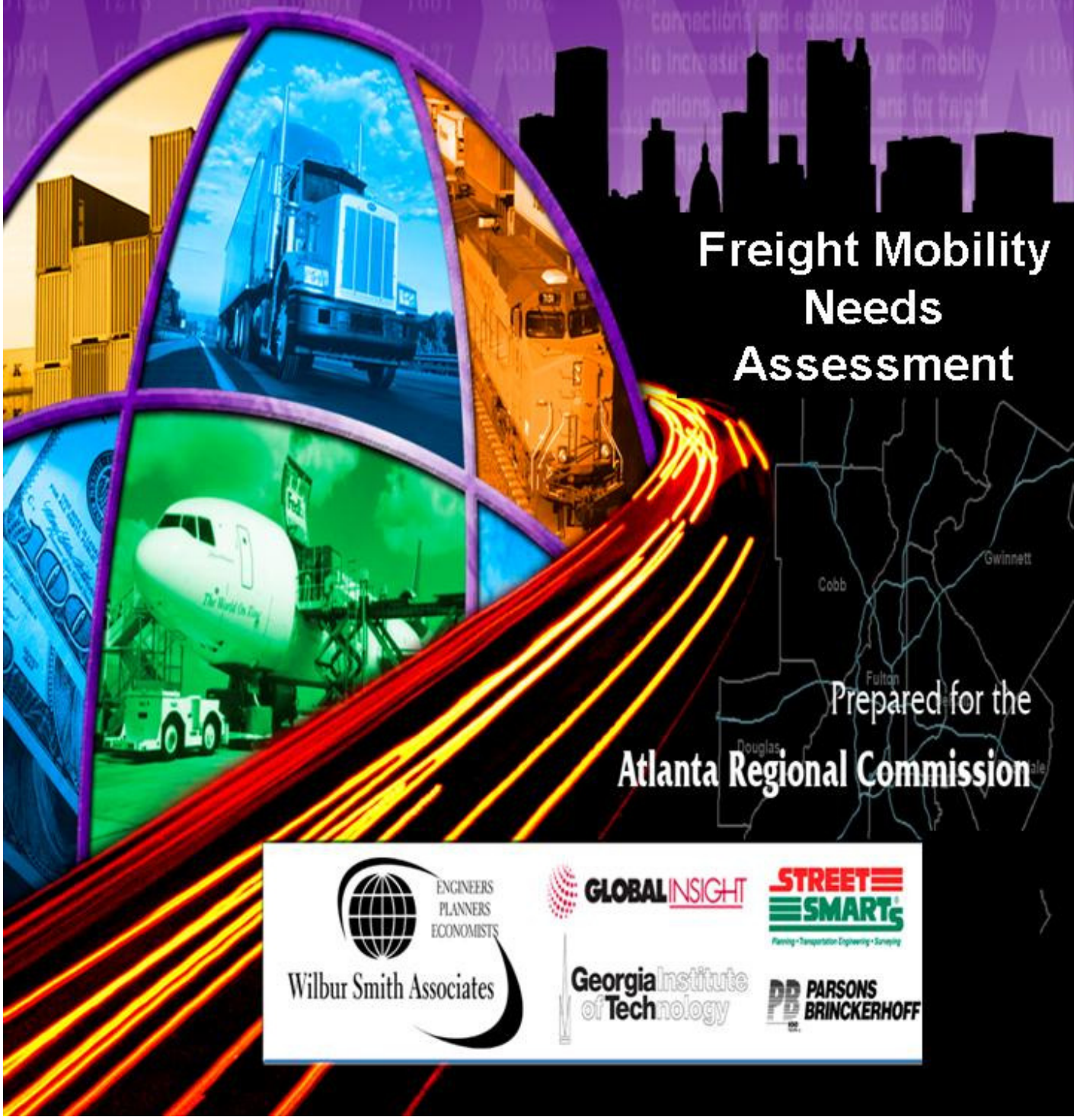
ATLANTA REGIONAL FREIGHT MOBILITY PLAN



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1. Introduction

The Atlanta region is one of the strongest and fastest growing logistics clusters in the nation. Metro Atlanta ranks fifth in the nation in transportation and logistics employment and the State of Georgia was recently ranked as the best state for logistics because of its air, ground, rail and sea facilities as well as corporate logistics centers and intellectual capital. As a result of the strategic role the region play's in the nation's freight system, identifying and programming effective improvements to accommodate increasing freight, goods, and services movement in the Atlanta area is critical to the economic vitality and quality of life of the region. The development of a data-driven, policy-based Regional Freight Mobility Plan for the Atlanta Metropolitan area is essential to the identification and prioritization of improvements that accommodate mobility of both people and goods while mitigating the negative impacts on congestion, safety, and communities. Developing the Plan requires collecting relevant and accurate data to analyze current and projected freight movement within and through the Atlanta Metropolitan area; inventorying modal assets; identifying deficiencies and issues; examining safety concerns; and establishing goals, objectives and performance measures. These steps comprise the needs assessment and are essential to preparing an effective set of strategies and recommendations to maintain and improve the existing area transportation facilities, encourage appropriate land use, ensure the safety and security of the regional system and address environmental concerns.

In an effort to gain insight into the current and future regional freight system performance and to inform the development of recommendations and strategies for enhancing regional goods movement, an in-depth assessment of the region's freight system performance was conducted and key freight mobility needs were identified in the 20-county Atlanta region. Key categories of needs include:

- System Capacity
- Land Use Conflicts
- Safety Concerns
- Education/Public Awareness
- Regional Approaches
- Economic Competitiveness
- Community and Environmental Impacts

The remainder of the report is organized around the objectives of the needs assessment as follows:

- Establish goals, objectives and performance measures related to regional goods movement- Section 2;
- Develop a profile of current and future regional commodity flows – Section 3;
- Examine commercial vehicle safety statistics – Section 4;
- Develop a regional freight system inventory and operational profile – Section 5;
- Facilitate an understanding of private sector freight stakeholder perspectives – Section 6; and
- Identify freight mobility needs – Section 7.

2. Goals, Objectives and Performance Measures for Regional Goods Movement

2.1 Goals and Objectives

The development of goals and objectives for the regional goods movement action plan involved numerous inputs with the primary components being stakeholder interviews (both public and private sector) and a half-day Executive Freight Forum conducted during November, 2006. Stakeholder interviews are discussed in the Data Technical Report produced in June 2005 and the proceedings from the Executive Freight Forum are provided in Appendix A.

Based on the input from both public and private sector stakeholders, the following goal for regional goods movements was developed:

"To enhance regional economic competitiveness by providing for efficient, reliable and safe freight transportation while maintaining the quality of life in the region's communities."

The objectives related to regional goods movements are:

- Facilitate an understanding of the importance of freight mobility to the region's economy and quality of life;
- Develop a dialogue between public decision makers and private sector freight stakeholders regarding needs and strategies;
- Integrate freight considerations in the public planning processes at all levels;
- Identify a regional freight transportation subsystem that is recognized as being essential to continued regional economic growth; and
- Develop a goods movement action plan that is data driven and stakeholder informed.

2.2 Freight Mobility Performance Measures

The purpose of this section is to recommend a set of performance measures that can be used in the evaluation of the proposed freight transportation plan for the ARC region. The suggested measures are based on a national review of performance measures that have been used in other metropolitan areas and states, as well as on the input received from the freight stakeholder meeting held as part of this project. This latter meeting provided an important foundation for identifying the types of issues that freight stakeholders considered important when considering recommended strategies and actions. In particular, there were four major system performance-related topics that surfaced during the discussions that were important:

- What is the flow capacity of the different freight modes in the Atlanta region, and how can this capacity be increased?
- What are the operating costs associated with freight movement in the region. This was broadly defined as including the cost of congestion and an estimate of the cost associated with unreliable travel flows.
- How effective are the local road connections to intermodal facilities?
- How can the safety record of trucks be improved?

The level of consensus on these four issues suggests that performance measures relating to each should be included in the final recommended set of measures.

2.2.1 Background and Definitions

Performance measures can be used in many different ways and in fact, the term "performance measure" is often used incorrectly to denote different concepts. For purposes of this freight planning study, the most important purpose of performance measures is to assess how a proposed plan performs against a set of defined performance criteria. Thus, if travel time increases or travel reliability decreases after implementing a set of strategies (and assuming that this is not caused by the natural growth in background traffic volumes), one could conclude that the studied strategies are not appropriate in this situation. Individual strategies or actions that are part of the recommended set could be evaluated against these measures as well and most likely would be given the desire to implement actions that maximize the overall desired performance of the plan. Individual criteria that are used to assess the effectiveness of specific actions or strategies are referred to here as evaluation criteria.

Another important use for system performance information is in the periodic monitoring of such performance over time to identify whether performance is improving or deteriorating. Such information is important for transportation officials because it can provide an "early warning system" that indicates potential problems, or if the information is spatially refined, it might even pinpoint areas of the region that need more detailed attention. This study will recommend a set of indicators that can be used by ARC to monitor what is happening to the freight/logistics system in the region. However, the focus of this report is on the purpose of performance measures defined in the previous paragraph.

A May, 2005 memorandum to Jane Hayse and Tracy Clymer provided an example of how a performance measure framework could be developed that achieves several different functions within a regional planning process.[1] Exhibit 2.1 and the descriptions below illustrate the concepts as they relate to freight mobility.

Regional Indicator: A high level indicator that reflects a characteristic of a region or of a region's transportation system that gives a quick glance look for non-technical people of what is happening, usually over time. In Figure 1, the indicator is some measure of economic contribution of the freight sector to the region's economy, perhaps measured through economic input-output models or as number of freight-related jobs in the region. Often, but not always, a regional indicator might not be under the control or direct influence of transportation agencies.

Goals: Goals are fairly amorphous statements that indicate a desired end state or characteristic of a system. Thus, in Figure 1, the goal is to have the transportation system provide for efficient freight movement (it does not yet say how this would be done).

[1] **Memorandum from M. Meyer to J. Hayse and T. Clymer, "Goals, Objectives, and Performance Measures: Terminology," May 27, 2005.**

Objectives:

Objectives are more specific statements of how a plan will achieve the goal. In Exhibit 2.1, one way of having the transportation system contribute to more efficient freight movement would be to reduce the number of congested bottlenecks on a pre-defined freight strategic network. Usually, there are several objectives associated with a goal.

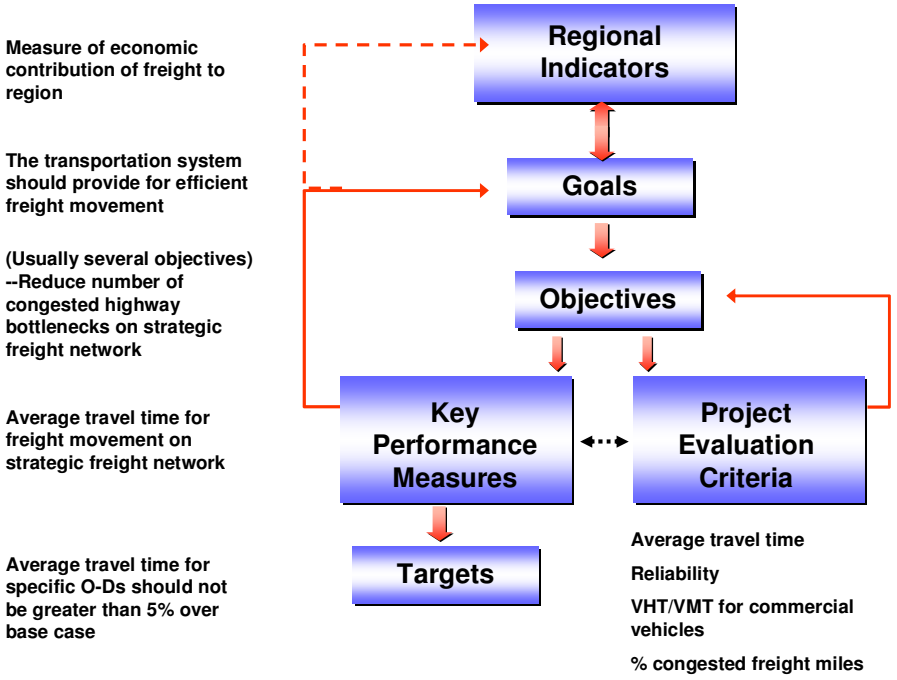
Key Performance Measures:

Performance measures are system- or network-level measures that indicate how your transportation plan is performing overall as compared to a small set of measures. Thus, you might have anywhere from 10 to 12 performance measures that are critical for decision making. In Exhibit 2.1's case, the system performance measure is "average travel time for freight movement on the strategic freight network. This measure allows someone to determine the effectiveness of a system plan in the context of this specific objective.

Project Evaluation Criteria/ Measures of Effectiveness

Evaluation criteria relate directly to the evaluation of alternatives and scenarios. These criteria are often numerous and relate to a variety of issues that might be relevant to a particular alternative. Thus, in Exhibit 2.1, we have several criteria shown that are not exactly the same as the system performance measure, but which feed directly into understanding the impacts of alternatives and/or scenarios. They are called "criteria" because they are supposed to help you decide which of the alternatives being considered as the best.

Exhibit 2.1: Performance Measure Framework



One of the defining characteristics of performance measures as they relate to freight planning is that the transportation modeling capability must exist to be able to predict future values (note: this is not the case with indicators). Thus, given that planning by definition deals with the identification of future states of the transportation system and how system performance might vary given the implementation of different strategies and actions, being able to predict future freight performance is fundamental to their usefulness as a planning tool. This is not an insignificant issue. There are many appealing performance measures that, if data existed or models were able to predict future values, would provide important information to the decision making process. However, freight planning, in particular, is hindered with a very limited ability to predict future values of such measures. For example, whereas every freight study defines safety as a key goal and thus performance measure, it is very difficulty to predict the change in the safety record with the adoption of different strategies (unless one is completely eliminating, for example, trucks from the general traffic stream; thus, one could assume that truck-car crashes would naturally disappear).

2.1.2 Proposed Set of Performance Measures

The set of performance measures shown in Exhibit 2.2 are offered as candidates for possible use in evaluating plan performance. They are identified by specific issue categories. In addition, some would have to be estimated through the use of the ARC travel demand model or the Wilbur Smith CIMS tool, whereas others could be estimated with geographic information systems, or with other possible non-model techniques.

Exhibit 2.2: Recommended Performance Measures for Plan Evaluation

<table>
<tr><th>Issue</th><th>Performance Measure</th><th>How Estimated?</th><th>Comments</th></tr>
<tr><td rowspan="5">System Productivity</td><td>• Congested lane-miles on strategic freight road network</td><td rowspan="5">• The current travel demand model is capable of producing this information</td><td rowspan="4">This effort should not be difficult because it utilizes existing model capabilities</td></tr>
<tr><td>• Congested lane-miles on designated truck routes</td></tr>
<tr><td>• Average travel speed on strategic freight road network</td></tr>
<tr><td>• Average travel speed on selected O-D trip pairs</td></tr>
<tr><td>• Percent of top 25 congestion bottlenecks that are being improved</td><td>The congestion management process can be used for this.</td></tr>
<tr><td>Reliability</td><td colspan="3">The freight stakeholders and the literature identify trip reliability as one of the most important performance measures for improving transportation system performance. However, the regional travel demand model does not currently have a capability of estimating change in reliability in future years. In the short</td></tr>
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	term, reliability improvements could be measured subjectively. The quantification of this measure, however, is one that should be considered for future development. Currently, FHWA in cooperation with ATRI is developing a data system capable of measuring variability in travel time for heavy trucks on the interstate system. ARC should work directly with these organizations to assess the potential of implementing the program in the ARC Region. In the meanwhile, ARC should focus on performance measures based on the factors that lead to variability in travel time such as crash clearance times, number of crashes on strategic freight subsystem, number of lane closures on strategic freight subsystems and number of work zones on primary freight subsystem.		
Connectivity	• Percent of bridges on freight strategic road network with load limitations	• Bridge investment priorities would have to be compared with proposed projects	This would require coordination with GDOT on proposed bridge investment
	• Percent of freight-critical locations (e.g., intermodal yards, distribution centers, air cargo facilities, etc.) that have LOS C or better	• The current travel demand model is capable of producing this information	This effort should not be difficult because it utilizes existing model capabilities
Mode Split	• Percent freight movement through region by mode	• The Wilbur Smith CIMS tool can be used to estimate mode share	This effort should not be difficult because it utilizes existing model capabilities
Safety	• Percent of top truck-car crash locations being improved	• This would simply identify the top 50 truck-car crash locations and if an investment is occurring at a location, it would be assumed that safety is being improved.	This measure is a surrogate for the actual safety benefits associated with making improvements.
	• Percent of at-grade rail crossings being eliminated/improved	• This would measure the impact of projects on reducing or improving at-grade rail crossings in the region.	This measure is a surrogate for the actual safety benefits associated with making improvements. It could also be used as a measure of system productivity.
Environmental Impacts	• Freight-related air emissions	• To a first approximation,	Both of these measures would be

		vehicle miles traveled can be used for estimation.	estimates based on average emissions or gallons consumed per VMT.
	• Freight-related fuel consumption	• To a first approximation, vehicle miles traveled can be used for estimation.	

3.0 Goods Movement Profile

3.1 Introduction

Understanding the flow of commodities that move through the study region, including from where the goods are originating, where they are destined and by what modes they move is critical in understanding the demand for infrastructure in the Atlanta region. In order to facilitate this understanding, a commodity flow profile based on the 2005 base year and 2030 freight forecasts provided in the TRANSEARCH database purchased as part of the Regional Freight Mobility Study is presented below. [2]

The data provide summary movements by location of origin and destination for each major commodity type and for each of the transportation modes. Commodity types are based on the 2-digit Standard Transportation Commodity Code (STCC) designation. Directions of the flows are categorized as follows:

- Inbound – Freight flows that originate outside of the study region but terminate within the study region; thus representing imports into the region.
- Outbound- Freight flows that originate within the study region but terminates outside of the region; thus, representing exports out of the region.
- Intra – Freight flows that both originate and terminate within the five county region; thus representing intra-regional trade.
- Through – Freight flows that neither originate nor terminate within the study area but simply pass through the region.

Exhibit 3.1 displays freight flows by commodity, mode and direction for the 20-county Atlanta region in 2005 and 2030. In 2005, nearly 1 billion tons of freight traveled on the region's transportation system. In 2030, total freight tonnages are projected to increase by 78 percent to nearly 1.7 billion tons.

3.2 Freight Flows in 2005

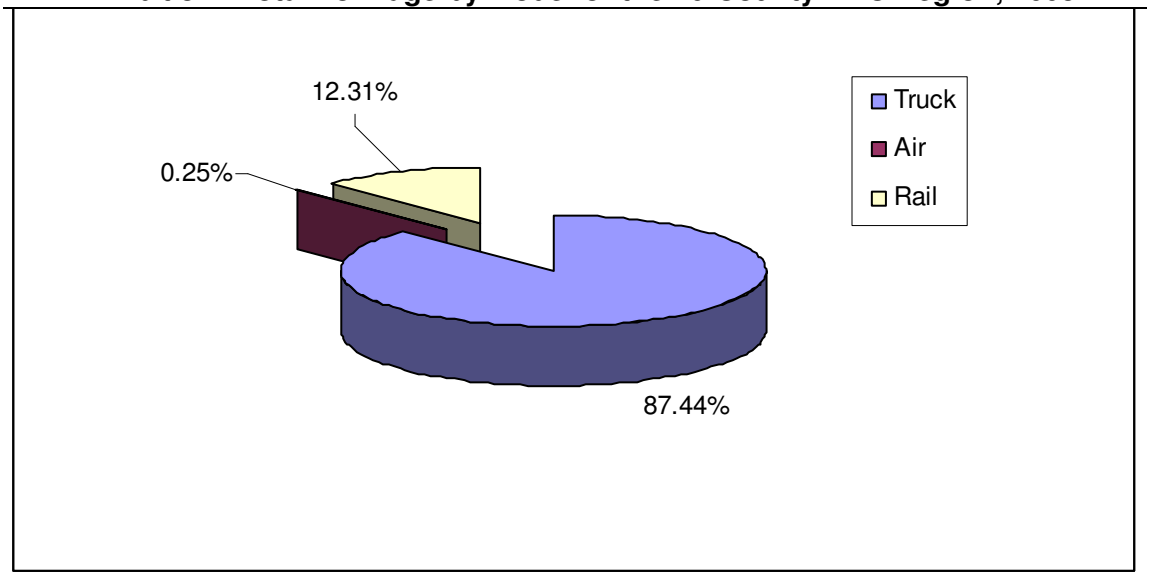
Exhibit 3.2 provides a breakdown of freight tonnage by mode for 2005. As can be seen, trucks and highways carried the lion's share of the total volume of freight, accounting for over 87 percent of all of the freight moved throughout the region. In terms of volume, rail is the second most significant mode and accounts for over 12 percent of the region's freight tonnage. Air cargo, despite growing significantly over the past decade, accounts for only 0.25 percent of the total freight tonnage. However, it should be noted that air cargo accounts for substantially higher percentages of total value and represents the fastest growing segment. The modal shares are projected to shift slightly by 2030, with truck freight increasing to 91 percent, rail decreasing to 8 percent and air cargo accounting for 1 percent of the total volume.

[2] Unless otherwise noted, the source for all freight statistics presented in this report is TRANSEARCH commodity Flow developed by Global Insight Inc. for ARC.

Exhibit 3.1: Total Tonnage by Mode for the 20 County ARC Region, 2005 and 2030

Tons		2005	2030	% Change
Truck	Local	102,907,367	222,199,621	116%
	Outbound	105,622,275	215,885,310	104%
	Inbound	304,225,980	546,004,650	79%
	Through	328,464,498	555,754,463	69%
	TOTAL	**841,220,119**	**1,539,844,044**	**83%**
Air	Outbound	280,716	678,397	142%
	Inbound	1,078,377	2,687,646	149%
	TOTAL	**1,359,093**	**3,366,043**	**148%**
Rail	Local	64,409	190,294	195%
	Outbound	2,961,223	7,261,757	145%
	Inbound	31,498,838	50,759,616	61%
	Through	75,271,239	92,502,628	23%
	TOTAL	**109,795,708**	**150,714,295**	**37%**
All Modes	**TOTAL**	**952,374,920**	**1,693,924,382**	**78%**

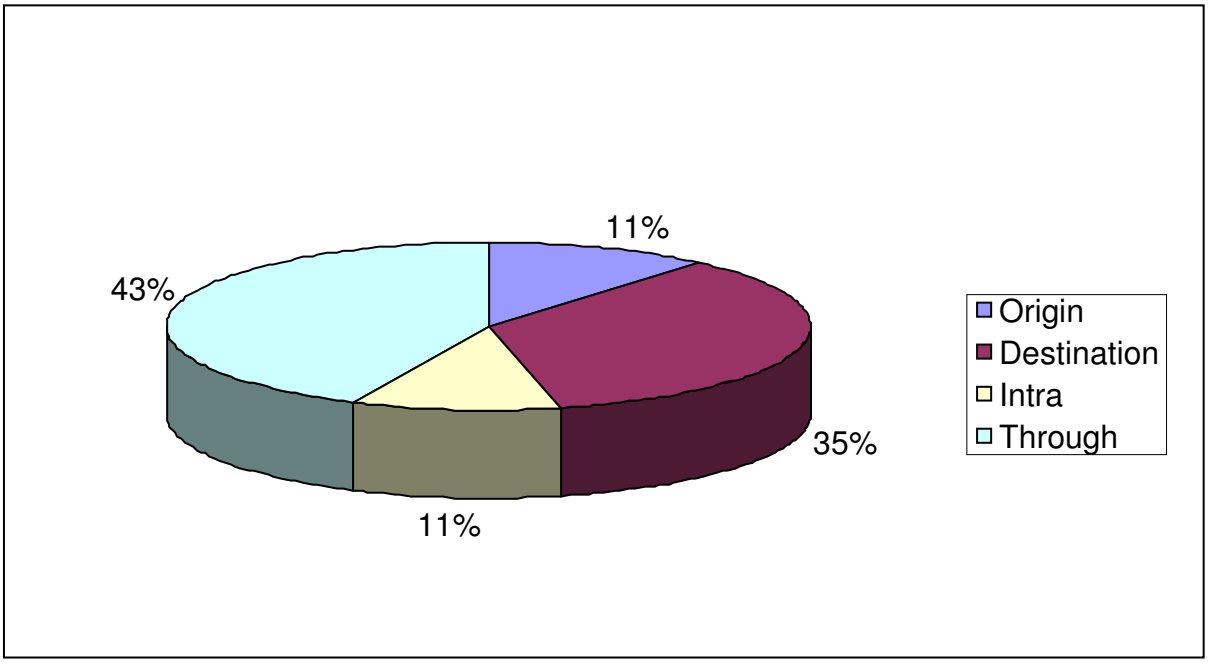
Exhibit 3.2: Total Tonnage by Mode for the 20-County ARC Region, 2005



The directional flow of the freight moving on the region's transportation system is depicted in Exhibit 3.3. As can be seen, 43 percent of the nearly 1 billion tons of freight traveling in the region represents through traffic with no originating or terminating point in the Atlanta region. While this

may seem high, it is a relatively small percentage compared to neighboring regions such as Nashville where over 70 percent of the freight volume is through traffic. What it does mean is that the majority of freight movement in the region, or 57 percent, is servicing the local economy. It is also worth noting that through traffic represents the slowest growing component of freight volumes in the region for both trucking and rail (see Exhibit 3.1). The origins and destinations of the freight movement in the region allow for differentiating between freight that requires regional access to service the regional economy and the freight that uses the system because it provides (at least theoretically) the most efficient route on the way to the final destination.

Exhibit 3.3: Originating Terminating, Intra and Through Freight Movements for the 20 County ARC Region-All Modes, 2005 (tons)



3.2.1 2005 Freight Flows by Commodity

Examining the types of commodities flowing on the region's system can provide insight into the potential freight transportation needs such as time sensitivity, vulnerability to damages and modal tendencies. A summary of the top ten commodities shipped by all modes and representing all directional flows is provided in Exhibit 3.4. Notable is the fact that the top ten commodities in terms of volume represent 82 percent of the total tonnages of the region's good movement. The top commodities are food or kindred products (150 million tons), lumber or wood products (114 million tons) and nonmetallic minerals (98 million tons). Secondary traffic, which represents the distribution of manufactured goods, accounts for over 76 million tons or nearly 8 percent of the tonnage of goods on the region's system. Again, it should be noted that often the heavier commodities, such as lumber, coal and aggregates, are relatively low value relative to manufactured finished or intermediate goods. Thus, the shippers moving these goods have different priorities when it comes to freight transportation. Shippers of manufactured goods tend to

be sensitive to travel times and reliability while making smaller (in terms of weight) and more frequent deliveries. Basic commodities tend to be heavy in nature and shippers are more focused on cost with less emphasis on speed. One major exception is construction related materials. While these aggregate materials are heavy and relatively low value, they often have a limited life (such as concrete) and require a timely and reliable transport. The obstacle for public planners is that they must plan a transportation system that meets the needs and priorities of all the shippers moving commodities.

Exhibit 3.4: Top Ten Commodities To, From, Through and Within Atlanta Region by All Modes, 2005

Commodity	Tons
Food Or Kindred Products	150,155,596
Lumber Or Wood Products	114,502,646
Nonmetallic Minerals	98,881,317
Chemicals Or Allied Products	85,221,755
Clay, Concrete, Glass Or Stone	80,687,579
Petroleum Or Coal Products	76,432,779
Secondary Traffic	76,211,755
Farm Products	42,868,876
Coal	39,706,475
Pulp, Paper Or Allied Products	39,638,698
Other	172,647,812
Grand Total	**976,955,288**

Exhibit 3.5 displays the total amount of freight that originates from the region, representing exported goods totaling 110 million tons. The top commodities shipped from the Atlanta region are Secondary traffic or manufactured products (20 million tons), food or kindred products (21 million tons) and lumber or wood products (14 million tons). Again, this outbound freight represents regional exports or wealth generating freight. Providing efficient freight transportation to external markets is critical to the producers of this freight and thus, the region's economic competitiveness.

Exhibit 3.5: Top Ten Commodities Originating from the Atlanta Region by All Modes, 2005

Commodity	Tons
Secondary Traffic	20,527,198
Food Or Kindred Products	15,884,010
Lumber Or Wood Products	14,859,986
Clay, Concrete, Glass Or Stone	12,063,692
Chemicals Or Allied Products	7,537,435
Transportation Equipment	7,462,326
Nonmetallic Minerals	6,016,321
Pulp, Paper Or Allied Products	4,714,344
Petroleum Or Coal Products	4,531,915
Fabricated Metal Products	2,797,156
Other	14,044,509
Grand Total	**110,438,892**

Exhibit 3.6 displays the total amount of freight destined for the region, which represents imported freight totaling 341 million tons. The top commodities shipped to the Atlanta region are lumber or wood products (68 million tons), food or kindred products (57 million tons) and non metallic minerals (43 million tons). These imported commodities represent inputs for the region's producers and consumption goods for the region's residents and visitors.

Exhibit 3.6: Top Ten Commodities Destined for the Atlanta Region by All Modes, 2005

Commodity	Tons
Lumber Or Wood Products	68,040,320
Food Or Kindred Products	57,504,138
Nonmetallic Minerals	43,121,227
Clay, Concrete, Glass Or Stone	24,599,386
Petroleum Or Coal Products	20,642,102
Chemicals Or Allied Products	20,518,763
Coal	17,414,387
Secondary Traffic	13,770,271
Primary Metal Products	12,800,413
Transportation Equipment	10,558,509
Other	52,456,072
Grand Total	**341,425,588**

Exhibit 3.7 summarizes the total amount of intra freight movements which is equal to 103 million tons. Nonmetallic minerals (41 million tons), secondary traffic (21 million tons) and clay, concrete, glass or stone (15 million tons) dominate intra-regional commodity flows. These commodities are essential for meeting the demands of local construction activity and personal consumption within the region.

Exhibit 3.7: Top Ten Commodities Moved Within Atlanta Region by All Modes, 2005

Commodity	Tons
Nonmetallic Minerals	41,531,779
Secondary Traffic	21,493,354
Clay, Concrete, Glass Or Stone	15,607,287
Food Or Kindred Products	7,263,059
Lumber Or Wood Products	7,230,667
Petroleum Or Coal Products	2,057,195
Chemicals Or Allied Products	1,733,511
Primary Metal Products	1,324,031
Pulp, Paper Or Allied Products	1,047,174
Transportation Equipment	942,815
Other	3,014,822
Grand Total	**103,245,694**

Exhibit 3.8 summarizes the volume of freight moving through the region. Freight volumes moving through the region are dominated by raw inputs and basic goods such as food and kindred products, chemical or allied products and petroleum or coal products. Secondary traffic and transportation equipment round out the top ten commodities (in terms of tonnage) moving through the region.

Exhibit 3.8: Top Ten Commodities Moving Through the Atlanta Region by All Modes

Commodity	Tons
Food Or Kindred Products	69,504,389
Chemicals Or Allied Products	55,432,046
Petroleum Or Coal Products	49,201,567
Farm Products	33,287,297
Clay, Concrete, Glass Or Stone	28,417,214
Lumber Or Wood Products	24,371,672
Pulp, Paper Or Allied Products	23,503,084
Coal	22,292,087
Secondary Traffic	20,420,932
Transportation Equipment	17,521,598
Other	77,893,227
Grand Total	**421,845,114**

3.2.2 2005 Freight Flows by Mode

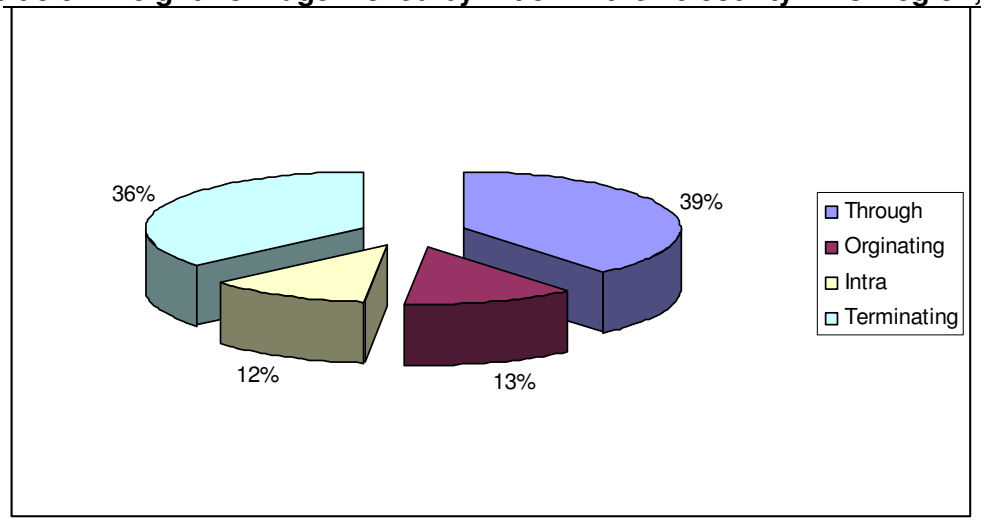
The previous section provided summary statistics for the volume of freight flowing through the region. The following section will examine these same movements by mode.

Freight Flow by Truck

As presented in Exhibit 3.2 above, over 87 percent of the total tonnage of freight traveling in the Atlanta region is transported by truck on the region's roadway system. Of that 87 percent, the directional flow is as follows (also presented in Exhibit 3.9):

- 39 percent of the freight tonnage moved by truck passes through the region;
- 36 percent of the freight moved by truck represents inbound freight for the Atlanta area;
- 13 percent of the freight moved by truck represents outbound from the Atlanta region; and
- 2 percent of the trucked freight tonnage moves internally within the Atlanta region.

Exhibit 3.9: Freight Tonnage Moved by Truck in the 20 county ARC Region, 2005



Exhibits 3.10 through 3.13 display the top commodities by volume being transported by truck for outbound, inbound, through and intra-regional movements. Note that when examining commodity flows by mode, there is a notable shifting in the most significant commodities in terms of volume, As expected, secondary traffic, food and kindred products and transportation equipment are relatively more significant when examining the trucking mode alone. This is due to the fact that the time sensitivity and service requirements of these types of goods are more readily met by trucking than by other modes. Also notable is the fact that the largest single component of trucked secondary traffic is the intra-regional movements. This supports the fact that the region serves as a freight hub which generates significant cross-region trips for the distribution of finished goods. This is a positive in the fact that the freight activity is also generating employment and expanding the tax base as opposed to simply being shipped in from outside the region.

Exhibit 3 .10: Top Ten Commodities Originating from Atlanta Region by Truck, 2005

Commodity	Tons
Secondary Traffic	20,527,198
Food Or Kindred Products	15,616,980
Lumber Or Wood Products	14,826,143
Clay, Concrete, Glass Or Stone	11,968,852
Chemicals Or Allied Products	7,400,673
Transportation Equipment	6,578,953
Nonmetallic Minerals	5,862,763
Pulp, Paper Or Allied Products	4,604,042
Petroleum Or Coal Products	4,485,578
Fabricated Metal Products	2,786,825
Other	11,483,899
Grand Total	**106,141,904**

Exhibit 3.11: Top Ten Commodity Terminating in Atlanta Region by Truck, 2005

Commodity	Tons
Lumber Or Wood Products	67,757,370
Food Or Kindred Products	55,029,945
Nonmetallic Minerals	41,183,930
Clay, Concrete, Glass Or Stone	21,733,501
Petroleum Or Coal Products	19,763,347
Chemicals Or Allied Products	18,207,941
Secondary Traffic	13,770,271
Primary Metal Products	12,233,037
Pulp, Paper Or Allied Products	9,522,129
Transportation Equipment	8,930,843
Other	37,737,118
Grand Total	**305,869,429**

Exhibit 3.12: Top Ten Commodities Moved Through Atlanta Region by Truck, 2005

Commodity	Tons
Food Or Kindred Products	64,037,284
Petroleum Or Coal Products	41,258,181
Chemicals Or Allied Products	34,448,432
Farm Products	27,978,193
Lumber Or Wood Products	21,860,395
Secondary Traffic	20,420,932
Clay, Concrete, Glass Or Stone	19,492,092
Pulp, Paper Or Allied Products	17,855,193
Fabricated Metal Products	15,770,965
Transportation Equipment	14,486,274
Other	51,125,284
Grand Total	**328,733,226**

Exhibit 3.13: Top Ten Commodities Moving within Atlanta Region by Truck, 2005

Commodity	Tons
Nonmetallic Minerals	41,531,779
Secondary Traffic	21,493,354
Clay, Concrete, Glass Or Stone	15,599,644
Food Or Kindred Products	7,257,470
Lumber Or Wood Products	7,230,667
Petroleum Or Coal Products	2,057,195
Chemicals Or Allied Products	1,724,230
Primary Metal Products	1,324,031
Pulp, Paper Or Allied Products	1,047,174
Transportation Equipment	934,084
Other	2,981,716
Grand Total	**103,181,344**

Freight Flow by Rail

Exhibits 3.14 through 3.17 summarize regional rail traffic by commodity for outbound, inbound, through and intra-regional traffic. It should be noted that transportation equipment represents the second most significant outbound commodity shipped by rail in terms of tonnage in 2005 but that is likely to change given the closure of the Ford plant and the slow-down at the GM plant in Doraville. Also notable is the fact that intra-regional rail traffic is limited to five commodities, evidencing the traditional role of rail as longer haul shipments and the challenges of developing short-haul rail as a viable alternative for diversion of truck traffic.

Exhibit 3.14: Top Ten Commodity Originated in Atlanta Region by Rail, 2005

Commodity	Tons
Waste Or Scrap Materials	1,069,858
Transportation Equipment	879,244
Misc Mixed Shipments	410,617
Food Or Kindred Products	267,030
Nonmetallic Minerals	153,558
Primary Metal Products	138,790
Chemicals Or Allied Products	135,730
Textile Mill Products	120,267
Rubber Or Misc Plastics	118,636
Apparel Or Related Products	112,512
Other	457,189
Grand Total	**3,863,431**

Exhibit 3.15: Top Ten Commodities Terminating in Atlanta Region by Rail, 2005

Commodity	Tons
Coal	17,207,559
Clay, Concrete, Glass Or Stone	2,861,430
Food Or Kindred Products	2,440,148
Chemicals Or Allied Products	2,024,617
Nonmetallic Minerals	1,937,297
Farm Products	1,932,982
Transportation Equipment	1,289,625
Petroleum Or Coal Products	874,344
Pulp, Paper Or Allied Products	810,862
Primary Metal Products	564,930
Other	1,612,741
Grand Total	**33,556,534**

Exhibit 3.16: Commodities Moving within the in Atlanta Region by Rail, 2005

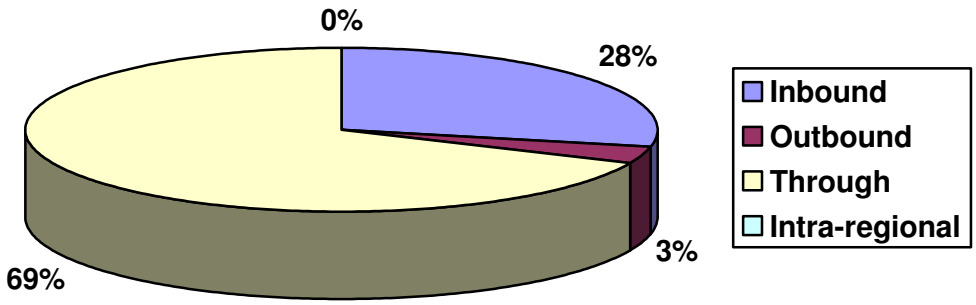
Commodity	Tons
Waste Or Scrap Materials	33,106
Chemicals Or Allied Products	9,281
Transportation Equipment	8,731
Clay, Concrete, Glass Or Stone	7,643
Food Or Kindred Products	5,589
Other	0
Grand Total	**64,350**

Exhibit 3.17: Top Ten Commodities Moving Through the Atlanta Region by Rail

Commodity	Tons
Coal	22,001,905
Chemicals Or Allied Products	15,601,436
Clay, Concrete, Glass Or Stone	8,897,146
Pulp, Paper Or Allied Products	5,647,891
Food Or Kindred Products	5,467,105
Farm Products	5,309,104
Petroleum Or Coal Products	3,528,529
Nonmetallic Minerals	3,042,026
Transportation Equipment	3,035,324
Lumber Or Wood Products	2,511,277
Other	6,261,505
Grand Total	**81,303,248**

Exhibit 3.18 displays the directional flow of rail freight in the region. For rail, through traffic constitutes the lion's share of volume, representing 69 percent of the total. This compares to 39 percent through traffic for trucked tons. Note that intra-regional rail movements account for less than 1 percent of the total rail volume. Although this component of traffic is projected to nearly double by 2030, it will still account for less than 1 percent of the total rail movements.

Exhibit 3.18: Directional Flow of Rail Freight Flow for the 20 County ARC Region, 2005



Air Cargo

Air cargo represents the least significant mode in terms of total tonnage but in terms of value and time sensitivity, it represents the most significant freight. In addition, it also represents the fastest growing component of freight transport nationally and regionally, with a projected increase of 148 percent by 2030.

A total of more than 433 thousand tons of air cargo originates from the Atlanta 20 county region. Exhibit 3.19 displays the volume of freight that originates in the Atlanta region by air by commodity type. The most significant commodities originating in the region are miscellaneous mixed shipments, mail or contract traffic and transportation equipment. Notable is the fact that transportation equipment and electrical components (a major input into automotive assembly) represent significant tonnages of air cargo and the region is likely to experience a decline in this activity due to the closure of the Ford assembly plant and the slow down at the region's GM plant. However, a growing segment of the air cargo traffic in the region, as is discussed in more detail in the Modal Profile Technical Report, is perishable goods such as flowers, fresh fish and fruits and vegetables.

Exhibit 3.19: Top Commodities Originating in Atlanta Region by Air, 2005

Commodity	Tons
Misc Mixed Shipments	231,891
Mail Or Contract Traffic	192,193
Transportation Equipment	4,129
Printed Matter	2,194
Electrical Equipment	1,145
Chemicals Or Allied Products	1,032
Machinery	825
Rubber Or Misc Plastics	147
Grand Total	**433,556**

A total of nearly 2.0 million tons of air cargo came into the Atlanta region. The fact that inbound air cargo volume is over four times the volume of outbound cargo supports the fact that Atlanta is a regional hub for air cargo activity serving the consumption markets of the southeast. Exhibit 3.20 displays the amount of freight that is destined in the Atlanta region by air equals 1.9 million tons. The top inbound air cargo commodities include mail or contract traffic, transportation equipment and chemicals or allied products.

Exhibit 3.20: Top Ten Commodities Terminating in Atlanta Region by Air

Commodity	Tons
Mail Or Contract Traffic	594,698
Transportation Equipment	338,041
Chemicals Or Allied Products	286,205
Machinery	235,292
Electrical Equipment	110,139
Fabricated Metal Products	68,828
Printed Matter	67,319
Misc Mixed Shipments	54,916
Instrum, Photo Equipment, Optical Eq	52,947
Pulp, Paper Or Allied Products	41,105
Other	150,135
Grand Total	**1,999,624**

3.2.3 Freight Flow by County

Exhibits 3.21 and 3.22 display freight flows by county for inbound, outbound and intra freight movements by all modes. Through traffic at the county level is not presented as it would lead to double counting total flows for the region as a whole. That information is provided in the county fact sheets produced as part of the study effort. As can be seen in Exhibit 3.21, Fulton County dominates in terms of total tonnage of freight moving into, out of and within the county. Over 170 million tons terminate and 44 million tons originate from Fulton County, accounting for 45 percent of the freight moved by all counties. Cobb and Gwinnett Counties account for 9 percent and 8 percent respectively.

Exhibit 3.21: Tonnage of Freight Movement by County, 2005 (Inbound, Outbound and Intra-county)

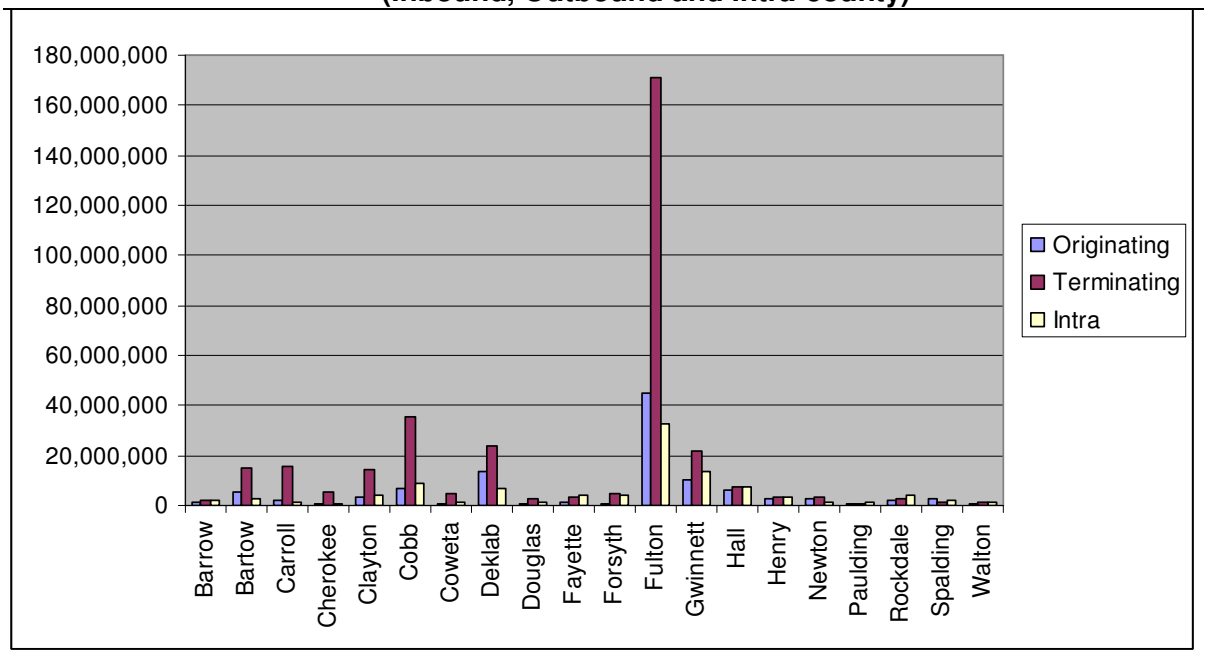


Exhibit 3.22: Freight Flow by County

County	Originating	Terminating	Intra	Total
Barrow	1,437,838	1,922,328	1,748,416	5,108,582
Bartow	5,165,979	15,296,289	2,399,261	22,861,529
Carroll	2,193,597	15,901,702	1,516,978	19,612,277
Cherokee	1,022,249	5,140,046	633,384	6,795,679
Clayton	3,354,408	14,231,485	3,774,695	21,360,588
Cobb	6,629,627	35,371,667	8,798,563	50,799,858
Coweta	931,499	4,898,378	1,086,389	6,916,266
Deklab	13,762,199	24,192,318	6,881,606	44,836,124
Douglas	639,107	2,410,116	1,587,470	4,636,693
Fayette	1,459,459	3,124,227	3,940,705	8,524,391
Forsyth	885,891	4,959,836	4,072,975	9,918,702
Fulton	44,680,936	170,960,871	32,852,889	248,494,696
Gwinnett	10,466,547	22,103,450	13,674,616	46,244,613
Hall	6,098,181	7,509,444	7,607,620	21,215,245
Henry	2,999,864	3,586,776	3,253,671	9,840,310
Newton	2,504,461	3,716,673	1,335,064	7,556,198
Paulding	372,855	788,600	1,238,065	2,399,520
Rockdale	2,267,990	2,811,036	3,775,210	8,854,236
Spalding	2,636,751	1,059,918	2,005,539	5,702,208
Walton	929,455	1,440,428	1,062,577	3,432,460

3.3.4 Domestic Trading Partners, 2005

The Atlanta region is both a generator and attractor of freight not only through the economic activity of the region itself, but also a hub of logistic activity that supports other regional economies. Identifying the region's trading partners is important in understanding the geographic region for which Atlanta is the epicenter of logistics activity as well as identifying other potential market opportunities for the region's businesses. In addition, understanding trade flows is critical to understanding the role of the region's transportation system in context of the larger southeastern, national and global freight transportation systems.

Given the scope of the data available for the current study effort, the region's trading partners are limited to domestic partners. International partners are identified for air cargo in the Modal Profile Technical Report. The top ten domestic metro areas tons to which the Atlanta region exports freight are displayed in Exhibit 3.23. Macon-Warner Robins, Georgia (7.7 million tons), Miami-Fort Lauderdale, Florida (6.5 million) and Los Angels-Long Beach, California (6.5 million tons) are the top three trading partners for outbound freight from the Atlanta region. The fact that seven of the top ten destinations are outside the state of Georgia and that four of the top ten are outside of the Southeast provides insight into the significance of Atlanta in the national freight system.

