committee	8.33%
Collaborative process with freight community	29.17%
My community/agency does not currently have freight-specific transportation policies or projects.	25.00%

Comments:

- Henry County has identified transportation policies that will benefit both residents and the freight community.
- We have proposed projects for future roadway widening which would assist with freight as well as a Feasibility Study for a new interchange that would certainly assist with freight mobility; additionally, there are references to policies/goals in our current CTP.
- US-78 has been designated as an A-to-A Freight Corridor.
- Truck Routes approved by city council.
- I-85 at Amlajack Blvd Interchange Justification Report (IJR) approved by FHWA in 2012.
- The Gwinnett County Department of Transportation's Traffic Control Center (TCC) views real-time traffic along major corridors and can identify and react to major incidents which may affect freight traffic. The GC Smart Commute website provides public access to our traffic cameras. Linking it to the state's Georgia Navigator system expanded the usefulness of both sites. The goal is to improve traffic flow using real-time information to reduce bottlenecks, adjust traffic signals, and warn motorists early. Gwinnett County also maintains and publishes a Truck Route map.

Question 3: What type(s) of project(s) has your community considered to address freight-related issues? (Select all that apply)

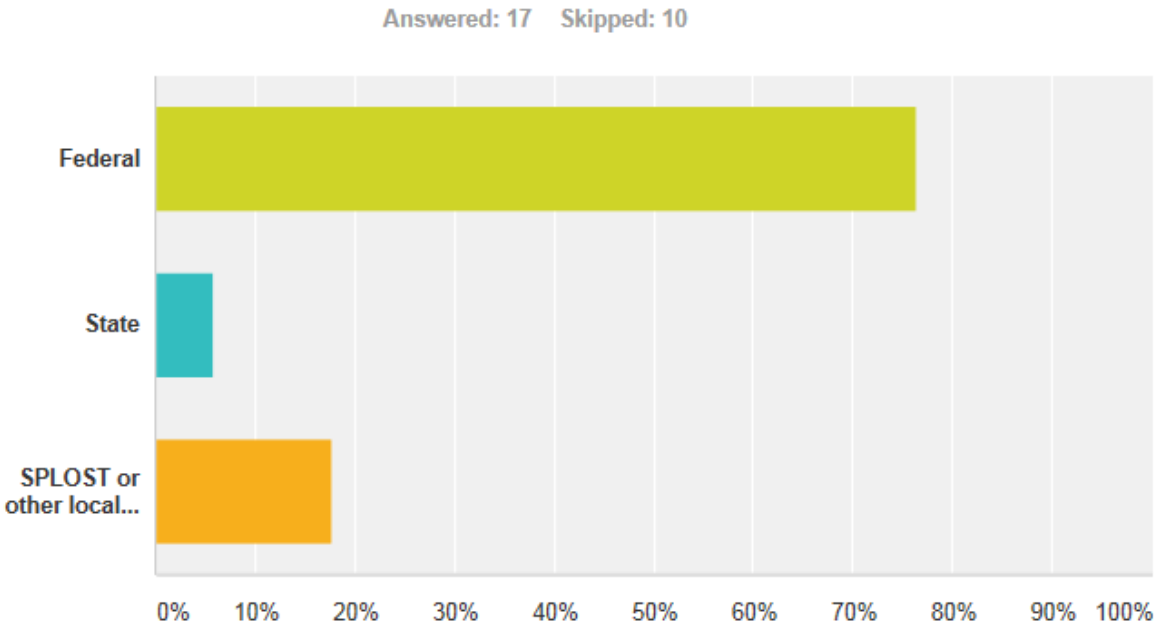


Answer Choices	Responses (%)
Capacity projects (additional lanes or new facilities)	73.91%
Geometric improvements (turning radii, shoulder width)	82.61%
Improvements (such as turn lanes, signal timing)	78.26%

Comments:

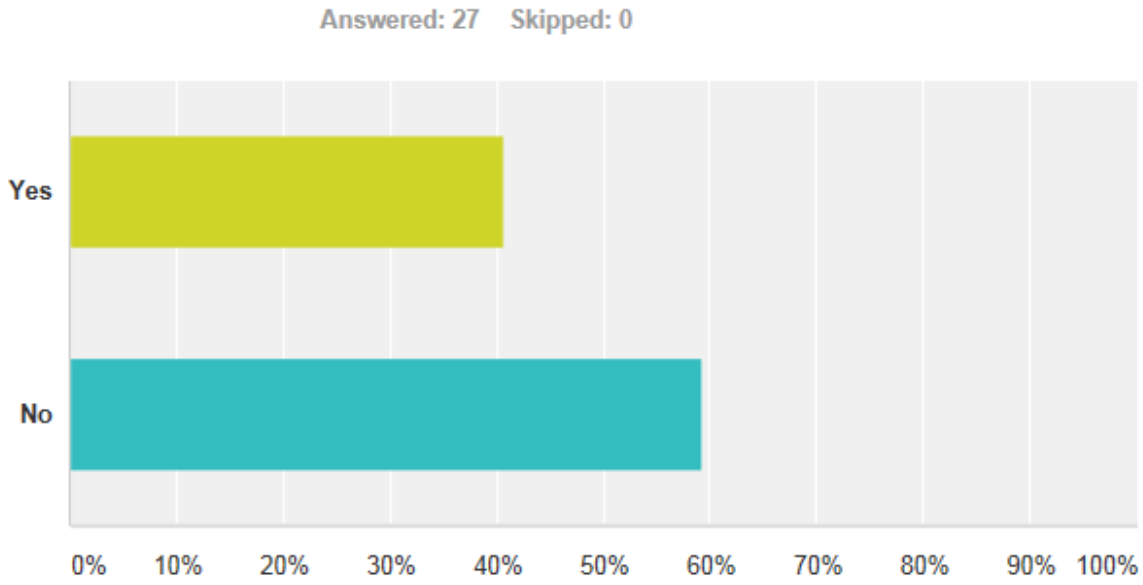
- Generally speaking, the projects we have considered and implemented were not driven by freight-related issues; rather the goal was to improve mobility for all users.
- None
- TBD as we develop the MPO's first LRTP and TIP.
- Generally completed by developers through local code or DRI review requirements.
- We currently are engaged in completing a parallel collector road north of US-78. It extends 4.2 miles and will service major commercial and industrial parcels. Because of narrow lanes and many businesses along the corridor, we believe that this method is much more cost effective in the long run.
- Almost all Gwinnett DOT projects follow GDOT and AASHTO design requirements and accommodate the turning and storage needs of large freight vehicles.

Question 4: If there are freight projects in your current program, what is their primary funding source? (Select one)



Answer Choices	Responses (%)
Federal	76.47%
State	5.88%
SPLOST or other local funding source	17.65%

Question 5: Have you implemented a freight-related project in the last five years?



Answer Choices	Responses (%)
Yes	40.74%
No	59.26%

Comments:

- Realignment of King Mill Road was completed as required by a GRTA condition of approval for DRI #2035.
- King Mill Road Realignment east of SR 42 was required as part of GRTA NOD 2035; additionally; it was previously programmed as a HC SPLOST project for realignment for improved access to SR 42.
- Widening sections of Old Alabama Road and Jones Bridge Road.
- Though not specifically geared toward freight movement, multiple projects have or will soon improve freight mobility in the area. Some examples are:
  - Garden Walk Boulevard Extension between SR 85 and Upper Riverdale Road (completed)
  - Panola Road widening (under construction)
  - Clark Howell Highway at Forest Parkway realignment (under construction)
  - Intersection improvement at North Parkway and Forest Parkway (completed)
  - Host of signal timing/upgrade projects
- Additionally, PI 0001817, CW Grant grade separation at NS Railroad/SR 3 (Old Dixie) is currently under construction. That project will significantly improve freight movement in and around the vicinity of the Atlanta Airport – Mountain View area.
- The West Winder Bypass project with Phase 1 scheduled for construction in 2018; intersection improvement for Ed Hogan Road at Bankhead Highway construction scheduled for 2016.
- Holcomb Bridge Road RR Crossing Study – Scoping study to create a project to address the short vertical curve over the Norfolk-Southern RR crossing.
- Improvement of Cass-White/CR 1690 with its intersection at US 411, including relocation of the railroad bridge.