Exhibit 3.23: Top 10 Domestic Trading Partners (By BEA) Commodities Originating from Atlanta Region, 2005

BEA*	Volume (Tons)
Macon-Warner Robins-Fort Valley, GA	7,744,882
Miami-Fort Lauderdale-Miami Beach, FL	6,543,229
Los Angeles-Long Beach-Riverside, CA	6,523,662
Birmingham-Hoover-Cullman, AL	5,417,662
Jacksonville, FL	5,110,146
Albany, GA	4,537,179
Savannah-Hinesville-Fort Stewart, GA	4,514,458
San Jose-San Francisco-Oakland, CA	4,299,279
Orlando-The Villages, FL	3,293,018
New York-Newark-Bridgeport, NY-NJ-CT-PA	2,782,436
Other	46,748,369
Grand Total	**97,514,320**

*BEA economic areas are defined as the relevant regional markets surrounding metropolitan or metropolitan statistical areas.

The top ten metro areas from which the Atlanta region imports freight are displayed in Exhibit 3.24. The top three metro areas are Albany, Georgia, Macon-Warner Robins Georgia and Savannah, Georgia. It should be noted that majority of the volume of imports recorded from these areas represent imports from other regions, including international destinations, which have been collected at facilities in these locations and then distributed to the Atlanta region.

Exhibit 3.24: Top 10 Domestic Trading Partners (By BEA) Commodities Terminating in the Atlanta Region, 2005

BEA*	Volume (Tons)
Albany, GA	18,469,328
Macon-Warner Robins-Fort Valley, GA	15,989,449
Savannah-Hinesville-Fort Stewart, GA	15,687,677
Chicago-Naperville-Michigan City, IL-IN-WI	11,598,055
Lexington-Fayette--Frankfort--Richmond, KY	10,883,420
Jacksonville, FL	10,200,889
Augusta-Richmond County, GA-SC	9,775,094
Birmingham-Hoover-Cullman, AL	7,749,449
Charleston-North Charleston, SC	6,828,036
Milwaukee-Racine-Waukesha, WI	5,924,184
Other	165,552,048
Grand Total	**278,657,630**

3.3 2030 Forecasts of Regional Freight Flows

The future flow of commodities that originate, terminate, pass through and move internally in the study region is described in this section. This analysis includes commodity flows by mode and county for the year 2030. The values ascertained for the forecasted year 2030 were derived from the base year 2005 TRANSEARCH database. These future commodity flows provide a depiction of the change in freight flows for the Atlanta region. Similar to the 2005 commodity profile in Section 3.2 above, the 2030 commodity profile provides summary freight movements by location of origin and destination for each for each transportation mode and major commodity type based on the 2-digit Standard Transportation Commodity Code (STCC) designation.

It is important to note that the forecast of freight flows in the region are a result of variable economic, population and geographic factors. Economic factors that influence projected values are specifically germane to the variety to industries in the Atlanta region as well as economic conditions nationally and internationally. These forecasts do not attempt to forecast modal shifts in commodity movement. Instead, if a commodity is moving by truck today, it is assumed to move by truck in 2030. Any shifts in modal shares are a result in the shift in the types of commodities moving as well as the origins and destinations of movements. In addition, these forecasts represent *unconstrained forecasts*; thus, it is assumed that there will be sufficient capacity on the region's transportation system to accommodate the increased traffic. This analysis of the future freight flows of Atlanta region will provide insights into the following aspects:

- Increasing volumes of specific commodities;
- Shifts in directional flows of freight;
- Shifts in freight volume by modal split between truck, rail and air; and the
- Relationship between projected increase volumes of commodities, by mode and direction.

There are several key observations recognized from the 2030 forecasts:

- The total amount of freight movement is projected to increase by 78 percent by 2030 from 952 million in 2005 to 1.7 billion in 2030.
- Out of the approximately 1.7 billion tons of commodity moving to, from, within and through the region, the 39 percent pass through the region and 35 percent terminates in the region.
- By 2030, truck will constitute for 90 percent of all traffic.
- Food and Kindred Products is the top commodity shipped in the region achieving a 84 percent growth rate and accounting for approximately 17 percent of all freight shipped by 2030 and 98 percent of this commodity is transported via trucks.
- Secondary Traffic, or goods for distribution, is projected to grow by 210 percent by 2030 to 236 million tons, much of which will travel by truck.
- Freight shipped by rail as a share of total freight hauled is projected to decrease by 3.4 percent by 2030, but rail volume is anticipated to increase by 37 percent.
- Local economic factors will potentially adjust rail volumes. As distributors and manufactures in the region continue to reevaluate operations, potential changes to commodities such as transportation equipment could lead to decreasing rail share by 2030.
- Air cargo is forecast to expand by 148 percent, but still account for only 0.2 percent of the total share of the total freight flow.
- Electrical equipment moved by air will experience a significant increase in volume; a project growth of 545 percent is expected.
- Freight tonnage in Douglas County is projected to grow by 241 percent by 2030, potentially straining highway infrastructure, specifically routes such as I-20 and SR 78.
- The cities in the southeast such as Macon, Georgia, Charleston South Carolina will continue to be major trading partners with the Atlanta region.

The following sections present forecasts by mode, commodities and local jurisdictions.

Exhibit 3.24 displays freight flows by commodity, mode and direction for the 20-county Atlanta region in 2030. In 2030 the total projected freight flow is nearly 1.7 billion tons, a 78 percent increase from the 9.5 million tons that moved in 2005.

Exhibit 3.24: Growth in Freight Flows by Mode for the 20-county ARC Region (in tons)

Tons		2005	2030	% Change
Truck	Local	102,907,367	222,199,621	116%
	Outbound	105,622,275	215,885,310	104%
	Inbound	304,225,980	546,004,650	79%
	Through	328,464,498	555,754,463	69%
	TOTAL	**841,220,119**	**1,539,844,044**	**83%**
Air	Outbound	280,716	678,397	142%
	Inbound	1,078,377	2,687,646	149%
	TOTAL	**1,359,093**	**3,366,043**	**148%**
Rail	Local	64,409	190,294	195%
	Outbound	2,961,223	7,261,757	145%
	Inbound	31,498,838	50,759,616	61%
	Through	75,271,239	92,502,628	23%
	TOTAL	**109,795,708**	**150,714,295**	**37%**
All Modes	**TOTAL**	**952,374,920**	**1,693,924,382**	**78%**

The largest increase in freight flows will occur with freight hauled by air, projected at 148 percent, followed by truck at 83 percent and rail at 37 percent. The significant increase in air freight will ultimately contributes to the increase of freight moved by truck as all air freight cargo is transferred at some point to truck for transport to end users. The total rail volume does not increase as tremendously as the other modes, however, the projected increase in local freight transported by train constitutes for the largest increase of all modal segments at 195 percent.

Exhibit 3.25 depicts the projected freight tonnage by mode. Interestingly enough, the 2030 freight projections indicated the gradual shift in the modal split of the amount of freight moved. Freight moved by truck will increase to 90.9 (1.5 billion) percent of the total volume as compared to 87.4 percent from 2005. The increase percentage of freight hauled by truck caused an adjustment in the

percentage of the total freight moved by rail and air, which constitute for 8.9 (150 million) percent and 0.2 (3 million) percent respectfully. Although air freight will endure the largest projected increase of freight hauled by mode, the share of the total amount of freight for the region moved by air will actually decrease by .05 percent. In addition the percent of tonnage for rail will decrease by 3.4 by 2030. As indicated previously, the substantial increase in air freight from 2005 to 2030 supports an increase in the amount of truck freight. The increase local rail moves also influences truck and drayage moves for the region.

Exhibit 3.25: Total Tonnage by Mode for Atlanta Region, 2030

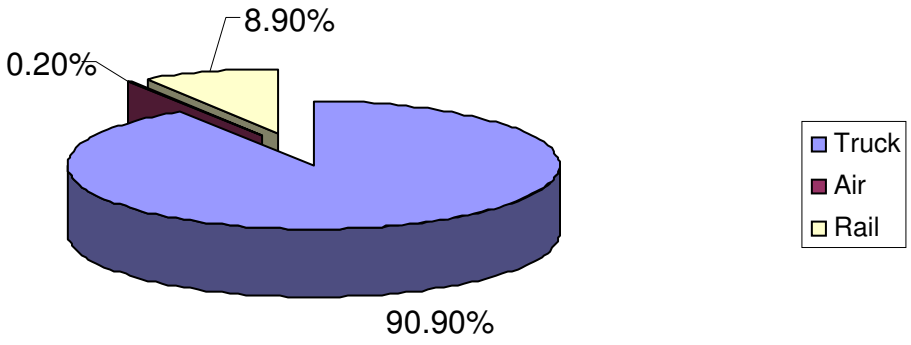
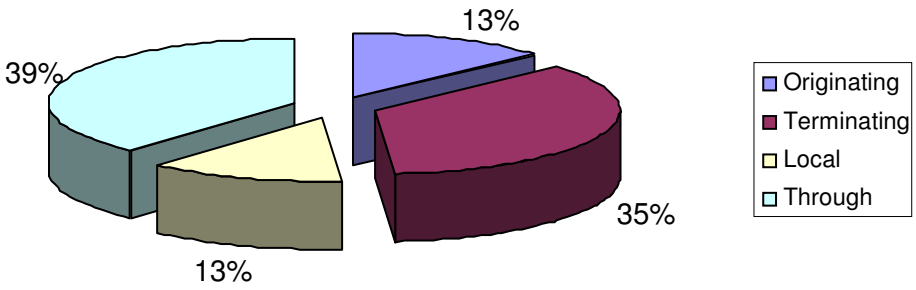


Exhibit 3.26 indicates that through freight movements will still be the primary directional flow of freight in the region; however, the total amount of pass though freight will decrease to from 43 percent 39 percent (680 million) as compared to 2005. Inbound freight will remain constant at 35 percent and local and outbound freight will increase slight by 3 percent to 13 percent or approximately 244 million each.

Exhibit 3.26: Originating, Terminating, Local and Through Freight Movements for 20-County ARC Region, 2030



3.3.1 2030 Forecasts of freight Movements by Commodity

Food and Kindred products will continue to be the dominate commodity shipped as this commodity will constitute the highest volume of freight transported for terminating and pass-through movements, growing by 84 percent from 2005. In addition, Food and Kindred Products is projected to be the fourth most common commodity for Intra-regional moves. Secondary Traffic is forecast to increase by 220 percent and account for and 150 million tons. Nonmetallic Minerals is projected to grow by 53 percent and constitute for 236 million of freight. Exhibit 3.27 displays the top commodities moving in the Atlanta region.

Exhibit 3.27: **Top Ten Commodities To, From, Through and Within Atlanta Region by All Modes, 2030**

Commodity	Tons
Food Or Kindred Products	277,783,465
Secondary Traffic	236,807,946
Nonmetallic Minerals	150,865,429
Clay,Concrete,Glass Or Stone	139,512,668
Petroleum Or Coal Products	136,742,117
Lumber Or Wood Products	129,086,370
Chemicals Or Allied Products	100,650,239
Farm Products	72,911,628
Transportation Equipment	69,875,178
Fabricated Metal Products	57,168,171
Other	322,521,172
Grand Total	**1,693,924,382**

Exhibit 3.28 indicates that the top commodities shipped from Atlanta are Secondary Traffic (64 million) Food or Kindred Products (37 million) and Clay, Concrete, Glass or Stone (23 million). The secondary traffic is representative of the region's critical role as a distribution center and manufacturing center for the eastern portion of the US.

Exhibit 3.28: Top Ten Commodities Originating from the Atlanta Region by All Modes, 2030

Commodity	Tons
Secondary Traffic	64,063,164
Food Or Kindred Products	37,882,497
Clay,Concrete,Glass Or Stone	23,734,401
Transportation Equipment	15,156,615
Lumber Or Wood Products	14,000,417
Chemicals Or Allied Products	10,109,770
Nonmetallic Minerals	8,810,218
Petroleum Or Coal Products	7,958,171
Pulp,Paper Or Allied Products	6,803,882
Electrical Equipment	5,867,494
Other	29,438,836
Grand Total	**223,825,465**

Exhibit 3.29 displays the forecast of top commodities shipped to Atlanta. Leading in terms of tonnage are Food or Kindred products (107 million), Lumber or Wood Products (79 million) and Non Metallic Minerals products (71 million). The food and kindred products are necessary to serve the region's growing consumption market and the construction related materials are being fueled by the demand for housing and commercial buildings.

Exhibit 3.29: **Top Ten Commodities Destined for the Atlanta Region by All Modes, 2030**

Commodity	Tons
Food Or Kindred Products	107,945,397
Lumber Or Wood Products	79,590,198
Nonmetallic Minerals	71,279,457
Petroleum Or Coal Products	60,778,780
Secondary Traffic	40,568,360
Clay,Concrete,Glass Or Stone	37,954,029
Chemicals Or Allied Products	28,701,276
Coal	24,135,913
Transportation Equipment	22,530,283
Primary Metal Products	20,183,644
Other	105,784,575
Grand Total	**599,451,912**

Exhibit 3.30 suggests that the top commodities shipped within Atlanta in 2030 will be Secondary traffic (77 million), Non Metallic Minerals products (59 million) and Clay, Concrete, Glass or Stone (35 million).

This is reflective of the projected growth in population and economic activity for the region.

Exhibit 3.30: **Top Ten Commodities Moved Within Atlanta Region by All Modes, 2030**

Commodity	Tons
Secondary Traffic	77,480,589
Nonmetallic Minerals	59,234,840
Clay,Concrete,Glass Or Stone	35,178,234
Food Or Kindred Products	18,835,135
Lumber Or Wood Products	9,225,188
Petroleum Or Coal Products	4,177,690
Chemicals Or Allied Products	3,554,969
Transportation Equipment	3,422,257
Machinery	2,220,024
Primary Metal Products	1,707,632
Other	7,353,357
Grand Total	**222,389,915**

Exhibit 3.31 displays the forecasts for the top commodities shipped within Atlanta in 2030 by tonnage. Food or Kindred (113 million), Petroleum or Coal Product (63 million) and Chemicals or Allied Products (58 million) comprise the top three, accounting for thirty six percent of the total.

Exhibit 3.31: Top Ten Commodities Moving Through the Atlanta Region by All Modes 2030

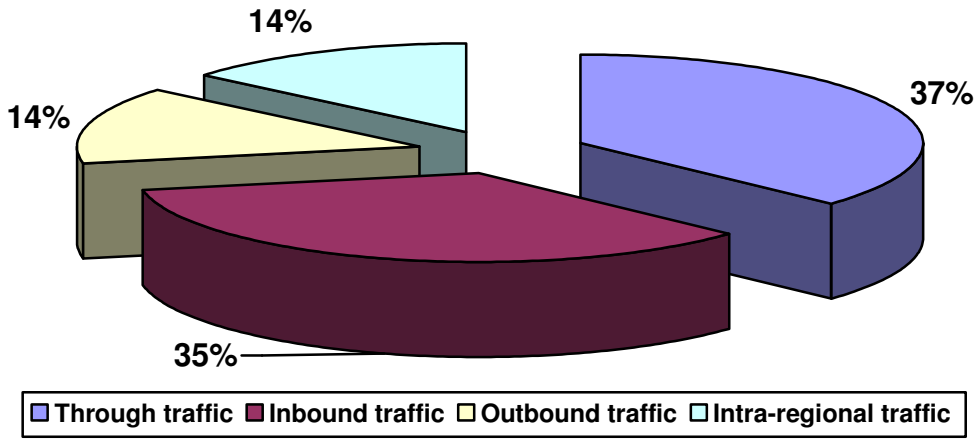
Commodity	Tons
Food Or Kindred Products	113,120,437
Petroleum Or Coal Products	63,827,476
Chemicals Or Allied Products	58,284,223
Secondary Traffic	54,695,833
Farm Products	53,533,614
Clay,Concrete,Glass Or Stone	42,646,004
Fabricated Metal Products	34,157,351
Pulp,Paper Or Allied Products	29,981,726
Transportation Equipment	28,766,022
Primary Metal Products	26,710,090
Other	142,534,313
Grand Total	**648,257,091**

3.3.2 2030 Forecasts of Commodity Movement by Mode

The amount of truck freight projected to move among the region will reach 90% compared to rail at 8.9 percent and air at .20 percent by 2030. Exhibit 3.32 indicates that of the 90 percent of freight forecasted to move by truck:

- 37 percent of the freight tonnage moved by truck passes through the region;
- 35 percent of the freight moved by truck represents inbound freight for the Atlanta area;
- 14 percent of the freight moved by truck represents outbound from the Atlanta region; and
- 14 percent of the trucked freight tonnage moves internally within the Atlanta region.

Exhibit 3.32: Freight Tonnage Transported via Truck in the ARC Region, 2030



Exhibits 3.33 through 3.36 depict the tonnages of directional flow for truck commodities for the Atlanta region. Secondary Traffic and Food or Kindred Products dominate the top commodities shipped. Secondary Traffic is the top commodity that originates and moves within the Atlanta region at 64 million and 77 million tons shipped respectfully. Food or Kindred Products is the top commodity that terminates and moves through the region.

The commodity mix of freight projected to move in 2030 will remain relatively constant when compared to the base year, 2005. Secondary Traffic will increase 67 percent from 2005, and will become more of an influence across all directional movements. Food and Kindred Products will increase by 47 percent from 2005 and will remain a major component of commodities moved throughout the region.

Truck Cargo, 2030

Exhibit 3.33 depicts the volume of commodities that are forecasted to originate from Atlanta and move by truck. The top commodities are secondary traffic (64 million), Food or kindred Products 37 millions and Clay, Concrete, Glass or Stone (23 million)

Exhibit 3.33: Top Ten Commodities Originating from Atlanta Region by Truck, 2030

Commodity	Tons
Secondary Traffic	64,063,164
Food Or Kindred Products	37,580,856
Clay,Concrete,Glass Or Stone	23,572,613
Lumber Or Wood Products	13,980,760
Transportation Equipment	12,129,896
Chemicals Or Allied Products	10,049,125
Nonmetallic Minerals	8,649,929
Petroleum Or Coal Products	7,904,216
Pulp,Paper Or Allied Products	6,803,882
Electrical Equipment	5,863,233
Other	25,287,637
Grand Total	**215,885,310**

Exhibit 3.34 depicts forecasted volume of commodities that originate via truck from Atlanta. The top commodities are Food or kindred Products (103 million), Lumber Wood Products (79 millions and Non metallic Minerals (68 million).

Exhibit 3.34: Top Ten Commodity Terminating in Atlanta Region by Truck, 2030

Commodity	Tons
Food Or Kindred Products	103,873,029
Lumber Or Wood Products	79,250,708
Nonmetallic Minerals	68,033,682
Petroleum Or Coal Products	59,692,798
Secondary Traffic	40,568,360
Clay,Concrete,Glass Or Stone	33,216,758
Chemicals Or Allied Products	26,436,680
Primary Metal Products	19,330,778
Transportation Equipment	19,265,052
Fabricated Metal Products	17,462,370
Other	78,874,434
Grand Total	**546,004,650**

Exhibit 3.35 depicts the forecasted volume of commodities moving through the Atlanta region via truck. These commodities have neither an originating or terminating point in the 20 county region. The top commodities are Food or kindred Products (106 million), Petroleum or Coal Products (58 millions and Secondary Traffic (54 million).

Exhibit 3.35: Top Ten Commodities Moved Through Atlanta Region by Truck, 2030

Commodity	Tons
Food Or Kindred Products	106,242,019
Petroleum Or Coal Products	58,031,166
Secondary Traffic	54,695,833
Farm Products	48,688,188
Chemicals Or Allied Products	44,725,574
Fabricated Metal Products	34,149,324
Clay,Concrete,Glass Or Stone	31,200,326
Transportation Equipment	24,423,906
Primary Metal Products	24,060,490
Lumber Or Wood Products	23,664,404
Other	105,873,234
Grand Total	**555,754,463**

Exhibit 3.36 depicts forecasted volume of commodities moving within the region via truck. The top commodities are Secondary Traffic (77 million), Non metallic Minerals (59 millions) and Clay, Concrete, Glass or Stone (35 million).

Exhibit 3.36: Top Ten Commodities Moving within Atlanta Region by Truck, 2030

Commodity	Tons
Secondary Traffic	77,480,589
Nonmetallic Minerals	59,234,840
Clay,Concrete,Glass Or Stone	35,164,071
Food Or Kindred Products	18,820,115
Lumber Or Wood Products	9,225,188
Petroleum Or Coal Products	4,177,690
Chemicals Or Allied Products	3,536,722
Transportation Equipment	3,362,076
Machinery	2,220,024
Primary Metal Products	1,707,632
Other	7,270,675
Grand Total	**222,199,621**

Trucks will serve as the most dominant mode of transportation in 2030, and the increase in specific commodities dictate its high use by shippers. The high amount of freight coming into the region supports the fact that the Atlanta region serves a major hub for consolidation of freight as well as the anticipated surge in population. For example, the propensity for secondary traffic, which is defined as freight flows to and from distribution centers or through intermodal facilities, to increase is directly related to the high amount freight transfer facilities within the Atlanta region, and the southeast. Therefore, the linkages between mode choice for freight traffic and current and future land use development are influencing factors in the growth of freight. Consumers and the economy often dictate the growth of commodities such as Food or Kindred products. However, major

distributors such as Coca-Cola, Publix and Kraft foods, which distribute commodities classified as Food or Kindred Products are permanent fixture in the Atlanta region and service the region's residents; therefore, as the population grows, so will the number of trucks needed to service their demands for consumer goods.

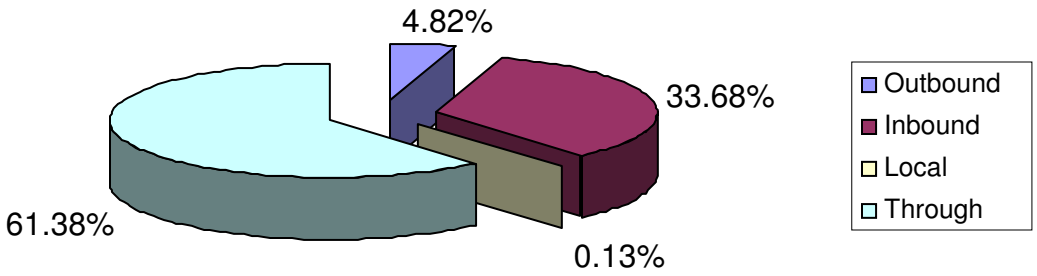
Rail Cargo, 2030

The amount of freight transported by rail by the year 2030 is projected to decrease from 12.0 percent in 2005 to 8.9 percent in terms of share of total freight tonnage. Of that 8.9 percent,

- 61 percent of the freight tonnage moved by rail passes through the region;
- 33 percent of the freight moved by rail represents inbound freight for the Atlanta area;
- 4 percent of the freight moved by rail represents outbound from the Atlanta region; and
- Less than 1 percent of the rail freight tonnage moves internally within the Atlanta region.

The directional flow of rail freight is described in Exhibits 3.37 through Exhibits 3.41. The majority of the commodities being transported by 2030 by rail pass through the Atlanta region; accounting for about 61 percent of the total rail tonnage. However, it should be noted that in 2005, pass-through rail traffic accounted for over 68 percent of the total rail volume. The shift in rail freight is reflected in the amount of inbound rail commodities, which will grow from 28 percent to approximately 34 percent by 2030. It is important to note the impact of this shift in rail freight on other modes. Rail as a mode of transportation by nature is typically used to move highly dense commodities longer distances. Therefore it is highly reasonable to assume that goods moving by rail with constitute for a high amount of pass through freight. However, since Atlanta's is a major freight hub, the amount of freight inbound rail freight is significant. Although the shift in the directional flow from through freight to inbound freight is a slight 5 percent, inbound rail volume will increase by 61 percent. The rail volume that is destined for rail terminals within the region will, in most cases, need to eventually be transported by truck to another terminal or end user. This reinforces the connectivity between the increase in the directional flow of freight volume for one specific mode and the eventual impact to another mode. In this case, the 5 percent shift in rail commodities passing through the region to commodities terminating in the region contributes to the increase truck volumes as percentage of overall freight volume.

Exhibit 3.27: 2030 Forecast of Freight Tonnage Moved by Rail for the 20-County ARC Region



Coal, Transportation Equipment and Waste or Scrap Materials are projected to be the most dominant commodities shipped by rail in terms of volume. Coal accounts for 44 percent of all of the commodities shipped that are destined for the Atlanta region. Transportation Equipment and Waste Scrap Materials constitute for 72 percent of all of the commodities that are shipped by rail from the region by 2030. Transportation equipment shipped by rail is projected to increase significantly, but the economy will determine the volume of many of these commodities, as exampled by transportation equipment, which is projected to increase by 80 percent. However, changes in the local automotive industry may impact these values, as the changes at the Ford plant and GM plant will cause a decrease in the need for this type of commodity to travel to the region.

Exhibit 3.38 depicts the volume of commodities projected to originate from Atlanta by rail. The top commodities are Transportation Equipment (3 million), Waste or Scrap Materials (2 million) and Miscellaneous Mixed Shipments (1 million).

Exhibit 3.38: Top Ten Commodity Originated in Atlanta Region by Rail, 2030

Commodity	Tons
Transportation Equipment	3,024,768
Waste Or Scrap Materials	2,280,489
Miscellaneous Mixed Shipments	1,040,072
Food Or Kindred Products	301,641
Clay, Concrete, Glass Or Stone	161,787
Nonmetallic Minerals	160,289
Shipping Containers	77,732
Chemicals Or Allied Products	58,996
Petroleum Or Coal Products	53,955
Primary Metal Products	51,002
Other	51,024
Grand Total	**7,261,757**

Exhibit 3.39 depicts the projected volume of commodities terminating in the Atlanta region in 2030. The top commodities are Coal (22 million), Clay, Concrete, Glass or Stone (4 million) and Farm Products (4 million).

Exhibit 3.39: Top Ten Commodities Terminating in Atlanta Region by Rail, 2030

Commodity	Tons
Coal	22,863,904
Clay,Concrete,Glass Or Stone	4,732,219
Farm Products	4,462,232
Food Or Kindred Products	4,030,629
Nonmetallic Minerals	3,245,775
Transportation Equipment	2,771,132
Chemicals Or Allied Products	1,930,014
Misc Mixed Shipments	1,614,677
Pulp,Paper Or Allied Products	1,360,238
Petroleum Or Coal Products	1,076,032
Other	2,672,766
Grand Total	**50,759,616**

Exhibit 3.40 depicts the projected volume of commodities moving within the Atlanta region in year 2030. The top commodities are Waste or Scrap Materials (82 thousand), Transportation Equipment (60 thousand) and Chemicals or Allied Products (18 thousand).

Exhibit 3.40: Commodities Moving Internally in Atlanta Region by Rail, 2030

Commodity	Tons
Waste Or Scrap Materials	82,682
Transportation Equipment	60,182
Chemicals Or Allied Products	18,247
Food Or Kindred Products	15,020
Clay,Concrete,Glass Or Stone	14,163
Other	0
Grand Total	**190,294**

Exhibit 3.41 depicts the projected volume of commodities moving through the Atlanta region by 2030. The top commodities are Coal (19 million), Chemicals or Allied products (13 million) and Clay, Concrete, Glass or Stone (11 million).

Exhibit 3.41: Top Ten Commodities Moving Through the Atlanta Region by Rail

Commodity	Tons
Coal	19,842,888
Chemicals Or Allied Products	13,558,650
Clay,Concrete,Glass Or Stone	11,445,679
Pulp,Paper Or Allied Products	7,253,479
Food Or Kindred Products	6,878,418
Petroleum Or Coal Products	5,796,310
Nonmetallic Minerals	5,060,424
Farm Products	4,845,427
Waste Or Scrap Materials	4,426,449
Transportation Equipment	4,342,116
Other	9,052,789
Grand Total	**92,502,628**

Commodities moved by rail are forecast to increase by 37 percent by the year 2030, but are projected to decrease in the total share of freight hauled. Local freight moves is expected to increase by 195 percent from 2005 but will only constitute for slightly more than 0.1 percent of the overall freight volume.

Air Cargo

Air freight is projected to grow 148 percent by 2030 as miscellaneous mixed shipments and Electrical Equipment will dominate the commodities shipped by Air. Miscellaneous Mixed Shipments and Electrical Equipment will increase by 141 percent and 545 percent respectively. Interestingly enough, Mail or Contract traffic which dominated the amount of freight that is destined for the region decreases by 560 percent by 2030. This is reflective of Delta's loss of its contract with the US Postal service, The increase these types of goods create reliance for high value and

time sensitive electrical equipment to move by air and indicates a need for these industries to rely on a supply chain network that incorporates connection between air and truck carriers.

Exhibit 3.42 depicts the projected volume of air cargo commodities originating in the Atlanta region. The top commodities are 2030 Miscellaneous Mixed Shipments (540 thousand), Mail or Contract traffic (124 thousand) and Electrical Equipment (4 thousand).

Exhibit 3.42: Top Commodities Originating in Atlanta Region by Air, 2030

Commodity	Tons
Miscellaneous Mixed Shipments	540,356
Mail Or Contract Traffic	124,221
Electrical Equipment	4,260
Machinery	3,814
Transportation Equipment	1,951
Printed Matter	1,790
Chemicals Or Allied Products	1,649
Rubber Or Misc Plastics	357
Apparel Or Related Products	0
Other	0
Grand Total	**678,397**

Exhibit 3.43 depicts the volume of air cargo by commodity that is forecasted to be destined for the Atlanta region in 2030. The top commodities are electrical equipment (622 thousand), Transportation Equipment (494 thousand) and Machinery (346 thousand).

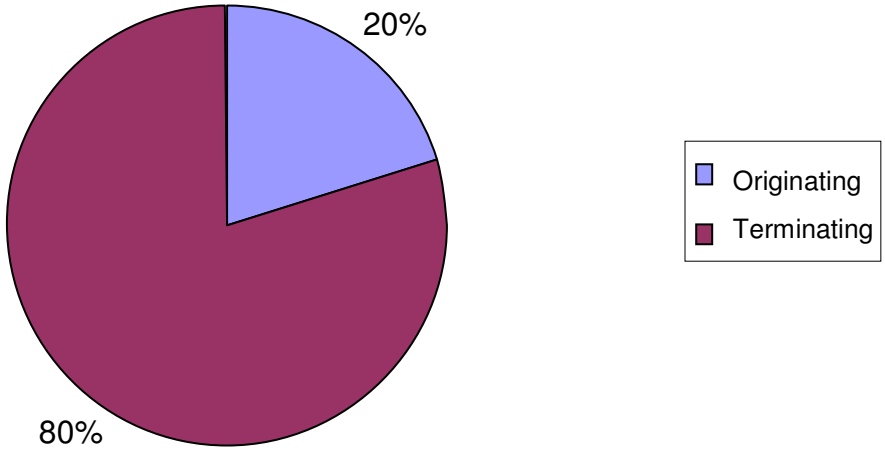
Exhibit 3.43: Top Ten Commodities Terminating in Atlanta Region by Air

Commodity	Tons
Electrical Equipment	622,816
Transportation Equipment	494,099
Machinery	346,285
Chemicals Or Allied Products	334,581
Mail Or Contract Traffic	215,863
Miscellaneous Mixed Shipments	172,107
Instrument, Photo Equipment, Optical	116,170
Printed Matter	85,318
Miscellaneous Manufacturing Products	71,307
Fabricated Metal Products	67,297
Other	161,801
Grand Total	**2,687,646**

Exhibit 3.43 suggests that 80 percent of the region's air freight in 2030 will be destined for the Atlanta region. The Atlanta Hartsfield-Jackson Airport is a major catalyst for air cargo that generates additional truck moves. Even though air freight is typically lighter in weight, this cargo

often times may have specific loading requirements that cause more space to be utilized on a trailer, thereby increasing the number of vehicles needed to transport air cargo load.

Exhibit 3.44: 2030 Forecasted Freight Tonnage Moved by Air for the 20-County ARC Region

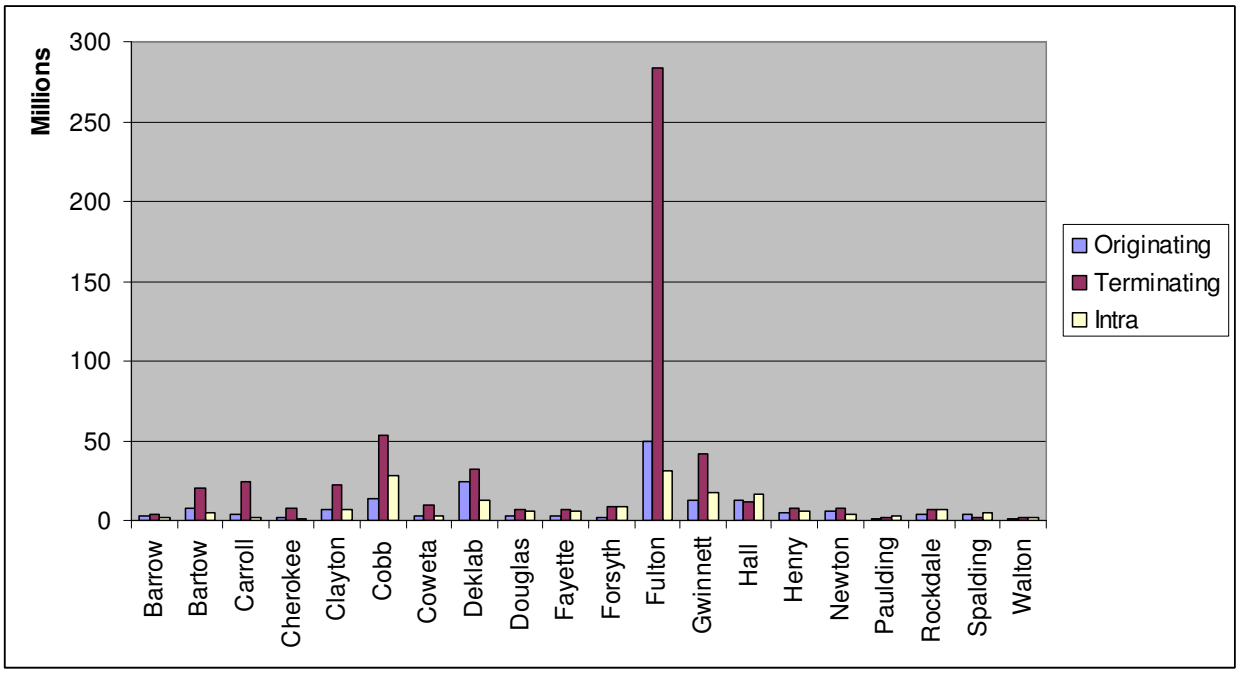


3.3.3 2030 Freight Forecast by County

Exhibit 3.45 and Exhibit 3.46 show the forecasted freight flows by county for originating, terminating and internal freight movements for 2030. Fulton County is expected to continue to be the dominate county in terms of overall freight flow, especially for inbound freight. Fulton County is projected to experience 383 million tons of freight moving among the county, followed by Cobd and Dekalb Counties at 95 million and 68 million respectfully.

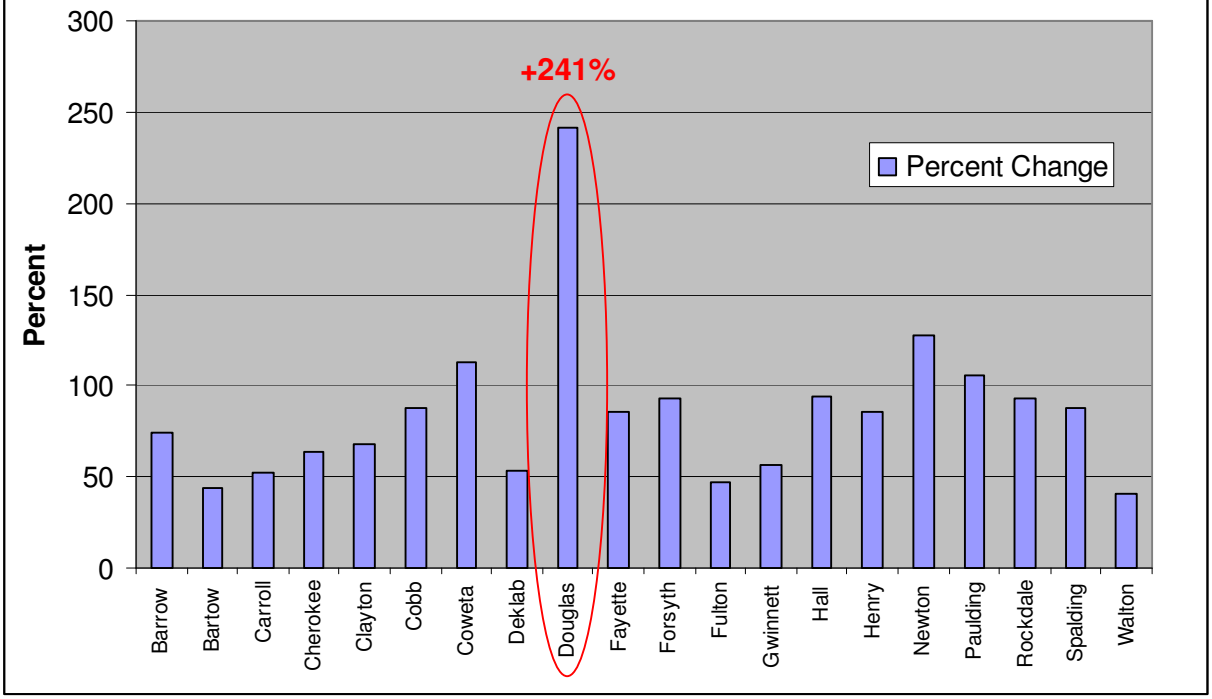
Although Fulton, Cobb and Dekalb counties constitute for the counties with the highest amount of freight moving in the region, Douglas County will experience the largest grow rate at an increase of 241 percent by 2030 from 2005. The most pertinent potential impact may exist with the highway infrastructure, as major truck routes such as Interstate 20 and State route 78 extend through the county, and serve as the main roads to access western markets. I-20 and SR 78 currently have recorded some of the highest truck counts throughout the Atlanta region, so the project increase in volume will eventually lead to additional strain on these road segments and the need for additional capacity in the system. These roads are identified as apart of the strategic freight highway system which will be discussed later in Section 5.

Exhibit 3.45: Freight Movements by County, 2030 (Originating, Terminating, Intra-County)



County	Originating	Terminating	Intra	Total
Barrow	2,447,066	4,101,404	2,344,449	8,892,918
Bartow	7,904,020	20,604,916	4,473,442	32,982,378
Carroll	3,607,665	24,735,535	1,600,136	29,943,335
Cherokee	1,974,661	8,189,654	934,907	11,099,222
Clayton	6,754,031	22,142,065	7,085,212	35,981,308
Cobb	13,381,435	53,537,147	28,621,954	95,540,536
Coweta	2,469,797	9,249,479	2,991,221	14,710,497
Dekalb	24,211,355	31,999,091	12,717,280	68,927,726
Douglas	3,253,487	7,213,066	5,387,202	15,853,755
Fayette	3,253,487	7,213,066	5,387,202	15,853,755
Forsyth	1,768,727	8,868,638	8,534,790	19,172,155
Fulton	49,211,505	283,783,383	31,105,440	364,100,328
Gwinnett	13,060,614	42,013,216	17,228,117	72,301,947
Hall	12,499,307	11,803,176	16,934,333	41,236,815
Henry	5,131,367	7,486,479	5,612,392	18,230,238
Newton	6,124,030	7,546,424	3,551,024	17,221,478
Paulding	789,052	1,580,081	2,552,124	4,921,257
Rockdale	3,944,491	6,523,661	6,645,411	17,113,563
Spalding	3,992,781	2,012,771	4,674,086	10,679,638
Walton	1,356,436	1,910,993	1,565,561	4,832,990

Exhibit 3.47: Percent Change of County Freight Flow 2005 to 2030



3.3.4 Domestic Trading Partners, 2030

Exhibits 3.48 and Exhibit 3.49 display the key urbanized areas that are key trading partners for the Atlanta region. By 2030, the inbound and outbound freight to and from these major BEA regions will double. The top domestic trading partners for freight terminating from the Atlanta region is Chicago, Illinois (27 million), Charleston, South Carolina (26 million) and Albany, Georgia (26 million) and the top domestic trading partners for freight originating from the Atlanta region is Macon-Warner Robins, Georgia (15 million), Miami-Fort Lauderdale, Florida (13 million) and Los Angeles, California (12 million). A major point of emphasis throughout this report is the fact that the Atlanta region is a major transportation and logistics hub. Identifying volumes with the study is important, however, it is vital to understand the relationship the that the region shares with other major regions. In 2030, the Macon, Georgia area will remain the top BEA that Atlanta ships freight to; however, Chicago will assume the position as the top BEA that ships freight to the Atlanta region. Macon serves as a key external consolidation point for the Atlanta region. Due to Interstate 75 and interstate 16 merging in Macon, this area serves as a transfer for freight destined for Florida or Savannah. The southeast still remains a major contributor for inbound freight to the region. Areas such as Charleston, Savannah Georgia and Jacksonville, Florida are support by ports domiciled in those regions. As for outbound freight, Miami, Florida and Los angles are major port gateways for international freight shipments.

Exhibit 3.48: Top 10 Domestic Trading Partners (By BEA) Commodities Terminating in the Atlanta Region, 2030

BEA*	Volume (Tons)
Chicago-Naperville-Michigan City, IL-IN-WI	27,626,223
Charleston-North Charleston, SC	26,938,041
Albany, GA	26,550,550
Savannah-Hinesville-Fort Stewart, GA	24,160,216
Macon-Warner Robins-Fort Valley, GA	23,453,886
Augusta-Richmond County, GA-SC	16,800,891
Birmingham-Hoover-Cullman, AL	13,349,682
Jacksonville, FL	13,114,395
Kansas City-Overland Park-Kansas City, MO-KS	12,139,848
Lexington-Fayette--Frankfort--Richmond, KY	11,373,147
Other	309,664,478
Grand Total	**505,171,358**

Exhibit 3.49: Top 10 Domestic Trading Partners (By BEA) Commodities Originating from Atlanta Region, 2030

BEA*	Volume (Tons)
Macon-Warner Robins-Fort Valley, GA	15,224,573
Miami-Fort Lauderdale-Miami Beach, FL	13,063,553
Los Angeles-Long Beach-Riverside, CA	12,967,964
Birmingham-Hoover-Cullman, AL	10,444,470
Albany, GA	10,277,220
Savannah-Hinesville-Fort Stewart, GA	10,212,994
Jacksonville, FL	10,036,623
Orlando-The Villages, FL	7,338,981
San Jose-San Francisco-Oakland, CA	6,896,974
Augusta-Richmond County, GA-SC	6,113,328
Other	94,905,593
Grand Total	**197,482,274**

4. Freight Safety Profile

4.0 Introduction

Safety is a large component of freight transportation and is a top priority for both public officials and commercial freight motor carriers. Understanding crash data is extremely important in creating policy or investing technology that addresses safety. This section presents information regarding safety implications as gleaned from crash data for the region. Unless otherwise referenced, the data used is from the Critical Analysis Reporting Environment (CARE) system developed as part of the CARE Project at the University of Alabama. This system combines databases of crash data from state sources with analysis and reporting tools to allow mining of the data.

It is desirable to look at data from multiple years in order to look at trends as well as even out the results that might be seen if looking at only one or two years of data. Within the CARE databases, two databases were found to contain multiple years of crash data. For the Atlanta region, there are some key findings that should be incorporated into future planning considerations for freight:

- The Atlanta region had 8,819 crashes annually, on average, from 2000-2005
- Fulton County had the most commercial vehicle crashes during this time period, registering 11, 628 crashes, followed by Dekalb and Cobb County at 9,038 and 6,850 respectively
- 62 percent of Commercial Vehicle crashes are caused by Commercial Vehicles themselves.
- Commercial vehicles crashes have increase by 41 percent since 2000.
- Although a slight discrepancy exists when comparing for month by month commercial vehicle crashes, January and February records the least amount of crashes for all months at approximately 7 percent of all crashes. Traditionally, freight volumes tend to be lower during these months.
- Saturday and Sunday record the least amount of crashes during the week, but commercial vehicle crashes remain constant throughout the week.
- The vast majority of most commercial vehicle crashes occur between 7am to 7pm, peaking from 3pm to 4pm.
- Only 1 percent of commercial vehicles crashes result in fatalities.
- 68 percent of commercial vehicle crashes involve tractor trailer combination vehicles and only 3 percent of all commercial vehicle crashes involved hazardous materials.
- 33 percent of all crashes occur at intersections.

The databases were mined to find information regarding the trends and characteristics of commercial vehicle crashes in the ARC area. The following sections describe the result of these findings.

4.2 Number of Commercial Vehicle Crashes

One dataset found in the CARE system was listed as “2000-2005 Georgia Commercial Vehicle Data”. While no explanation is provided for the source of the dataset other than

the name, it was discovered in comparing this dataset to the "2000-2005 Georgia Crash Data" database, that the "2000-2005 Georgia Commercial Vehicle Data" database contains a record for each commercial vehicle involved in an accident. The "2000-2005 Georgia Crash Data" database contains one record for each crash. Exhibit 4.1 presents the number of crashes involving commercial vehicles in the 20-county ARC area for period from 2000 through 2005 and the number of commercial vehicles involved annually.

Exhibit 4.1: Commercial Vehicle Crashes in ARC Area

Year	Number of Crashes Involving Commercial Vehicles	Number of Commercial Vehicles Involved
2000	7,573	8,086
2001	7,387	7,949
2002	8,400	9,073
2003	9,429	10,169
2004	9,417	10,225
2005	10,710	11,720
Total	**52,916**	**57,222**

As noted above, the data available in the CARE databases represents the number of crashes and the number of vehicles involved in the crashes, however, these data are not correlated to roadway volumes, therefore no crash rates are available.

4.3 When Crashes Occur

This section presents various results showing when crashes involving commercial vehicles occur. The time periods examined include annual variation, monthly variation, day of week variation, and time of day variation.

Looking at the annual occurrence of crashes involving commercial vehicles from 2000 to 2005, there has been an overall increase in the number of these crashes. In a couple of years the number decreased slightly from year to year, but the overall increase was from 7,573 in 2000 to 10,710 in 2005 (Exhibit 4.1).

According to the Atlanta Regional Commission 2006 Fact Book, the average daily VMT (vehicle miles traveled) in the 10-County ARC region increased from just below 110,000,000 miles to just over 118,000,000 miles. This is an increase of 7.5%. In contrast, the commercial vehicle crash data shows that in the same time period the number of crashes involving commercial vehicles in the 20-county ARC area increased from 7,573 to 10,710. This is an increase of 41%. In comparison, the overall number of crashes in the 20-county ARC area during the same period increased from about 183,000 to about 210,000, an increase of 15%. Looking at these numbers a different way, crashes involving commercial vehicles in the 20-county area went from 4.1% of all crashes to 5.1% in the period from 2000 to 2005.

Looking at monthly variations in the number of crashes involving commercial vehicles, Exhibit 4.2 shows that there are obvious variations from year to year in the number of crashes in each month. However, Exhibit 4.3 shows that averaged over the six-year period of analysis only slight variations are observed. Most of this variation can be attributed to the different number of days in the various months, and overall there is no apparent significant difference in the monthly occurrence of these crashes.

Exhibit 4.4 shows that while there is a noticeable difference between weekdays and weekend days, there is no significant difference in the occurrence of commercial vehicle crashes on weekdays. This likely reflects the distribution of commercial vehicle miles traveled.

Finally, in the category of "When Crashes Occur" is an examination of time-of-day distribution. Exhibit 4.5 shows an hourly distribution of crashes involving commercial vehicles. These again are the total number of occurrences in the 20-county ARC area from 2000-2005. As previously indicated, while the volume and vehicle miles traveled were not correlated to the crash data in the CARE database, it is obvious that the number of crashes follows the daily flow of traffic observed in an urban area, which in turn indicates that congestion is giving rise to increases in commercial vehicle crashes and that strategies that focus on improving safety during peak periods will have the most impact.

Exhibit 4.2: Crashes by Year

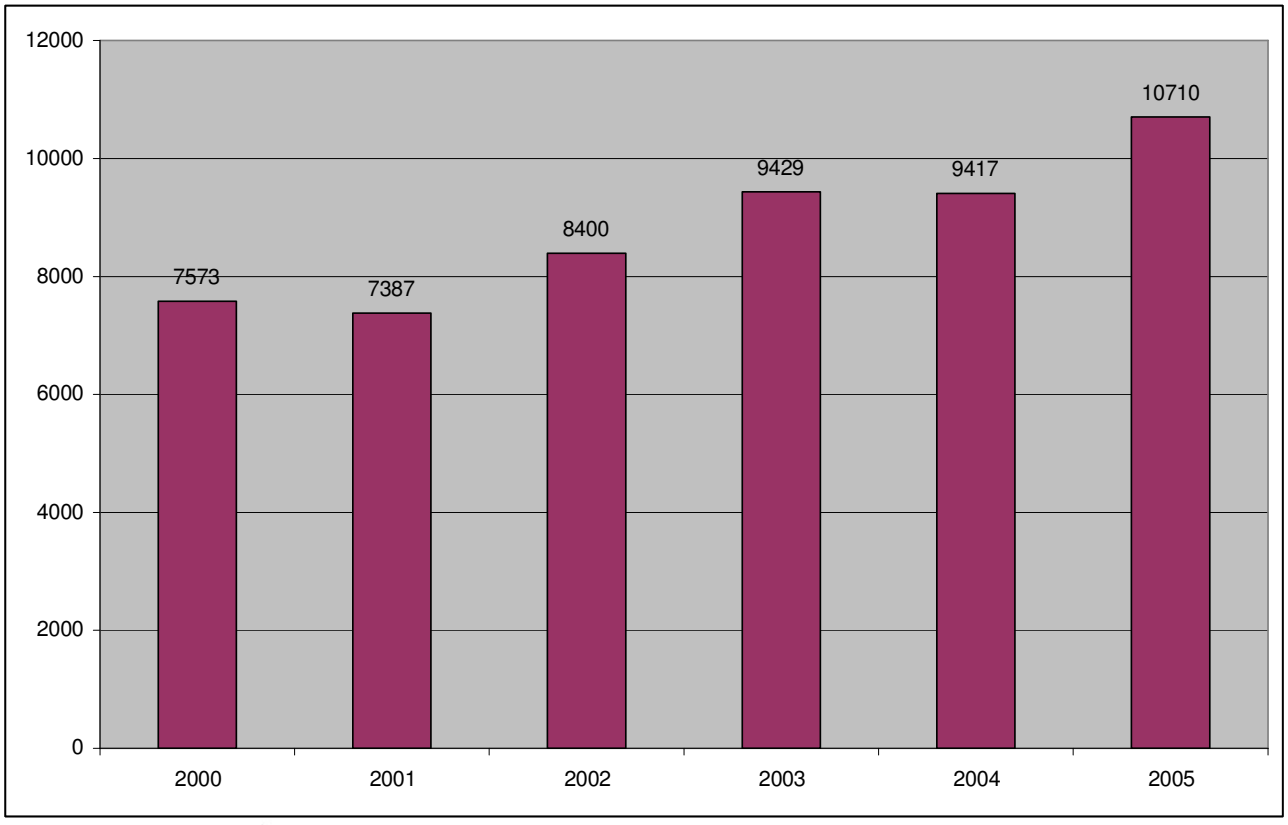


Exhibit 4.3: Crashes by Month by Year

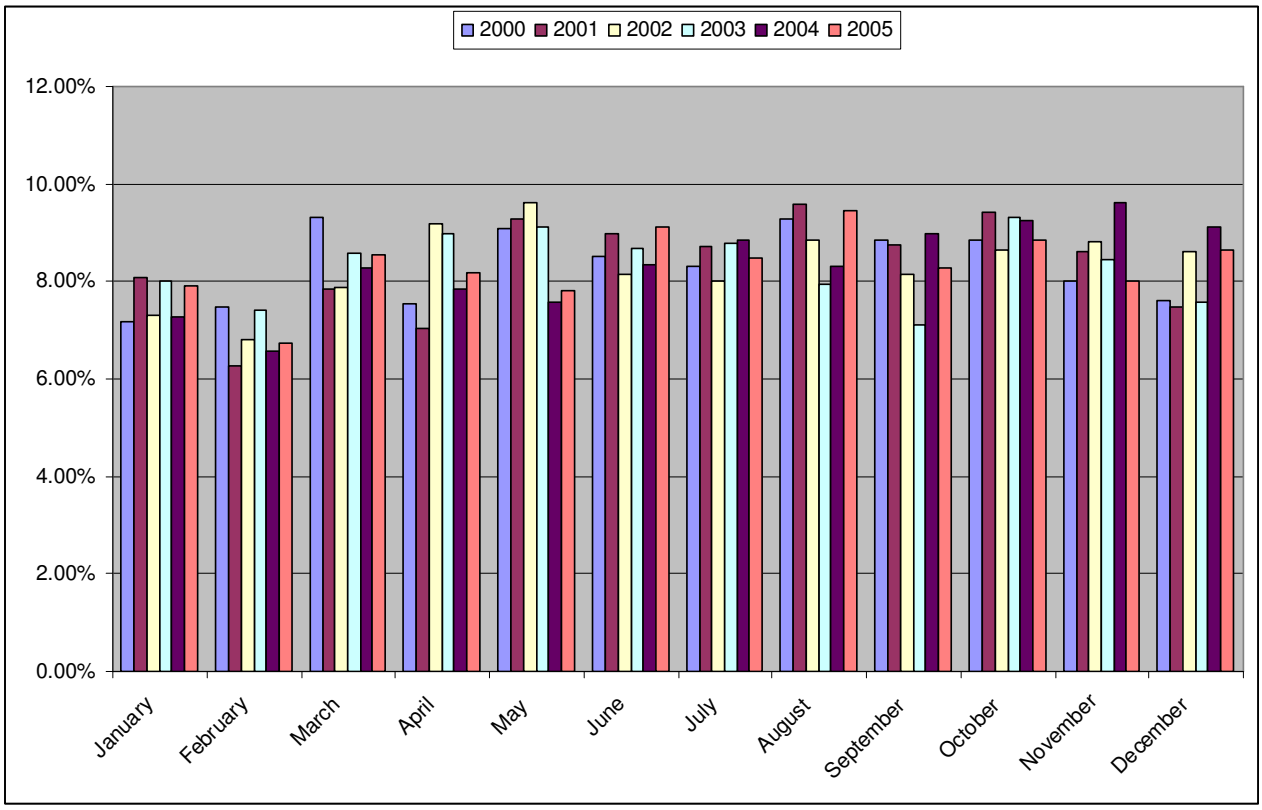


Exhibit 4.4: Crashes by Month (2000-2005)

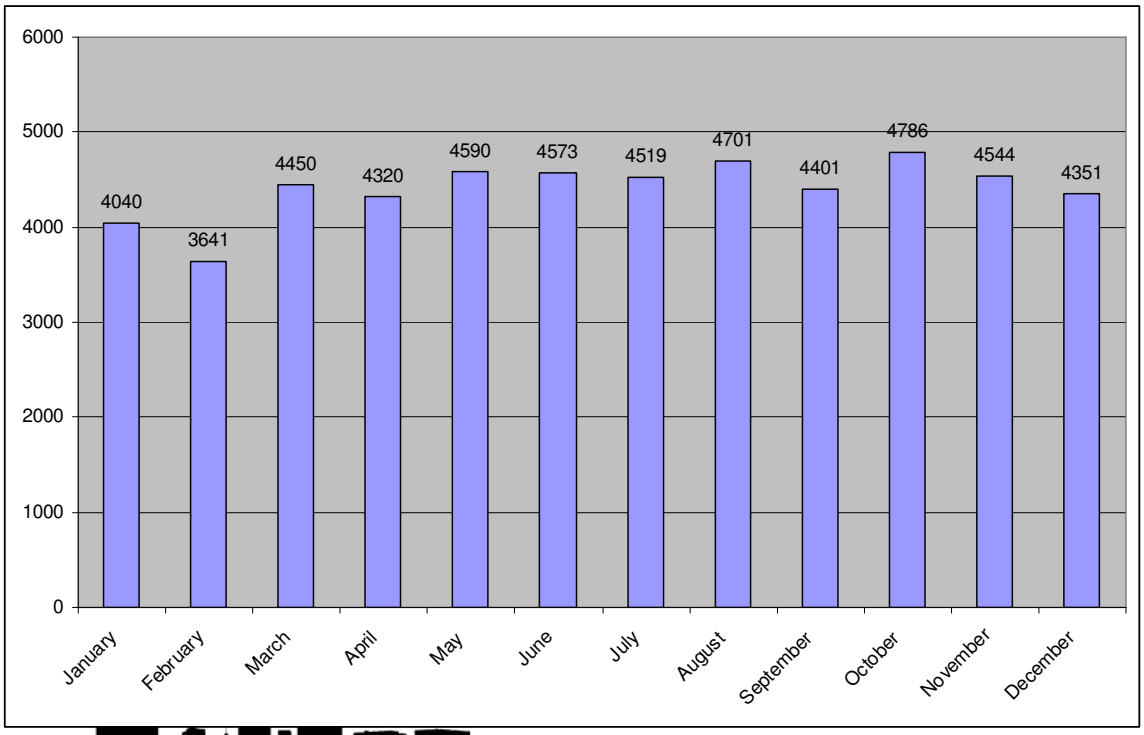


Exhibit 4.5: Crashes by Day of the Week

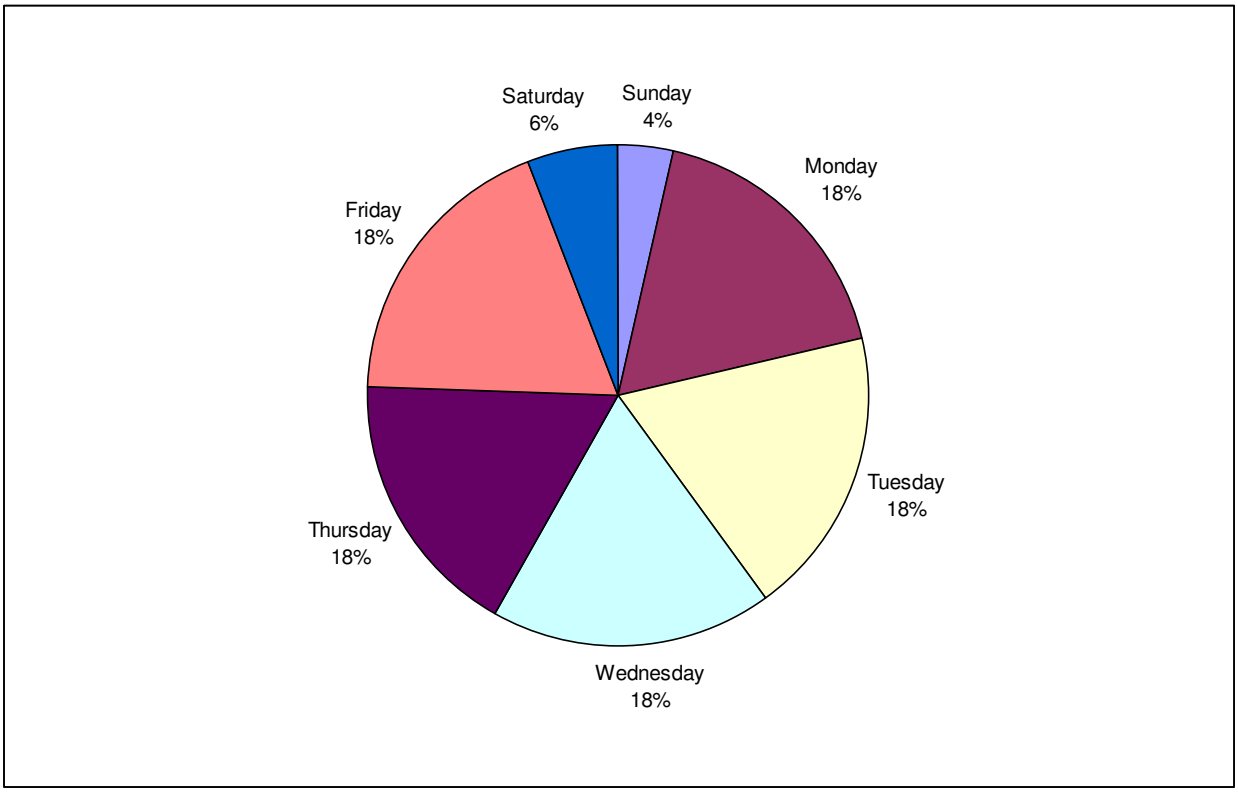
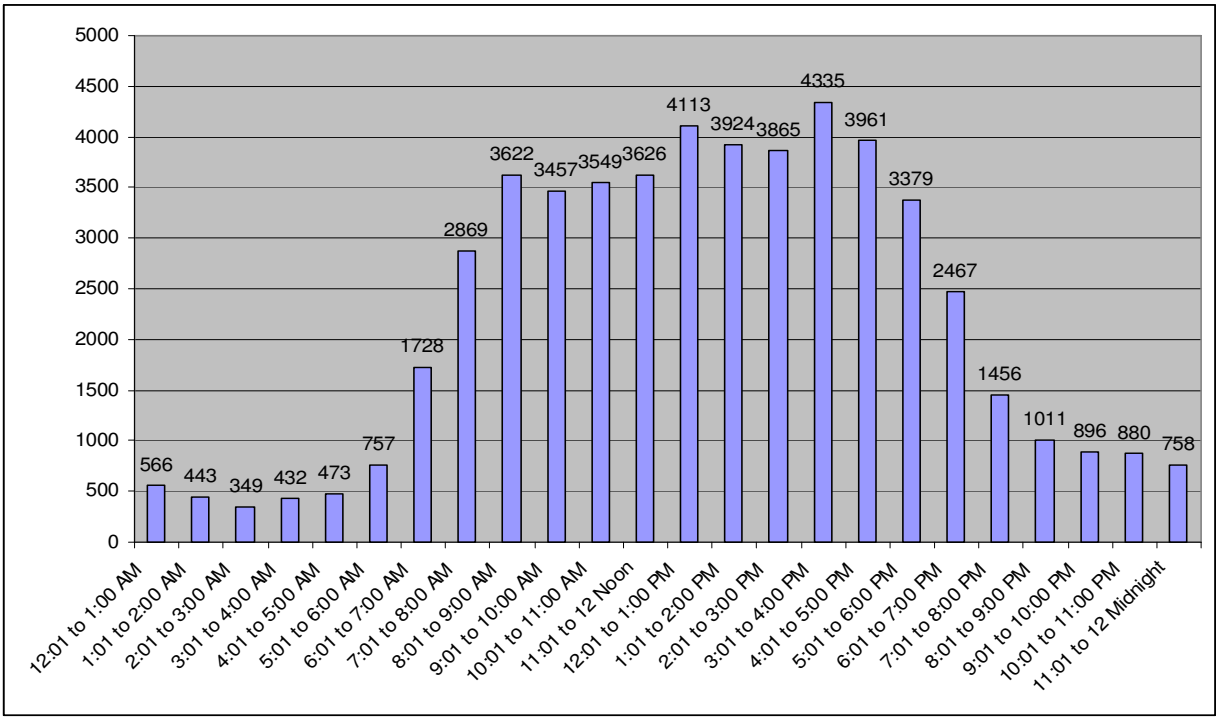


Exhibit 4.6: Crashes by Time of Day



4.4 T[illegible] Crashes Involving Commercial Vehicles

In addition to looking at when crashes have occurred, the CARE databases contain data that will allow an examination of the type of crashes involving commercial vehicles. These examinations include the types of crashes, (or manner of collision), the crash severity and the involvement of more than one commercial vehicle.

Exhibit 4.7 shows the percentages of various types of crashes that occurred from 2000-2005 involving commercial vehicles. Rear end and sideswipe same direction collisions are the two most common, with angle collisions being third most common. This correlates with other information documented in this document that indicates that most crashes involving commercial vehicles occur on high volume roadways (interstates) and not primarily at intersections. The data also indicates that 12% of the crashes are crashes that do not involve other vehicles, which are typically crashes where the vehicle ran off the road and struck an object.

Exhibit 4.8a shows the Crash Severity distribution of crashes involving commercial vehicles, while Exhibit 4.8b shows the distribution of Crash Severity for crashes that did not involve a commercial vehicle. It can be seen that while a larger percentage of commercial vehicle crashes were property damage only (PDO) compared to non-commercial vehicle crashes, the percentage of fatalities in commercial vehicle crashes is higher.

Exhibit 4.9 presents the number of crashes documented in which one or more commercial vehicles were involved. By multiplying the number of crashes with the number of commercial vehicles involved, the total number of commercial vehicles involved in crashes is obtained, which was documented earlier. Exhibit 4.9 also shows that about 4,000 out of almost 53,000 crashes (8%) involving commercial vehicles involve more than one commercial vehicle.

Exhibit 4.7: Type of Crash

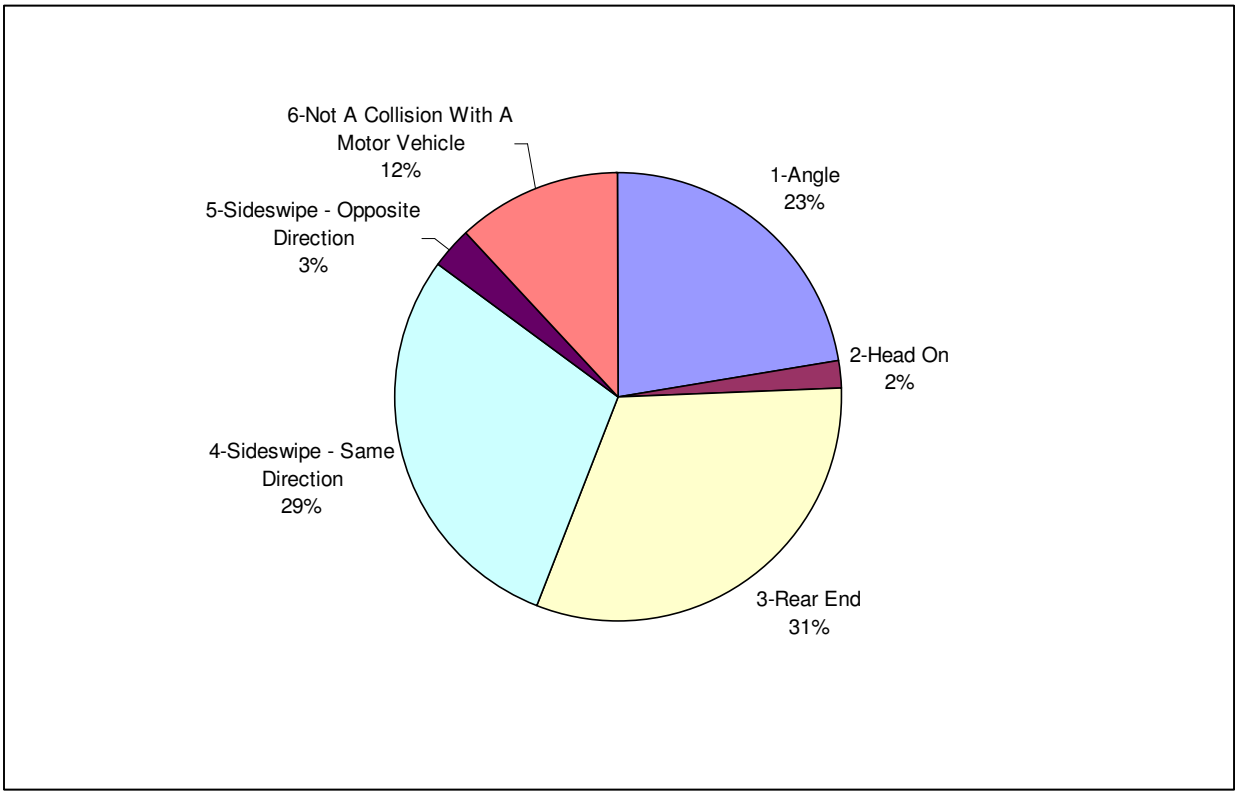


Exhibit 4.8a: Crash Severity for Crashes Involving Commercial Vehicles

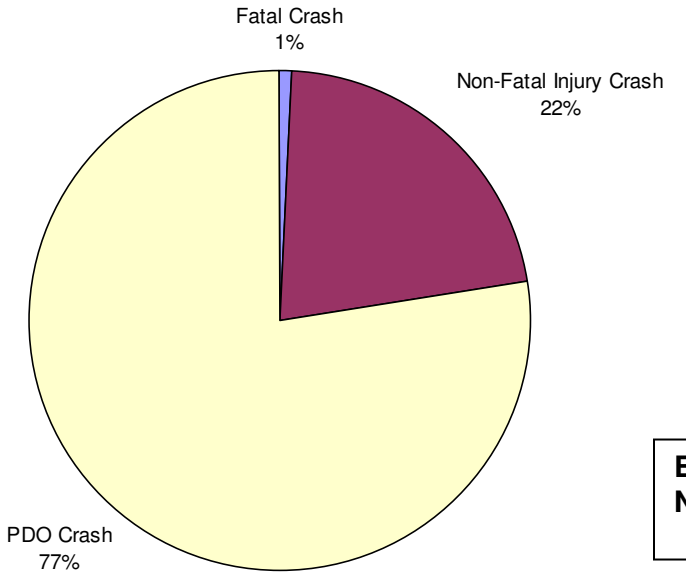


Exhibit 4.8b: Crash Severity for Crashes Not Involving Commercial Vehicles

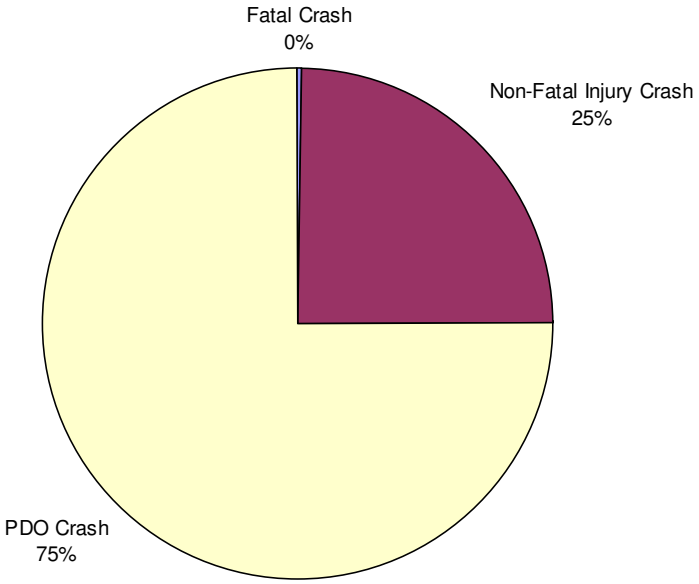


Exhibit 4.9: Number of Commercial Vehicles Involved in Crash

Number of Commercial Vehicles Involved in Crash	Number of Crashes	Total Number of Commercial Vehicles Involved
1	48,853	48,853
2	3,851	7,702
3	193	579
4	11	44
5	4	20
6	4	24
Total	**52,916**	**57,222**

4.5 Types of Commercial Vehicles involved in Accidents

Next, information is presented that shows the Types of Commercial Vehicles involved in crashes. First, an examination of the gross vehicle weight of the vehicles involved shows that the vast majority are fully loaded tractor trailer trucks in the 70,000 to 80,000 pound range (Exhibit 4.10). This is correlated by the other categories of vehicle type information shown in Exhibit 4.11 and Exhibit 4.12. Exhibit 4.11 confirms that tractor trailer trucks are the most represented vehicle configuration in the crash database. Exhibit 4.12 shows that enclosed box body types are the most common vehicle body types represented and that flatbed trailers are the next most frequently represented vehicle body type.

Exhibits 4.11 and 4.12 also show dump trucks are the most commonly involved single unit truck involved in crashes.

Another characteristic of the commercial vehicles that can be examined is the presence of hazardous materials cargo. Exhibit 4.13 shows that 3% of the commercial vehicles involved in crashes in the ARC area are carrying hazardous material. Additional analysis of the database indicates that out of the approximately 1,100 vehicles carrying hazardous materials when involved in a crash, about 200, or about 18%, experienced a release of hazardous materials as a result of the crash.

Exhibit 4.10: Gross Vehicle Weight of Commercial Vehicles Involved in Crashes

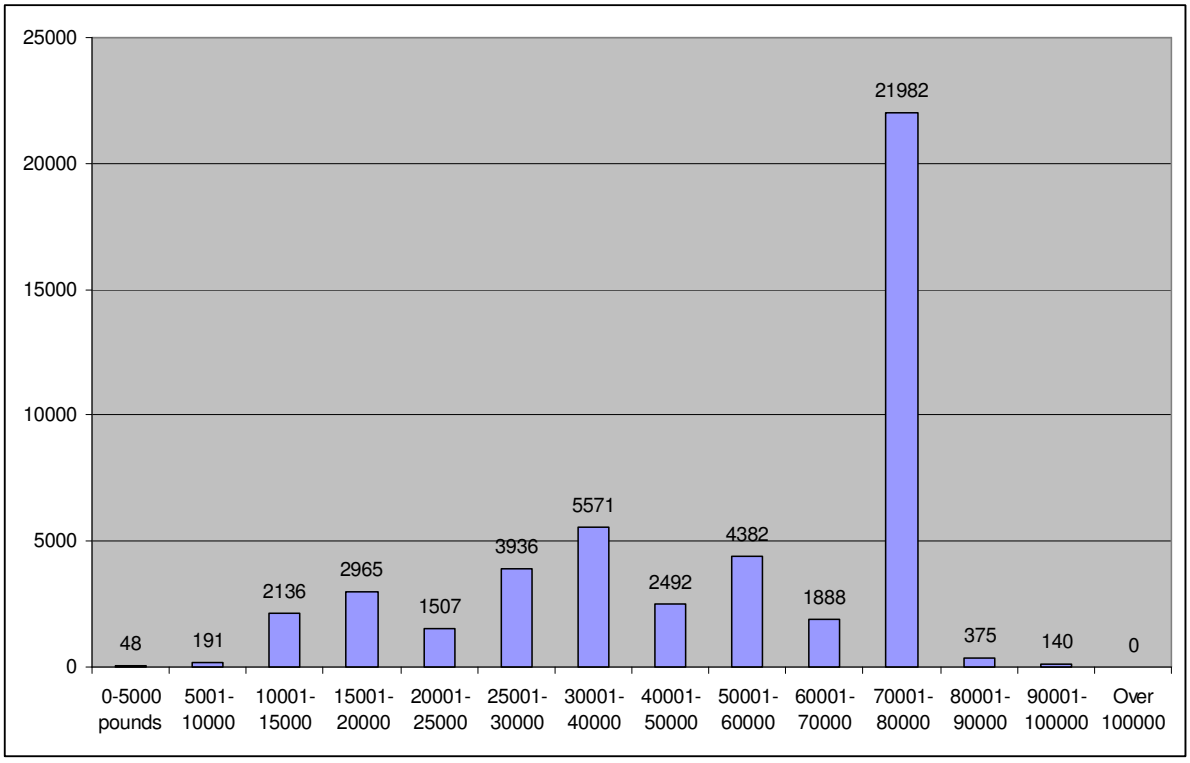


Exhibit 4.11: Vehicle Configuration

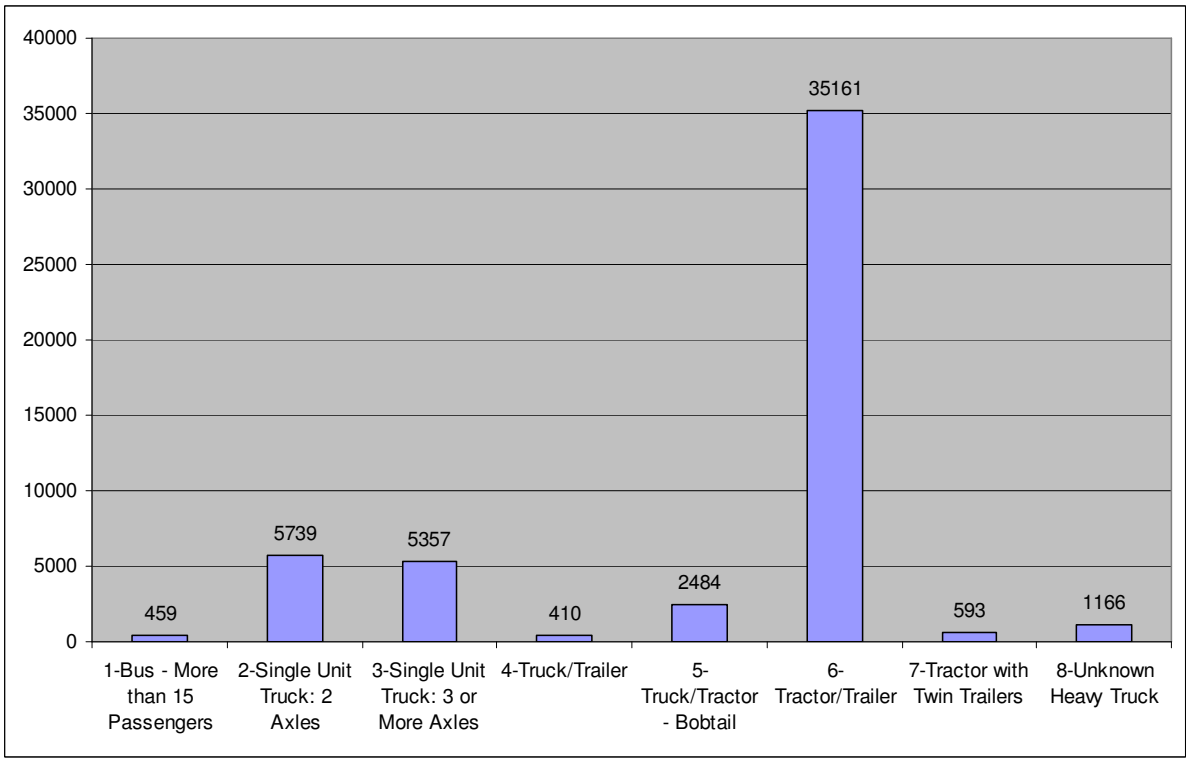


Exhibit 4.12: Body Type

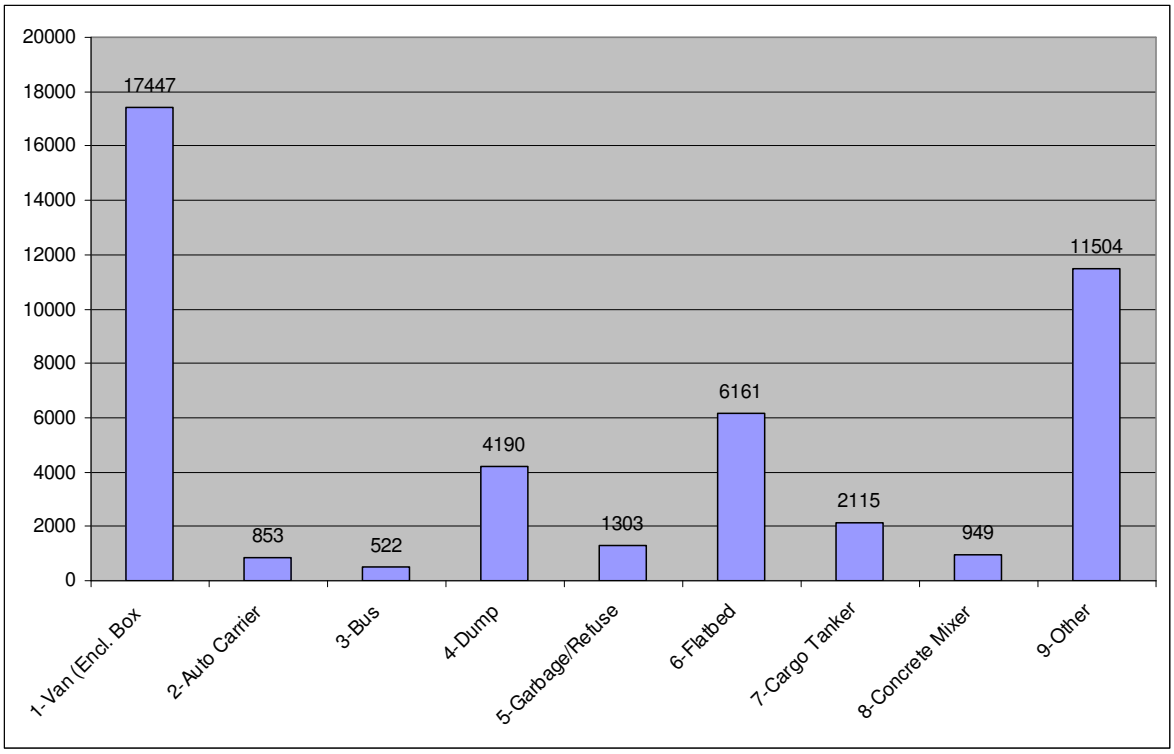
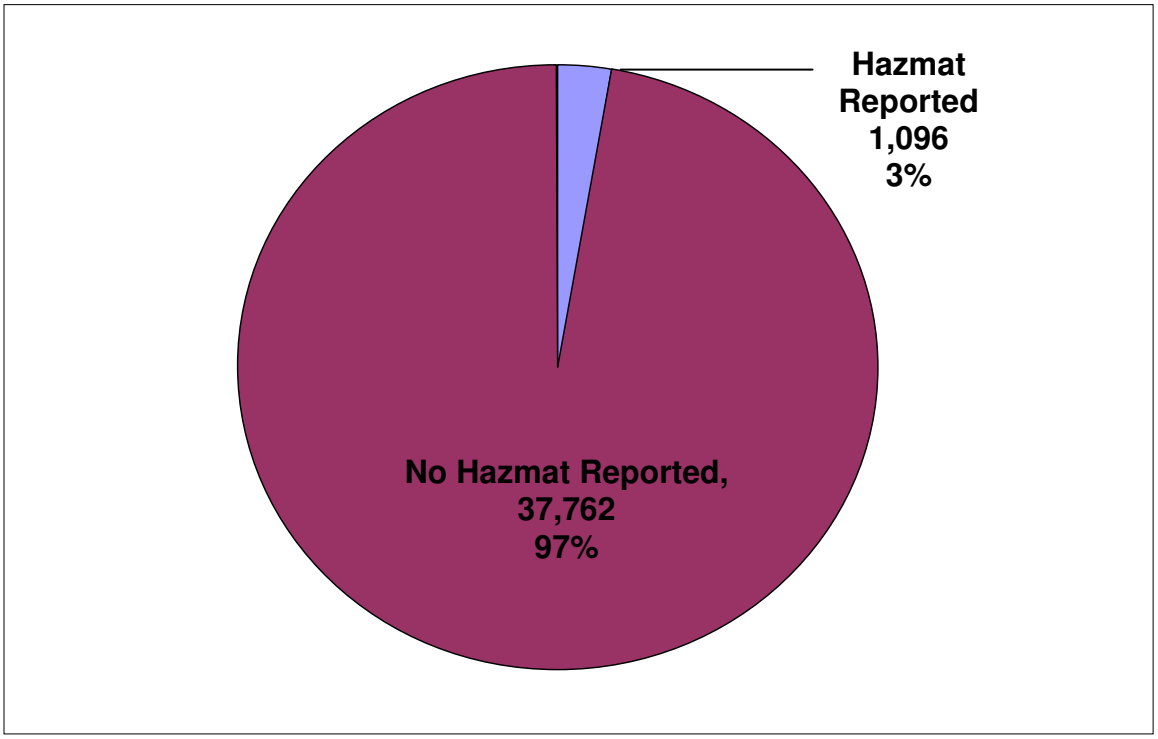


Exhibit 4.13: Crashes Involving Hazardous Materials



4.6 Commercial Crashes involving Private Vehicles

Another set of variables that can be used to characterize commercial vehicle crashes are those variables that indicates who is involved, particularly the drivers. The variables that were examined from the available data were whether the causal vehicle involved in the crash was the commercial vehicle, the state that issued the license of the commercial driver if the commercial driver was the cause of the crash, whether the vehicle involved was designated as interstate or intrastate, whether a commercial vehicle driver involved in a crash was operating with suspended CDL, and whether the commercial vehicle driver that caused a crash was under the influence of alcohol or drugs.

First, Exhibit 4.14 shows the annual number of crashes caused by a commercial vehicle compared to the number of crashes caused by another vehicle when a commercial vehicle was involved. On an annual basis, the number of crashes involving commercial vehicles where a commercial vehicle is also the cause of the crash is consistently 62-64% of all crashes involving commercial vehicles in the ARC area.

Exhibit 4.15 presents the distribution of Interstate versus Intrastate designated commercial vehicles involved in crashes. Somewhat surprisingly given the distribution in Exhibit 4.3, 65% are designated as interstate and 35% as intrastate.

As reported in the CARE system and shown in Exhibit 4.16, about 2% of the commercial drivers involved in crashes in the ARC area are operating with a suspended CDL.

Finally, with regard to driver characteristics of commercial vehicle drivers who caused a crash, Exhibit 4.17 shows the “Condition of Driver” recorded when the commercial vehicle caused a crash. Pleasantly, this data indicates that only approximately 100 crashes (codes 3, 4, and 5) out of over 33,000 involved a commercial driver who was designated as under the influence.

Exhibit 4.14: Comparison of Commercial Vehicle Caused Crashes to Non-Commercial Vehicle Caused Crashes

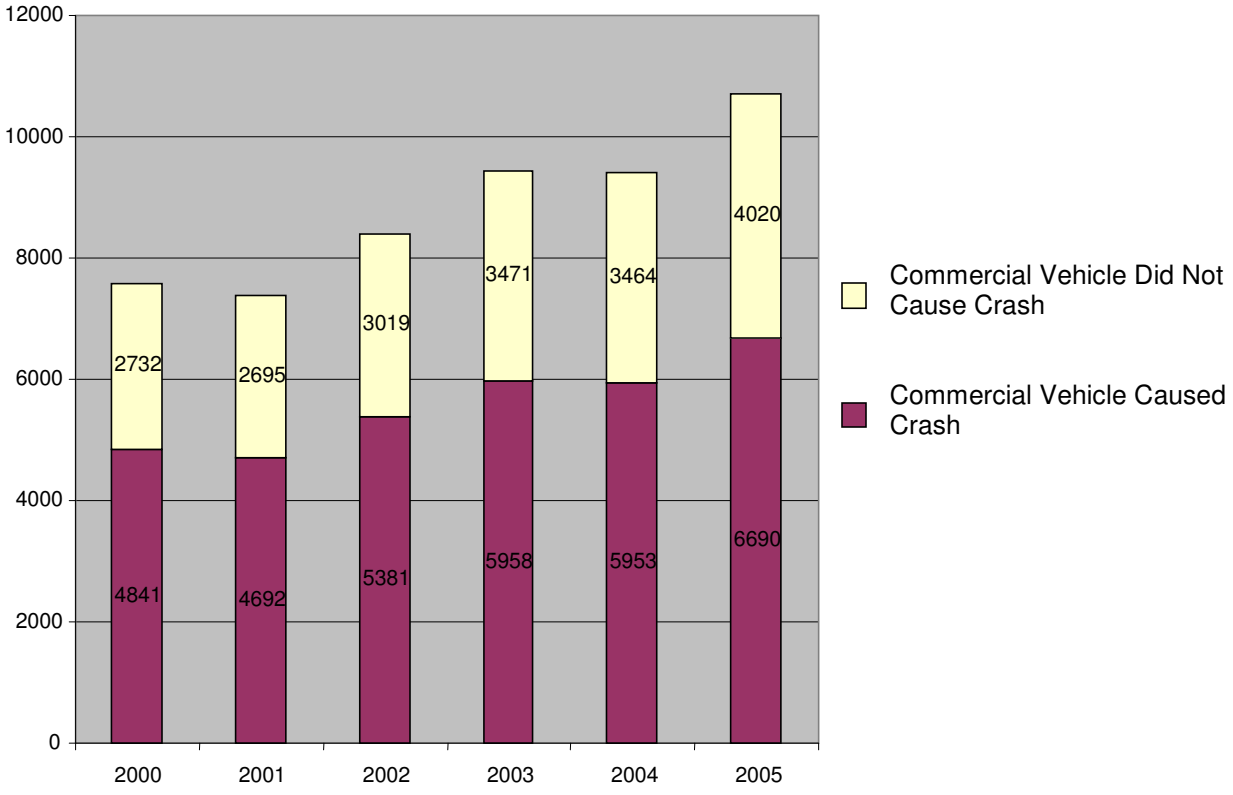


Exhibit 4.15: Interstate vs. Intrastate

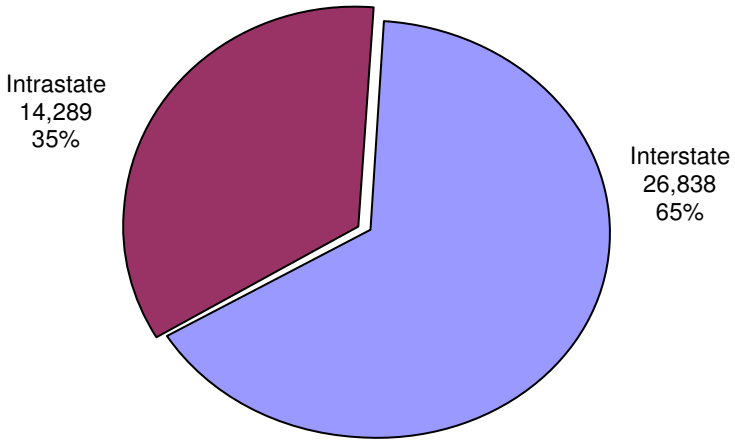


Exhibit 4.16: Commercial Vehicle Driver Involved in Crash with Suspended CDL

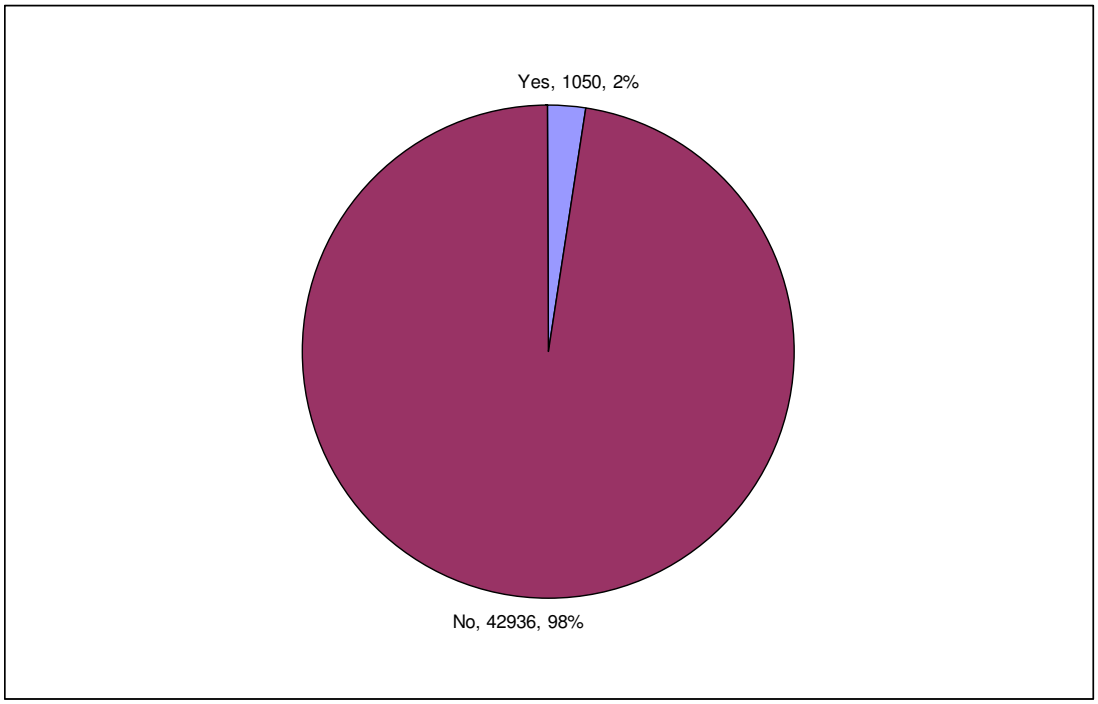


Exhibit 4.17: Condition of Driver in Commercial Caused Crashes

Condition	Number of Crashes
1-Not Drinking	32314
2-Not Known if U.I	995
3-Drinking - Not Impaired	23
4-U.I. Alcohol	71
5-U.I. Drugs	33
6-U.I. Alcohol and Drugs	7
7-Physical Impairment	25
8-Apparently Fell Asleep	47

4.7 Location of Crashes Occur in the Atlanta Region

Last, but certainly not least, is a presentation of the location commercial vehicle crashes have occurred. This looks at some general locations, such as “At-Intersections” versus “Not At-Intersections” and location characterized by Roadway ADT. This section also looks at the geographic distribution of commercial vehicle crashes in the ARC area.

Exhibit 4.18 shows that one-third of the commercial vehicle crashes in the ARC area occur at intersections and the other two-thirds do not. This fact reinforces the point that most commercial vehicle crashes in the area involve tractor-trailer trucks on the interstates.

In addition, Exhibit 4.19 also corroborates other information presented by showing that by far the largest numbers of commercial vehicle crashes occur on roadways with an ADT over 75,000, which are mostly interstate roadways and some larger arterials.

Exhibit 4.20 shows the geographic distribution of commercial vehicle crashes throughout the 20-county ARC area. As previously indicated, these crash occurrences are not adjusted by volume or VMT to show rates, therefore the counties with higher VMT show the higher numbers of crashes. Also as previously mentioned in the discussion of time-of-day distribution of crashes, this analysis still indicates where commercial vehicle crash improvement strategies can have the most impact in terms of the number of crash occurrences.

Location-based data was available for the crashes that occurred from 2000 to 2004. Therefore, Exhibits 4.21 through 4.39 show the locations of commercial vehicle crashes in the 20-county ARC area for this period. The maps depict the locations of the crashes in relation to the designated truck route system (with the exception of Carroll County for which data was unavailable). Fulton, Deklab, Cobb counties, which account for 63 percent of all vehicle crashes and 31 percent of freight shipped, experience the majority of the crashes along I-285 and I-20. These counties should be the primary focus of planning policies that address truck safety.