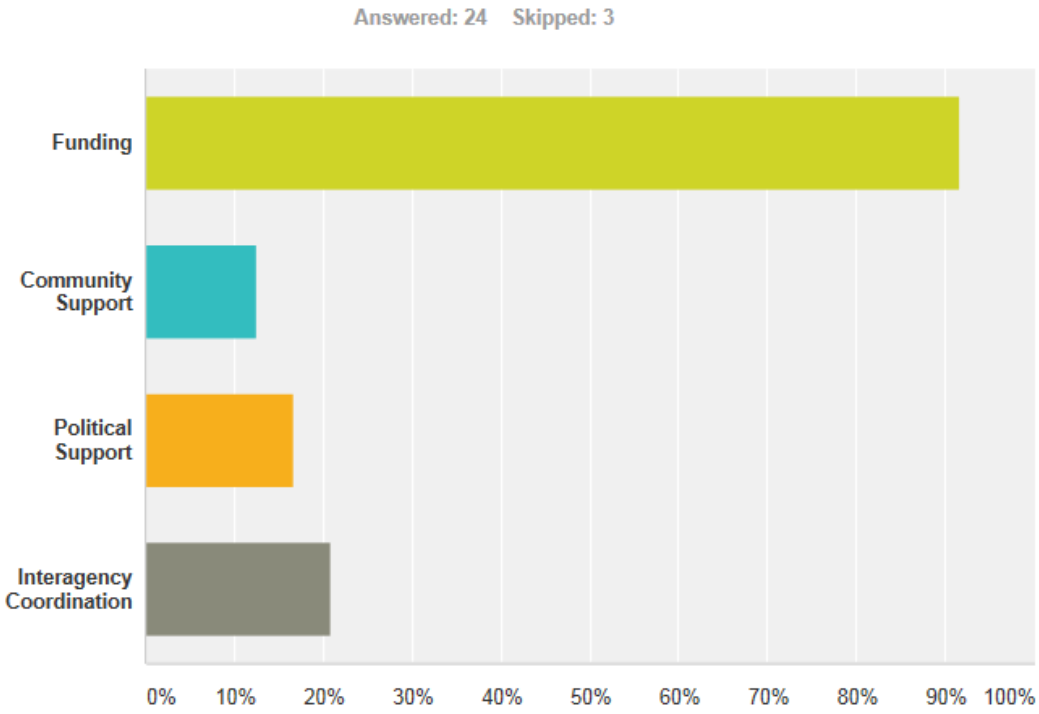
- However, we have a widening project in the design phase that was adjusted to accommodate freight concerns. The Sigman Road Widening project consists of four phases; one of which has been completed and three phases remaining. We are incorporating a multi-use path along the arterial corridor to accommodate bicyclists outside the travel lanes due to the high volume of truck traffic that currently uses this corridor and is expected to increase even more once the widening is completed. There are large industrial and manufacturing establishments along Sigman Road that generate a large truck volume to bring materials in and move the manufactured freight out.
- The A to A project was initiated by ARC and GDOT, with input from the CID and other partners.
- Charlotte Rowell Boulevard/SR 138 Extension, Social Circle Bypass - Phase II, SR 138 @ West Spring Street Intersection Improvements (add thru lane)
- Construction is currently underway on the Newnan SE Bypass Extension from Turkey Creek Road to SR 16 (4-lanes), the associated SR 16 widening (4-lanes) and the US 29 at Pine Road intersection improvements (all 3 projects were sponsored by Coweta County and let together by GDOT. CST will be completed June 30, 2016). These projects will allow for more efficient movement of freight-related traffic around the city of Newnan.
- Completed extension of McGinnis Ferry Road, from Satellite Boulevard to Lawrenceville Suwanee Road; completed widening of SR 20 from east of Lawrenceville to Loganville; completed to major new interchanges on SR 316, at Collins Hill Road and at SR 20.

Question 6: What is the most important freight investment that your community/agency could make?

Comments:

- The completion of a new interchange serving the area between Exits 216 and 212 along I-75.
- Obtaining approval and funding for implementation of new interchange between Exits 216 and 212.
- More capacity and operational improvements on SR 141 & SR 120.
- The CW Grant project, 0001817 ends at the Conley Rd / I-285 Bridge. The Conley Rd bridge over I-285 will still need to be reconstructed and the remaining section of Conley Rd between I-285 and SR 54 (Jonesboro Rd) will need to be widened in order to fully develop the original concept. Also, the anticipated redevelopment of Ft. Gillem military base will generate additional freight volumes in the area. We are looking at ways to further improve the Conley Rd corridor and create a new connection to the base and I-675. See TIP project CL-264 Conley Road Extension Feasibility Study.
- SR 6 Freight Recommendations cited in the Connect 6 Corridor Study and an overall countywide freight study and truck routing plan.
- The West Winder Bypass which would provide two bridges, one over the railroad tracks and the other over SR 316. Would connect SR 211 to SR 316.
- Additional capacity.
- Improved geometry over Norfolk Southern Railroad at crossings.
- Addition of I-75 interchange that ties directly into US 411; Improvements to interchanges along I-75 at Cass-White/CR 1690 and Old Allatoona Road/CR 63107.
- Infrastructure improvements that expedite shipping to interstates, e.g. widening projects, interstate ramps, etc.
- Funding the three phases of the Sigman Road widening project would help significantly in the movement of freight in Rockdale County and the City of Conyers. The existing major manufacturing establishments that Sigman Road would serve include Solo Cup, Pratt Industries, Golden State Foods, Hill-Phoenix, and many others.
- As stated, about $28M for the parallel system.
- Alternate interchange north of City limits to serve the growing warehouse/distribution facilities between McDonough and Locust Grove.
- Eliminating bottle necks along SR 400 and SR 369 to improve mobility of truck traffic.
- Truck lanes on SR 6 through the urban area of the County.
- Turn lanes.
- Southern States is rerouting its freight to enter and leave the city via Oak Street from US 19/41.
- Providing additional capacity/congestion relief along the SR 81 corridor from Loganville to Walnut Grove.
- I-85 at Amlajack Interchange and the connecting roadway network.
- Additional grade separations along SR 316 and additional capacity on I-85.

Question 7: What is the biggest barrier to implementing this investment? (Select all that apply)?

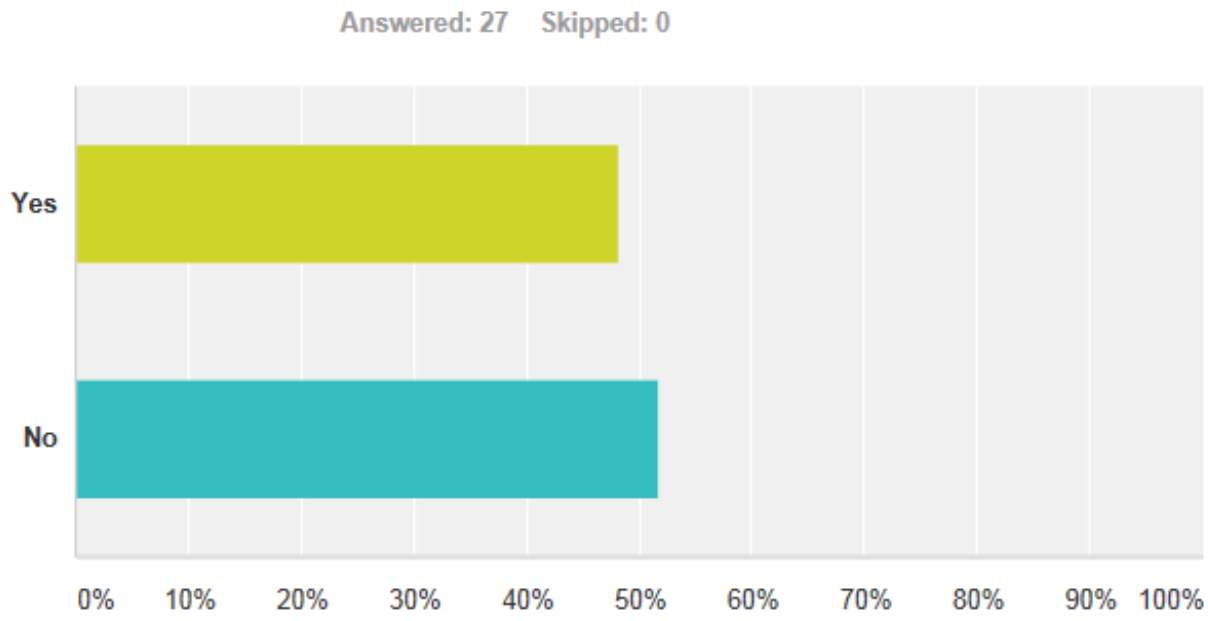


Answer Choices	Responses (%)
Funding	91.67%
Community Support	12.50%
Political Support	16.67%
Interagency Coordination	20.83%

Comments:

- We are using CID, SPLOST, LCI, State, and Federal funds for the project

Question 8: Have you identified initiatives in certain locations that could improve freight flow with relatively low investment of money and time? An example might be a signaling change or turning lane addition near a facility that handles a substantial number of trucks.