Exhibit 4.18: Crashes at Intersections

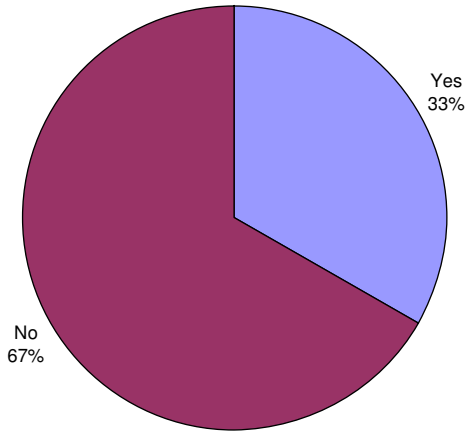


Exhibit 4.19: Average ADT on Roadway where Commercial Vehicle Crash Occurred

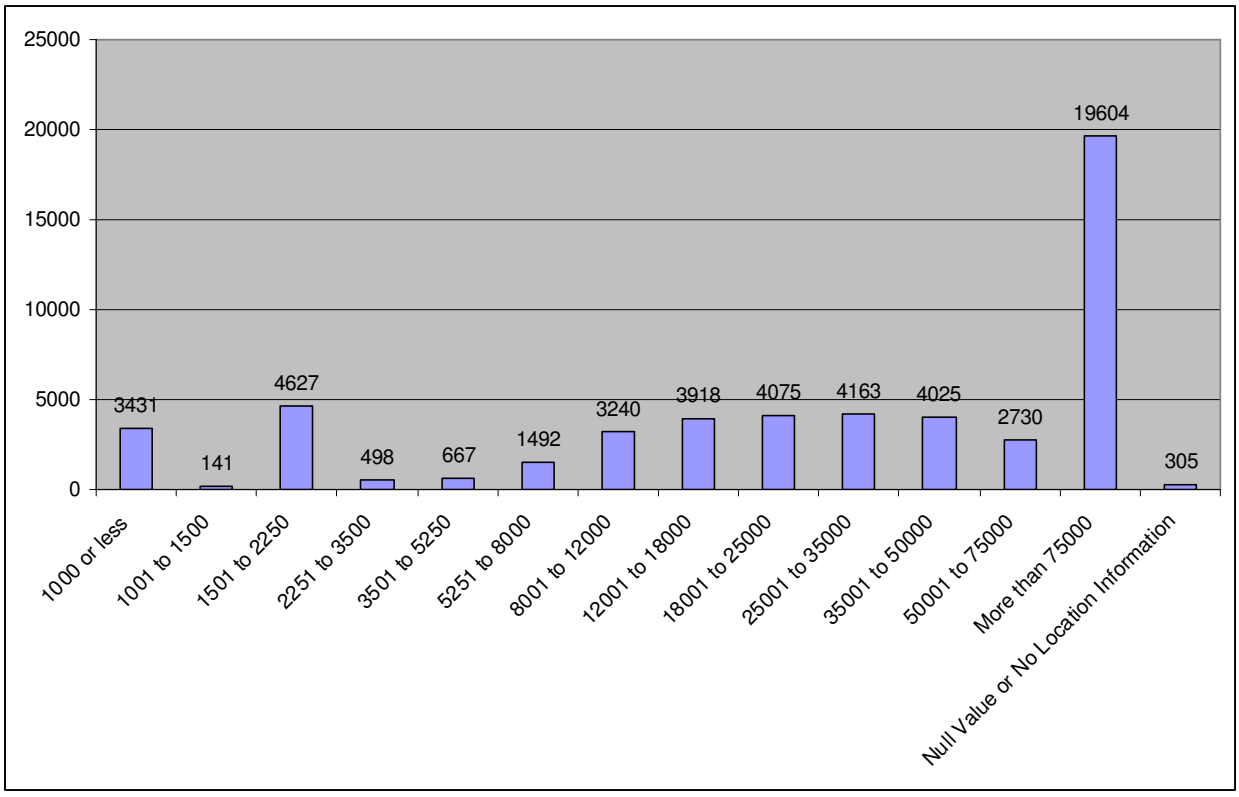
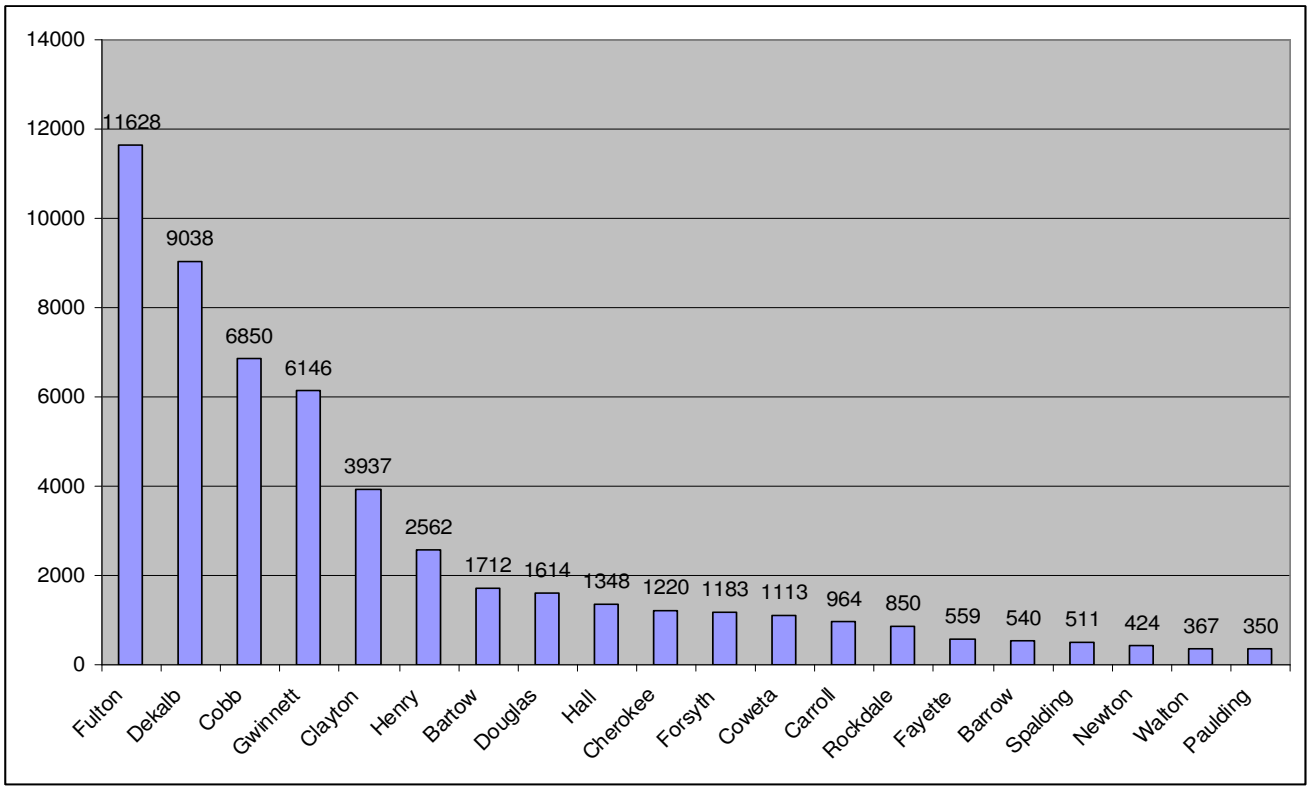

25000
20000
15000
10000
5000
0
3431
141
4627
498
667
1492
3240
3918
4075
4163
4025
2730
19604
305
1000 or less
1001 to 1500
1501 to 2250
2251 to 3500
3501 to 5250
5251 to 8000
8001 to 12000
12001 to 18000
18001 to 25000
25001 to 35000
35001 to 50000
50001 to 75000
More than 75000
Null Value or No Location Information

Exhibit 4.20: Crashes by County (2000-2005)



4.8 Freight Safety Data Summary

Safety is always a focus of both planning organizations and private sector freight stakeholders. Carriers wish to operate effectively and efficiently and maintain high safety standards. Any breach in safety standards place carriers in a vulnerable position and at high risk to be liable for damage endured as result of a driver's negligence. Accidents lead to high insurance premiums as well as potential settlements which raise costs tremendously. Therefore the freight industry has a vested interest in ensuring the region's infrastructure is conducive for safe travel for all motorists. After conducting analysis of the CARE database, several elements were identified and brought to the forefront:

- The CARE database is expansive, and provides detailed information on Commercial vehicle crashes. However, Georgia has limited intersection traffic count data and traffic counts for vehicles entering and exiting intersections. Although one-third of all commercial vehicle crashes occur at intersections, identifying the amount of crashes at specific intersections can provide additional insight to identifying problem areas. Issues such as geometric design and turning

radii could be the primary reasons for crashes that occur at intersection. Obtaining this information could aid in the prioritization of certain road projects.

- The data does pinpoint key corridors that should receive attention:
    - I-285 in Clayton, Dekalb and Fulton County;
    - I-75 between SR140 and I-20 in Bartow County;
    - I-285 to SR 135 in Clayton County;
    - SR 5 to I-285 in Cobb County;
    - I-657 to SR 16 in Henry County;
    - I-85 in Coweta, Dekalb and Fulton County;
    - I-20 in Dekalb, Douglas, Fulton and Rockdale County;
    - SR 20 at SR 316 in Gwinnett County;
    - SR 78 in Gwinnett County;
    - SR 23 in Gwinnett County an at SR 129 junction;
    - SR 16 in Spaulding County

- These aforementioned corridors undergo significant truck volume and commercial vehicle crashes. It is important to note that the focus should be directed towards the inner city areas of the corridor. Naturally, the closer to the city center, the more traffic volume occurs and the possibility for commercial vehicle crashes increase. This is apparent in Fulton County. However exurban areas such as Winder experience a high amount of commercial vehicle crashes. Localities such as these should be investigated as well.

- Additional research should be conducted throughout these key corridors to determine causes of commercial vehicle crashes.

Exhibit 4.21

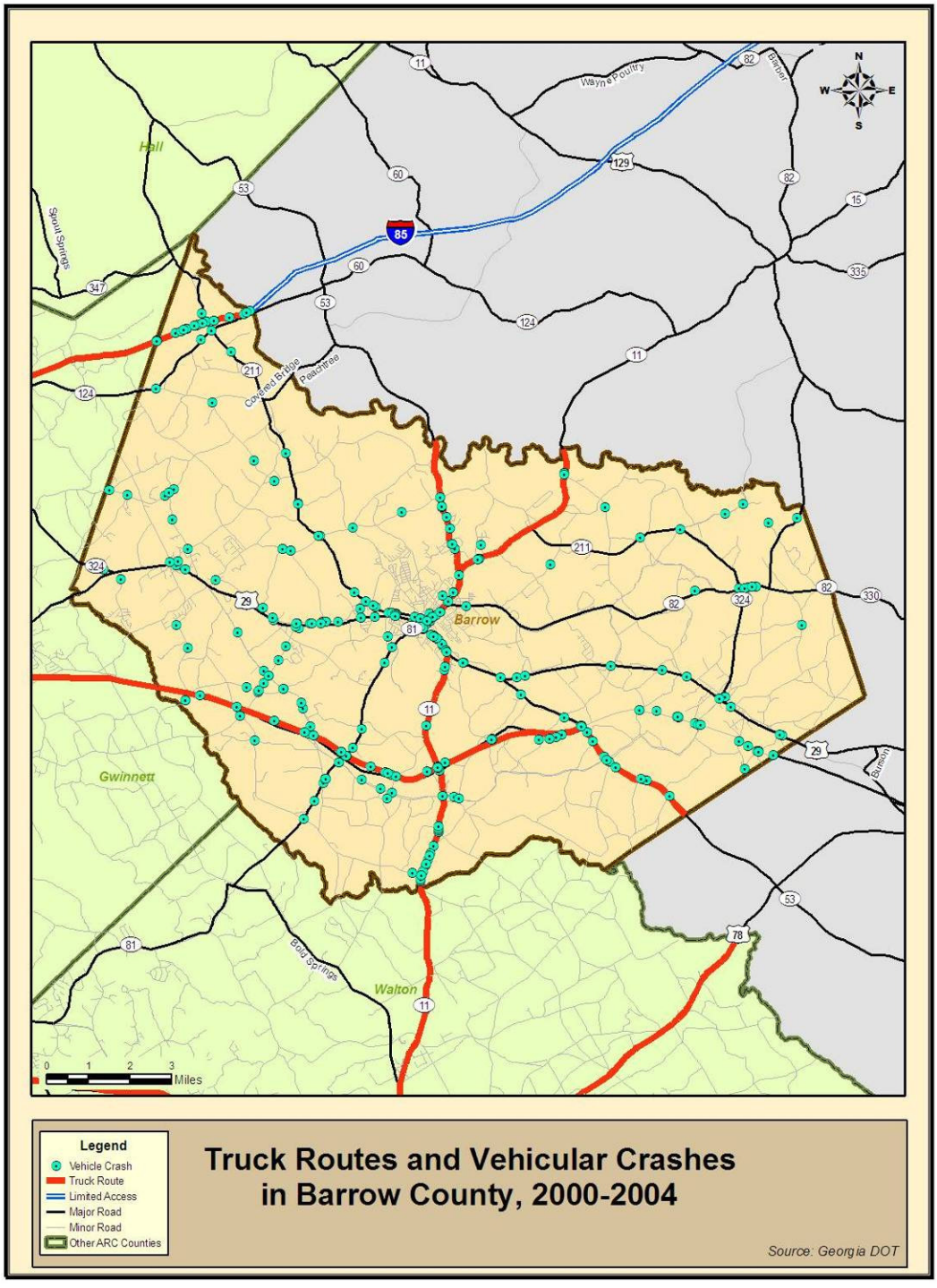

Hall
Gwinnett
Barrow
Walton
Auburn
Bond Springs
Sprout Springs
Covered Bridge
Peachtree
Wayne Poultry
Banter
85
0 1 2 3
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Barrow County, 2000-2004
Source: Georgia DOT

Exhibit 4.22

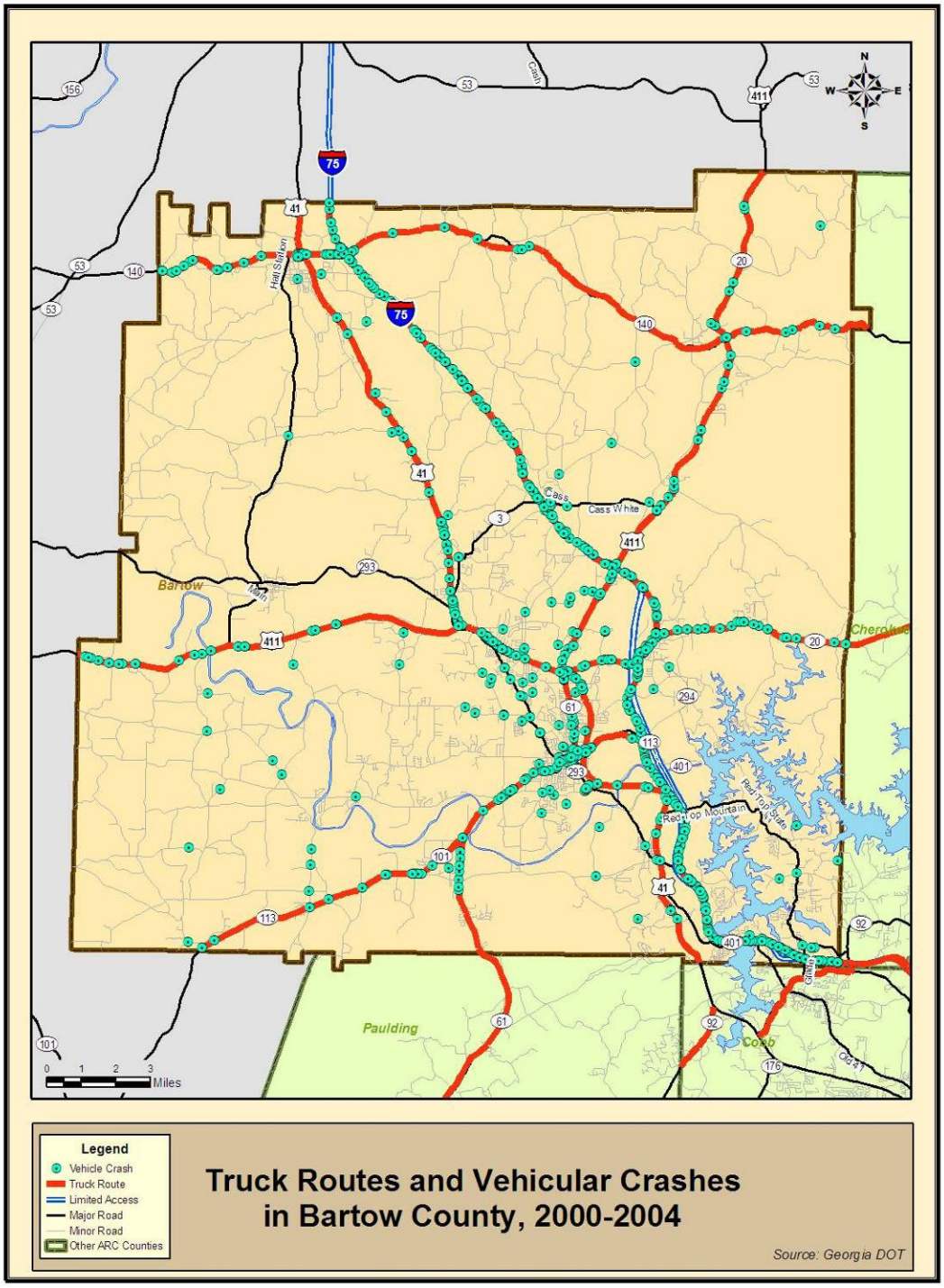

Bartow
Paulding
Cobb
Cherokee
Cass White
Hall Station
Red Top Mountain
Red Top State
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
0 1 2 3
Miles
Truck Routes and Vehicular Crashes
in Bartow County, 2000-2004
Source: Georgia DOT

Exhibit 4.23

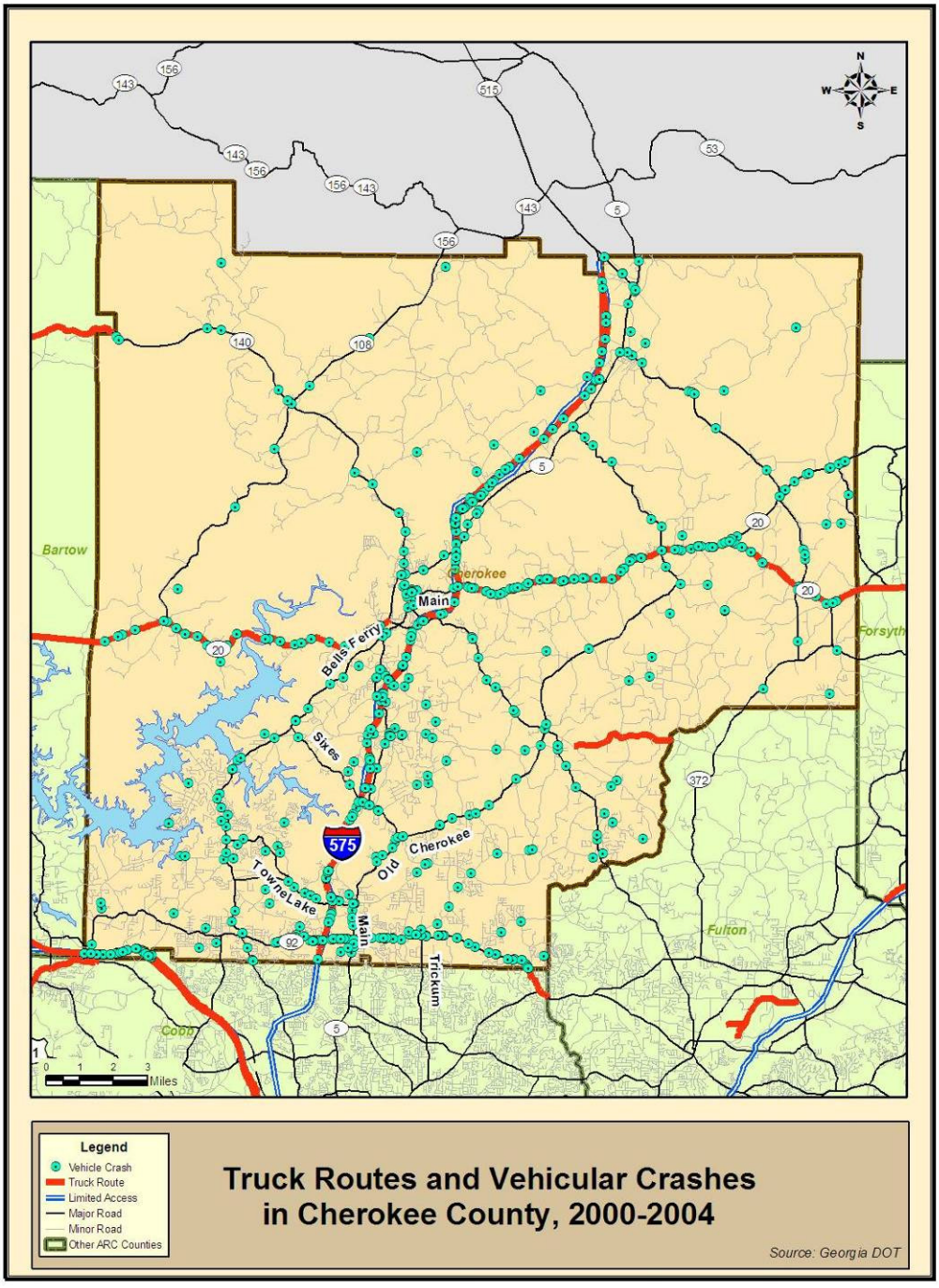

Bartow
Cherokee
Forsyth
Fulton
Cobb
Main
Bells Ferry
Sikes
Old Canton
Towne Lake
Trickum
575
20
5
92
372
0 1 2 3
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Cherokee County, 2000-2004
Source: Georgia DOT

Exhibit 4.24

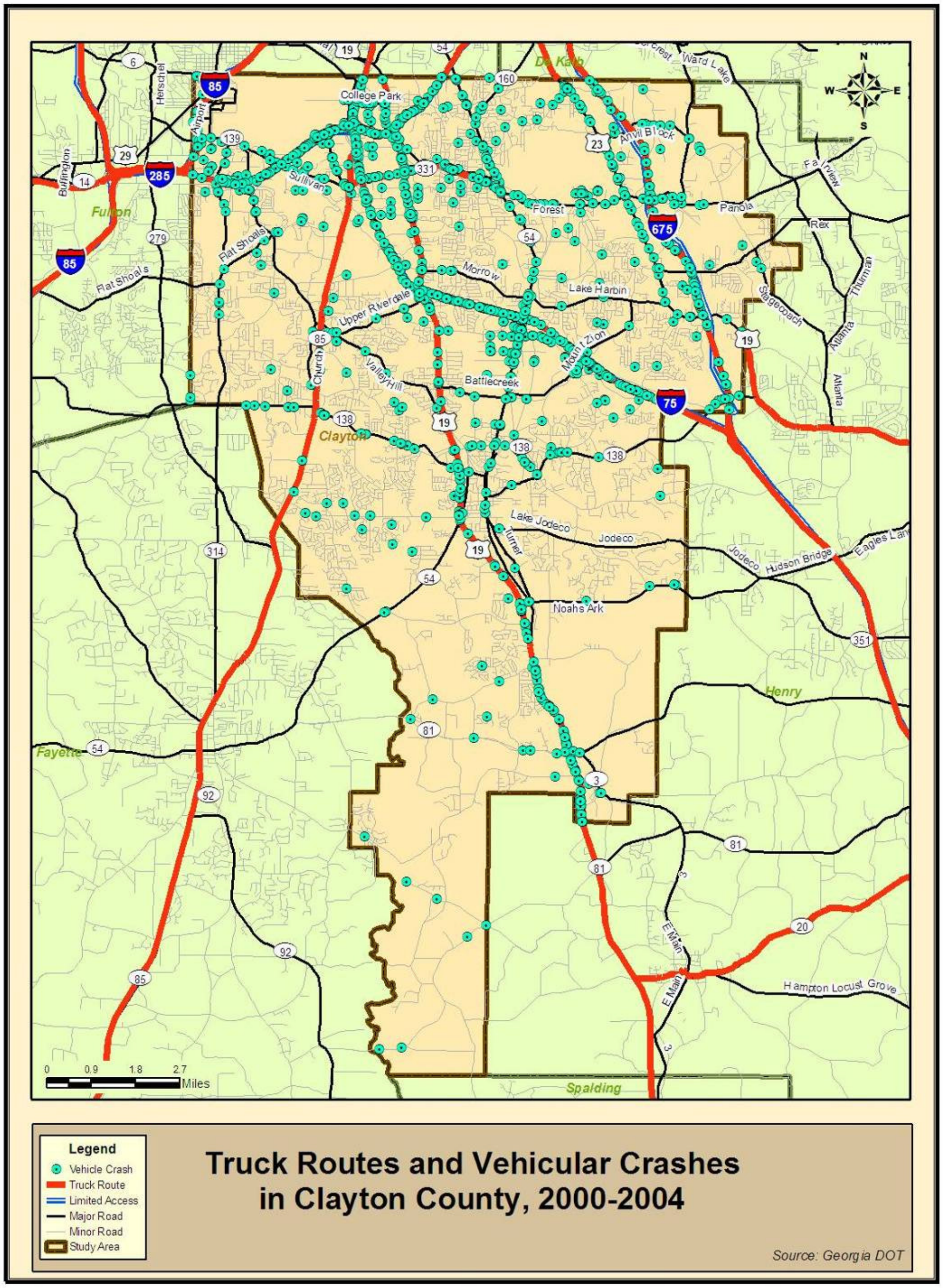

Truck Routes and Vehicular Crashes
in Clayton County, 2000-2004
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Study Area
Source: Georgia DOT
Miles
Clayton
Fulton
Henry
Fayette
Spalding
College Park
Forest
Lake Harbin
Battlecreek
Noahs Ark
Lake Jodeco
Jodeco
Hudson Bridge
Hampton Locust Grove

Exhibit 4.25

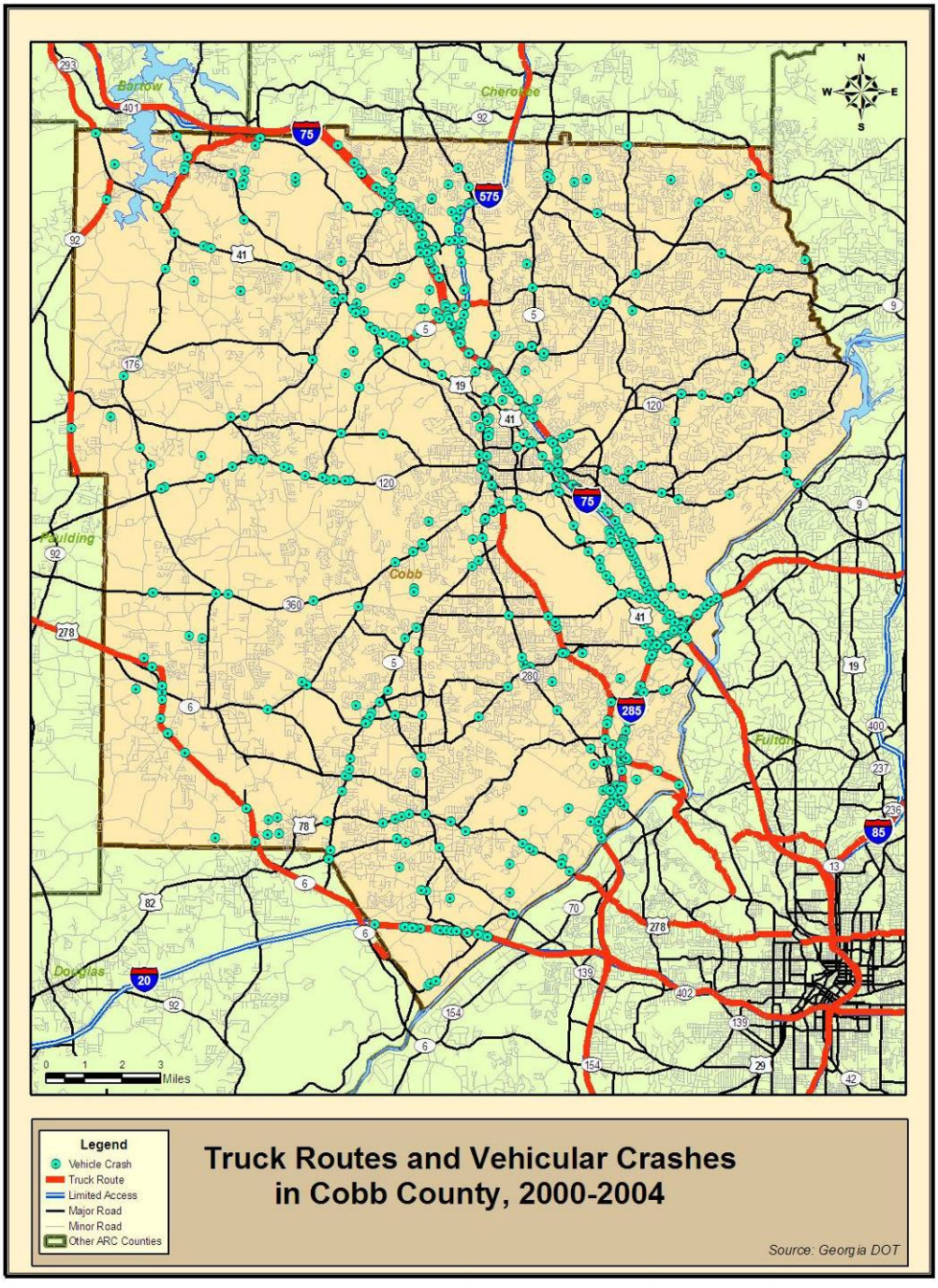

Bartow
Cherokee
Paulding
Cobb
Douglas
Fulton
75
575
285
20
85
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Cobb County, 2000-2004
Source: Georgia DOT

Exhibit 4.26

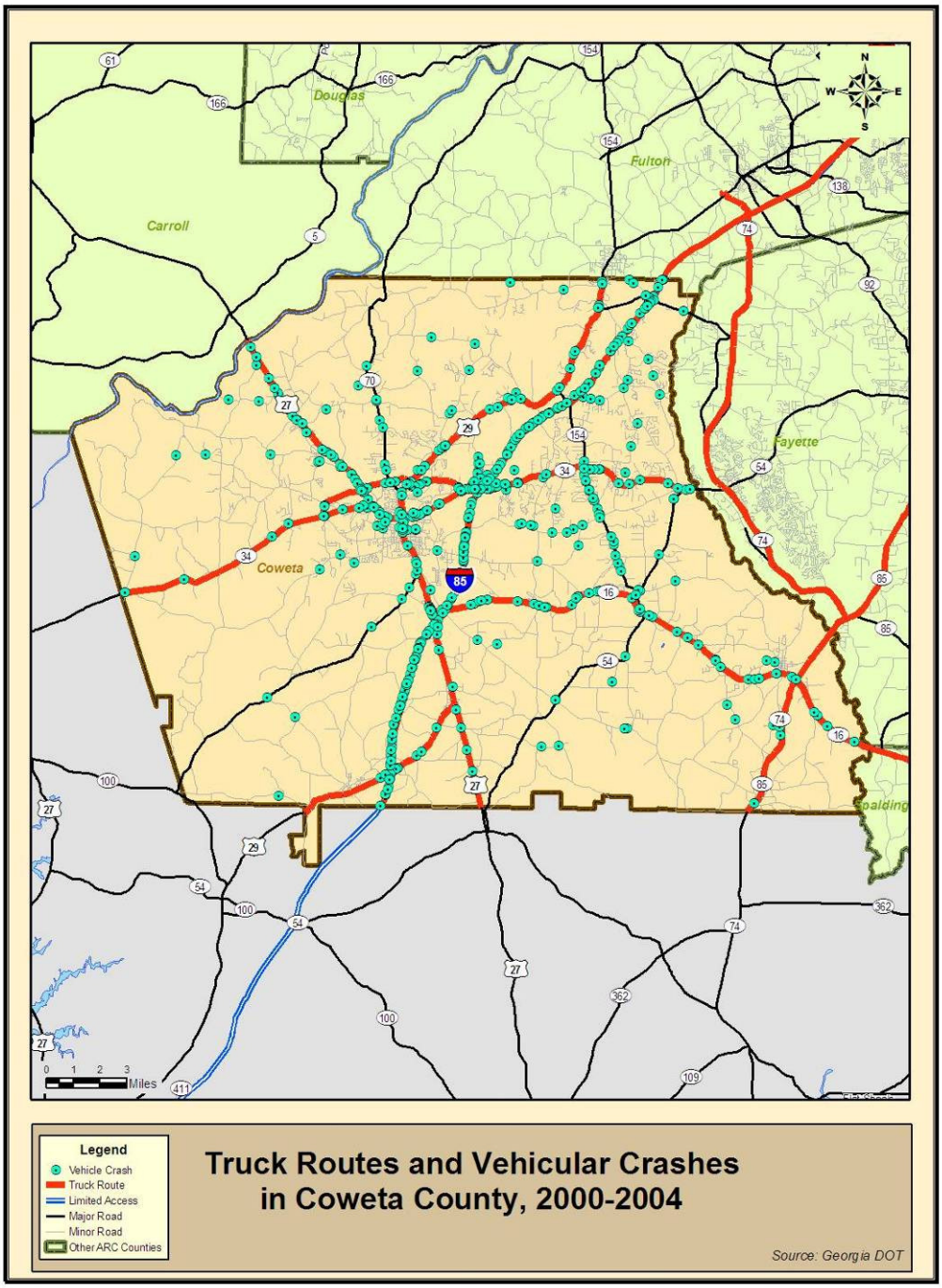

Douglas
Carroll
Fulton
Coweta
Fayette
Spalding
85
0 1 2 3 Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Coweta County, 2000-2004
Source: Georgia DOT

Exhibit 4.27

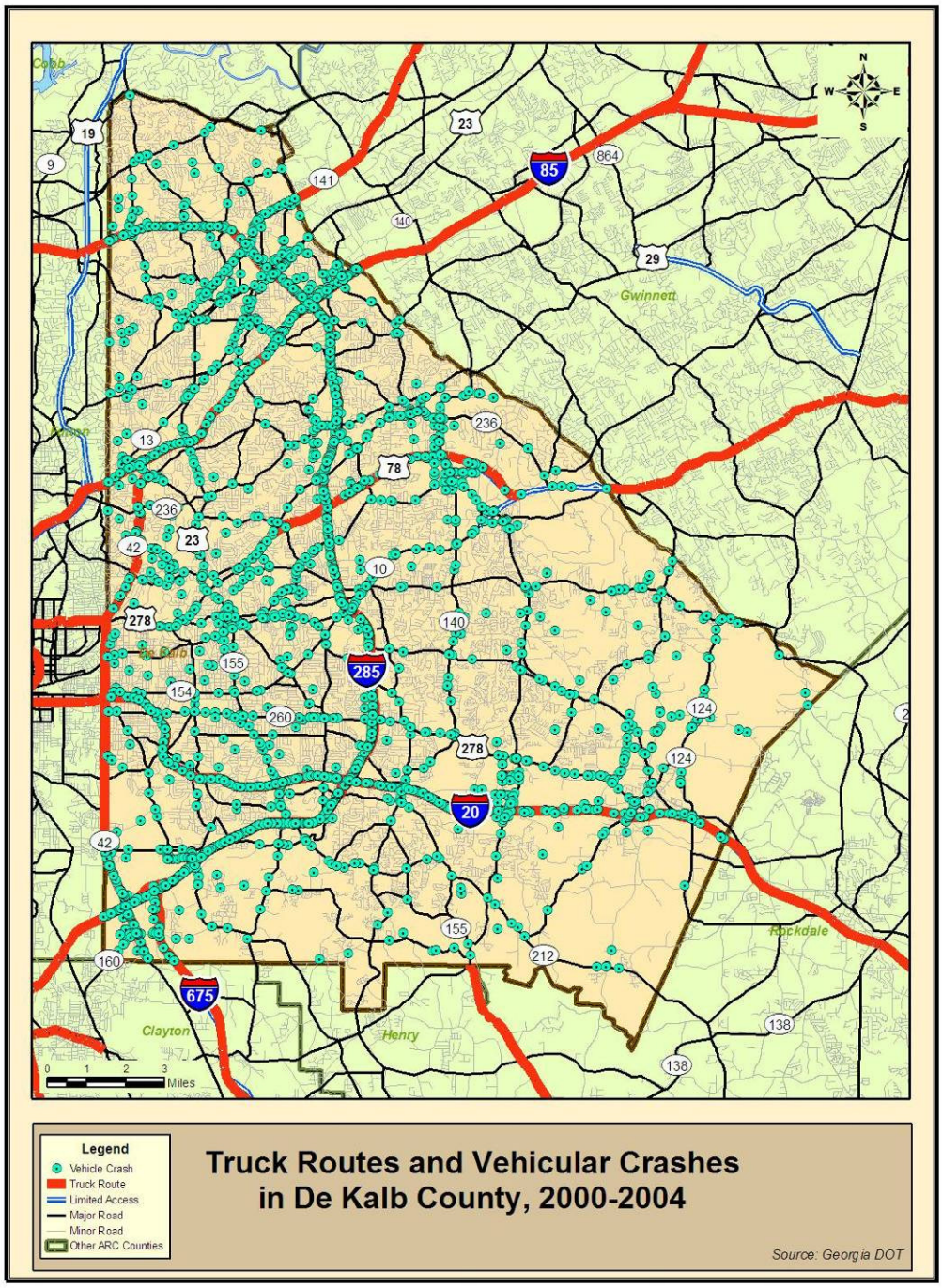

Cobb
Gwinnett
Clayton
Henry
Rockdale
Miles
0 1 2 3
N
W
E
S
19
9
23
141
85
864
140
29
13
236
78
42
10
278
155
154
260
285
124
20
160
675
212
138
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in De Kalb County, 2000-2004
Source: Georgia DOT

Exhibit 4.28

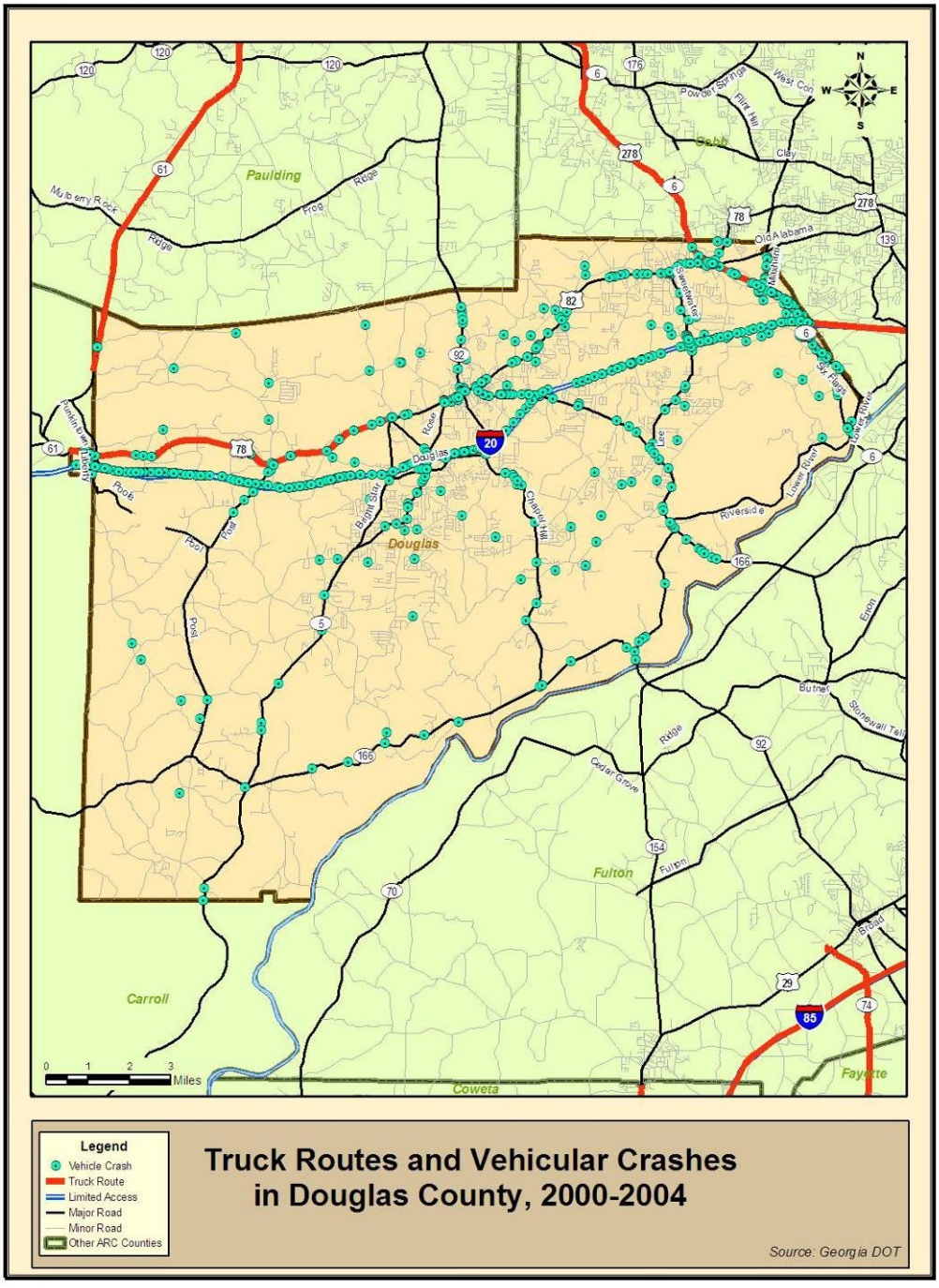

Paulding
Douglas
Carroll
Fulton
Coweta
Fayette
Cobb
Clay
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Miles
Truck Routes and Vehicular Crashes
in Douglas County, 2000-2004
Source: Georgia DOT

Exhibit 4.29

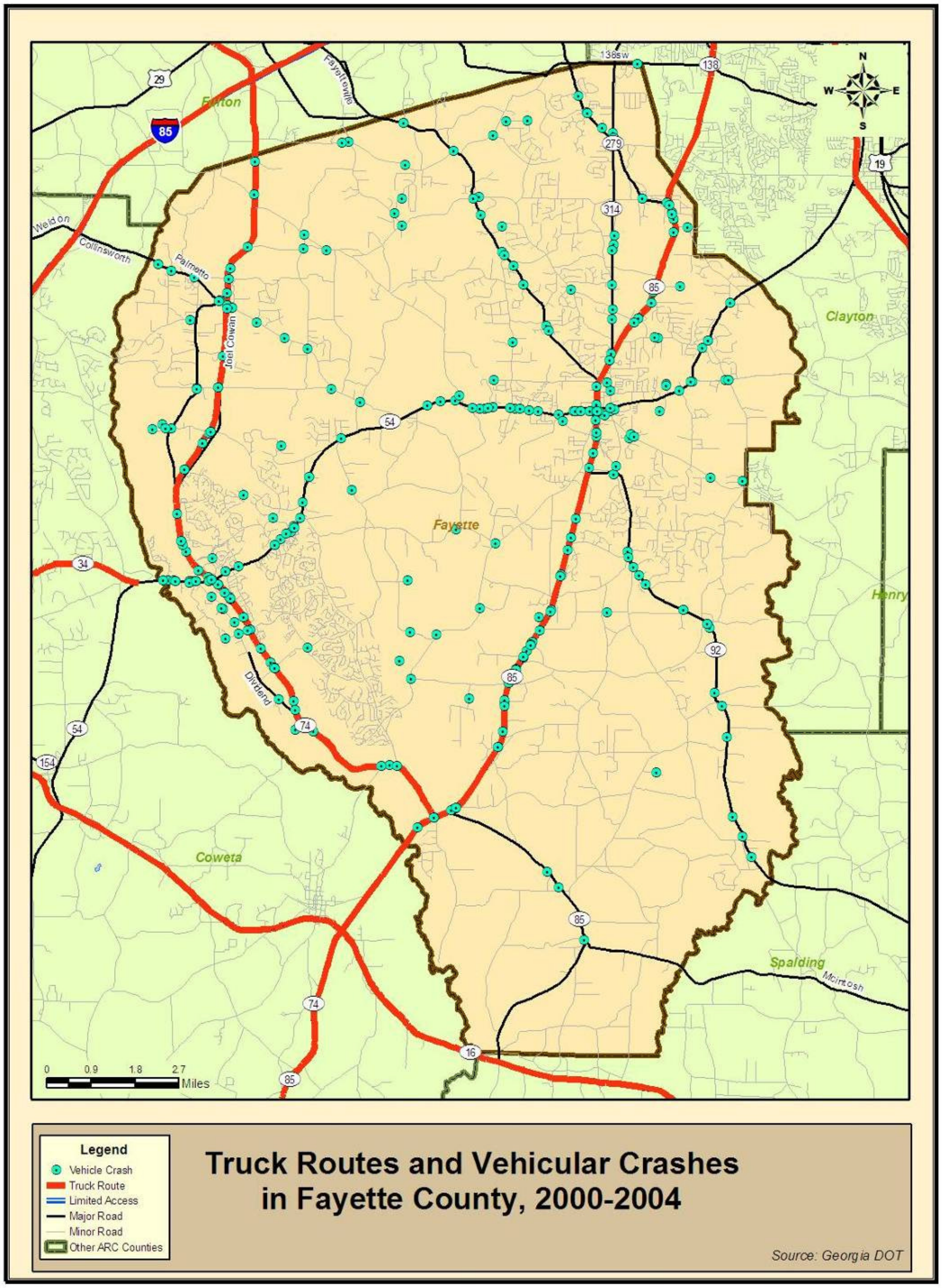

Fulton
Fayette
Clayton
Henry
Coweta
Spalding
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes in Fayette County, 2000-2004
Source: Georgia DOT
0 0.9 1.8 2.7 Miles

Exhibit 4.30

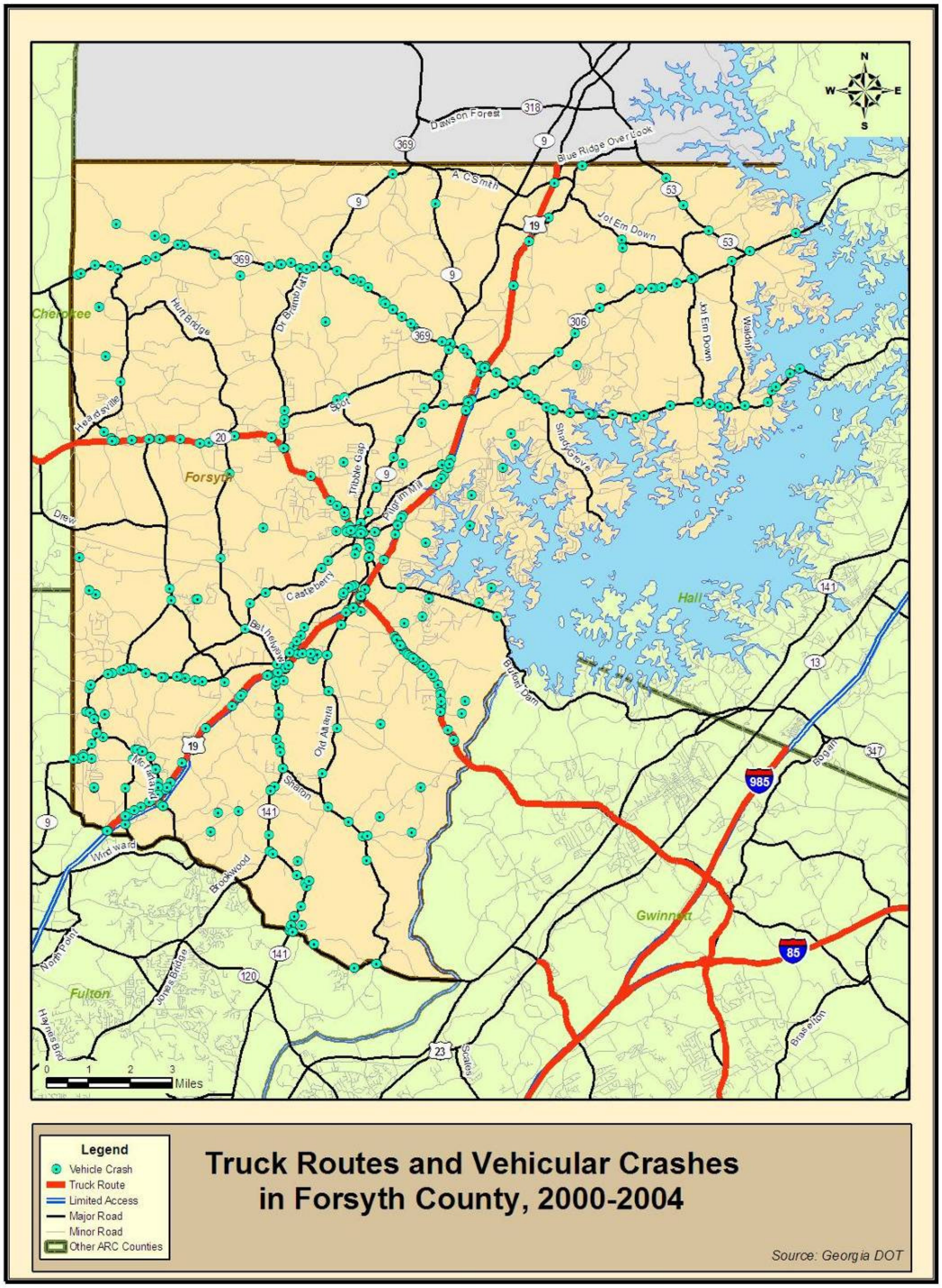

Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Forsyth County, 2000-2004
Source: Georgia DOT
Miles
Forsyth
Cherokee
Hall
Gwinnett
Fulton

Exhibit 4.31

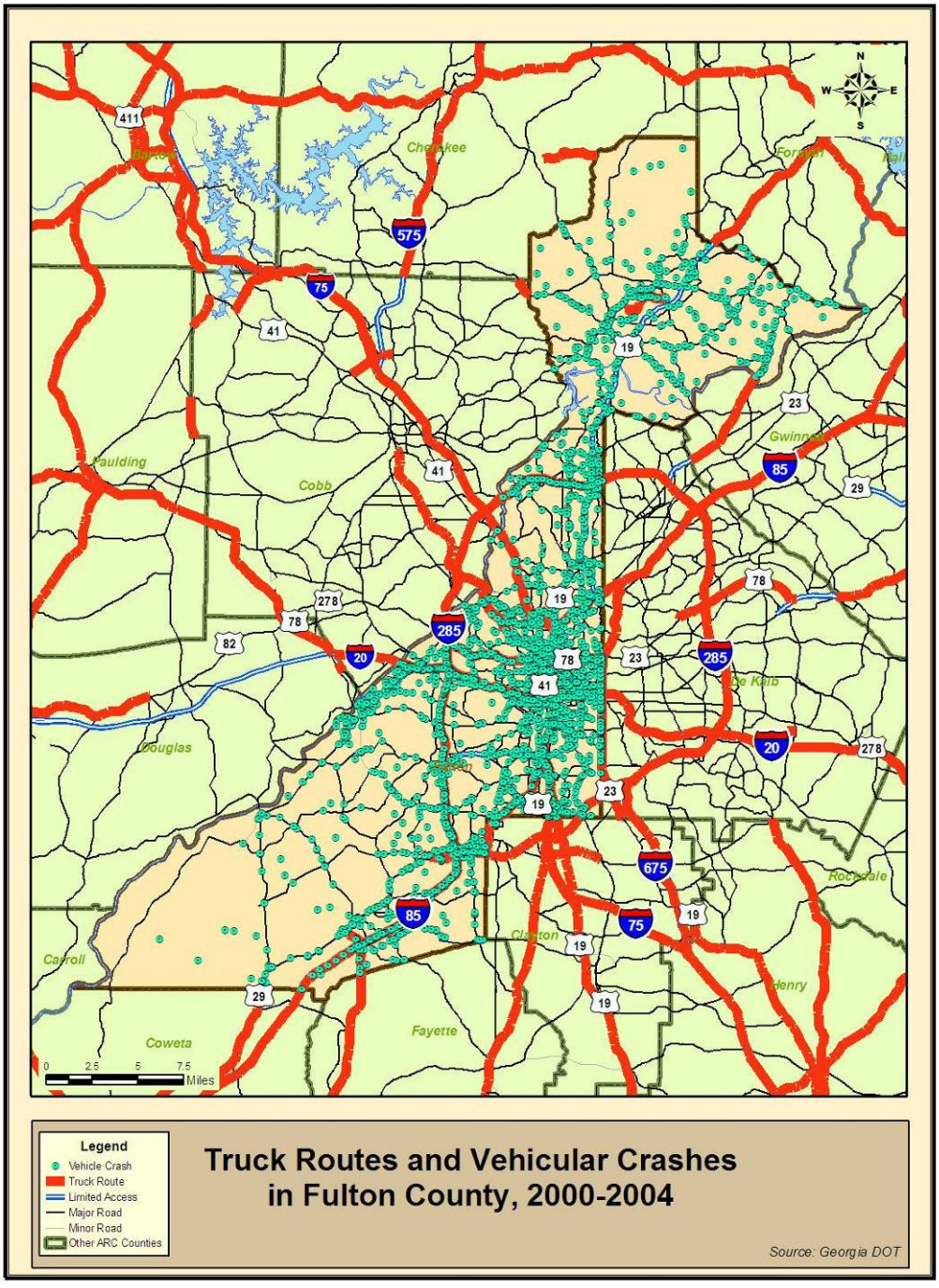

Cherokee
Paulding
Cobb
Douglas
Carroll
Coweta
Fayette
Clayton
Henry
Rockdale
Gwinnett
DeKalb
Forsyth
411
575
75
41
19
23
85
29
278
78
285
82
20
675
0 2.5 5 7.5 Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Fulton County, 2000-2004
Source: Georgia DOT