Answer Choices	Responses (%)
Yes	48.15%
No	51.85%

Question 9: If you answered yes to Question #8, then in what previous plan was this identified? Please provide the project ID, project number, or other identifier included in the planning document. If not identified in a previous plan, please provide a brief description, including location and purpose.

Comments:

- Transportation Analysis for DRI #2487. GRTA Condition. A part of a larger segment (HE-113).
- DRI #2487 – dual left turn lanes off of King Mill Road at SR 155 as well as dual receiving lanes on SR 155 leading to I-75. There is a four-lane planned for SR 155 (construction in long range 2021-2030) as part of HE-113, from I-75 NB ramps to at least SR 42.
- Widening SR-141 and installing the U-Turn projects from Smart Streets in RTP.
- PI #0012620.
- Ed Hogan Road Project - P.I. # 0009405, Barrow County. To provide an efficient & safe means to cross CSX railroad, with signal. This project would connect Bankhead Hwy to SR 8. Both of these roads are heavy with truck traffic. Bankhead Hwy is one of our few Industrial corridors in Barrow County.
- The location investigated was not on our CTP; the request for improved turning radii from SR 138 to Old Covington Road was generated by a large local manufacturer, Golden State Foods.
- ITS, medians, road surface improvements on the outside lanes that are reinforced to carry large trucks.
- On Business 6 at the intersection with Hwy 61 N, there needs to be a turn lane and the radius improved to allow northbound trucks and car traffic to flow without bottlenecking. There is not a project ID.
- FS (003, 225) ASP-FS (226-230) FS-AR 182 R205.
- We have requested GDOT support but no project has been planned.
- During the recent RTP updates, Walton County proposed an alternative to add turn lanes and signal upgrades at key intersections along SR 81 and 138 in lieu of complete widening.
- Several projects of this nature are included in the Coweta County Joint CTP Update adopted in March 2014. I will be happy to go over them with staff.
- Gwinnett County ATMS/ITS Infrastructure Expansion (GW-390 A,B C & D and others); I-85 NB Auxiliary Lane from Jimmy Carter Boulevard to Indian Trail Road (GW-381); CFI at US 78 and SR 124 (GW-078C); Indian Trail Road Turn Lane at I-85 NB (GW-335); SR 316 EB auxiliary lane from I-85 to Sugarloaf Parkway (GW-347).

Question 10: Are there any other important freight issues we should consider/include in this plan?

Comments:

- There should be an improved connection between SR 20 West in the vicinity of Westridge Industrial Parkway to I-75 at a new interchange and extending east across SR 42 to SR 81 East.
- Improved connection between SR 20, west of I-75 and SR 42 (and potentially SR 81 if there is applicable freight/truck activity along that route) east of I-75.
- Additional capacity on both SR-120 & SR-141 through the city of Johns Creek & Peachtree Corners.
- The City of Snellville attempts to work closely with the Evermore CID.
- Land use and infrastructure sustainability.
- Three (3) GDOT grade separated diamond interchanges over SR 316: SR 81, SR 11 & SR 53 in Barrow County.
- Railroad capacity and safety in NW Georgia corridors.
- The plan should differentiate between long-haul needs which are best addressed at the state and multi-regional level and local and regional distribution needs which require more specific improvements along the corridors.
- As suggested above.
- Primary concern for freight in Sandy Springs is routing of tractor trailers through neighborhoods on local streets and noisy deliveries adjacent to residential neighborhoods after hours.
- Big truck safety.
- Improvement at Cascade Rd at I-285.
- No
- Facilitating Public-Private Partnerships to implement freight-related projects (or discussion of best practices/lessons learned in communities that have done this successfully).
- Truck traffic using SR 316 through Gwinnett and Barrow counties.