Exhibit 4.32

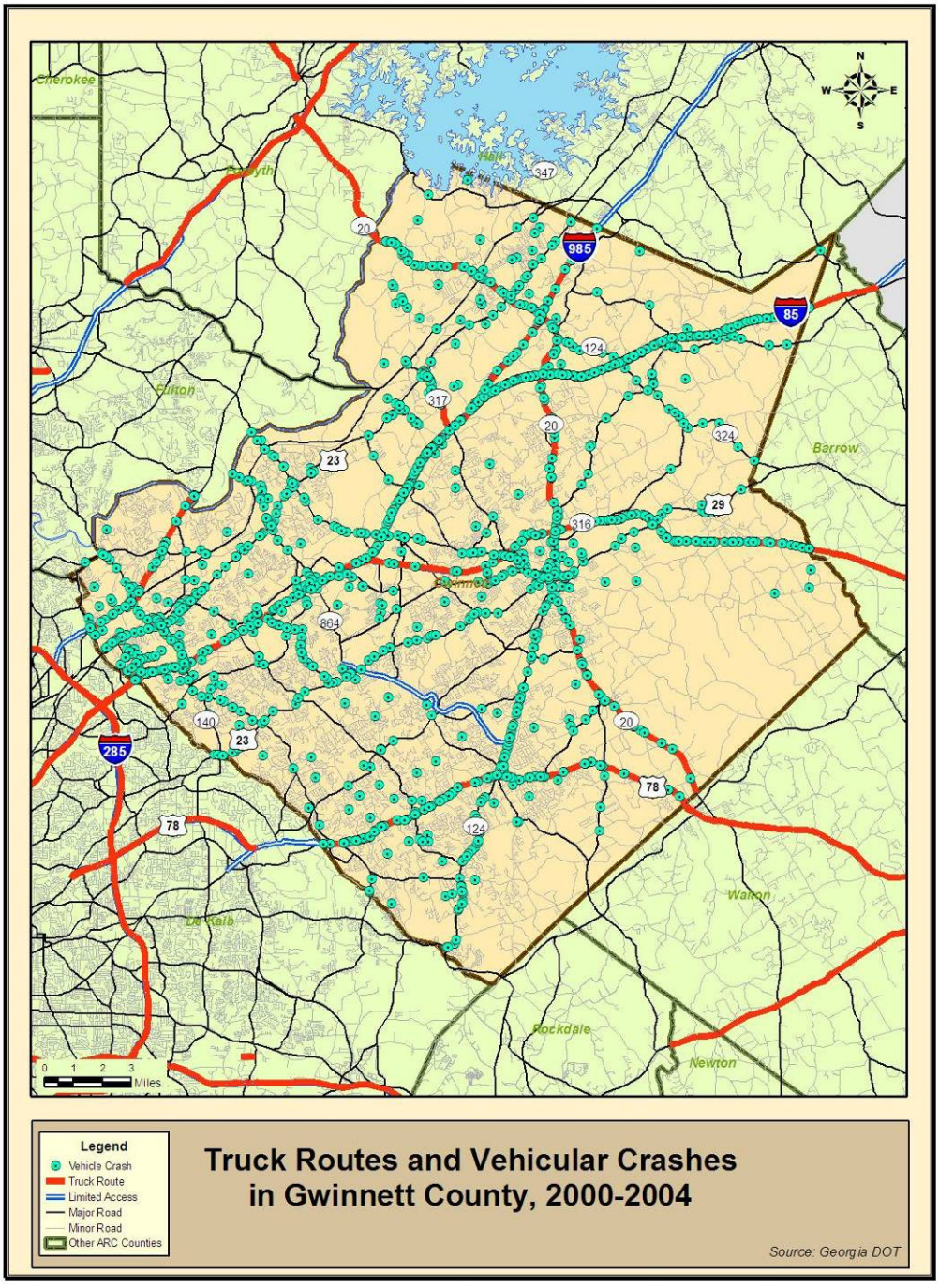

Cherokee
Forsyth
Hall
Fulton
DeKalb
Barrow
Walton
Rockdale
Newton
Gwinnett
985
85
285
20
124
317
23
324
29
316
864
140
78
347
N
S
E
W
0 1 2 3
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Gwinnett County, 2000-2004
Source: Georgia DOT

Exhibit 4.33

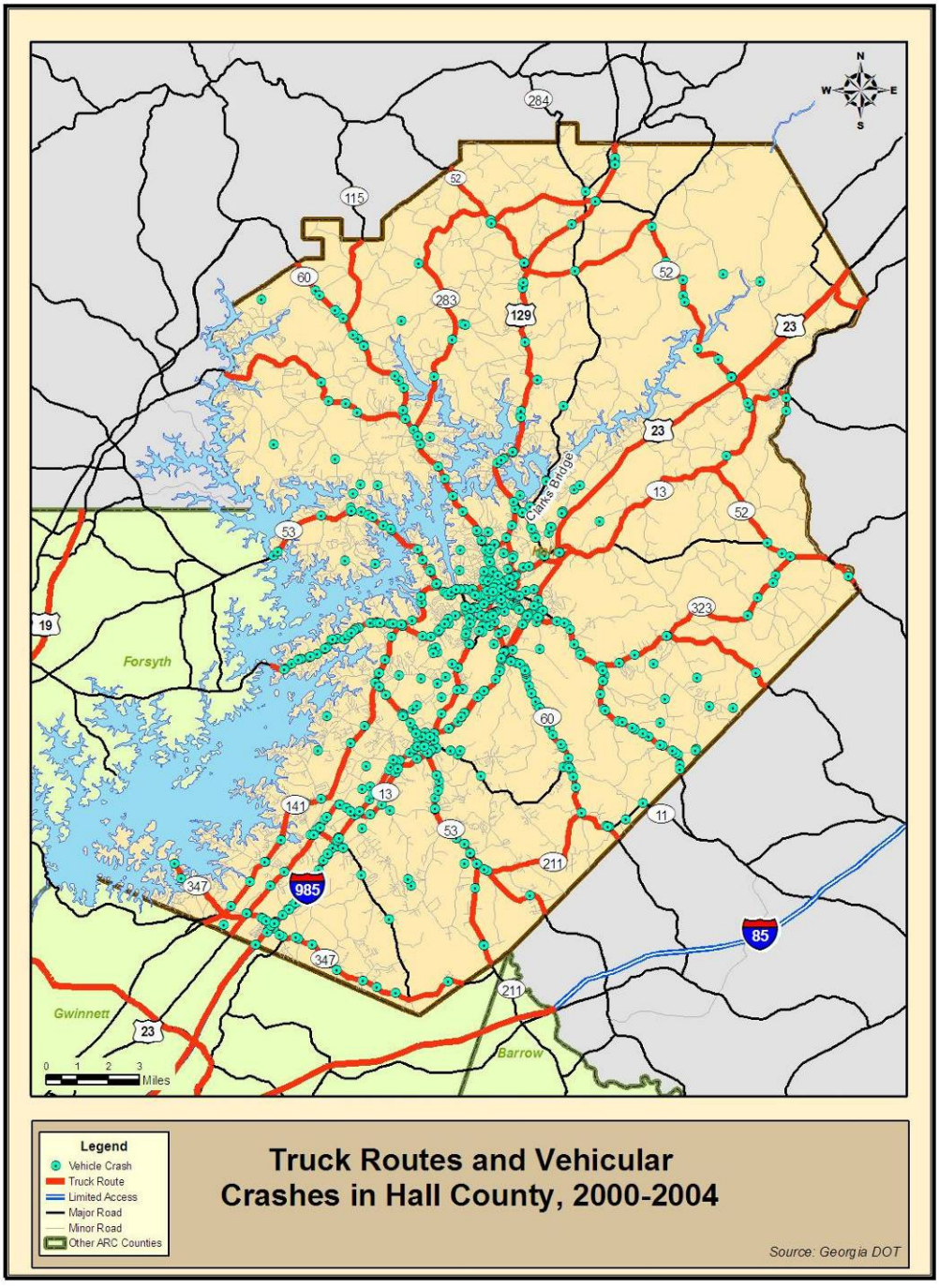

N
W
E
S
284
115
52
60
283
129
52
23
23
13
52
Clarks Bridge
53
19
323
Forsyth
60
141
13
53
11
211
347
985
85
347
211
Gwinnett
23
Barrow
0 1 2 3
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes in Hall County, 2000-2004
Source: Georgia DOT

Exhibit 4.34

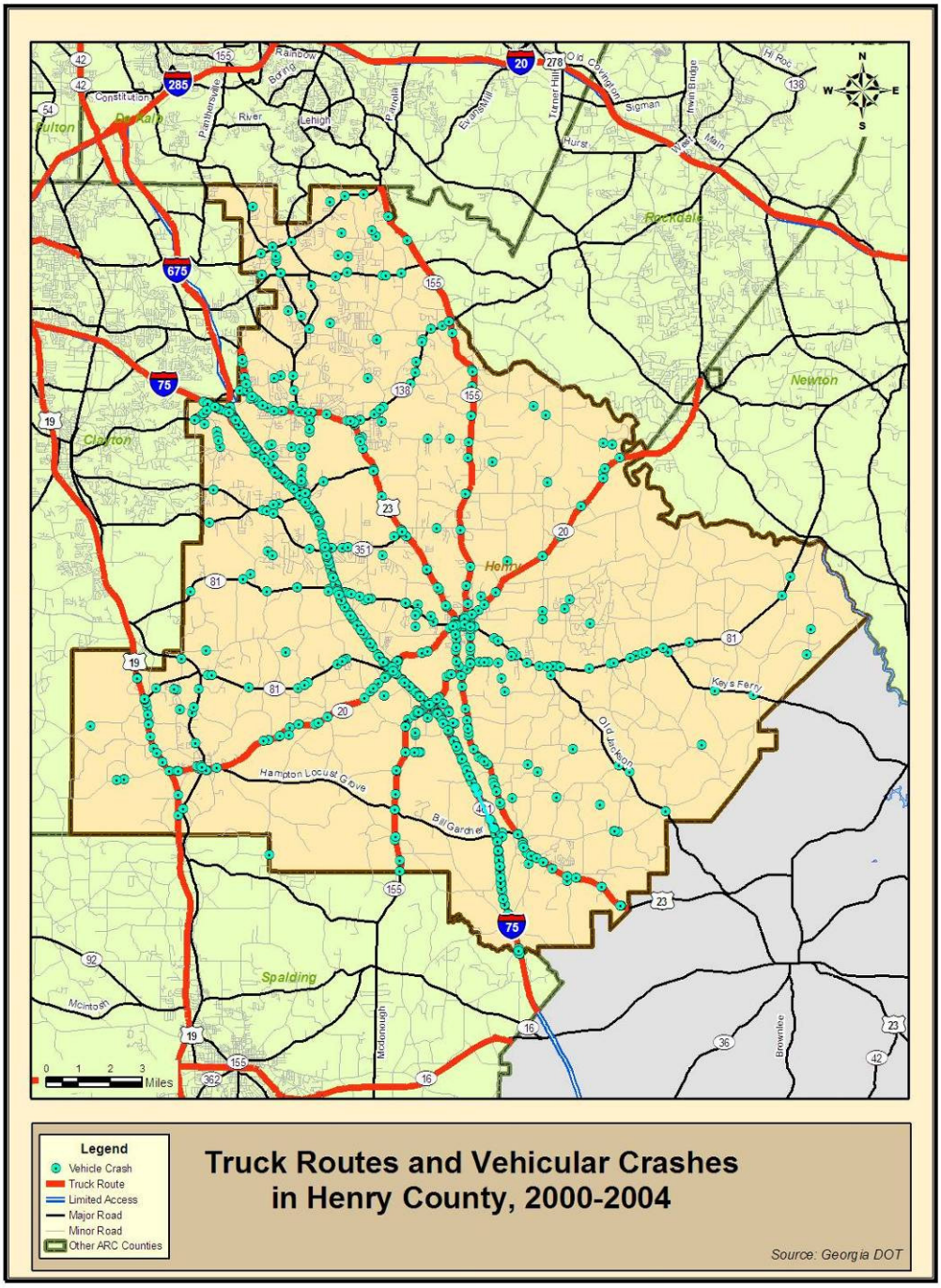

Rockdale
Newton
Clayton
Henry
Spalding
Hampton Locust Grove
Bill Gardner
Keys Ferry
Old Jonesboro
Mcintosh
Modoc
Brownlee
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
0 1 2 3 Miles
Truck Routes and Vehicular Crashes
in Henry County, 2000-2004
Source: Georgia DOT

Exhibit 4.35

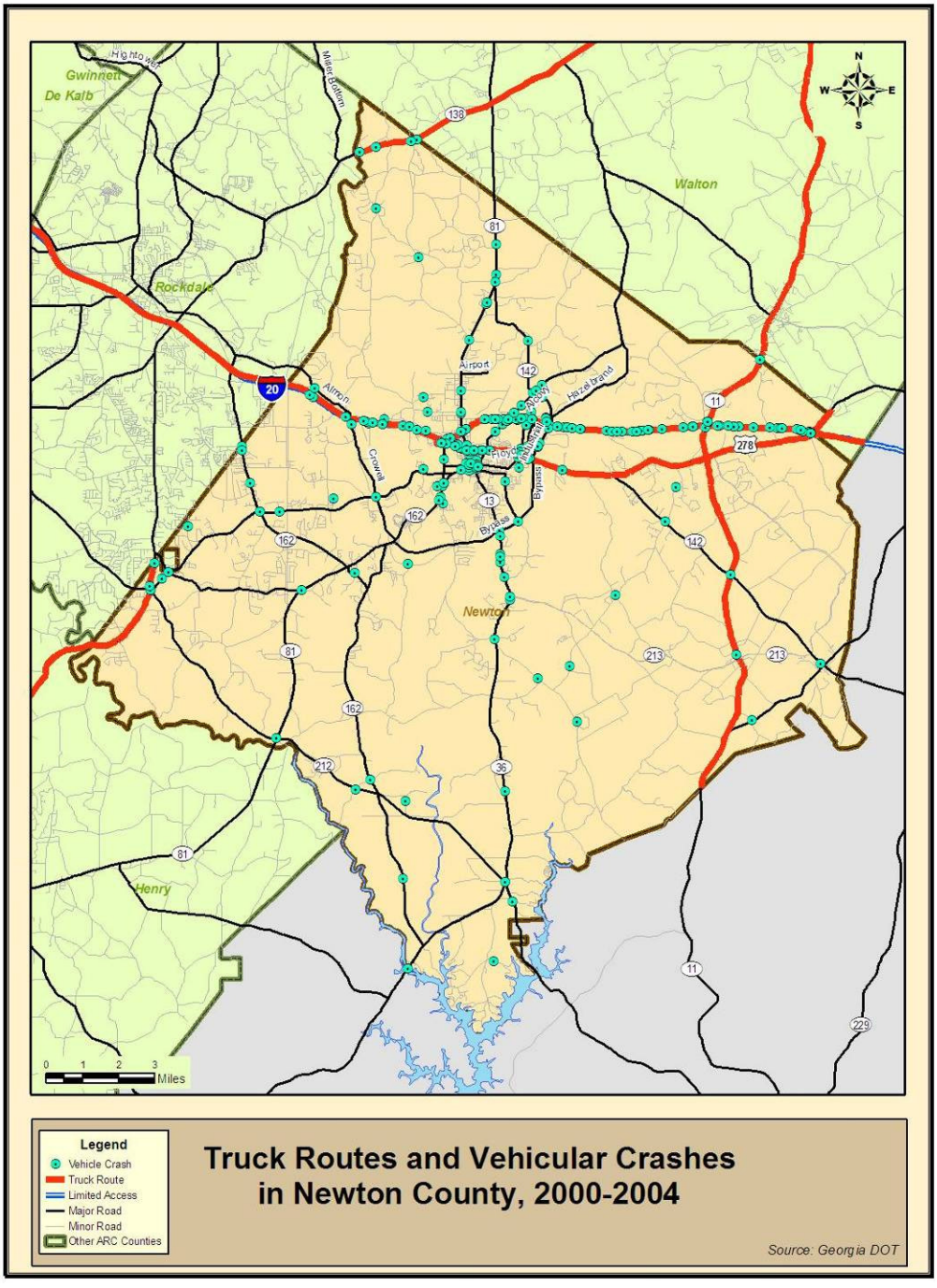

Gwinnett
De Kalb
Rockdale
Walton
Henry
Newton
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Newton County, 2000-2004
Source: Georgia DOT

Exhibit 4.36

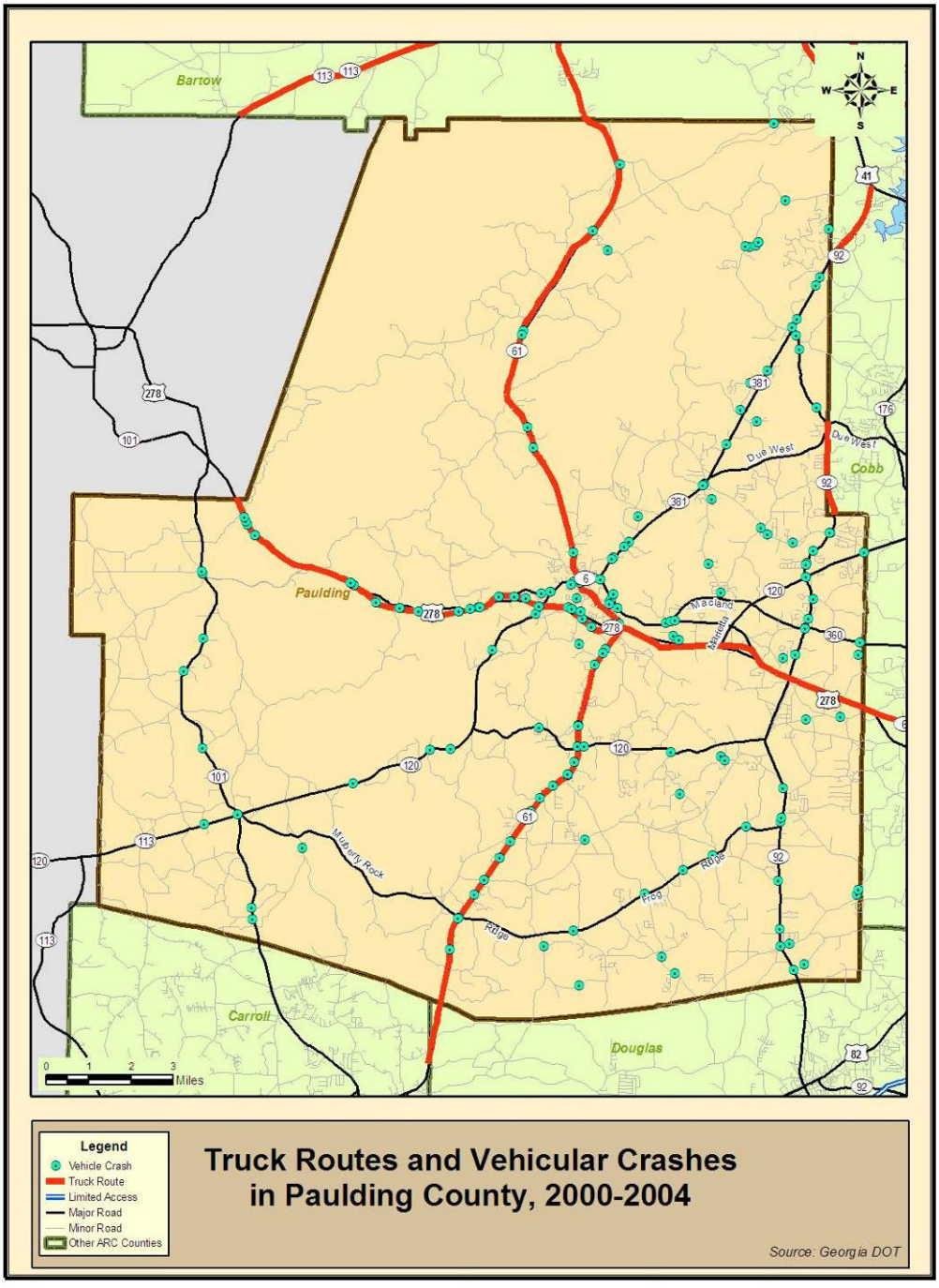

Bartow
Paulding
Cobb
Carroll
Douglas
Due West
Macland
Mulberry Rock
Ridge
0 1 2 3
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Paulding County, 2000-2004
Source: Georgia DOT

Exhibit 4.37

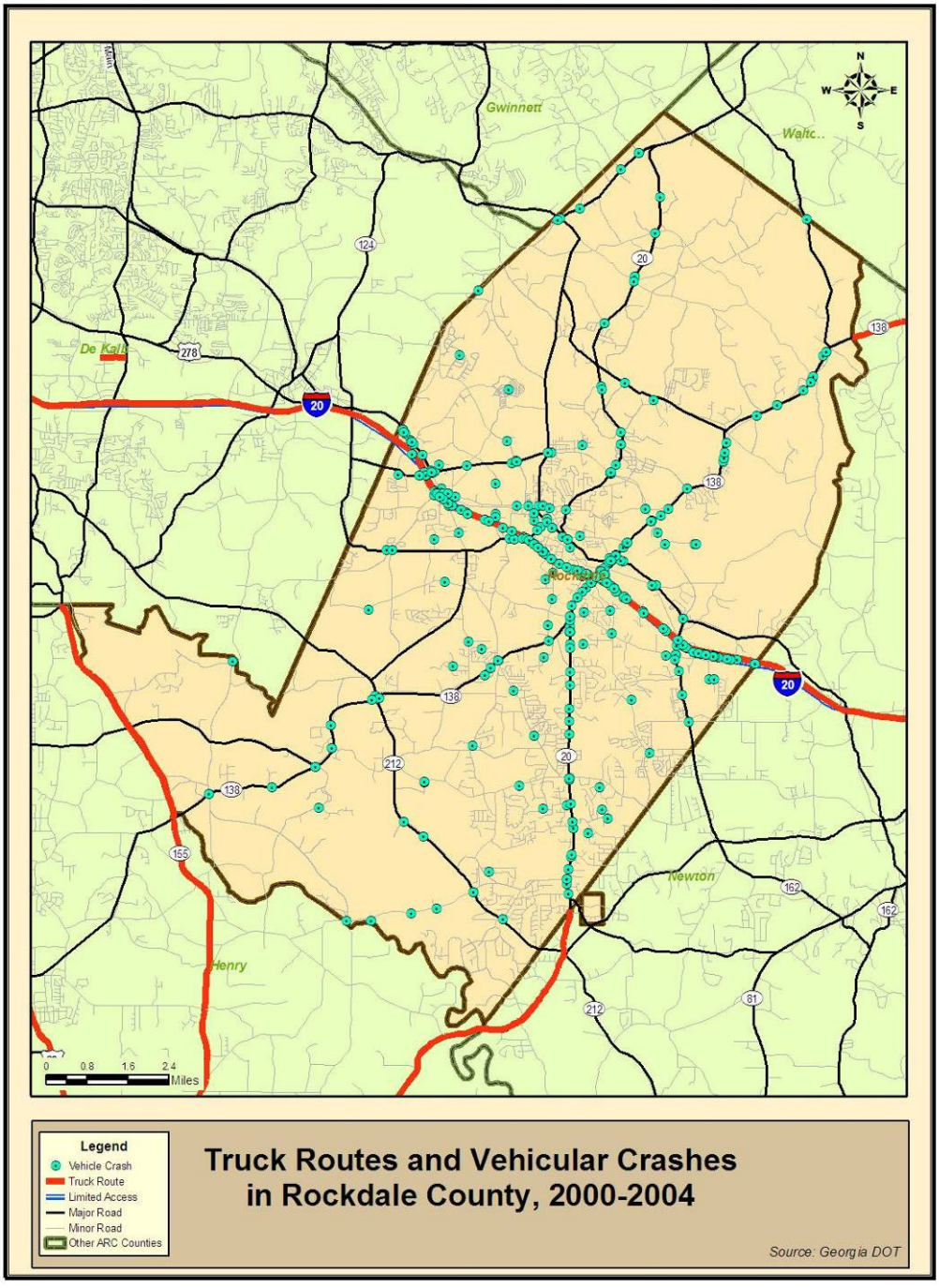

Gwinnett
DeKalb
Henry
Newton
Rockdale
20
124
278
138
212
155
162
81
N
S
E
W
0 0.8 1.6 2.4
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Rockdale County, 2000-2004
Source: Georgia DOT

Exhibit 4.38

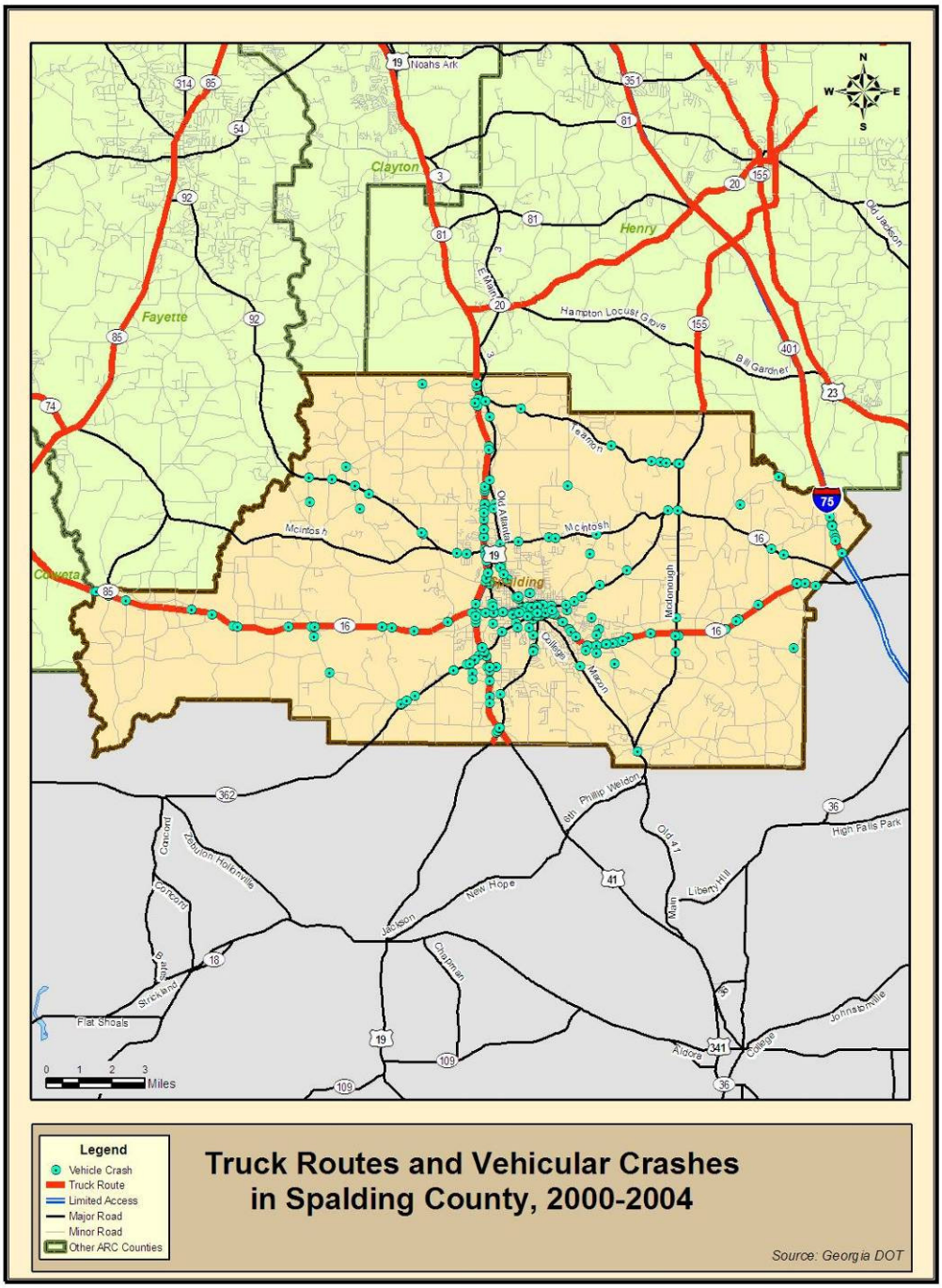
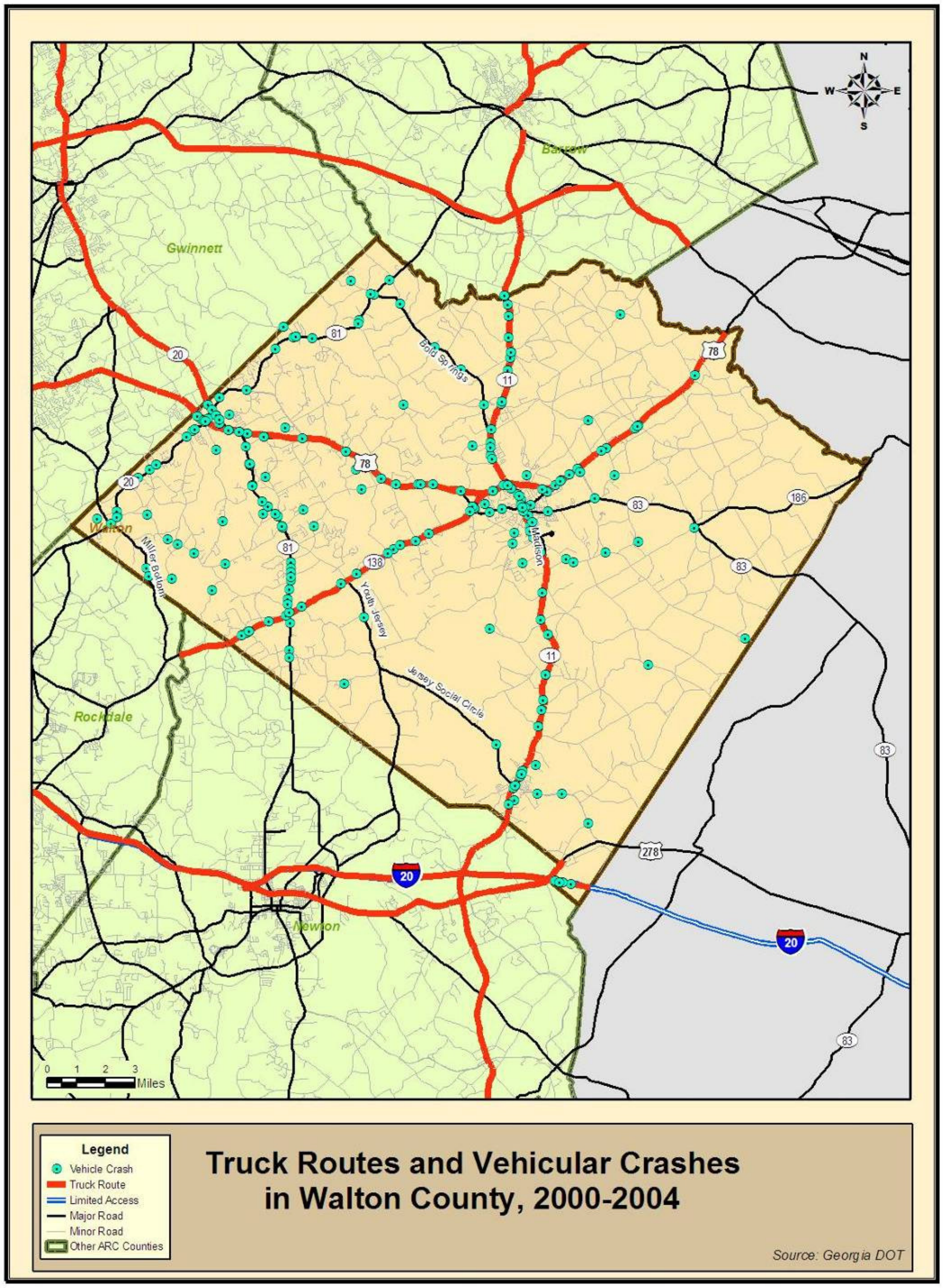

Clayton
Henry
Fayette
Coweta
Spalding
Noahs Ark
Hampton
Locust Grove
Bill Gardner
Old Jackson
Old Atlanta
McIntosh
Mcintosh
Pearman
Macon
College
Mcdonough
Phillip Weldon
Old 41
High Falls Park
Liberty Hill
New Hope
Jackson
Chapman
Concord
Johnsonville
Aldora
Flat Shoals
Miles
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Truck Routes and Vehicular Crashes
in Spalding County, 2000-2004
Source: Georgia DOT

Exhibit 4.39


Truck Routes and Vehicular Crashes
in Walton County, 2000-2004
Legend
Vehicle Crash
Truck Route
Limited Access
Major Road
Minor Road
Other ARC Counties
Source: Georgia DOT
Gwinnett
Barrow
Walton
Rockdale
Newton
Monroe
Bold Springs
Youth Jersey
Jersey Social Circle
Miller Bottom
Miles

5. Freight System Inventory and Operational Profile

As part of the regional freight needs assessment, detailed modal profiles were developed for the highway, rail, air cargo, warehousing and distribution networks and port systems. A summary of those efforts is provided here and the detailed profiles are provided in the Modal Profile Technical Memorandum. In addition to the inventory of physical infrastructure, operational conditions on the region's system is provided.

The purpose of conducting an inventory of key freight facilities is to identify a freight subsystem that is critical to servicing the needs of the region's private sector freight stakeholders who are also the region's employers and economic centers. Identifying the critical freight subsystem allows the region to prioritize and focus scarce resources on the portion of the system that services the largest number of stakeholders and provides the greatest return in terms of regional goods mobility.

5.1 Highway System

The trucking industry transports 70 percent of the total freight moved in the United States. In comparison, trucked freight represents nearly 84 percent of the fright tonnage moving in the Atlanta region with 53 percent of the outbound, 77 percent of the inbound and 79 percent of the through freight traveling by truck. Because of the heavy reliance on truck transportation, the highway system is instrumental in the efficient movement of freight in the Atlanta region. Motor carriers utilize the highway system to transport freight to customers throughout the region and to distribute goods to consolidation and intermodal freight facilities. The roadway network is a critical factor in enabling effective connections for the regions economy.

5.1.1 Identifying the Regions Freight Highway Subsystem

The strategic highway freight subsystem was identified based on set of criteria and stakeholder input. The primary criteria used include:

- Average Annual Truck Volume
- Average Annual Truck Percentage
- Connectivity to significant freight generator
- Designation as truck route
- Stakeholder identified route
- Role in terms of servicing local vs regional freight needs

Exhibits 5.1 and 5.2 display the resulting regional primary and secondary freight highway subsystem in tabular and map form, respectively. As shown, the region's interstate facilities comprise the primary freight subsystem and the secondary system expands to include key non interstate NHS routes as well as other state and local routes. In essence, the secondary freight system facilities serve as "stem" routes. The term "stem" indicates the path that a carrier follows

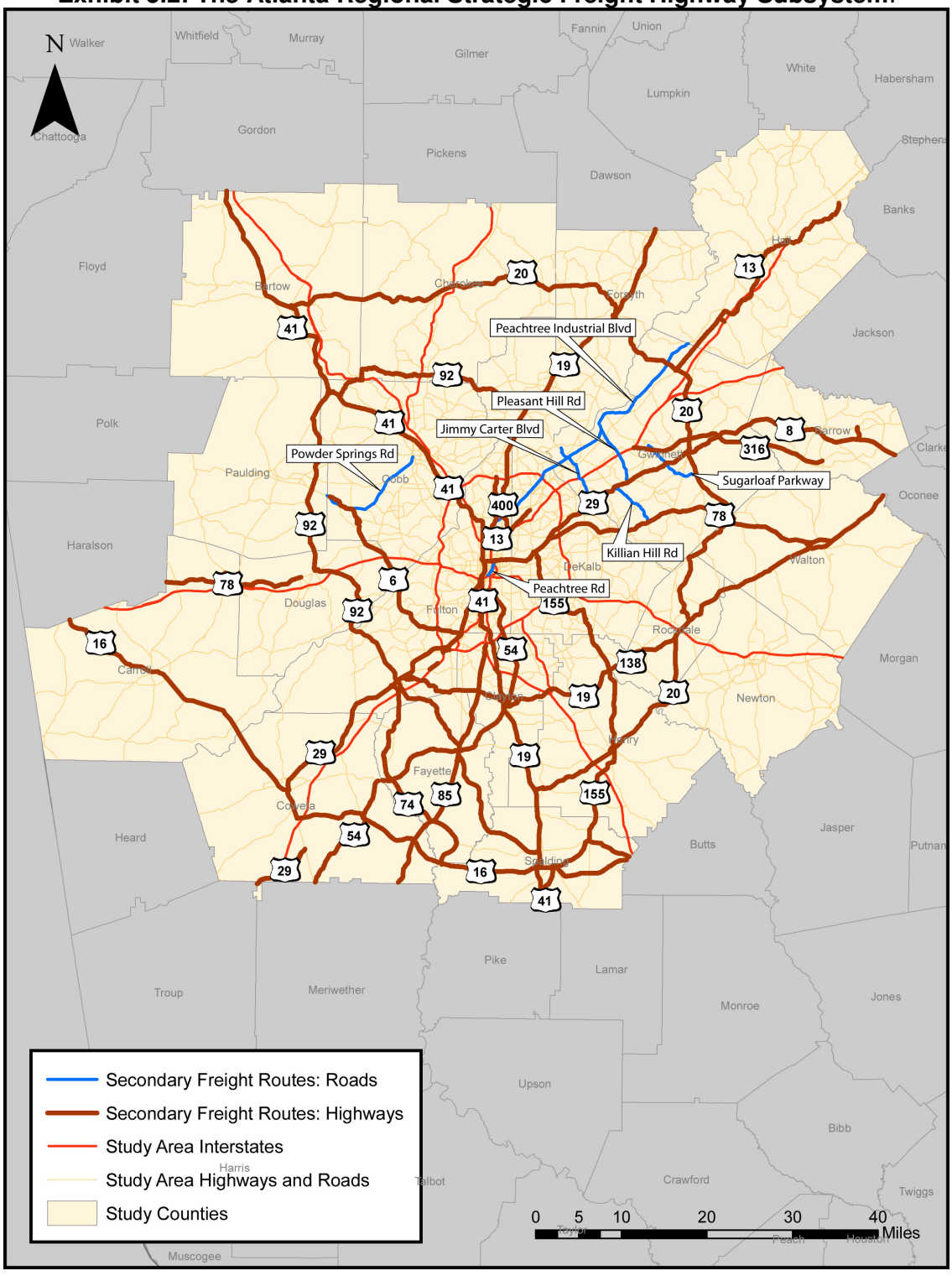
on the way to a customer or group of customers; in a local setting, it is the linehaul portion of pickup and delivery. In essence, a stem route is the way a carrier gets across town, so the network of stem routes combined with the interstates is the core system for trucks navigating the region. In addition to listing the routes, Exhibit 4.1 also provides statistics on the relative volume of truck traffic for each of the facilities.

Exhibit 5.1: The Atlanta Metro Regional Strategic Freight Highway Subsystem

Route	Average Daily Traffic(ADT)	Truck Volume	Truck Percentage
Primary Freight Subsystem			
Interstate 285	73,833	9,237	14%
Interstate 20	38,095	4,927	15%
Interstate 75	54,322	6,592	12%
Interstate 675	32,275	3157	10%
Interstate 85	60,501	3,288	6%
Interstate 985	30,718	1,113	4%
Interstate 575	26,285	780	3%
SR 78	48,230	7,234	15%
SR 85	28,410	3,409	12%
Thornton Road	26,260	3,151	12%
Winder Hwy	22,400	2,688	12%
SR 41	21,820	2,618	12%
Secondary Freight Subsystem			
SR 20	19,520	1,174	6%
Killian Hill Road.	39,190	1,957	5%
Sugarloaf Parkway	39,800	1,552	5%
Pleasant Hill Road	38,300	1,532	4%
SR 6 (Camp Creek Pkwy)	14,610	1,461	4%
Peachtree Road	35,990	1,439	4%

SR 74	9,480	189	2%
SR 16	5,570	612	11%
Jimmy Carter Blvd.	15640	625	4%
SR 54	34,680	1,387	4%
SR 92	20,620	824	4%
SR138	12,800	1,280	4%
SR 155	12,064	254	2%

Exhibit 5.2: The Atlanta Regional Strategic Freight Highway Subsystem:



Following are key observations regarding the network:

- The stems are like tree roots, embedding the interstates into the commercial community. They travel north-south and east-west, they cut a partial path through the dense northern territory, and they link up with each other.

- Stem routes can be city streets in some of the denser parts of town, and they can operate in a series, such as the corridor linking Fulton Industrial Boulevard[3] to the airport and Douglasville via Camp Creek Parkway and Thornton Road.

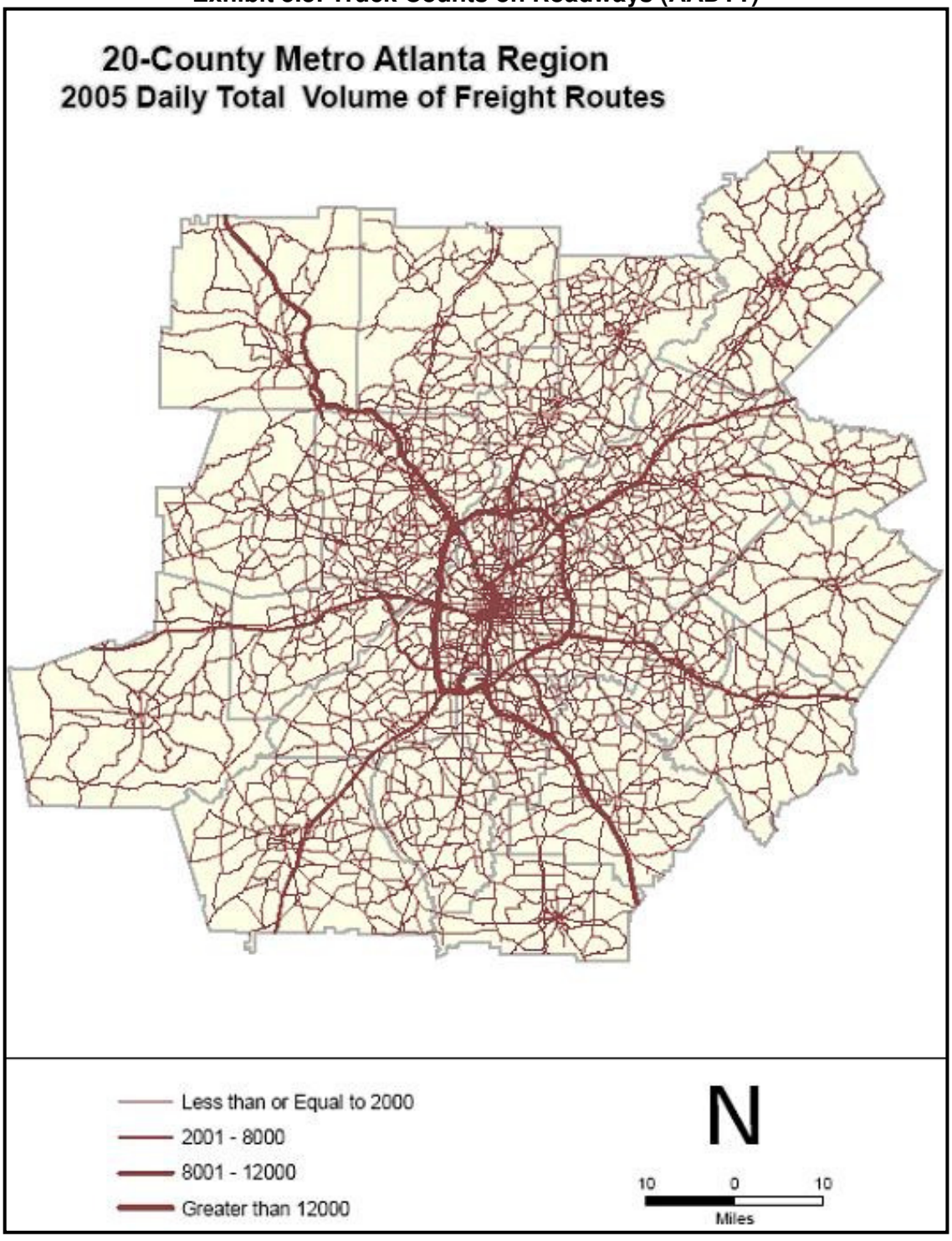
- The stems bear a close relationship to the economic geography, but they are less the routes that businesses grew up around (although some are), as they are the routes for getting *between* businesses. This is a crucial consideration for network and land use management, because cross-town corridors are most efficient when they are not heavily laden with local, turning traffic from roadside development.

- The prior point notwithstanding, freight carriers (including commercial fleets and the private fleets of local industries) do not describe most of these routes as "truck friendly". In other words, they are not a well-conceived system for transport of freight; they are just the most practical or direct facilities available. Neither are the stem routes a really viable alternative to the congested interstates: carriers consistently report that they cannot avoid the interstates because other options are inadequate.

There is a provocative perspective related to the last observation, but it can be seen best by reproducing a map from the Highway Profile. This appears as Exhibit 5.3, and it depicts daily truck volumes on Atlanta metropolitan roadways. The volumes include overhead truck traffic, which will add emphasis to the interstate system. It is nevertheless true that almost no facilities stand out on this map *other than* the interstate system (the main exception is the Camp Creek-Thornton Road connection to I-20, which passes through the Fulton Industrial Park). Indeed, the map demonstrates the very thing that stakeholders report: there are no viable alternatives to the interstate highways, and they are obliged to use them.

[3] The term "stem" is perhaps loosely applied to a road like Fulton Industrial Boulevard and a few others, since the Boulevard is the origin and destination point. However, it is a long road with many side streets full of businesses, so in that sense it is the main travel route to reach them.

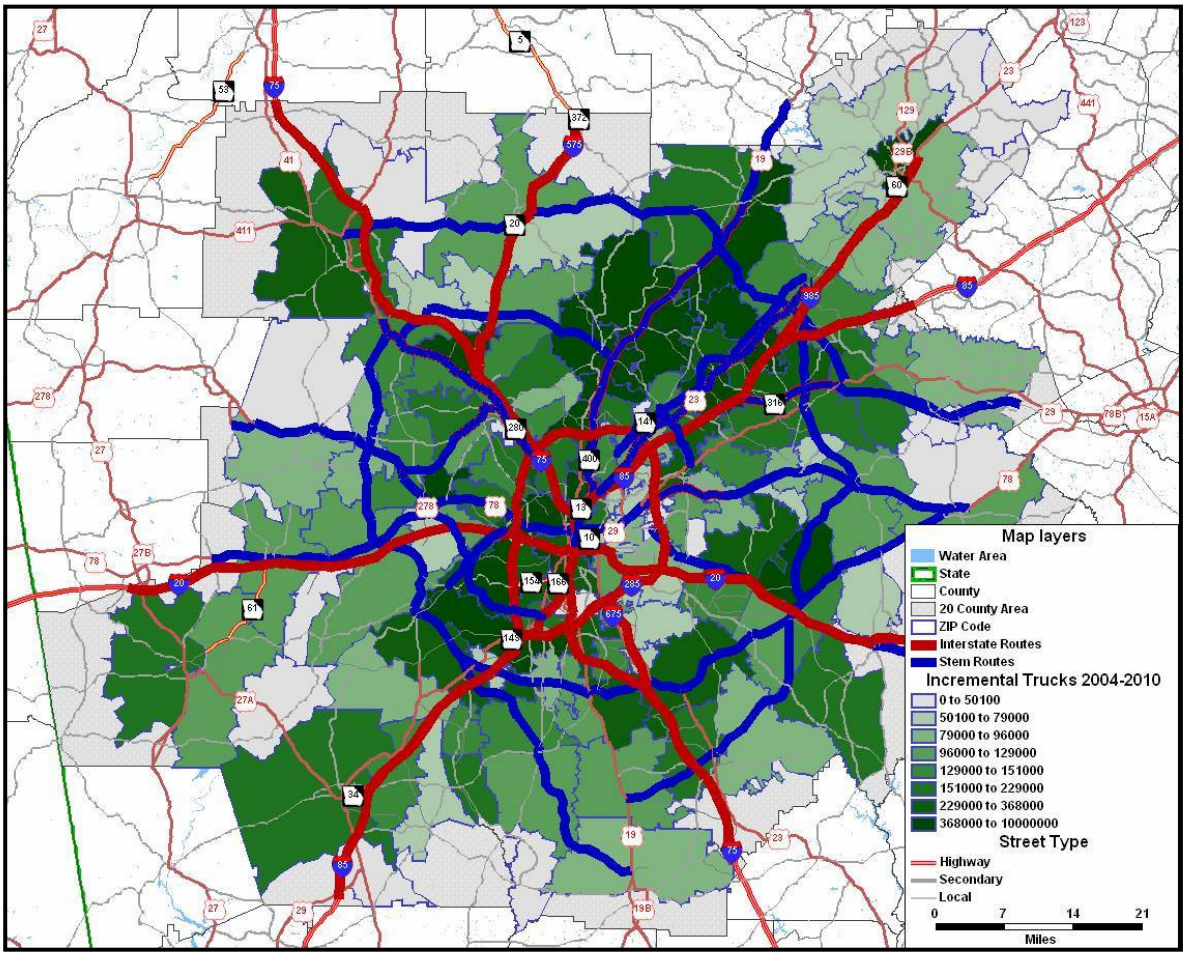
Exhibit 5.3: Truck Counts on Roadways (AADTT)



Stakeholders also ascribe the acuity of congestion in the Atlanta region to the same dearth of alternatives. As this study has documented elsewhere, they point to the grid network of surface streets possessed by other major U.S. cities, which not only relieves the interstates in those locations, but can be the best way to travel between many local points. The Atlanta arterial system is based on radials, and it lacks these connecting transverse routes. Looking again at the Atlanta core network with this perspective in mind, the provocative thing it reveals is that the stem routes amount to the carriers' attempt to establish the grid. It is an incomplete system – for example, there is nothing to directly serve the T-shaped district of distribution and retail that bisects I-85 below I-985, and the paths through the dense northern territory are limited and partial. Even so, the transverse routes are very much there; the principal thing that isn't there is the design, investment and management to support them purposefully as freight arteries.

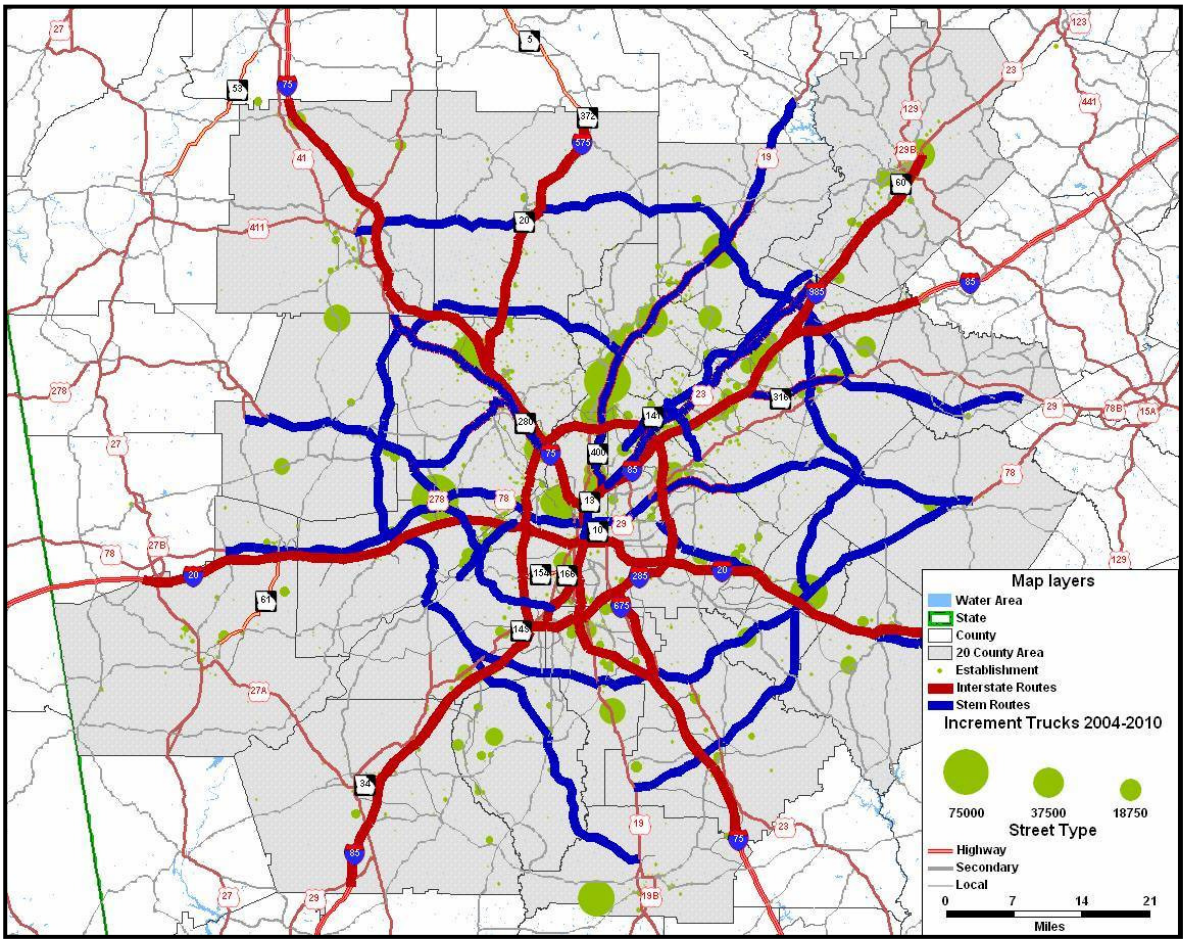
The suitability of the core network for the devotion of investment and management resources is justified in part by its alignment with the direction of traffic growth. Exhibit 5.4 considers this in terms of the incremental truck traffic by zip code through the year 2010. In this light, the network is very well situated to serve new volume. It reaches all of the concentrations of growth, and connects them to others around the region. While the districts of Carrollton and Newnan are left dependent on interstates, those facilities thus far are less congested at the periphery; it may also transpire that a connecting route like US 27A will gain importance.

Exhibit 5.4: Freight Highway Subsystem and Zip code Traffic Growth



A more specific yet less complete picture of growth is afforded by Exhibit 5.5, which plots incremental truck unit volume by establishment and situates it alongside the core network. As discussed above, the quantification by establishment captures less of the traffic than summation by zip code, but it is more precise about the location of growth in relation to facilities. Like the prior exhibit, the alignment it displays is rather good. Most growing businesses are on the grid, and it connects them across the region. The missing "T" is evident in the northeast, and there are other outliers; however, the chief visible deficiency visible lies to the south. Pockets of business expansion near and along US 19S may draw that facility into the stem routes, and a second cluster in Fayette County could have a similar influence on a route like SR 74.

Exhibit 5.5: Core Network and Establishment Traffic Growth



5.1.2 Level of Service on the Freight Highway Subsystem

Exhibits 5.6-5.9 demonstrate that the roadway system is severely congested along all major arteries in the region during the morning and evening rush timeframes while the off-peak timeframes offer much better operating conditions. During the 6am-10am period, (displayed in Exhibit 5.6) the north sides of I-285 along with many arterials are congested. Notable is the fact that the analysis suggest that there is excess capacity on the key freight routes during off-peak times. Thus, strategies for shifting freight traffic to off-peak hours are a potential worth exploring.

Exhibit 5.6: 2005 Atlanta Region Morning Peak Level of Service

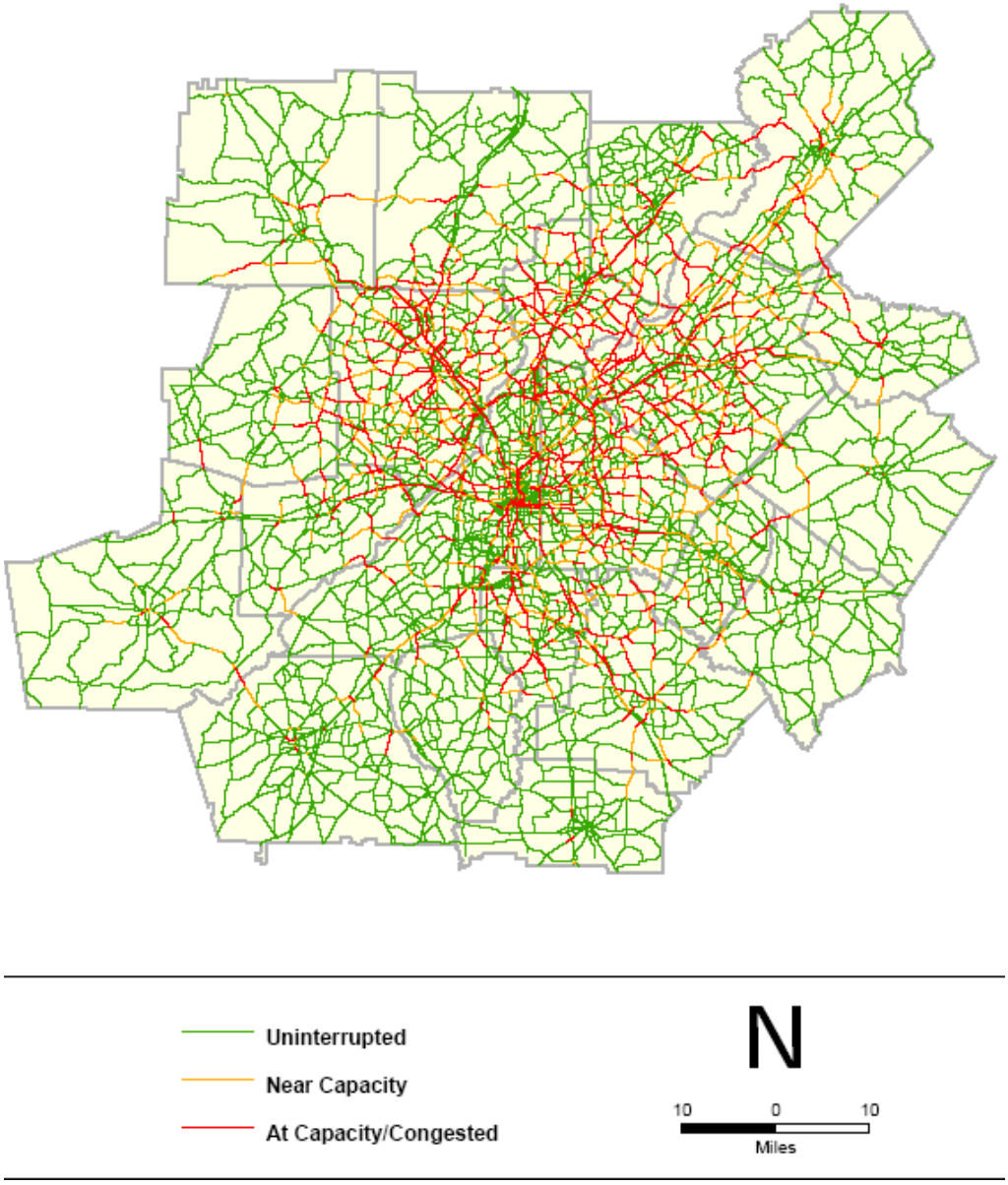
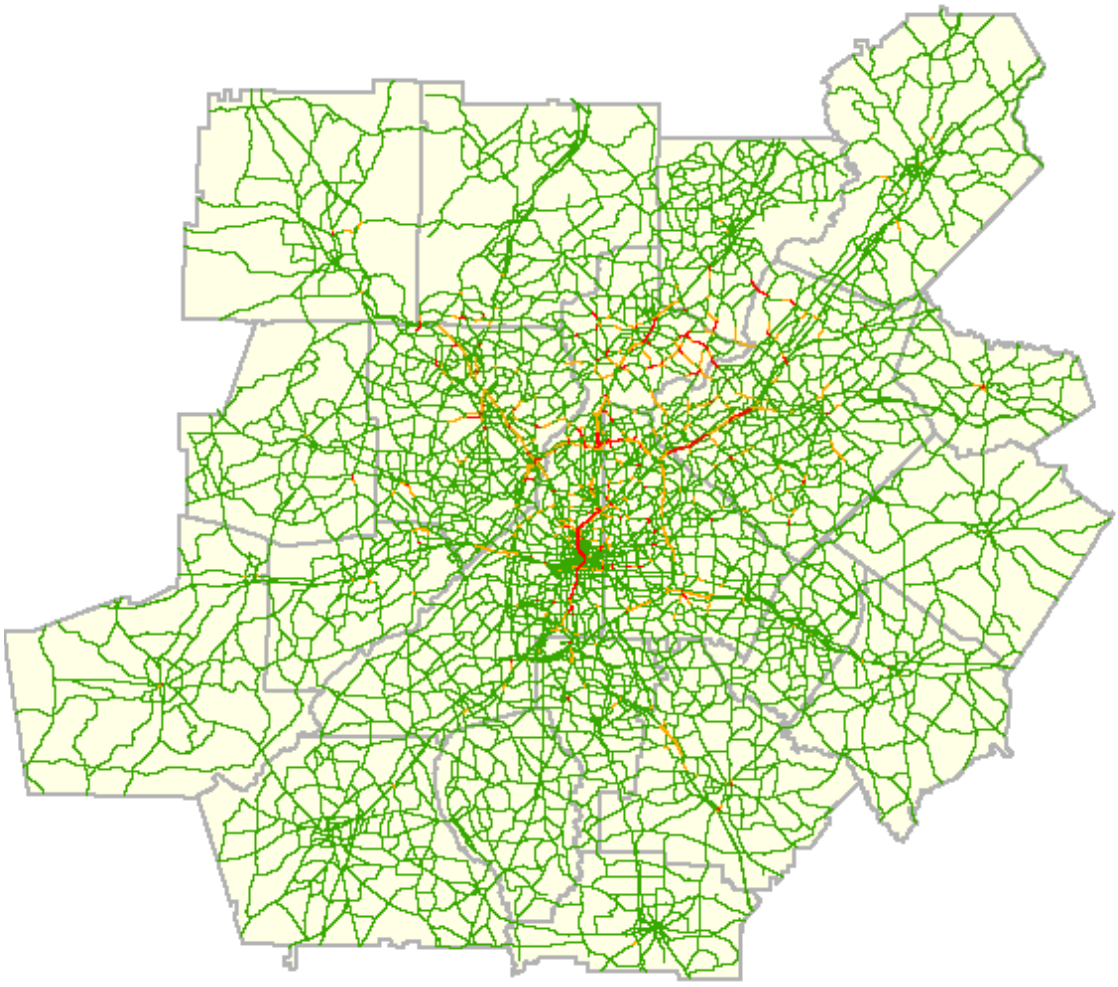


Exhibit 5.7 illustrates how service levels greatly improve during the midday hours of 10am-3pm. The morning peak trips are typically complete by this time of day. The primary route system shows uninterrupted flows except for roadways located within the city center. It should be noted that the percentage of trucks is often higher during off-peak hours relative to morning rush; however, because the overall level of passenger traffic is greatly reduced, the LOS is improved.

Exhibit 5.7: 2005 Atlanta Region Midday Level of Service



The heaviest traffic flow occurs during the evening rush hour period as return from work trips, other personal trips, and truck traffic move through the network as shown in Exhibit 5.8. The northern loop of I-285 extending northerly and the west side of I-20 are at full capacity from 3pm to 7pm.

Exhibit 5.8: 2005 Atlanta Region Evening Rush Highway Level of Service

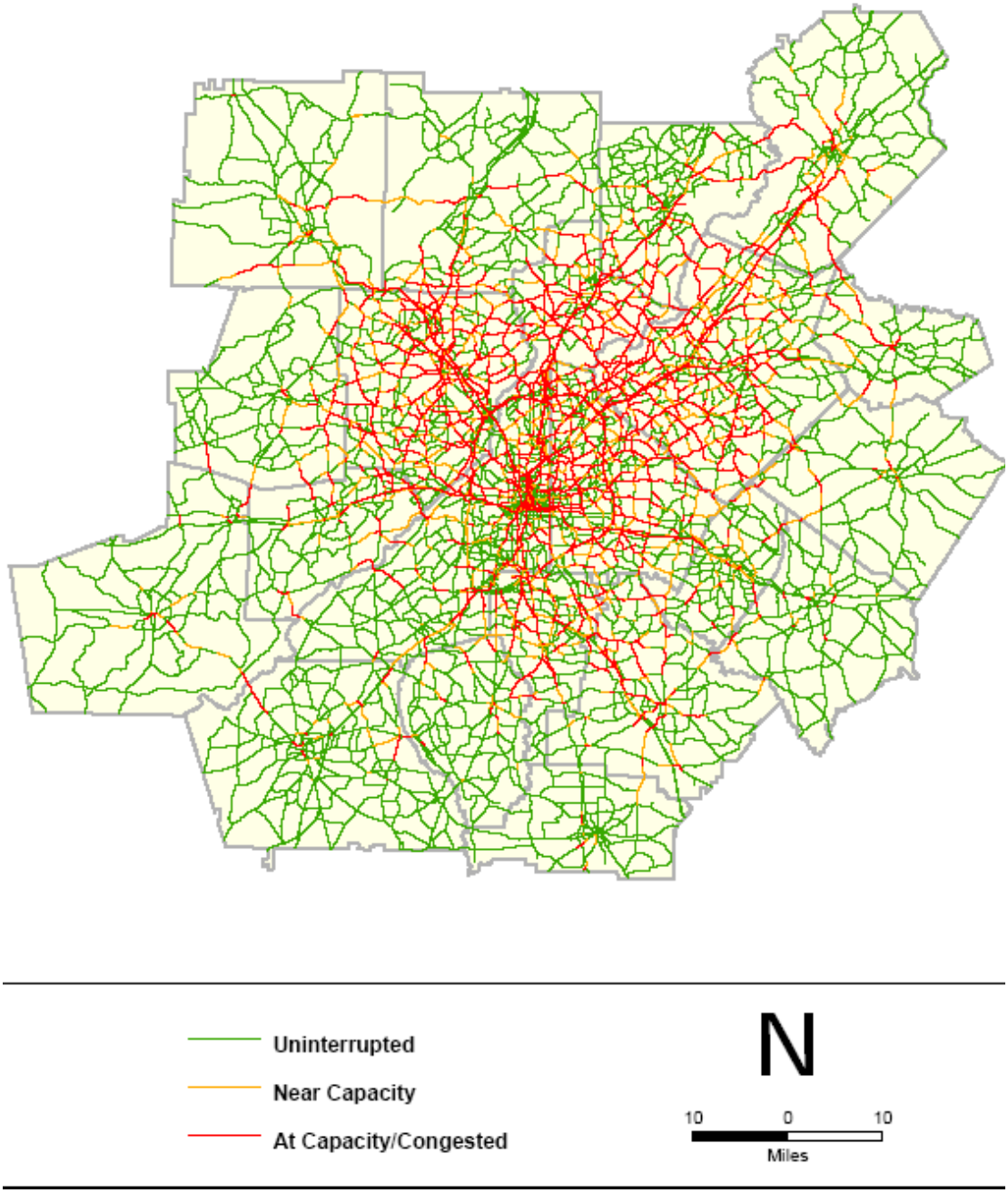
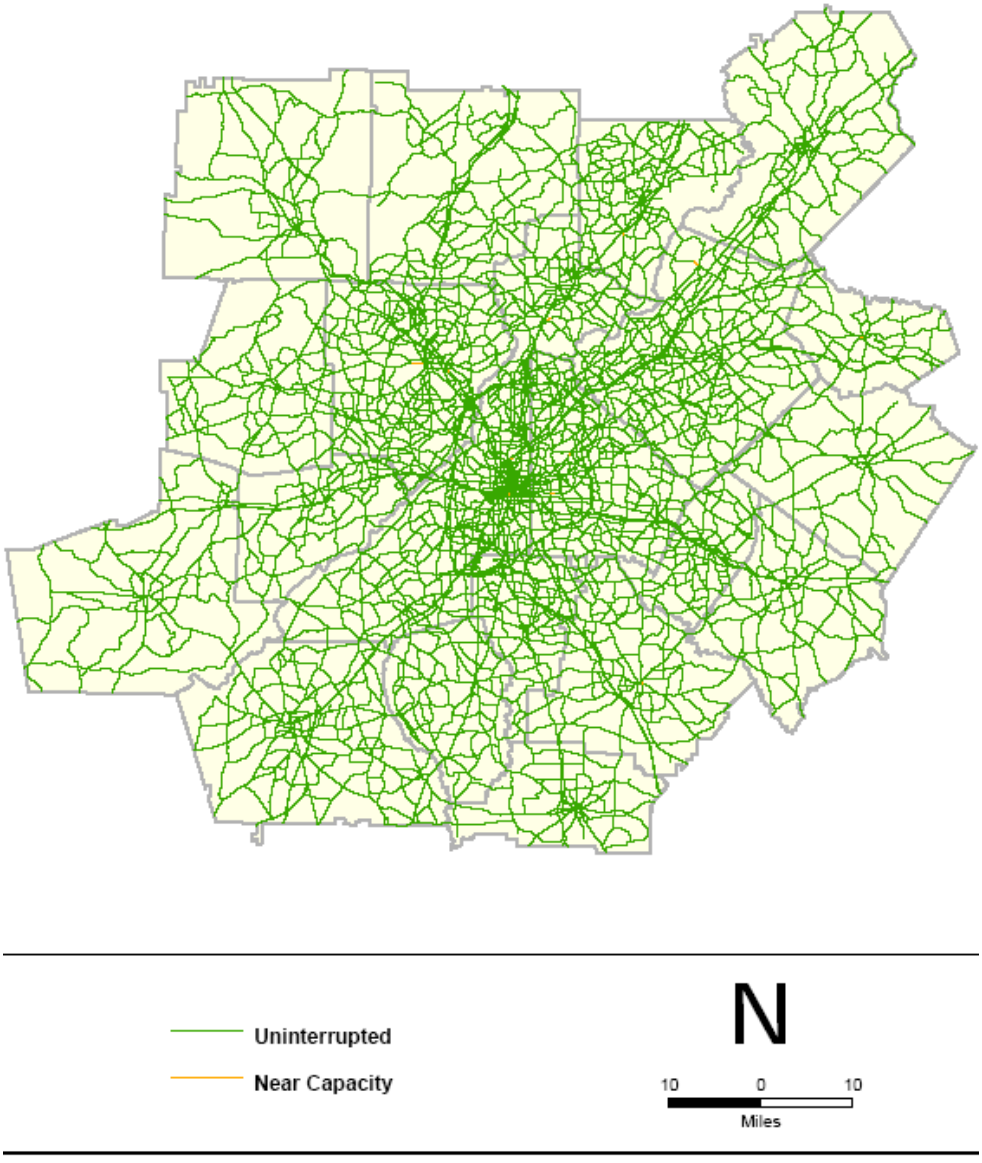


Exhibit 5.9 depicts the level of service of the network during the night period. The completely uninterrupted traffic flow demonstrates the opportunity to introduce off-peak or late evening or night delivery times. Low congestion leads to the high reliability and fast transit times through the roadway network. However, there are obstacles for shipper and receivers such as labor constraints, community impacts and security concerns that may impact the ability to operate off-peak.

Exhibit 5.9: 2005 Atlanta Region Night Time Highway Level of Service



5.1.3 Linking the Regional Freight Highway Subsystem to the Economy

This section reviews network alignment compared to establishment location by industrial sector, using the five groups employed before: distribution, retail, food, manufacturing, and construction. Exhibit 5.10 records the citations for stem routes that arose during field interviews in the various sectors. (The interstates aren't listed because every group mentioned them.) This is appropriate as a matter of reporting; however, the picture it gives is incomplete. The objective of field work was to reach all major sectors of the economy and all counties of the region; it did not attempt to reach every sector in every county. Moreover, not every respondent was able to describe operating routes, although many could. The consequence is that the field citations taken as a whole give a very good idea of the operating network, and the citations for a given sector point to significant routes for the industry, but the list may be only partial.[4] For example, there are many retailers to be served along GA-400, yet the retailers researchers talked to didn't mention this route. (One LTL carrier delivering to retail stated that they try to avoid GA-400, partly because of tolls, and partly because the mixed loads they haul may include hazardous goods, which are restricted on this road).

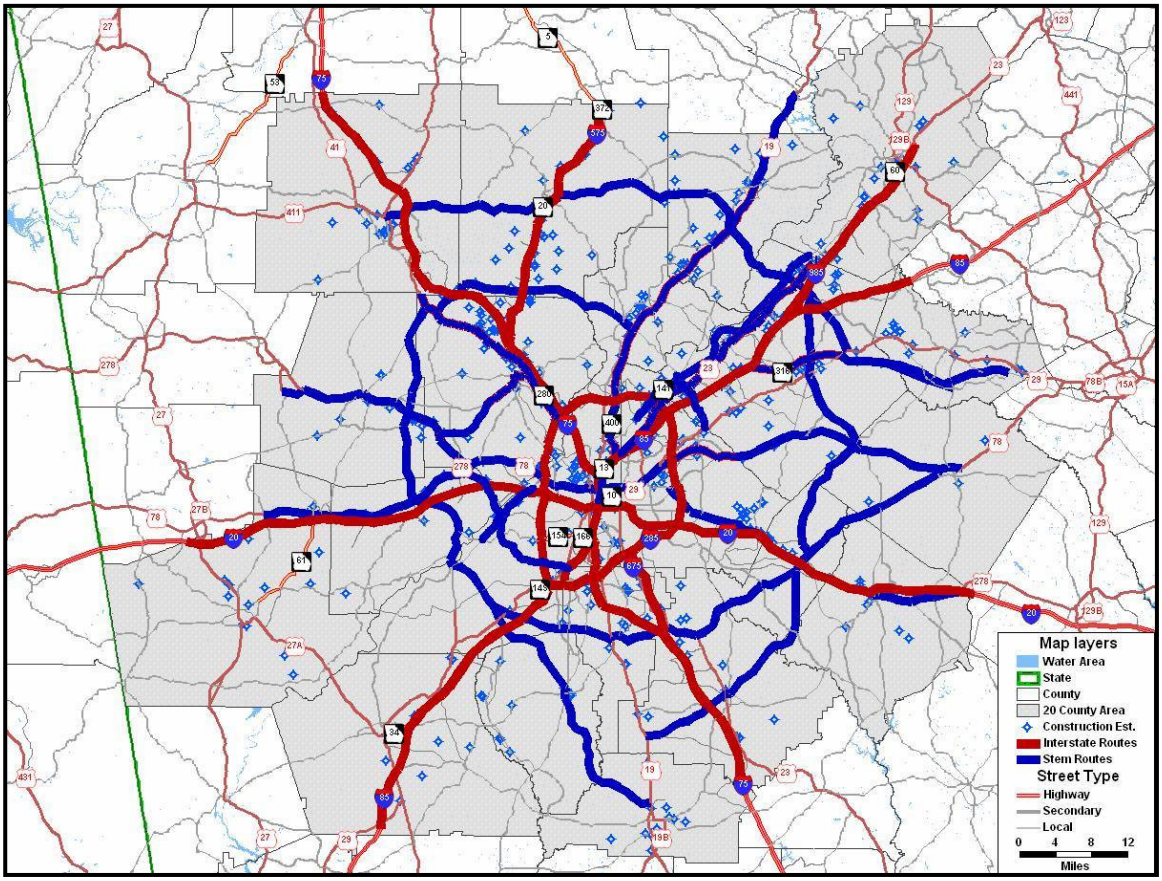
Exhibit 5.10: Citations of Routes by Private Sector Stakeholders

Stem Route Citations by Industrial Sector	Distribution	Retail	Food	Manufacturing	Construction
GA- 400/US-19	■		■	■	
US 78	■		■		■
US 278	■		■		■
SR 20	■		■	■	
SR 92	■	■			■
SR 138			■	■	
SR 316	■	■	■	■	
Peachtree St.		■	■		
Camp Creek Pkwy	■		■	■	
Fulton Industrial Blvd	■			■	
Thornton Rd					■
Powder Springs Rd			■		
Cobb Pkwy	■		■	■	
Buford Hwy			■	■	
Peachtree Industrial Blvd	■		■	■	
Jimmy Carter Blvd		■	■		

[4] Inclusion on the list of citations required mention by at least two participants from any sector, and typically there were more. Routes that only one participant identified were dropped, and it is certainly possible that some of those routes are important in their sector.

A fuller understanding of the effectiveness of the network for industry segments can be gained by looking at the relationships on the map. The construction sector establishments displayed in Exhibit 5.11 are an instructive place to start. They show a strong correspondence to the core system, and this correspondence goes beyond the several citations from field work, encompassing facilities like SRs 138 and 316. Establishments in the southwest seem off the grid, but they would be picked up by the inclusion of US 27A and SR 74 (described above in the discussion of Exhibits 4.8 and 4.9). More importantly, the network clearly serves the economic geography of this industry, and as the analysis of Exhibit 5.8 pointed out, it connects them to the regions of business growth, where one part of construction demand will occur.

Exhibit 5.11: Construction Establishments on Freight Subsystem



The distribution and retail sectors appear above in Exhibits 5.11 and 5.12. The alignment continues to be quite good, and the network is clearly supporting these industries. Again, the southwestern district is not enclosed by the grid, but thus far that is lighter volume territory for these businesses. Essentially all of the other districts are reached or encircled, enabling establishments

to be served and linked. Some of the prominent routes are SR 316 and Peachtree Industrial Boulevard in distribution, and GA 400 in retail.

Exhibit 5.12: Distribution Establishments on Freight Subsystem

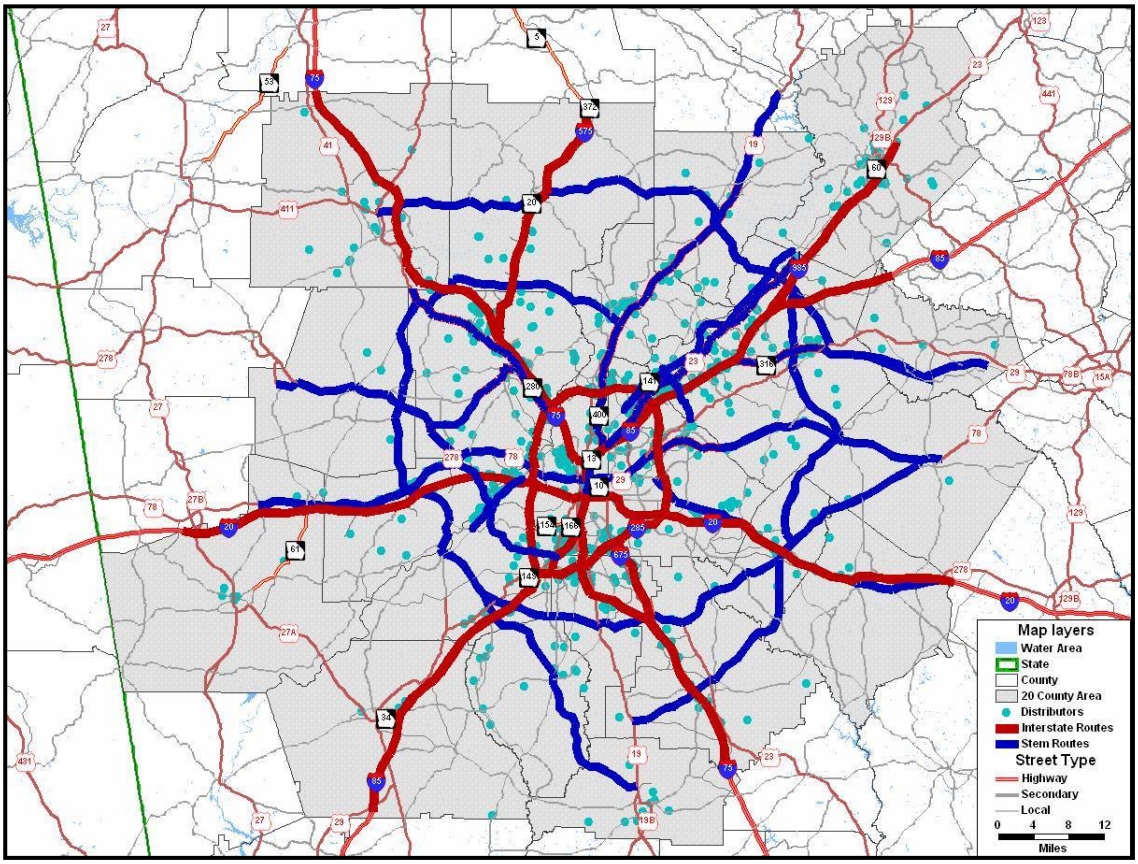
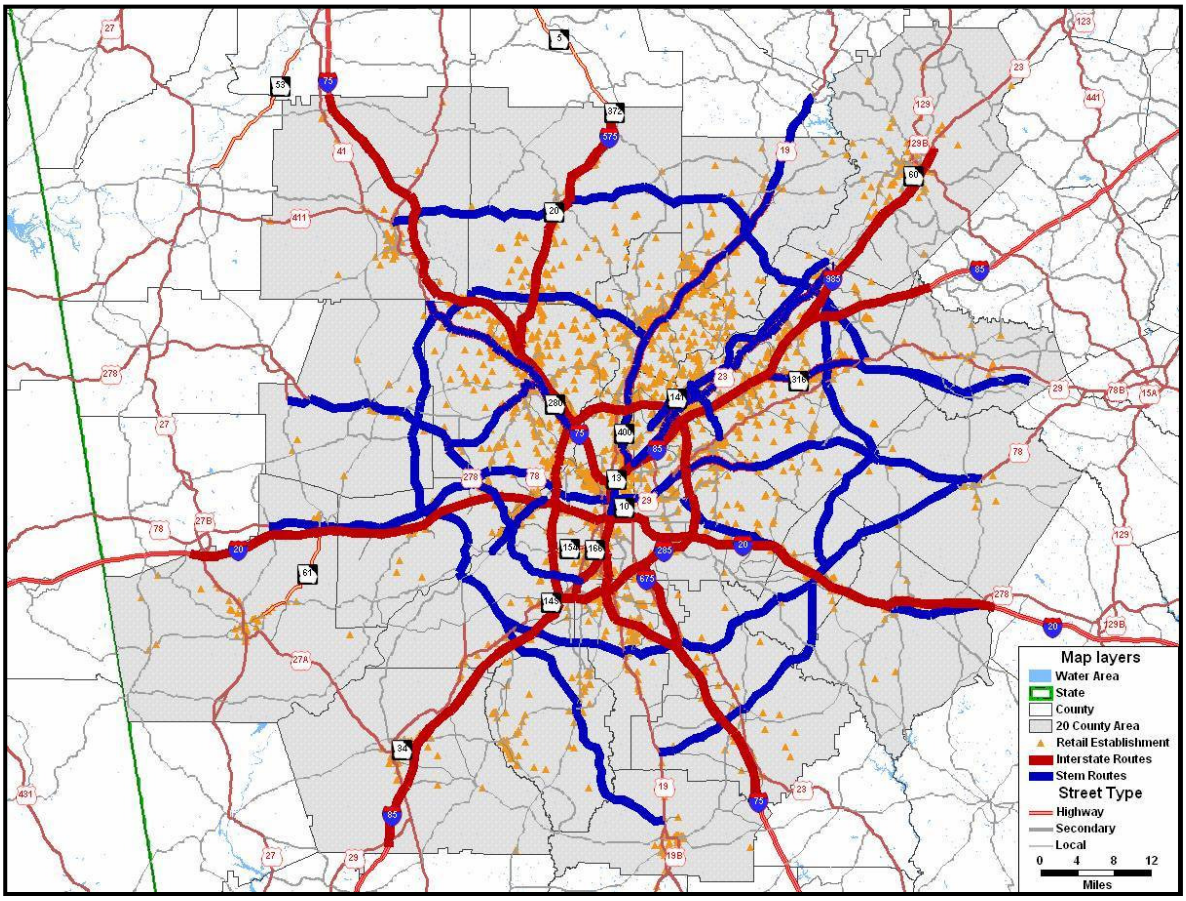
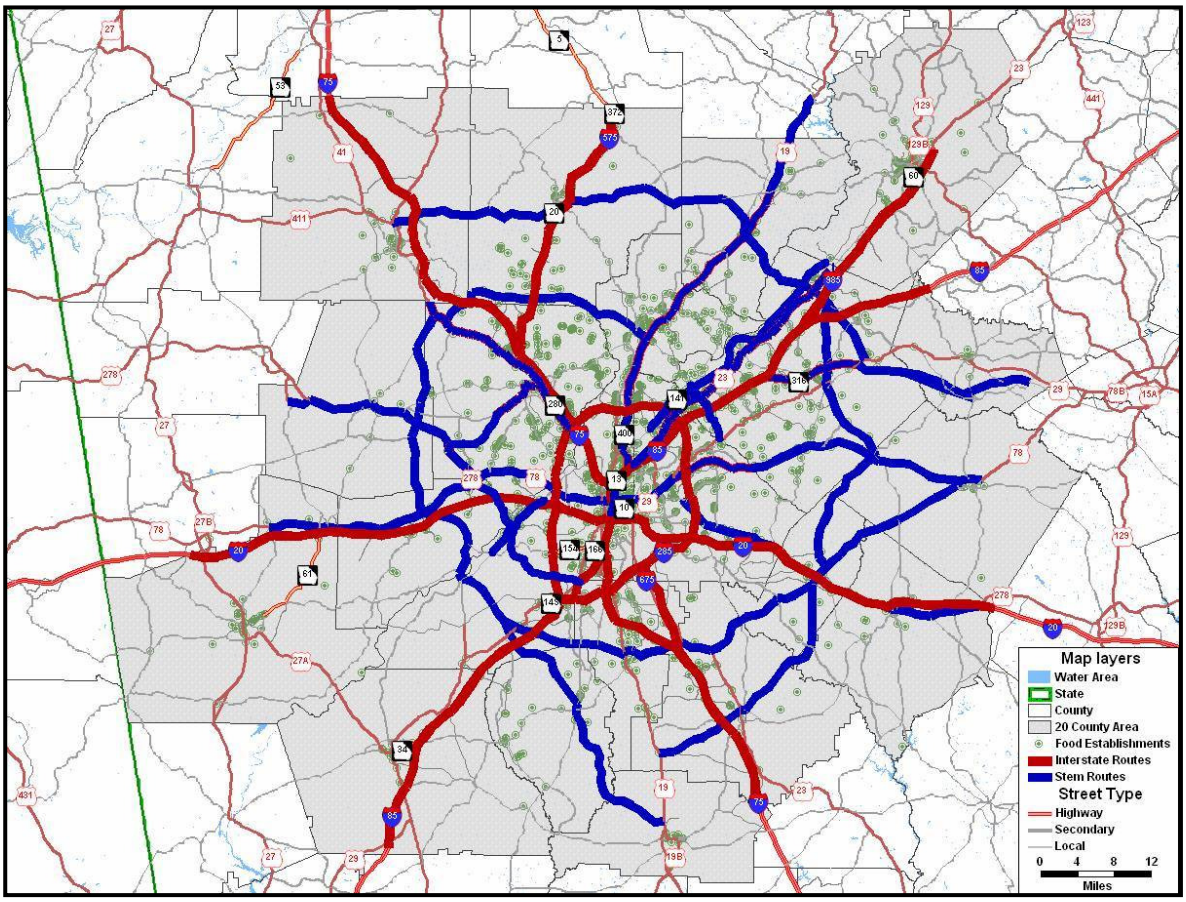


Exhibit 5.13: Retail Establishments on Freight Subsystem



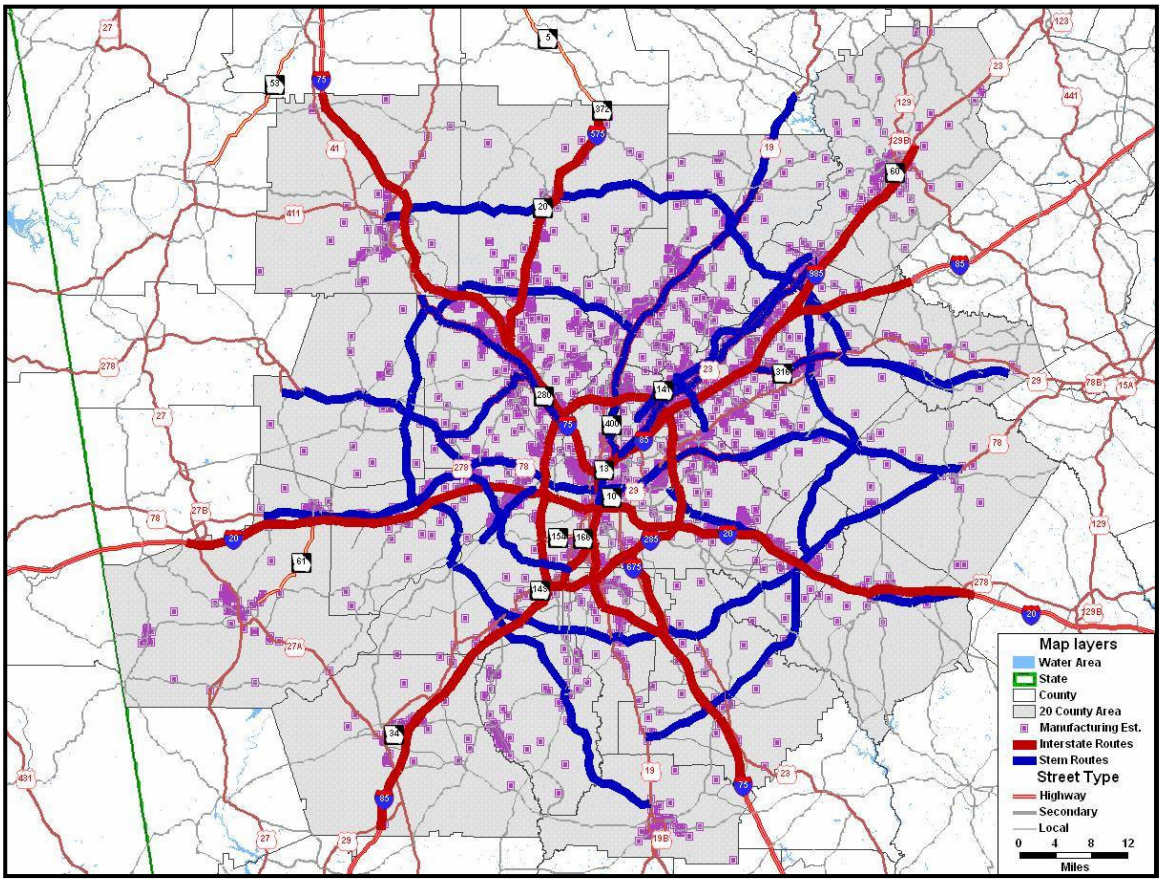
The food producing and distributing industry is depicted in Exhibit 5.14. As noted earlier, the geographic array of these businesses is skewed to the east, and the core system encases them like a web. Such routes as Powder Springs Road and SR 20 provide transverse connections between radials, enabling trucks that often make multiple-stop deliveries to move between population centers.

Exhibit 5.14: Food Sector Establishments on Freight Subsystem



The dispersion of manufacturing activity throughout the ARC region offers a final test of the efficacy of the core network in connecting industry. As is apparent from Exhibit 5.15, the system encompasses the length and breadth of this sector as thoroughly as it does others, enabling it to reach and be sourced from local as well as wider markets. Radials such as the Buford Highway partially acquire transverse links through crossing routes like SRs 20 and 316, while the Fulton Industrial cluster has ties to the truck terminals of the south just as it has to the interstates. US 19S toward Griffin probably is an additional stem, and it has western and eastern connections in place via SRs 92 and 20.

Exhibit 5.15: Manufacturing Establishments on Core Network



5.1.4 Freight Highway System Issues

General Freight Highway System Issues

The foregoing discussions suggest that the: Atlanta region has a core network for truck freight that contains the outline of a nascent grid system. The network provides effective connection for major sectors of Atlanta industry. Some segments are more important to some sectors, and some links are missing, but the key feature is that it is underdeveloped. Approached as a system with investment and management, it can be made substantially more efficient for cross-regional truck travel, and provide crucial support to a logistics-dependent economy.

Primary System Issues

The high amount of traffic and peak time congestion on the primary route system has been highly documented. The main issues with regards to these roadways are associated with traffic congestion and the unpredictability of the system. These two issues impact the service capability of

the freight transportation industry. However, due to the lack of alternative routes in the region, often times these routes are utilized regardless of congestion, and therefore carriers compensate for these issues.

Interstate to interstate interchanges are also another major issue that exists within the primary freight system. For example, the interchange merging I-85 into I-285, has limited distance for carriers to access I-285 eastbound. The need for large trucks to merge across numerous lanes to reach interstate exits poses a severe safety risk as well as forces truck drivers to continuously operate at slower speeds while operating within these interchange areas.

Secondary System Issues

Due to congestion on the primary freight subsystem, these routes are used to relieve carriers serving the region; however, these roads often are not optimal for truck operations due to interchange design, access issues and signal timing. In addition to general capacity constraints, lane capacity is often an inhibitor for trucks to navigate these roads safely such as segments of SR 78. Another general deficiency noted with regards to the secondary system is difficulty, merging onto the primary freight subsystem routes from the secondary freight subsystem roads resulting from design standards. An often cited example of this merging issue is at the Jimmy Carter Boulevard and I-85 interchange.

5.2 Rail and Intermodal System Profile

Since its beginnings as a terminus in the cotton trade, Atlanta has been the center of the rail-served markets of the Southeast. Six percent of the nation's rail tonnage today is based in or carried through the 20-county ARC region, including 11% of U.S. intermodal volume. One hundred thirty million tons of regional rail freight include unit trains of coal and grain, merchandise trains of forest and food products, chemicals, minerals, and automobiles, and fast trains of international and domestic containers.

Despite the loss of its automobile assembly plants, Atlanta will retain its importance in rail for the future. According to long term freight forecasts for the American Association of State Highway Transportation officials (AASHTO), three decades from now the region's share of U.S. rail tonnage will remain at 6% overall. During this period, a declining proportion of carload traffic will be offset by a climbing intermodal share, which will reach 13% of the nationwide total atop quadrupling volume.

Rail is 13% of Atlanta's freight tonnage but has an important role in essential economic sectors like the supply of feedstock to electric utilities, and the burgeoning international trade. This section examines rail freight's traffic and network, its operations and capacity, and its development issues.

5.2.1 Rail System Inventory

There are two primary Class I railroads operating in the Eastern United States, CSX Transportation and Norfolk Southern. Atlanta is served by both, along with three small railways. Exhibit 5.16 displays this network at the regional level. The Class I systems stretch generally from the Atlantic Coast to the Mississippi River, and from the Gulf Coast to the Canadian border. There are several significant observations to make about their networks:

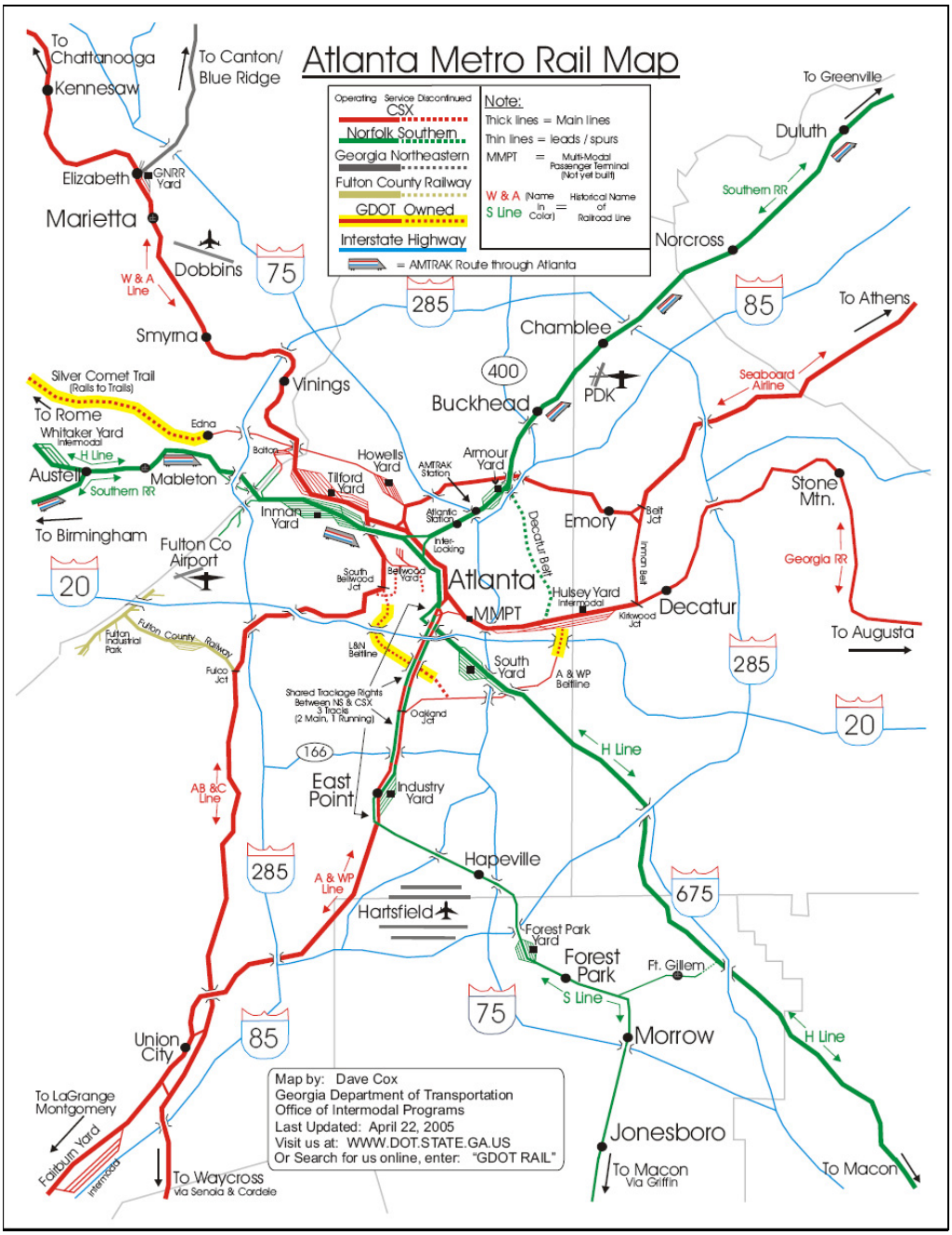
- There is a long gap caused by the Appalachian mountain range, which begins just north of Atlanta. The gap is bridged at a few points, but the bridging routes cross difficult terrain and are not fast, high capacity lines. Their chief purpose is to bring coal out of the mountains as apposed to linking eastern and western territories. The consequence of the gap is that from northern Georgia to Pennsylvania, both railroads have eastern and western sections.

- Partly because of the mountains, and also for reasons of history and economic geography, the route structure of the Class I railroads has a predominantly north/south orientation. In the southern states, there are east/west corridors flowing from the gateways of Memphis, New Orleans, and Meridian MS to Georgia and Florida, but the traffic flows most strongly toward the north.

- Norfolk Southern (NS) has limited presence in western Tennessee and Kentucky, and CSX is limited in Mississippi. CSX serves Florida directly; NS serves it through connection to the Florida East Coast Railway (not visible on the map). While the two railroads have about the same amount of track in Georgia, the NS routes converge on Atlanta and Macon, while those of CSX offer more alternatives.

A consequence of the NS network layout is that Atlanta literally is the linchpin of its southern system. Its eastern and western halves are joined only at three places; Asheville NC through the Appalachians, Columbus GA over an unmodernized line, and Atlanta. Between Austell in Douglas County and Inman Yard on the west end of downtown, four corridors come together on a single right-of-way with double and triple tracking: the route to Ohio through Chattanooga, the route west via Birmingham, the route south to Savannah and Florida via Macon, and the route to Virginia through Charlotte. Seventy trains cross this section of network daily, which is as much volume as NS puts between Chicago and Toledo on its Midwestern main.

Exhibit 5.16: Atlanta Rail System



Source: Georgia Department of Transportation

To manage this obvious bottleneck, classification yards[5] surrounding Atlanta were developed by NS and its predecessors through the years, in order to reduce the intensity of operations in the metropolitan area. The closest of these yards is in Macon; others at Sheffield AL (near Muscle Shoals) and Linwood NC (between Charlotte and Greensboro) were specifically constructed to relieve Atlanta, and there are further facilities in Chattanooga and Knoxville that contribute to the same purpose. CSX Transportation (CSXT) has major corridors south, north, west and east that cross at Atlanta, and it maintains classification yards along them at Waycross, Nashville, Birmingham, and Hamlet NC (between Charlotte and Fayetteville). However, for CSXT the center of southern operations is Waycross. Two main lines come there from Birmingham and Montgomery without touching Atlanta, there are lines to the ports at Savannah, Charleston, and Jacksonville, and there are links to the CSXT east/west corridor that follows I-10. For hundreds of miles north of Atlanta the CSX network is bifurcated and has no east/west connections. However, south of the city is a variety of routes, and even in metropolitan Atlanta there is more than one line, so that traffic crossing the region is not all funneled through the downtown right-of-way where CSX parallels Norfolk Southern. The upshot is that Atlanta is a primary market in the CSXT system, but less sensitive operationally than for NS.

The Atlanta region's three short line railways are low volume operations, accounting for less than 2% of the non-overhead rail traffic:

- The largest is the Georgia Northeastern Railroad. From a connection with CSXT near Marietta, on the main line between Atlanta and Chattanooga, it stretches 66 miles along an old L&N route to Ellijay, where a Georgia DOT line continues northward. It provides carload service to a range of industry, including lumber, chemical, and food products, the majority of it lying in Cobb and Cherokee counties. Volumes in past years have reached 11,000 annual loads.

- The Fulton County Railway is a 55-mile switching road serving the Fulton Industrial Park, southwest of I-20 and the perimeter. It connects exclusively to CSXT at Fulco Junction, near Cascade Road SW, and was formerly CSX track before being sold to the shortline holding company OmniTRAX. Although the Park is an active freight center, much of the rail line sees little service; recent volumes totaled 8,000 carloads of food products, paper, packaging, and metals. (There are several intermodal terminals within 15 miles of the Park, so direct rail is not the only form of rail service it receives.)

- The smallest is the Great Walton Railroad, which operates two branches off the CSXT main line between Atlanta and Augusta. The longer runs 25 miles southeast from Covington in Newton County, and connects to an NS branch line at Machern. The shorter runs north from Social Circle in Walton County to Monroe. Traffic volumes have not been published.

The Atlanta region's 130 million tons of rail freight consists of 59 million tons of carload traffic moving in general merchandise trains, 52 million tons of bulk freight in unit trains, and 19 million tons carried in containers and trailers on intermodal trains.

[5] Classification yards are operating hubs that break trains apart and form new ones that will travel directly to one or a few destinations. Many trains begin or end in Atlanta because of the size of its market. The function of the exterior yards is to keep traffic that is not bound for Atlanta on non-stop trains that just pass through.

4.2.2 Rail Operations and Capacity

CSXT and Norfolk Southern both have primary yards in Fulton County serving the metropolitan district. NS operates at Industry Yard in East Point and CSXT at Tilford Yard northwest of downtown. These are supported by a variety of smaller facilities spread through the local network, such as Armour and Howells yards on NS and CSXT respectively. Merchandise road trains are disassembled and assembled at the primary locations, and connect to local trains performing delivery and pickup at industrial sidings. While unit trains don't require this function because they move en masse to high volume receivers, there are other services related to unit train operations that yards provide, such as holding and managing loaded and empty equipment in the limited track space of customer and carrier sites.

Intermodal traffic is operated by both railroads with paired yards in complementary roles. The Norfolk Southern Inman Yard is on Marietta Road west of downtown, and lies generally parallel to CSXT's Tilford. It supports pickup and delivery drayage for trailers and containers exclusively in domestic service, and it performs all classification of domestic and international intermodal trains. The classification process chiefly is a matter of moving loaded intermodal platforms from one train to another, although a certain amount of transferring boxes between platforms can occur. Inman is an old in-town facility paired with the Austell terminal, built in the late 1990's in Cobb County near I-20 and the Douglas boundary. Austell is entirely devoted to regional Atlanta pickup and delivery business. International containers are 65-80% of its volume, and the remainder consists of domestic trailers and containers carried for major motor carriers. There is daily service for Savannah but the international traffic comes from ports up and down the Pacific and Atlantic coasts. For trains from the west on the NS Birmingham line, Inman provides a shuttle service back to Austell. The terminal is located on the Chattanooga line and the Birmingham route trains are unable to turn back toward it; instead, they continue up the bottleneck toward town, and are reworked for a return shuttle. A third NS intermodal facility is the Triple Crown terminal at East Point. Triple Crown is an NS subsidiary that operates bi-modal RoadRailer equipment, which are trailers with swappable wheel sets, able to run on rail track and on the highway. The subsidiary has its own network inside the NS system and has catered chiefly to the auto plants in Atlanta, although this now is changing. Four RoadRailer trains move daily to and from the terminal.

The CSX intermodal operations follow a similar pattern. There is an in-town intermodal terminal at Hulsey Yard, off the Boulevard in downtown Atlanta, and a second at Fairburn, 23 miles to the southwest along I-85 south. Hulsey is the older facility, its pickup and delivery drayage is focused on domestic containers, and it handles classification for domestic and international intermodal trains. Fairburn was built in Fulton County in the late 1990's for regional pickup and delivery business, and it is concentrated on international container traffic. There is shuttle service between Hulsey and Fairburn, and daily trains serve Charleston and Savannah. Transit time for the ports is two days, which is considerably longer than the same day or overnight transit available by truck, but is adequate for marine shipping (and NS schedules are not much different). It is noteworthy that CSX does not advertise any intermodal service for domestic trailers, and that NS – who does advertise it – expects this part of the business to fade away.

A variety of carload transfer operations are active in Atlanta. Unlike container and trailer transfers, where the goods are undisturbed as they move between modes, carload transfers remove goods

from railcars and load them into trucks. The most prominent types are for bulk commodities and new automobiles.

- The CSXT bulk terminal is at Howells Yard in Atlanta, on Chattahoochee Avenue; the NS facility is in Doraville on Weaver Way. Both accommodate transfer between railcars and tank trailers of products like petrochemicals, plastics, and liquid sweeteners. High volume and carefully monitored hose systems keep commodities protected and sealed during the rapid transloading process. Because bulk shippers typically load product in great quantity directly into railcars, the truck activity at a bulk terminal is delivery and not pick-up service.

- The CSXT transfer terminal for new automobiles is the Lawrenceville Total Distribution Services facility, on US29 in Dacula. The Norfolk Southern's is the Poole Creek Auto Distribution facility on Southwood Parkway in Hapeville. Both terminals originally had two purposes: first; to support outbound rail service for the region's automobile assembly plants – CSX for GM Doraville, and NS for Ford Hapeville; and second, to support regional truck distribution for inbound rail shipments of vehicles assembled elsewhere. The first purpose is disappearing but the second will continue, leaving both locations as delivery terminals. Transloading is accomplished by practiced personnel who drive vehicles off the railcar to an autorack truck trailer.

Pulling Out on Chattahoochie

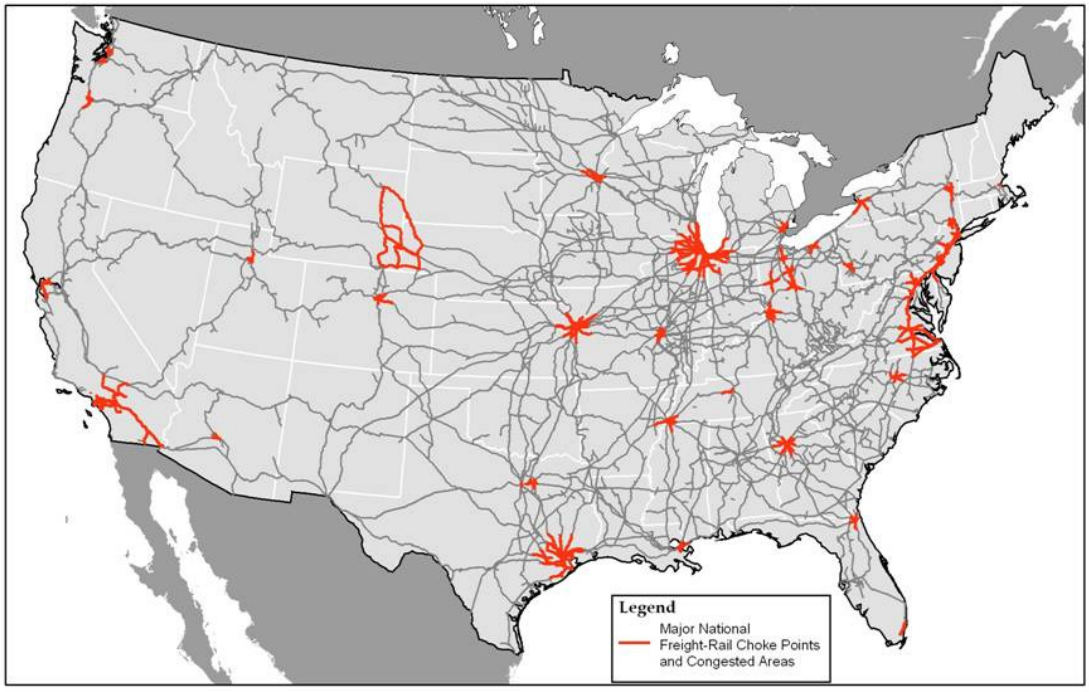
Access for all of these facilities in one sense is good. Hulsey is just blocks away from both I-20 and I-75/85, Inman lies between I-285 and I-75, and the newer intermodal terminals were sited for proximity to highways. The bulk terminals and Hapeville are near the perimeter, while only Lawrenceville is further out. There are local difficulties for the central Atlanta locations, however. Access to Hulsey is at a bend in the road with no turning signal, and road geometry as well as traffic in the old industrial Chattahoochie district make maneuvering and truck travel difficult for Howells and Inman Yards. In field interviews, a tank truck operator singled out the Howells bulk terminal as their most difficult spot for access in the region, and several LTL carriers named the Chattahoochie district among the worst they frequent. Numerous respondents identified traffic conditions along SR316 as exceptionally difficult – even allowing for the transient effects of construction – and this is the primary connecting route to Dacula. The notion of connecting route conditions points up the really systematic problem of access for any of these facilities: to get from any of them to anywhere, Atlanta traffic congestion falls across the path. Unless a truck is going away from the city from an outer terminal, there is no alternative to negotiating the gridlock.

Capacity at the transfer terminals is presently adequate. The auto facilities are losing their outbound volume, and while field interviews uncovered nothing specific about the bulk operations, they are in slow growth markets and are unlikely to be strained. Fairburn and Austell were built to relieve Hulsey and Inman, and the two outer terminals have room for expansion. The inner facilities have been filling in again, of course, but they are not currently pressed and the carriers

should be able to move volume outward to a reasonable degree. The long term challenge is the intermodal growth rates. Atlanta outbound and inbound volumes are expected to grow almost 30% between 2004 and 2010, and to swell over 300% during the next thirty years. When Fairburn and Austell were developed, the difficulties attending the public approval process were such that the railroads concluded new terminals could not be built henceforth. Their conclusion is mutable because it derives from human behavior, yet it may be the correct determination nevertheless.

The ability of Inman and Hulsey to marshal climbing quantities of through freight is another issue, and it ties to the larger question of regional rail capacity. A preliminary depiction of national rail bottlenecks prepared for AASHTO identifies the Atlanta region as one of the prime points of constraint in the Southeast (See Exhibit 5.17)

Exhibit 5.17: National Freight Rail Bottlenecks



Source: AASHTO Freight Bottomline Report

The attenuation of network by both railroads throughout the last several decades, coupled with the central position and explosive market growth of Atlanta market, made this inevitable. As one carrier put it, for many years they have "stressed concentration of volume" on the network, and "now we are trying to spread it out". This means that alternative routes kept in service did not receive investment, and are not yet ready to relieve core routes that are running out of room.

The choke point at Atlanta is more acute for NS than for CSX. There are two main arrows of growth expected by CSX on its system: the I-95 Corridor, and the Southeastern Corridor between

Chicago and Florida. The latter has two branches south of Nashville: the first through Birmingham, and the second to and through Atlanta. The branches join at Manchester, GA and continue to Waycross with combined volume. The implication of all this is that Atlanta is one of three routes absorbing the growth in the southeast, and the greatest stress is south of the metropolitan region, on the segment heading into Waycross. While CSX is investing in capacity on its Southeastern Corridor, Atlanta does not need to be its focus.

Norfolk Southern faces a different prospect, because most of the growth in its southern system connects to the linchpin at Atlanta. The western approaches from Chattanooga and Birmingham are single track routes; the alternative route from Birmingham through Columbus, GA has clearance restrictions that prohibit stack train passage, and a roadbed that is not geared to main line operation. Development of the "Meridian Speedway" corridor between Mexico, Dallas, Atlanta, and the Northeast via the Meridian MS gateway on the Kansas City Southern is building a new volume vector across Alabama that requires east-west capacity. To reduce pressure on Atlanta, in the long run a branch north from Birmingham through Tennessee in the western network probably will see investment, and the Columbus route may also come into play. In the meantime, NS is looking at capacity improvement along its Atlanta bottleneck route, between Inman and Spring Street.

A key pinch point affecting both railroads occurs at their Howell Junction connection, at the east end of Tilford and Inman Yards on a CSX interlocking. Carrier respondents felt that grade crossings at this location would be expensive but effective at improving throughput in the center of the Atlanta crossroads. A joint GDOT-CSX study is now underway to examine capacity between Atlanta and Athens for potential passenger service, and this same study may uncover route alternatives for the Atlanta metropolitan area as well. The recent abandonment of development plans by an owner of Beltline right-of-way is creating new concerns in the metropolitan district, because any attempt to push passenger traffic onto the already-overloaded freight network could congest operations out across the southeastern region.

5.3 Air Cargo Profile

Air cargo activity within the ARC Study region is dominated by Atlanta-Hartsfield Jackson International Airport (H-JAIA). As of October, 2006, H-JAIA is the only airport in the study region that offers scheduled air cargo service.[6] Through a combination of commercial passenger carriers, all-cargo cargo and integrated express carriers H-JAIA serves all domestic air cargo hubs, primary international gateways, major metropolitan areas and over 40 international destinations. In 2005 Atlanta handled 846,200 tons of air cargo, inclusive of domestic and international, freight, express and mail. In terms of annual tonnage in 2005, H-JAIA ranks 10th of U.S. airports and 25th internationally. In 2006, H-JAIA air cargo totals decreased 2.8 percent to 822,900 tons primarily due to the loss of U.S. Postal Service traffic traveling on Delta Airlines.

[6] OAG Worldwide Cargo Guide, October 2006

Due to the sheer volume of cargo coupled with the broad spectrum of markets served and array of carriers and carrier types operating at the Airport, it becomes important to understand the characteristics of each. Each type of carrier and each market (primarily international versus domestic) drives a different set of demands on the airport and its surrounding infrastructure. While many of these demands are centered on airside facilities, many affect air drayage patterns (trucking to and from the Airport), airport access and warehouse location requirements.

In order to gauge the demand placed on the Atlanta Hartsfield-Jackson International Airport's air cargo facilities and its surrounding support and access infrastructure an Airport site visit and facility tour was conducted along with interviews of representative H-JAIA cargo carriers, freight forwarders and drayage carriers. The information garnered from these efforts is coupled with Airport, carrier and market overviews in order to provide a composite picture of the airside and landside cargo activity at H-JAIA.

5.3.1 H-JAIA Infrastructure and Services

Atlanta Hartsfield-Jackson International Airport houses three airside cargo complexes that handle integrated express carrier cargo, all-cargo carrier cargo and commercial passenger carrier belly-space cargo. The North Complex, Midfield Complex and South Complex total 1.55 million square feet of warehouse space with 28 aircraft parking positions and 398 truck bays

The North Complex houses FedEx, UPS and DHL along with the Atlanta Perishables Complex which features on-site distribution and transport capabilities, USDA inspection services and a USDA approved fumigation chamber. The Midfield Complex houses Delta Airlines and the United States Postal Service (USPS). The South Complex is a multi-tenant facility that houses all-cargo carriers and third-party cargo handling operations.[7]

5.3.2 H-JAIA Air Drayage

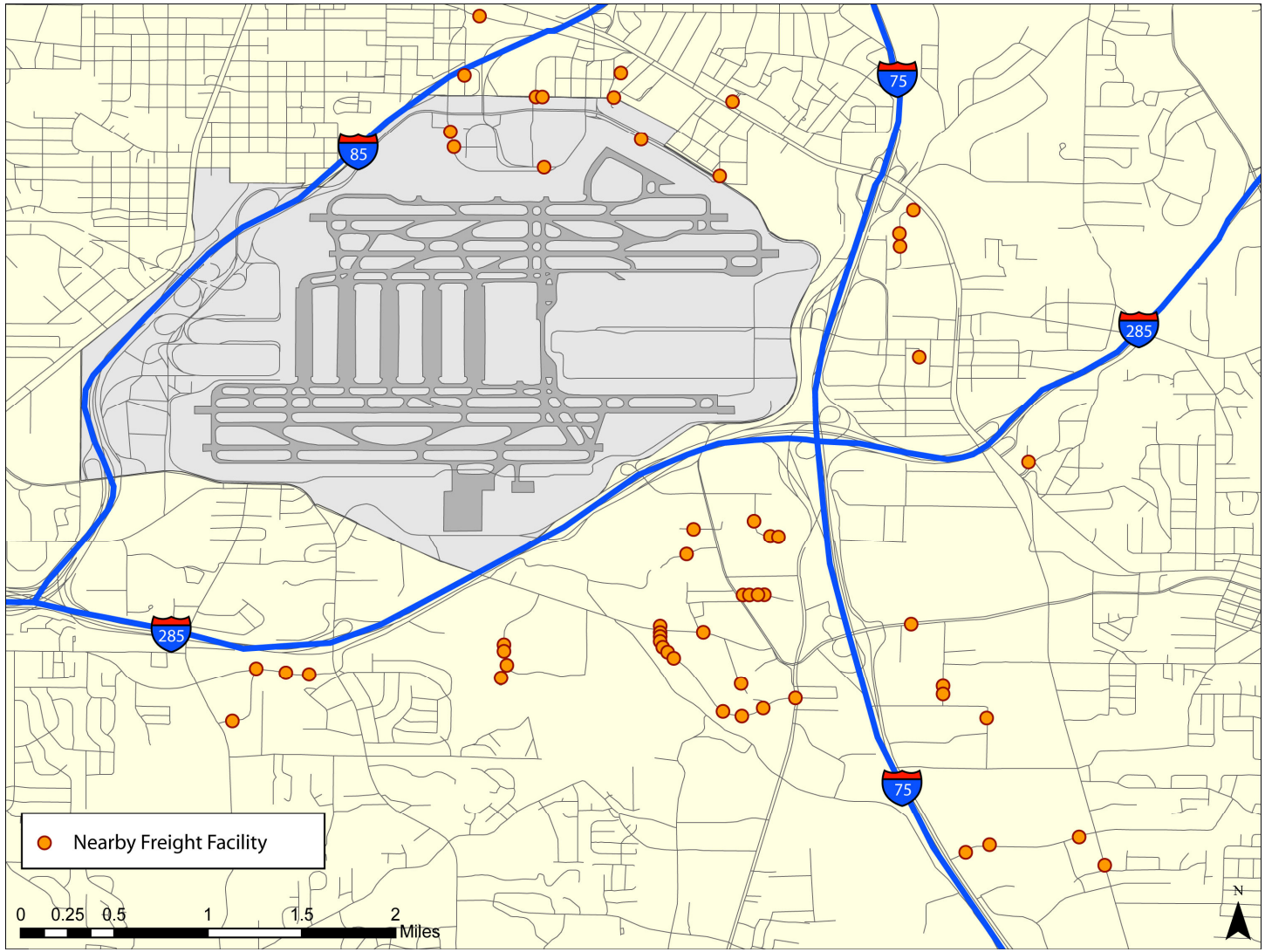
Air drayage, simply put, is the truck component of an air cargo freight movement that either brings the freight to the airport or carries the freight from the airport. Air drayage can either be local (to and from warehouses and distribution centers immediately surrounding the airport) or long distance involving interstate truck movements of air cargo.

Local Air Drayage

Exhibit 5.18 illustrates the main clusters of freight forwarder warehouse and distribution facilities in relation to H-JAIA. Note the concentration of facilities along I-75 and near the intersection of I-75 and I-285; it is from these points that the majority H-JAIA air cargo will arrive and depart from.

[7] Hartsfield-Jackson Atlanta International Airport Cargo Master Plan, December 2005, p.16

Exhibit 5.18: H-JAIA Freight Forwarder Facility Location



It is typically near or at the airport access points where air cargo drayage traffic is funneled and bottlenecks occur; this problem is compounded when passenger traffic is commingled with truck traffic at the same access points. However, Hartsfield-Jackson Atlanta International Airport maintains excellent traffic separation between passenger and truck traffic. Access to the passenger terminal is provided on the west side of the Airport via 1-85; truck access to the Airport's three air cargo complexes are provided to the east and south via I-75 and I-285 respectively. This is not to say that there are not congestion issues or bottlenecks, but the Airport's layout does eliminate a key problem of commingled traffic encountered at other airports.

Interstate Air Drayage

The estimated 70 percent market share of freight forwarders at H-JAIA, coupled with the fact that 45 percent of the Airport's air cargo is international traffic, translates into a prevalent demand for long-haul, interstate drayage. This is evident through the presence of a well-developed, scheduled road feeder service (RFS) network serving the Airport. RFS is scheduled drayage, typically operating airport-to-airport between major markets. H-JAIA's RFS network encompasses 32 cities nationwide, offering scheduled truck service to and from the Airport. As is illustrated in Exhibit 5.19, the following cities are served directly by the H-JAIA RFS network:

- Baltimore, MD
- Boston, MA
- Charleston, SC
- Charlotte, NC
- Chicago, IL
- Columbia, SC
- Columbus, OH
- Dallas, TX
- Denver, CO
- Detroit, MI
- Greensboro, NC
- Greenville, SC
- Houston, TX
- Indianapolis, IN
- Knoxville, TN
- Los Angeles, CA
- Memphis, TN
- Miami, FL
- Minneapolis, MN
- Mobile, AL
- Nashville, TN
- New Orleans, LA
- New York, NY
- Orlando, FL
- Philadelphia, PA
- Portland, OR
- St. Louis, MO
- San Francisco, CA
- Seattle, WA
- Tampa, FL
- Toledo, OH
- Washington D.C.

Exhibit 5.19 H-JAIA Scheduled RFS Network

Source: WSA, OAG Cargo Guide, July 2006

5.3.3 Access and Capacity Issues

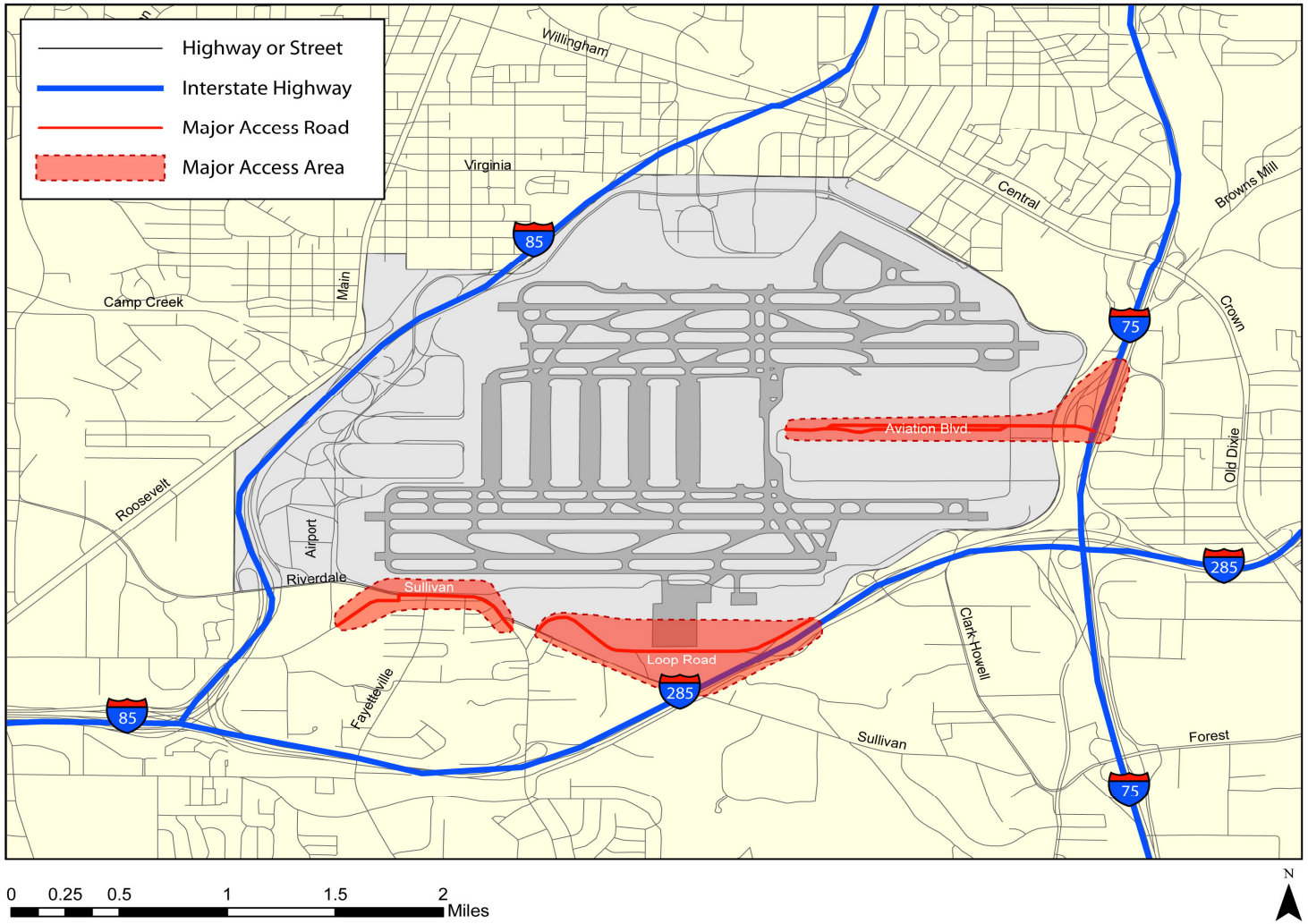
This final section of the air cargo profile will address the Airport access and bottleneck issues as reported during a series of meetings and interviews with a cross-section of H-JAIA air cargo carriers, freight forwarders and air drayage carriers. All of those interviewed have operations on-Airport or in facilities immediately surrounding the Airport. The cargo operators interviewed also represent carriers or operations in each of the Airport's three air cargo complexes (North, Midfield and South).

A common concern voiced was general interstate highway congestion in the region. This was a general assessment, and did not point out any specific routes, interchanges or bottlenecks. Fittingly, the two primary voices of this concern were the representatives from Delta Airlines (Commercial Passenger Carrier) and Pilot Air Freight (Drayage Carrier/Forwarder); operators that rely on, or are responsible for long-haul drayage to and from the Airport. Delta reports that general congestion, particularly in the morning makes it difficult for forwarders to make A.M. cut-offs. Pilot Air Freight, which services a 20-county area surrounding H-JAIA, reports that expansion of its customer base to the north of the Airport along I-75 is costing "significant time and money" in terms of delays and fuel. Again, no specific roadway segments, point or interchanges were identified; just "traffic" in general.

When asked to focus on H-JAIA access specifically – point where freight gains access to the Airport's grounds and airside facilities, the news was relatively good. Other than the general traffic issues discussed above, only three areas were cited as having significant congestion or bottleneck issues. It was reported that the majority of the challenges regarding congestion and delays involve airside issues ranging from truck staging areas to staffing issues. Airside staffing issues creating truck bottlenecks was perhaps the most surprising finding. Much of the air cargo at H-JAIA is handled airside by third-party contractors such as Swiss Global who load and unload truck and aircraft for multiple forwarders and all-cargo carriers. Discussions with Swiss Global representatives indicated that maintaining sufficient levels of staff to handle demand is becoming increasingly difficult. This assertion was also voiced by representatives from Pilot Air Freight, freight forwarder Kuehn and Nagel and customs broker Atlanta Customs Brokers. The problem results in increased truck-dock dwell time once airside while the vehicle waits for available staff. This decreased facility efficiency creates a situation where trucks are queued up on airside facility access roads, often blocking traffic or unable to maneuver effectively.

Exhibit 5.20 highlights the areas reported as having issues for trucks entering or departing the Airport.

Exhibit 5.20 Identified H-JAIA Air Cargo Access Issues



The Aviation Blvd. exit from I-75 provides access not only to Aviation Blvd and the Midfield Complex, but also connects to Loop Rd. Loop Rd. provides access to both the North and South Complex. This interchange has been reported to "easily backup" during peak activity (morning and evening cut-off times). Congestion is also reported once trucks exit I-75 onto Aviation Blvd. and enter the Loop Rd. intersection.

Aviation Blvd. and Loop Rd. are also reported to experience congestion for reasons described in the previous paragraph; queued trucks waiting to load and unload. Traffic congestion immediately surrounding the South Complex and Midfield Complex truck-docks has the potential to be severe. Not only must the trucks park and wait, their presence restricts the maneuverability of other traffic in the area.

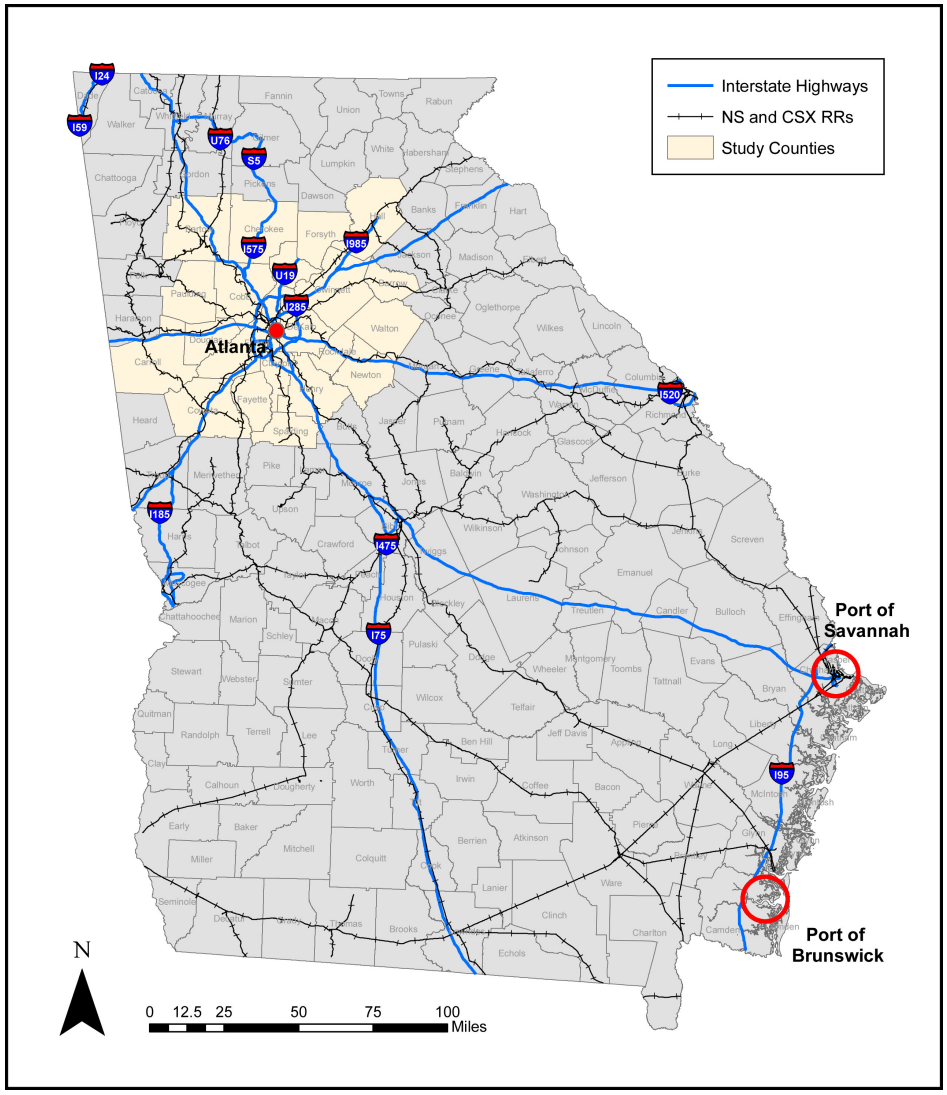
Sullivan Rd. to the west of the South Complex was also identified as a problem area. Due to construction of the Airport's fifth runway, Sullivan road has been "cut-off" from accessing the South Complex – a once direct route. Operators to the west of the must now use I-285 east and exit onto Loop Rd. to access the South Complex

In all, the air cargo operators stressed the importance of road and highway access to their operations. Because of the nature of H-JAIA's air cargo activity, a high percentage of freight forwarder international traffic, long-haul trucking is and integral component of the Airport's operations. As the Delta representative pointed out, because Atlanta Hartsfield is Delta's primary hub, there is tremendous international and flight frequency and capacity available to market. To reach that market nationwide, ground service (drayage) must reach a long way.

5.4 Seaport Systems Profile

The Georgia Ports Authority (GPA) operates two deepwater ports in the State of Georgia; the Port of Savannah and the Port of Brunswick. Located approximately 250 miles to the southeast of Atlanta in Chatham County, the Port of Savannah is the primary deepwater port serving the ARC Study region. Approximately 80 miles to the south of the Port of Savannah is the Port of Brunswick which handles bulk, break-bulk and containerized freight. Exhibit 5.21 illustrates the location of these two ports in relation to the study region along with primary interstate and rail connections.

Exhibit 5.21 Ports of Savannah and Brunswick



Through a combination of sources including the GPA, the U.S. Maritime Administration (MARAD), the U.S. Army Corp of Engineers and interviews with Port officials, a composite picture of Port infrastructure and activity is presented.

5.4.1 Seaport Infrastructure and Services

The Port of Savannah, home to the largest single-terminal container facility of its kind on the U.S. East and Gulf coasts, is comprised of two modern, deepwater terminals: Garden City Terminal and Ocean Terminal. Both facilities comprise a total of 51 piers, wharves and docks as described in the Corps of Engineers, Port Series No. 14 report for

the Port of Savannah. Many of these wharves are multiple purpose although several are designed to handle only specialized cargo, e.g., sugar, fuel, gypsum and timber products.

The Ocean Terminal consists of 11 berths dedicated to break-bulk and roll-on/roll-off facilities and covers 208 acres and provides customers with more than 1.3 million square feet of covered, versatile storage (four warehouses and nine transit sheds).

The Garden City Terminal consists of eight berths dedicated to containerized freight and is currently the largest of its kind on the U.S. East and Gulf coasts. The 1,200-acre single-terminal facility features 9,693 linear feet of continuous berthing and more than 1.3 million square feet of covered storage. The terminal is equipped with fifteen high-speed container cranes (4 super post-panamax & 11 post-panamax), as well as an extensive inventory of yard handling equipment.[8] The following companies have established distribution centers at the port:

Company	Square Footage
• Advance Auto Parts	380,000
• Bass Pro	600,000
• Best Buy	748,000
• Cal Cartage/Kmart	200,000
• Citi Trends	155,000
• Dollar Tree	800,000
• Fred's	600,000
• Hugo Boss	165,000
• Icon H&F	600,000
• IKEA	1,700,000
• Lowe's	750,000
• Michael's	250,000
• Pier 1 Imports	783,000
• Target	2,100,000
• The Bombay Company	250,000
• The Home Depot	1,400,000
• Tire Rack	250,000
• Wal-Mart	1,300,000

Additional tenants, facilities and services at the Garden City Terminal include the following:

- U.S. Department of Agriculture
- Fumigation Area
- Military Command Center
- Refrigeration Facility

[8] Georgia Ports Authority, Port of Savannah Facility Overview, www.gaports.com/facilities

- Port Police, Fire and Health Services
- Foreign Trade Zone (FTZ 104)

The Port of Savannah has 1200 acres available for development with only 400 that are currently developed. The Port currently has a 2 million TEU (twenty-foot equivalent unit) annual capacity with imminent plans to expand to 5 million and long-term (10-year) plans to expand to 11mn TEUs. The 11 million target is dependant on the ability to develop the island across the river.

The Port of Brunswick is comprised of three GPA-owned deepwater terminals, Colonel's Island Terminal, Mayor's Point Terminal and Marine Port Terminal. The three facilities combined feature nine distinct berths for bulk, break-bulk and roll-on/roll-off freight.

The Mayor's Point Terminal is a secured, dedicated break-bulk facility specializing in the rapid and efficient handling of a vast array of forest products and solid wood products. The 22-acre facility features a single 1,750 linear berth capable of accommodating multiple vessels, 355,000 square feet of in-transit freight storage space, 2,000 feet (610 m) of covered rail siding and 7.9 acres of open, versatile storage.

The Marine Port Terminals is designed to handle a diverse mix of break-bulk and bulk commodities. The 145-acre facility features five berths totaling 2,415 linear feet and 491,000 square feet of covered storage (eight warehouses and five transit sheds).

Colonel's Island Terminal is one of the fastest growing auto and heavy machinery ports in North America. The facility is supported by three berths totaling 925 linear feet. Today, more than 12 major auto manufacturers, supported by three auto processors (AMPORTS, Atlantic Vehicle Processing, Inc. and International Auto Processing, Inc.), utilize the Colonel's Island Terminal. Major ocean carriers that use this terminal include the following:

- HUAL North America
- Hyundai Merchant Marine
- K-Line
- MOL
- NYK Line
- VAGT
- Wallenius Wilhelmsen Lines

In addition, the terminal is also home to the South Atlantic's fastest growing bulk export/import operation. Colonel's Island Terminal is capable of accommodating 64,800 tons of agri-product in combined flat and vertical storage at any one time. [9]

[9] Georgia Ports Authority, Port of Savannah Facility Overview, www.gaports.com/facilities

5.4.2 Linking the Seaports to Atlanta

The following intermodal connections are provided at each of the Port of Savannah's terminals (Garden City and Ocean):

- Garden City Terminal is within 6.3 miles of Interstate 16 (east-west) and 5.6 miles of Interstate 95 (north-south). More than 100 trucking companies serve this terminal and Ocean Terminal. CSX Transportation and Norfolk Southern Railroad provide Class I rail service. The Mason ICTF (intermodal container transfer facility) provides overnight rail service to Atlanta and two- to four-day delivery to inland destinations such as Charlotte, Chicago, Dallas and Memphis.

- Ocean Terminal is ideally situated within 1.2 miles of Interstate 16 (east-west) and 10 miles of Interstate 95 (north-south). Norfolk Southern Railroad provides switching services on-terminal and line-haul services are provided by CSX Transportation and Norfolk Southern Railroad.[10]

Port of Savannah representatives indicated that approximately 163,000 out of a total of 495,000 containers stay within the local Savannah area. Many of these containers went to local distribution facilities and then returned empty to the docks. Forty-seven percent of all inbound containers to the port return empty to the ocean carrier, reflecting the imbalance of import to export traffic discussed in the previous section.

The Port completes 5500 moves per day utilizing 3000 trucks per day, 5 days per week. Approximately 56,000 of 495,000 imported containers moved by rail beyond port property, representing 11 percent of the total volume which passes through the Port. Rail activities are anticipated to increase 18 to 25 percent over the next five years. New services are being designed to reach to Memphis, Charlotte and the Ohio Valley.

There is a daily rail service via NS that runs overnight into the Austell yard in Atlanta. It is estimated that of all traffic heading to Atlanta, 50% will serve the Atlanta area and 50% will serve the broader national area. The port runs a 24-7 operation with truck gates open between 7am-6pm Monday through Friday. Overnight activities include warehousing, rail, inspection, and other prep work for next-day operations.

The following intermodal connections are provided at each of the Port of Brunswick's terminals (Mayor's Point, Colonel's Island and Marine Port):

- Mayor's Point Terminal is ideally situated within six miles of Interstate 95 (north-south). Two Class I rail providers, CSX Transportation and Norfolk Southern Railroad, offer rail service.

- Colonel's Island Terminal is located within 2.5 miles of Interstate 95 (north-south) via U.S. Highway 17. CSX Transportation and Norfolk Southern Railroad,

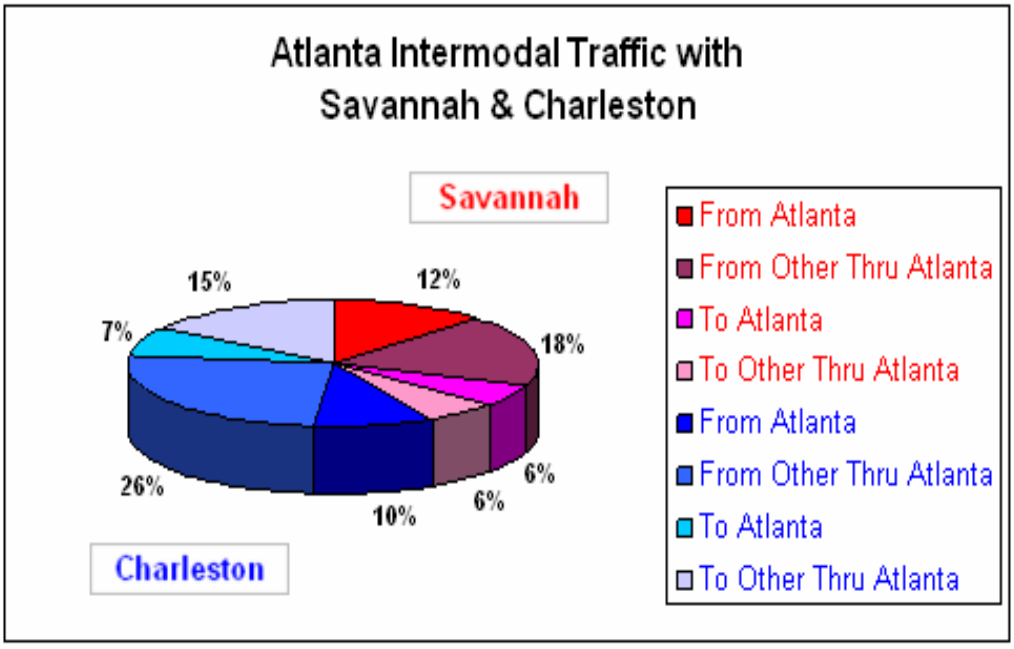
[10] Georgia Ports Authority, Port of Savannah Facility Overview, www.gaports.com/facilities

provide rail service. The Golden Isles Terminal Railroad interchanges with both Class I railroads and provides switching services for the terminal. Rail storage can accommodate 200 hopper cars by way of the complex's loop track.

- Marine Port Terminals is ideally situated within 7 miles of Interstate 95 (north-south). On-terminal interchange and line-haul services are provided by CSX Transportation and Norfolk Southern Railroad.[11]

Intermodal rail traffic with the port cities of Savannah and Charleston totaled 3.6 million tons in 2004, which was 19% of the Atlanta region's intermodal business. Although data sources do not fully identify the foreign trade portion of this traffic, it will account for most of it. Nearly two-thirds of this tonnage is traffic passing through Atlanta, as can be seen in Exhibit 5.22 (where the labels "From Other" and "To Other" denote overhead). Charleston tonnage (in blues) is 70% larger than Savannah's (in reds), and volumes to these cities are double the size of the volumes from them, implying that a heavier quantity of exports than imports is traveling by rail.

Exhibit 5.22: Intermodal Rail Traffic between Atlanta and Major Seaports



[11] Georgia Ports Authority, Port of Savannah Facility Overview, www.gaports.com/facilities

6 Private Sector Freight Stakeholder Perspectives

Gaining information regarding freight system performance from the perspective of private freight stakeholders is the most valuable source of information in the development of a freight mobility action plan. The current study utilized several tools for engaging the private sector in the study process including web-based surveys, one-on-one interviews, the Freight Task Force, truck intercept surveys and bottleneck and chokepoint identification on maps placed in freight facility break rooms. The details of this process and the resulting input are provided in the Data Collection Technical Report. The purpose of this section is to build on that tech memo by synthesizing the stakeholder input with the information presented in the regional freight system profile to focus on the implications of freight operations on key industrial supply chains and the transportation needs of those supply chains.

Atlanta's freight dependent facilities cut across a multitude of industries and discussion topics, but the critical component to their function in the region is distribution and logistics. The "Clusters of Innovation Initiative for Atlanta" study illustrated the important role the distribution sector plays in the area economy by stating that Atlanta had the fifth largest transportation and logistics cluster in the country in 1999, and that the industry added nearly 50,000 jobs to Atlanta in the preceding decade.[12] Because of the importance of distribution to Atlanta, the city's major freight facilities will be discussed from that perspective. This section presents a review of the composition and operation of the region's distribution business, and a selection of the issues and opportunities they present for transportation planning. Next, the questions of site selection and development are covered in an effort to understand how Atlanta can maintain its competitiveness in the distribution market. The facilities discussion then closes with a brief examination of the Automotive and Aggregates industries, in order to give a more complete picture of breadth and change in regional freight operations. The Automotive sector represents a traditional manufacturing industry with substantial freight volume that is closing its doors in Atlanta. The Aggregates sector represents large and heavy freight volumes on highways and surface routes that mirror the city's growth patterns, as they supply inputs to construction.

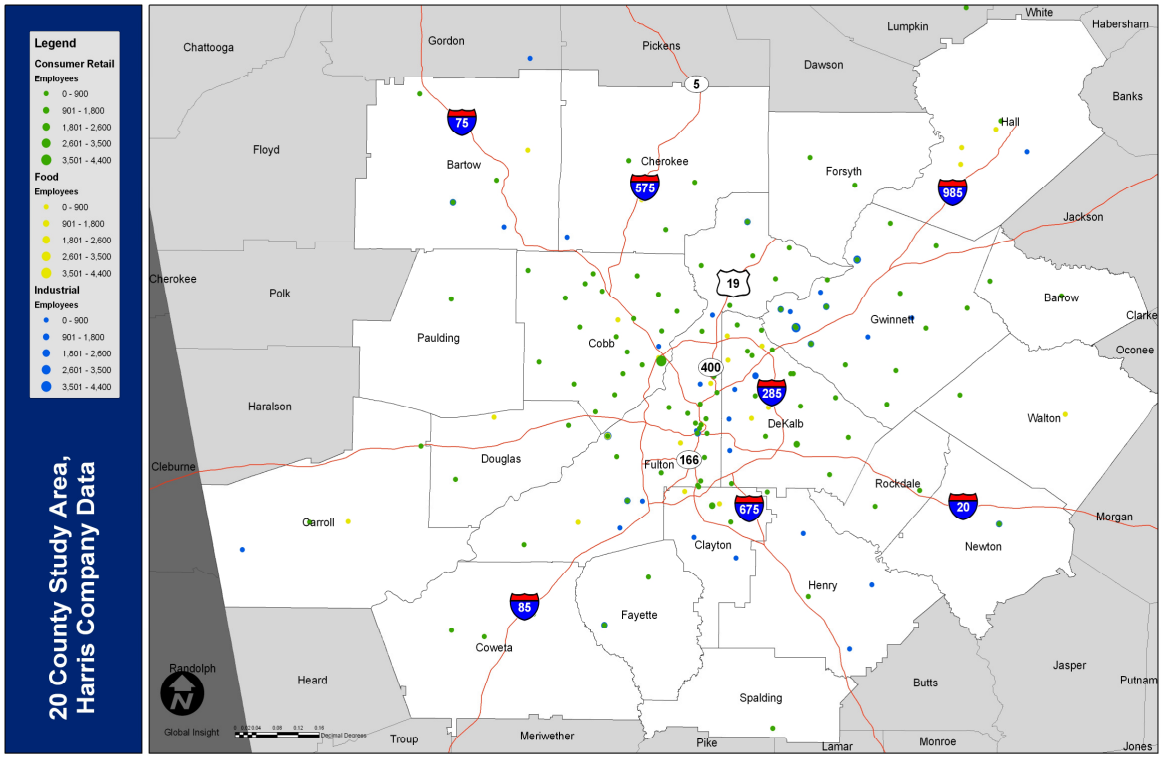
6.1 Distribution

Atlanta's warehouses and distribution centers are clustered in Fulton and Gwinnett counties and along the I-85 corridor. Fulton and Gwinnett counties represent 28% and 22% of Atlanta's warehouses and distribution centers respectively, with Dekalb County representing the 3rd largest share at 12%. Exhibit 6.2 displays where the consumer retail, food and industrial distribution companies are located in the 20 county areas. While several are located within the perimeter along I-75, I-85, and 400, the majority of these facilities are located outside of the perimeter, thus providing good access to the

[12] Porter, Michael. "Clusters of Innovation Initiative: Atlanta-Columbus." Council on Competitiveness Monitor Group ontheFRONTIER.

local Atlanta market and surrounding regional markets. There is somewhat more activity along the northern arms of I-85 and I-75, but the general pattern is one of concentric dispersion around the central business district.

Exhibit 6.2: Distribution Companies in Atlanta Region



Key area distribution centers can be classified into one of the three cited categories: Consumer Retail, Food, and Industrial. Using the Harris establishment dataset there are approximately 280 major companies distributing in the consumer retail segment, 150 in food, and approximately 400 in industrial.[13]

The project team interviewed eight distributors in the food segment, five in consumer retail, and multiple distributors in the industrial segment. The interview process revealed significant overlap between distribution in the industrial segment and companies engaged in manufacturing; this is a typical pattern because production facilities often will serve both functions. Additionally, interviews revealed similar information from the food

[13] These counts remove companies with employee totals below certain thresholds. These minimum thresholds are 20 employees for Consumer Retail and Food, and 40 employees for Industrial. The map is based on the Harris establishments in these groups, but does not display all of them because of geo-coding limitations.

and consumer retail distributors, and the industrial distributors. As such, the distribution analysis provided here will focus on the food and consumer retail segments.

6.1.1 Food

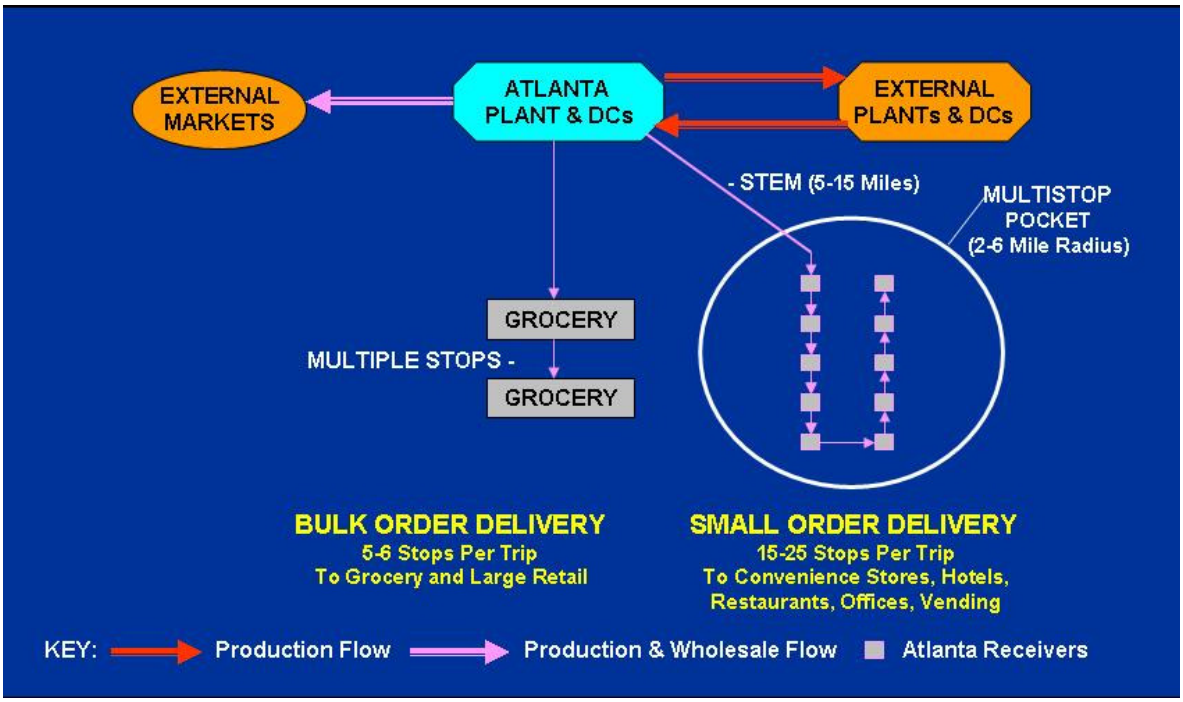
Understanding distribution in the food sector comes by explaining the industry's distribution operations, service and congestion issues, key routes, problem areas for distribution, and suggestions for improvement.
Many food distributors operate their own truck fleet to handle their distribution, which necessitates significant capital investment. The size of trucks is determined by the stores the trucks need to service. For instance, the large Publix distribution center in Lawrenceville delivers only to its grocery stores, providing the company with two advantages:

a) Publix can utilize large trucks because it knows its large grocery stores have the dock area capable of handling large trucks;
b) For stores located on streets with tight turn radii, Publix knows the exact number of smaller trucks to keep in its fleet to handle its more specialized deliveries.

Food distributors serving multiple locations, such as grocery stores, restaurants and gas stations, must have a more varied and flexible fleet (and often smaller) to accommodate different dock heights and turn radii.

Actual distribution in the industry follows a stem and pocket system where trucks cross town on a non-stop route (the stem) to a delivery area, and then make multiple deliveries within the area throughout the say (the pocket). The radius and the number of deliveries within the pocket depend on the size of shipments and the density of clientele. Because grocery store distribution centers typically only service their individual stores, their distances between stops are likely to be greater. Exhibit 6.2 below illustrates the supply chain for food distributors:

Exhibit 6.2: Food Distribution Supply Chain



On time delivery is critical in the food distribution sector as many products are perishable and are delivered on the day they are needed. Service and on time delivery is essentially part of the product itself and vendors are often chosen based on the service they deliver, along with their price, selection, and quality of goods. Because of the importance of service, many food distributors arrange their time of departure from the distribution center to avoid traffic. For example, drivers normally are on the road by 5 or 6 AM (and some as early as 3) to beat the morning rush, and return between 3 and 4 PM to get their stem completed before the afternoon rush takes hold.[14] However, with multiple deliveries to make, these drivers remain on the road throughout the morning peak; the early departure saves time on the long distance stem, and puts the driver inside the shorter distance pocket by the time the roads are jammed. Add in to this is the fact that many receiving windows (particularly at restaurants) are short and may not open until mid-morning. These short receiving windows force drivers onto the road during busy periods and heighten the risk of late deliveries.

Typically, when drivers do arrive late, receivers work to unload the truck within the same day. However, this may mean the driver is forced to wait thirty to sixty minutes, or to leave and return later in the day. Even in instances where the late delivery does not

[14] Actual rush hours differ slightly (+/- 30min) based on the actual route in question

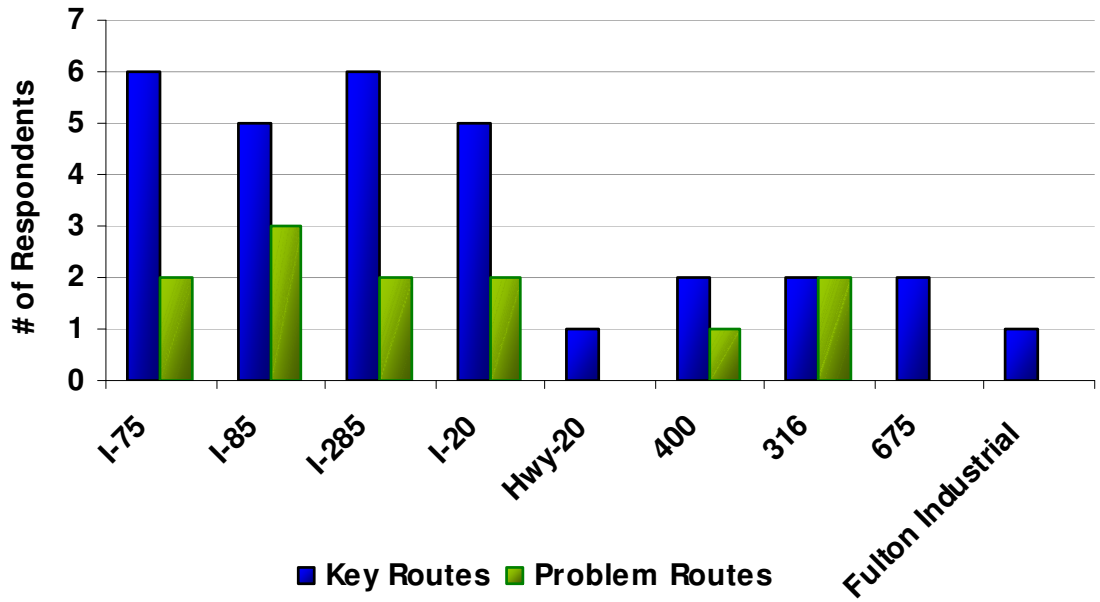
damage the relationship between the shipper and the receiver, a truck leaving and returning adds more miles to the total trip and increases traffic on Atlanta's roads. And, multiple delivery stops in sequence mean that a late arrival at one point jeopardizes the rest, so that the effect of service failures can be cascading.

Routes & Problems

The dispersion of grocery stores, restaurants, and other locations receiving food deliveries leads to utilization of several highways and surface routes. While some routes may only be important to one distributor, others are utilized by all. Exhibit 6.3 below charts the number of food distributors interviewed that described certain main routes as key and/or problematic to their distribution. Not surprisingly, I-75, I-85, I-285 and I-20 were among the major routes by many food distributors. Interestingly, not all users of the major interstates as key routes found them to be problematic, with only half reporting that congestion on these routes routinely interrupted service.

While the "major" issues detailed below will contain a degree of bias as they are specific to the industry and may not apply to all stakeholders, they are still relevant points of information considering the importance of these industries to Atlanta.

Exhibit 6.3: Food Distributors' Major and Problem Routes



The routes listed in Exhibit 6.3 were chosen due to the fact that they were highlighted as key and problematic routes by stakeholders across many industries; however, stakeholders in food distribution have a greater variety in their key routes. As such, the

routes mentioned as important or problematic by food distributors (in addition to the routes in Exhibit 6.3) are listed in the Exhibit 6.4 below.

Exhibit 6.4: Key and Problem Routes for Food Distributors in the Atlanta Region

Other Key Routes						
29	42	78	81	129	138	141
155	278	365	369	441	575	
Bankhead Hwy	Buford Hwy	Camp Creek	Cascade Rd	Cobb Pwy	Donald Lee Hollowell	Gresham
Hudson Bridge	Jimmy Carter Blvd	Jones Bridge	Metropolitan Ave	MLK	Mountain Industrial	Peachtree Dunwoody
Pleasant Hill Pkwy	Powder Springs Rd	Roosevelt Hwy	South Fulton Pkway/Spur 14	Stone Mtn Pkwy	Wieuca	Windsor Parkway

Problem Routes & Regions						
575	Ashby St	Barrett Parkway	Cobb Parkway	Fairburn Rd	Hwy 5	Jimmy Carter Blvd
Memorial Drive	Panolo Rd	Peachtree St	Peachtree Industrial Blvd	Pleasant Hill Rd	Sandy Springs	
Alpharetta	Buckhead	Marietta	Roswell	Piedmont		

Food distributors complained of several access problems, primarily relating to the tight areas food must be distributed to, especially in the downtown area. A selection:

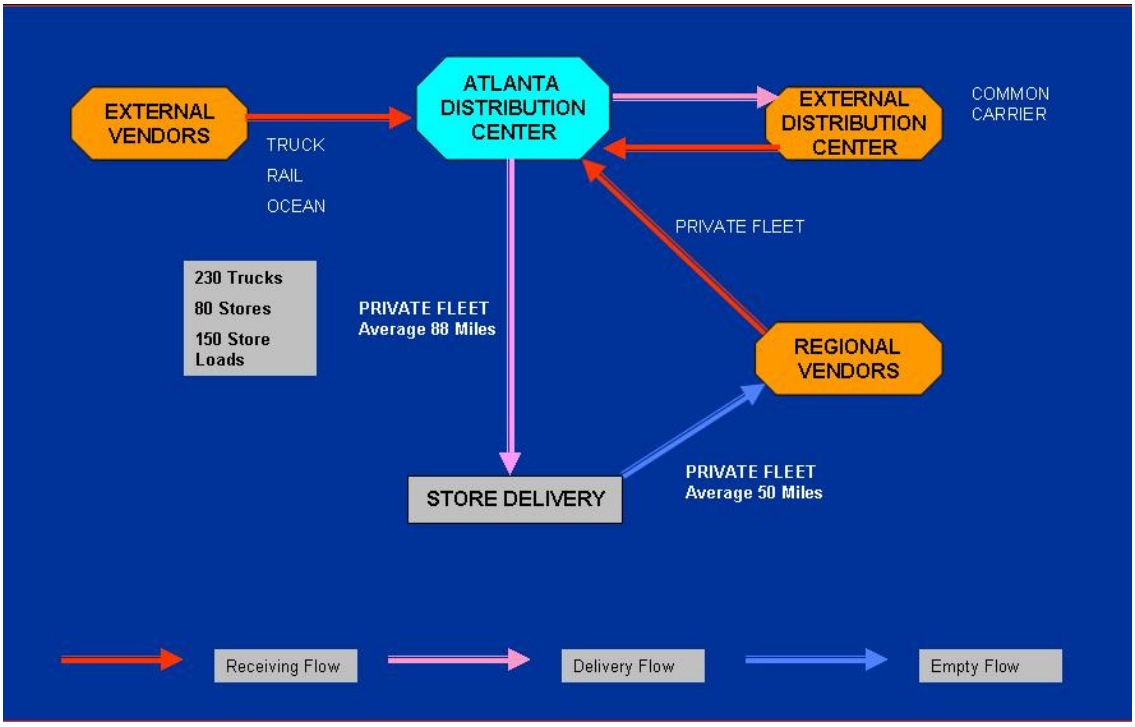
- A McCormick & Schmick's restaurant was recently constructed with clearances that are too low and thus inhibit trucks from directly accessing the restaurant and restaurants along Peachtree St. downtown have no loading docks;
- The Sheraton Hotel downtown has docks that are too low, but using a specially-designed trailer circumvents this problem. In some cases, the facilities pose no direct access problems, but immediate roads leading to the facilities are difficult to navigate;
- Food drivers complain of the Century Center for difficulty exiting the facility due to heavy traffic volume on the narrow main roads;
- The entire Buckhead area was described by multiple food distributors as difficult to navigate due to narrow roads, tight turn radii and heavy traffic;
- One grocery store is located on the corner of Spring St and 8th St downtown. While access into the store itself is fine, the intersection of Spring and 8th has a very tight turn radius for trucks and even use of smaller trucks can block traffic;

6.2 Consumer Retail

Distribution in the consumer retail sector is described below in terms of the industry's operations, service and congestion issues, key routes, problem areas for distribution, and the issue of encroachment.

With the exception of Wal-Mart and Haverty's, many consumer retail distributors do not maintain their own private fleets and thus, have a smaller capital investment than many food distributors. Exhibit 6.4 illustrates a typical freight flow for consumer retail distributors. Here, common carriers exchange products between Atlanta and external distribution centers and either private fleet or common carrier deliver directly from the Atlanta distribution center to the store. Note that the stem and pocket system familiar to food distribution is not applicable here. Deliveries still may require multiple stops in sequence, but they are spread over a larger area with greater distance between. (Of course, an LTL common carrier may operate a pocket by combining small deliveries for a mixture of retail and other customers.)

Exhibit 6.4: Typical freight Flow for Consumer Retail Distributors



Service and congestion are important to consumer retail distributors from the standpoint of just-in-time delivery and inventory maintenance. As in store inventories are kept low to display greater product variety and respond to point-of-sale data, deliveries must be made on time to ensure that there is always product available. Atlanta's congestion hinders the ability to deliver on time but one company interviewed found a useful solution to the problem. Congestion partially motivated one retail distributor to convert the majority of deliveries (from their corporate distribution center to their stores) to a drop-and-hook system. Prior to moving to the drop and hook system, drivers missing appointments had to wait two weeks to get another delivery appointment scheduled – under the new system on-time delivery has gone from 84% to 95% because drivers can move during off-peak times. While drop and hook is not be feasible for many distributors (it requires truckload deliveries, more trailers in a fleet, and space to leave them), ARC may find opportunities to encourage this system as one of many means of reducing peak traffic.

Home Depot has also found success in having deliveries from its distribution centers to its stores take place at night to maximize available parking for consumers during store hours, and to keep store personnel engaged in customer service during the day. This off-peak delivery system is easier to implement for a retail distributor delivering to its own stores because it manages the receiving hours. Off peak operations can be more difficult when not using a private fleet as it can be difficult to get common carriers to work off-peak, especially for smaller companies that do not have enough volume to dictate better terms.

6.2.1 Routes & Problems

While the key routes for food distributors have more variance than those for consumer retailers, many of the major routes are the same between the two industries, with I-85, I-285 and I-20 listed as key routes. Highway 20, 400, 316, 27, and 431 were also cited as key routes by the consumer retailers interviewed. A handful of these key routes were also identified as being problematic for freight traffic. Problems along I-85, I-285, I-75 and 400 were all described as being locations where congestion hinders efficient goods movement.

One large consumer retail distributor explained problems relating to I-285 as being the fault of the right two lane restriction, stating that 75% of all congestion is in the first two lanes. This same distributor suggests that removing the right two lane rule will ameliorate congestion. Congestion on all routes was also blamed on poor speed limit enforcement as speeding, and resulting accidents frequently cause delays and exacerbate existing congestion levels.

No access problems were reported by these companies for accessing their own distribution facilities, in part because many of the large DCs are located outside of the city and in most cases, were designed with freight access in mind. Consumer retail distributors face a different situation when delivering product to stores, or to facilities other than their own. For example:

- Discovery Mills Mall is reported as having no outside loading docks, thus making it difficult to maneuver trucks to loading locations.
- The Buckhead area is known for its narrow streets and tight turn radii, making it difficult to freight in all industries to access delivery points.

6.2.2 Encroachment

One distributor interviewed complained of noise abatement policies interfering with delivery times in certain areas. Such noise abatement policies restrict deliveries before and after certain times of the day in areas where there is a residential population, often preventing drivers from arriving at a location before or after rush hour. Noise abatement policies are just one of many issues arising from the encroachment of residential areas on freight areas. These land-use conflicts are commonplace and are becoming increasingly problematic in locations where freight traffic can no longer access established industrial areas due to neighborhood restrictions, no-truck routes requiring a circuitous approach, and heavy congestion along previously adequate access routes. The issue is not really that industrial and residential areas need to be made separate, which may be undesirable and probably is impractical. From a freight logistics standpoint, the issue is access, through the retention of clear, efficient truck routes into industrial centers as residential areas move in.

6.3 Site Selection & Development

Given the significance of logistics and distribution in the Atlanta economy, it is vital that distribution companies continue to be attracted to the city and can operate efficiently in the future. With an eye to preserving this sector as an economic driver, the following discussion treats the criteria used to select industrial sites, Atlanta's competitiveness relative to surrounding cities, and how redevelopment of old sites might shape up in the future. It derives chiefly from interviews with a handful of players in the region's commercial real estate market.

6.3.1 Criteria

Interviews with real estate developers suggested that companies choosing a distribution facility location typically consider the criteria found in Exhibit 6.5.

Exhibit 6.5: Criteria for Distribution Facility Location

Site Selection Criteria
Proximity to Interstate
Square Foot Rental Rate
Labor Force
Building Suitability
Executive Homes

The criteria begin with access to the freight network, an adequate and qualified labor force, and the cost and characteristics of the building. For example, height requirements allow distribution centers to store product vertically. Big box retailers are looking for 34-35' with large floor space, which is a standard older buildings cannot meet.

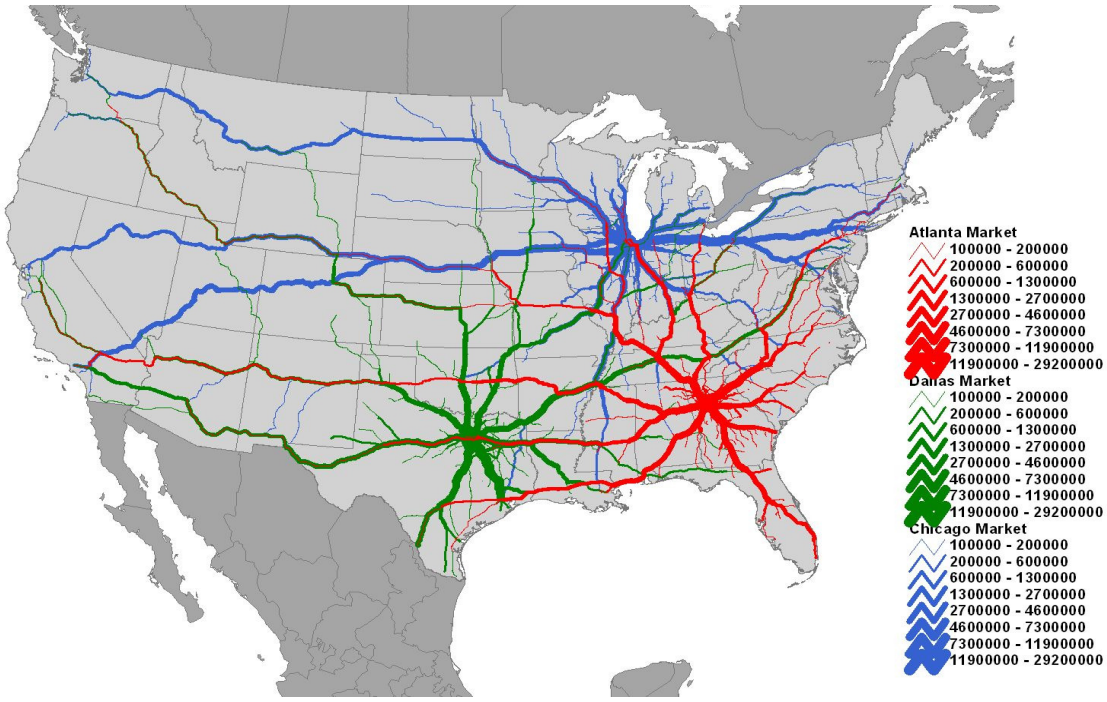
When selecting locations for distribution centers, companies will often run site selection models, performing the analysis in-house or through real estate advisor firms. The role of congestion in these models is interesting, because they may not explicitly account for it in a quantitative manner. Neither is congestion really a part of network access, and reportedly it is handled more as a qualitative issue. For example, one real estate advisor claimed that they would not locate a company at the top of I-285 if its deliveries would require heavy use of 285 to access the Atlanta market. For many shippers and developers, congestion is not thought of when selecting a city to locate – it is often not thought of at all until a facility is operational, at which point the focus becomes how to operate efficiently in the face of it. While realtors could not say that congestion has much influence on the attractiveness of Atlanta or of sites within it, they also were reluctant to discount its influence in the future. The upshot probably is this: roadway congestion plainly affects the efficiency of distribution operations and therefore the economic performance of distribution businesses. If Atlanta wishes the businesses who select it to compete with the best in the world, then it will tend to their efficiency.

6.4 Competitiveness

While shippers and developers are beginning to look outside of Atlanta for its site selection, Atlanta will retain its competitiveness relative to other areas (such as Macon, Valdosta, McDonough, Chattanooga and Charlotte) because the city's advantages outweigh its disadvantages. Atlanta's primary attributes are two-fold: its excellent infrastructure and its large local market. Turning to infrastructure, Atlanta has excellent interstate access including I-85 and I-75 north and south, and I-20 east and west. Additionally, Atlanta has excellent rail access on the core networks of both Norfolk Southern and CSX, and has the train frequency and service quality of a rail hub. These features, coupled with Hartsfield-Jackson International Airport and the Delta hub, and a four-hour drive from the Port of Savannah, give Atlanta much to offer in the way of sufficient infrastructure to accommodate distribution facilities.

Just as important as infrastructure, Atlanta presents a huge local market to serve as the anchor for distribution centers. Unlike the much smaller markets of Macon or Valdosta, companies located in Atlanta will be able to send a significant portion of their shipments from their facility locally, minimizing freight expenses and improving service. Exhibit 6.6 illustrates the highway freight networks for the three largest inland distribution cities in the U.S. Note that Chicago and Dallas (as well as Atlanta) all have large local markets.

Exhibit 6.6: Largest Distribution Markets in the U.S.; Atlanta, Chicago & Dallas



6.5 Non-Distribution Facilities

6.5.1 Automotive

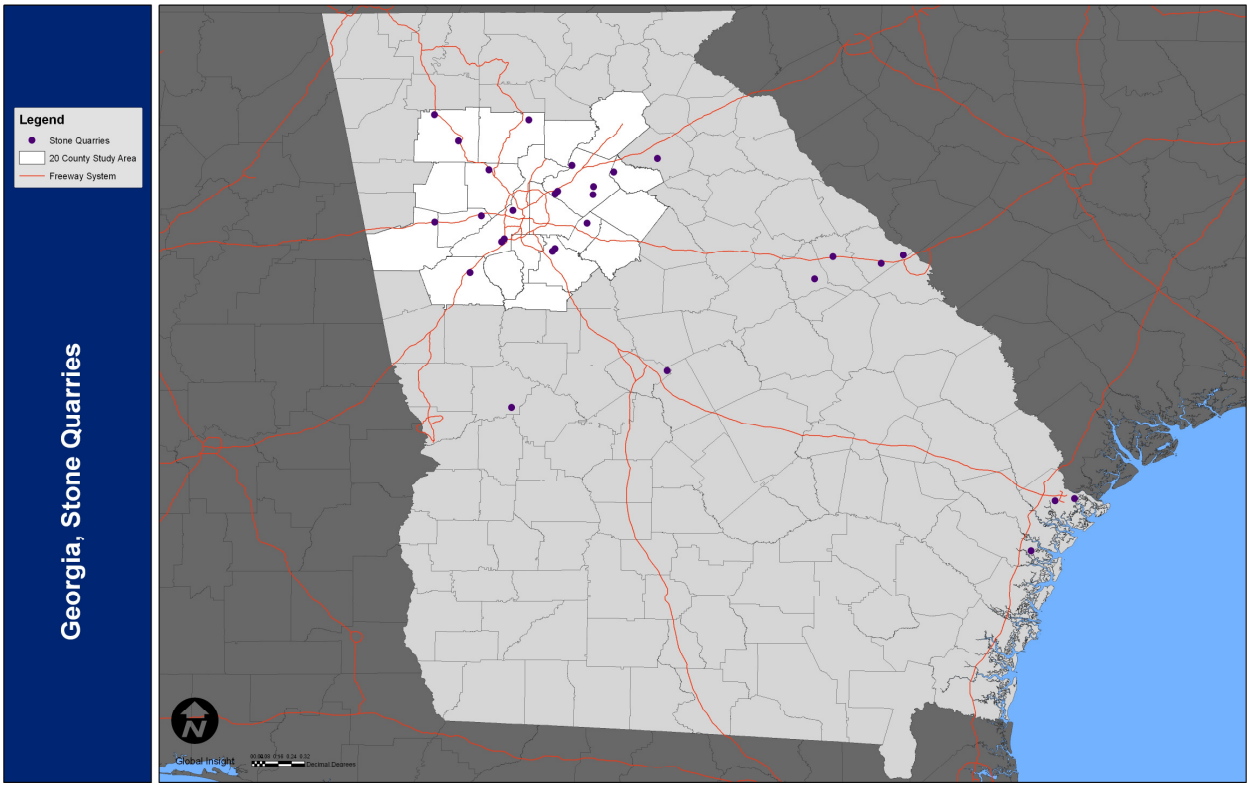
Other major shippers include those in the automotive and aggregates industries. Atlanta's automotive plants are significant here as both Ford and General Motors (GM), two large employers, are leaving Atlanta and taking with them a significant amount of freight. Ford closed its Hapeville facility in the Fall of 2006 and General Motors plans to close its Doraville facility (capable of producing 300,000 vehicles per year) in 2008. There is a chance that the GM plant will remain open, but it is already in the process of downsizing and volume has begun to decrease. The reduction in freight resulting from these closures will be significant as all current inbound parts traffic to these plants and all of their outbound new vehicle traffic will cease and will not be replaced locally. At GM alone, this equates to 500 trucks per day, inbound and outbound. The only replacement traffic Atlanta will see is inbound car shipments as local consumers purchasing vehicles made at the Ford and GM plants will now purchase vehicles made elsewhere. However, it currently remains to be seen where new inbound this traffic will originate. It will be important to keep an eye on these facilities for future redevelopment as both are located on prime real freight real estate with Ford near the airport and GM at the head of the I-85 corridor.

6.5.2 Aggregates

The aggregates industry is important from a facilities point of view because it serves Atlanta's growing construction and development. In doing so, it generates a significant amount of heavy truck freight on both Atlanta's highways and surface routes. One prominent feature of aggregates movement is the development of quarries to support short travel distances, which then utilize more surface routes and fewer highways. Additionally, it is an industry critically impacted by congestion as crews on a construction site often can't work without aggregate material and require large quantities of it. A delay in an aggregate material delivery can result in construction workers being paid while they are unable to work, or the possibility of materials being lost when hot asphalt or wet cement – each usable only for a limited time - cannot be used until the aggregates load arrives.

Exhibit 6.7 depicts the location of a selection of Atlanta's rock quarries (the origin points for aggregates traffic). Every quarry accounts for several hundred loaded trucks per day, each carrying 14 to 25 tons of crushed stone and traveling about a dozen miles to job sites.

Exhibit 6.7: Major Stone Quarries Throughout Georgia



6.6 Future Growth & Redevelopment

Development growth for distribution and other industrial facilities is occurring in several areas. Specifically, on the I-85 north corridor up to Braselton and Jackson County (approximately 75 miles North East of Atlanta), on I-75 around McDonough, and the area between I-85 S, 75 S, and I-20 (an area that allows distribution centers to efficiently serve Florida. Other key areas of industrial growth include the intersection of I-85 and I-285, between I-85 and I-20 (an area that has good access to three rail yards), and the I-85 south corridor to Macon.

Atlanta used to be classified as city that could expand without barriers. In other words, as areas grew congested, companies could pack up and move down the next exit. The result of this ongoing pattern in Atlanta is that companies have begun to find themselves facing possible locations that are too far away from the local market. The solution to this is redevelopment of older freight areas. This is already happening with Atlanta's residential population, as people tired of long commutes are moving back into redeveloped areas of town. One problem facing redevelopment of industrial areas is that large distributors want new facilities that are nicer and larger than un-used facilities currently in place. This is particularly evident in the Fulton Industrial area where there are several small pieces of land held by different owners. As companies look to build facilities on larger plots of land, the Atlanta Regional Commission can help by forming land parcels to make multiple small plots of land into larger plots that suit large distributors. Fulton Industrial's superb road access and perimeter location make it an ideal candidate for redevelopment, with a real benefit for truck travel and its associated effects. Even so, with old buildings and various signs of deterioration Fulton will require a variety of upgrade investments before it rises to the world-class standard that Atlanta otherwise offers the world.

7.0 Identification of Needs

Current and future freight mobility needs were identified based on data, technical analysis and stakeholder input presented above. The needs presented here are focused on those of regional concern and on the regional freight system identified above and in general represent systemic needs. Systemic needs can be defined as universal or general mobility issues that are broader in nature and may reflect infrastructure, operational, institutional and/or regulatory deficiencies or inefficiencies. Often, but not always, addressing systemic needs requires significant investment in terms of infrastructure and money and/or innovative solutions. The systemic needs for current and future freight mobility in the Atlanta region have been organized around six key issues including:

- System capacity
- Land Use Conflicts
- Safety
- Education and Public Awareness
- Regional Approaches
- Economic Competitiveness
- Community and Environmental Impacts

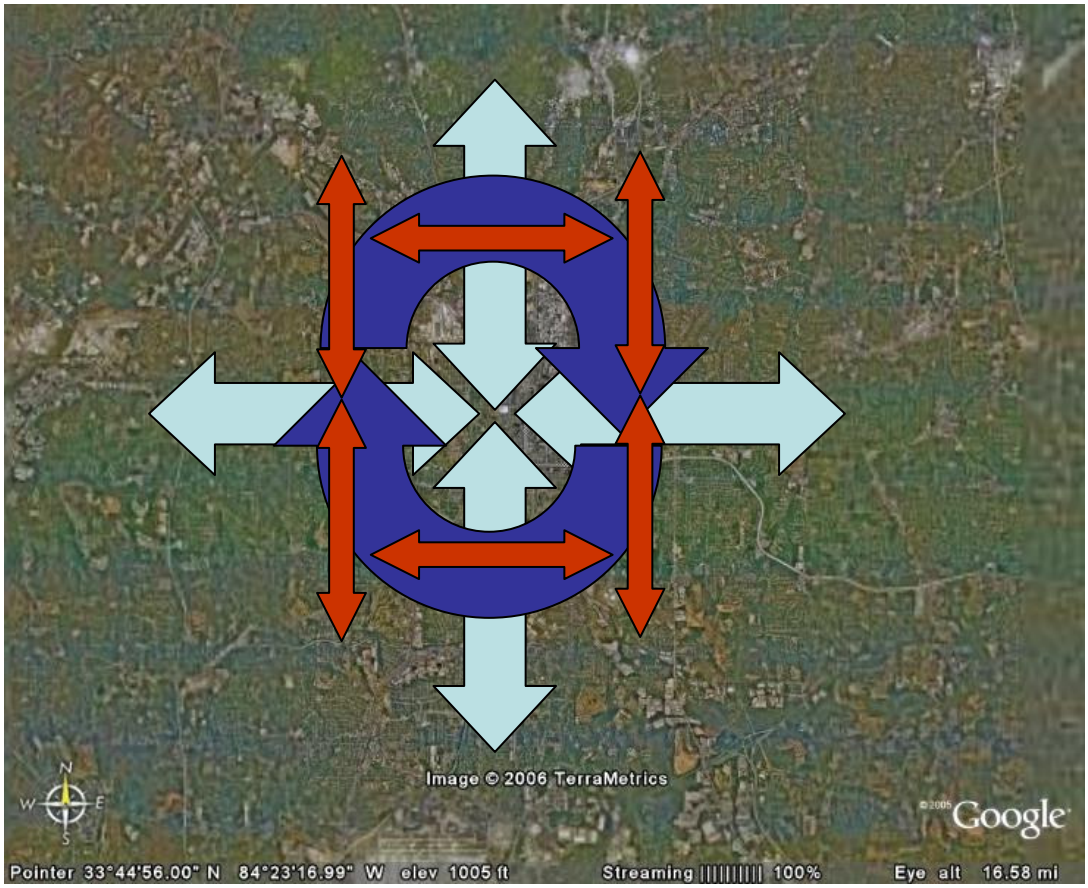
7.1 System Capacity

Congestion and resulting capacity deficiency was identified as the number one issue with regards to freight mobility and infrastructure deficiencies was identified as the primary cause of congestion. Following is a summary of the five leading freight congestion and infrastructure needs in the Atlanta region.

7.1.1 Insufficient grid system leads to lack of alternative routes

Throughout the stakeholder input process one of the most significant problems identified was the inability for trucks to cross the city transversely, without resorting to the perimeter or I-285. Observations from professionals who have operated truck fleets in other cities made clear how Atlanta's surface structure differs from other urban areas and how Atlanta's structure contributes to congestion they perceive as being worse. The region's surface routes are essentially set up as radials out from the city's center – rather than as a grid system of intersecting arterials, similar to what would be found in Los Angeles, Detroit or Washington D.C. Currently, it isn't terribly difficult to move North and South from the city, but there is no good way to move across it. This problem is not only critical on the North side between I-75 and I-85, but also exists through the center and on the South side of Atlanta. The absence of traverse surface arterials also implies a lack of relief routes. Thus, cross-town truck drivers who have no alternative to using I-285, also have no alternative when it backs up, and the perimeter along with its major interstate feeders tends to lock up. Exhibit 7.1 schematically illustrates the radials, the perimeter beltway, and the gridline routes that are generally absent in the region.

Exhibit 7.1: Absence of Traverse Routes in the Atlanta Region



7.1.2 Bottlenecks at Key Interstate Interchanges and Freight Generators

The fact that key interchanges on the region's interstate system gives rise to considerable recurring congestion is no surprise to most since a national report released by the Alliance of Highway Users identified Atlanta has having three of top twenty worse interchange bottlenecks in the U.S. These three include the I-75/I-85 interchange, the I-85/I-285 Interchange and the I-75/I-285 interchange. Other notable interchange and bottlenecks identified as a regional need include:

- I-85 and SR400
- I-85 and Jimmy Carter Blvd
- I-285 interchanges at Peachtree Industrial Blvd, LaVista Road, Pleasant Dale Road and I-20
- I-85 and SR316

Other non-interchange bottlenecks related to key freight generators include heavy commercial and retail areas in the region, key industrial corridors and facilities serving significant intermodal yards or distribution centers. The bottlenecks receiving the most citations include:

- Peachtree Street- especially around Lennox Mall
- Buckhead area
- Cobb Parkway – signal timing is issue for commercial vehicles
- Thornton Road at Austell Intermodal Yard – growth of commercial activity along corridor forces excessive truck/passenger vehicle interactions
- Fulton Industrial Boulevard – volume leads to prolonged travel times
- Downtown Atlanta – volume and design issues lead to prolonged travel time and difficulty with pick-up and deliveries
- Marietta area- growth in area leading to increasing interaction of truck and passenger traffic.

7.1.3 At-Grade Rail Crossings

While there has been continued improvement in reducing the number of at-grade crossings, they continue to be an issue for local communities throughout the region. Not only do these crossings impact both freight and passenger mobility but they also create safety concerns for the traveling public. As the increase in rail freight is projected to increase by 37 percent in terms of tonnage and 53 percent in terms of carloads or containers by 2030, the delays and safety concerns arising as a result of at-grade crossings will also continue to increase.

Exhibit 7.2 displays the top five at-grade rail crossings in terms of AADT by County. Notable is the fact that there are 15 crossings in the study area that experience more than 20,000 AADT. Gwinnett County has among the most significant at-grade crossings in terms of both AADT and the number of trains per day. Fulton County also has notable crossings with both high AADT and significant train activity. In terms of train activity, Henry County stands out with its top five at-grade crossing experiencing between 30 and 45 trains per day.

Exhibit 7.2: Top Five At-Grade Rail Crossings based on AADT, by County

County	RR Crossing Owner	Road Name	AADT	Trains per Day
Barrow	CSX Transportation	Athens St.	13,450	30
	CSX Transportation	SR 11 S Broad	10,720	16
	CSX Transportation	Horton St.	6,770	19
	CSX Transportation	Old Rd.	5,684	1
	CSX Transportation	Jefferson St.	3,240	16
Bartow	CSX Transportation	East Main	11,950	47
	CSX Transportation	Burnt Hickory Rd.	9,870	6
	CSX Transportation	Burnt Hickory Rd.	9,870	24
	CSX Transportation	US 411	7,840	1
	CSX Transportation	Old Mill Rd.	6,380	6
Carroll	Norfolk Southern Corp.	Industrial Blvd.	17,130	31
	Norfolk Southern Corp.	Maple St.	9,800	4
	Norfolk Southern Corp.	Carroll St.	9,210	31
	Norfolk Southern Corp.	Ala. St.	9,070	6
	Norfolk Southern Corp.	Dixie St.	7,950	8
Cherokee	Georgia Northeastern	Water Works	15,300	2
	Georgia Northeastern	NA	14,370	2
	Georgia Northeastern	Marietta Rd.	12,010	4
	Georgia Northeastern	Arnold Mill Rd.	9,140	2
	CSX Transportation	NA	8,400	2
Clayton	**Norfolk Southern Corp.**	**SR 54 Jonesboro Rd.**	**35,740**	**2**
	Norfolk Southern Corp.	Jonesboro Bypass	17,200	7
	Norfolk Southern Corp.	Clayton State Blv.	16,720	7
	Norfolk Southern Corp.	Mt Zion Rd.	15,300	2
	Norfolk Southern Corp.	Forest Pkwy.	15,100	8
Cobb	**CSX Transportation**	**Sandy Plains Rd.**	**21,090**	**2**
	Georgia Northeastern	**Marr Rd.**	**20,030**	**4**
	CSX Transportation	Piedmont Rd.	19,670	4
	CSX Transportation	Church St.	13,405	10
	CSX Transportation	Cherokee	11,900	38

County	RR Crossing Owner	Road Name	AADT	Trains per Day
Fulton	**Norfolk Southern Corp.**	**Murphy**	**23,750**	**12**
	Norfolk Southern Corp.	**Monroe Dr.**	**20,910**	**2**
	Norfolk Southern Corp.	**Simpson**	**20,000**	**1**
	CSX Transportation	Welcome All Rd.	18,900	16
	CSX Transportation	Old Fairburn Rd.	18,900	16
Gwinnett	**Norfolk Southern Corp.**	**Pleasant Hill Rd.**	**33,750**	**29**
	Norfolk Southern Corp.	**Buford Hwy.**	**28,630**	**6**
	Norfolk Southern Corp.	**Suwanee Dam Rd.**	**26,580**	**29**
	CSX Transportation	**Harmony Grove Rd.**	**21,800**	**20**
	Norfolk Southern Corp.	Lawrenceville St.	15,510	29
Hall*	Norfolk Southern Corp.	Athens St.	11,160	35
	CSX Transportation	Industrial Blvd.	7,850	4
	CSX Transportation	Mason Dr.	5,940	8
	CSX Transportation	MLK Jr. St.	5,250	2
	Norfolk Southern Corp.	White Sulphur Rd.	4,920	29
Henry	Norfolk Southern Corp.	Flippen	14,140	45
	Norfolk Southern Corp.	Hampton St.	10,970	46
	Norfolk Southern Corp.	Jonesboro St.	8,280	46
	Norfolk Southern Corp.	SR 155	4,750	30
	Norfolk Southern Corp.	Gas Plant Rd.	4,170	45
Newton	The Great Walton Rail	Covington By-pass	10,300	1
	CSX Transportation	Emory St.	10,270	6
	Norfolk Southern Corp.	Washington St.	9,774	4
	Norfolk Southern Corp.	Roper Rd.	1,530	35
	CSX Transportation	New Alcovy Rd.	9,730	10
Paulding	The Great Walton Rail	Pace St.	9,300	2
	CSX Transportation	Mount Olivet Rd.	472	4
	CSX Transportation	NA	458	10
	Norfolk Southern Corp.	Academy Dr.	390	20
	Norfolk Southern Corp.	Johnson St.	390	29

County	RR Crossing Owner	Road Name	AADT	Trains per Day
Coweta*	Norfolk Southern Corp.	Franklin Rd.	10,580	2
	CSX Transportation	Weldon Rd.	6,190	10
	CSX Transportation	Broad St.	5,200	11
	CSX Transportation	McCullum Parkway	4,900	16
	CSX Transportation	Spence St.	4,870	22
Dekalb*	**CSX Transportation**	**Conyers St.**	**28,140**	**6**
	CSX Transportation	**Hugh Howell Rd.**	**22,200**	**2**
	Norfolk Southern Corp.	**Johnson Ferry Rd.**	**22,150**	**2**
	Norfolk Southern Corp.	**Pleasantdale Rd.**	**21,960**	**2**
	CSX Transportation	Rockridge Rd.	15,720	10
Douglas	Norfolk Southern Corp.	(UR) Campbellton	16,120	31
	Norfolk Southern Corp.	Mosley St.	15,670	31
	Norfolk Southern Corp.	Burnt Hickory Rd.	5,680	31
	Norfolk Southern Corp.	Rose Ave.	5,220	31
	Norfolk Southern Corp.	Brown St.	2,380	31
Fayette	**CSX Transportation**	**Tyrone Rd.**	**30,440**	**2**
	CSX Transportation	Lee's Mill Rd.	7,430	30
	CSX Transportation	Crabapple Lane	6,380	30
	CSX Transportation	Dividend Dr.	5,740	30
	CSX Transportation	Tyrone Rd.	5,620	30
Rockdale	CSX Transportation	Sigman	10,900	4
	CSX Transportation	NA	8,590	8
	CSX Transportation	West St.	5,490	8
	CSX Transportation	Covington Hwy.	5,040	2
	CSX Transportation	N. Salem Rd.	4,400	8
Spaulding	Norfolk Southern Corp.	Hill St.	12,700	10
	Norfolk Southern Corp.	High Falls Rd.	9,980	1
	Norfolk Southern Corp.	High Falls Rd.	9,930	10
	Norfolk Southern Corp.	Hwy. 16 A.K. Bolto	9,500	4
	Norfolk Southern Corp.	Solomon St.	9,340	2
Walton	CSX Transportation	Broad St.	7,940	2
	CSX Transportation	Monroe Rd.	6,710	2
	CSX Transportation	Madison Ave.	3,690	2
	CSX Transportation	Atha St.	1,710	2
	CSX Transportation	Davis St.	760	2

Source: Georgia Department of Transportation, 2006

** At-grade crossings with higher AADT but no trains have been omitted*

7.1.4 Rail Capacity Limitations and Development Issues

Resolution of capacity limitations is the first consideration affecting long term development of freight rail services in greater Atlanta. It clearly has ramifications for rail operations in the whole southeastern market, and just as clearly requires regional network investments of which those in Atlanta are a part. An example is the necessity for NS shuttle trains between Austell and Inman because of the lack of a link between the Birmingham and Chattanooga lines. This creates two additional movements across the Atlanta bottleneck route, soaking up capacity that could otherwise be used for new traffic. At the time of Austell's construction, there may have been an option to create such a link, but the growth in Douglas and Cobb Counties since that time probably now prohibits it. Whether an alternative can be found for this or not, at minimum it highlights the criticality of the need for foresight in long range transportation and land use planning, and the shared interests of the private and public sector.

Beyond this basic point, there are a number of issues surrounding the development of rail services in the Atlanta region. A selection follows, presented as three pairs:

- *Two new corridors* will affect the growth of international trade traffic coming to and through the region. The Meridian Speedway (cited above) establishes a direct rail route to Mexico City, and another support to Atlanta's ambition to be a formal or informal center of Latin American trade. The Heartland Corridor between the port at Norfolk, VA and the Ohio Valley, under development with federal assistance along former export coal routes, will compete with the ambitions of Savannah and Charleston to become new landbridge gateways for Asian goods bound to the Midwest.

- *Two prospects* for industrial redevelopment are present at rail-served sites on the south side of town. One is Fulton Industrial Park, which has superb highway access but could benefit from public sector action to spur preparation of adequate land parcels and infrastructure. The availability of outbound loads of manufactured goods is one aspect of the Atlanta market that attracts trucking capacity to the region, and its nurture would be an offset to the region's worsening congestion. Manufacturing derives benefit from rail service as well, and the revitalization of rail service might be a condition set by ARC for its involvement in redevelopment. One form this could take might be introduction of competitive access to the site, as a stimulus to service quality.

- The second location is the Fort Gillem military base in Forest Park, now slated for closure. This is a rail-served property near I-285 and I-675 in the city's truck terminal district that could be redeveloped for industry, and used to preserve Atlanta manufacturing in efficient locations for freight logistics. Once again, competitive rail access (or related horse-trading) might be a condition for public aid.

- *Two concerns* for the future of intermodal rail service are the marginalization of trailer operations, and the long term effect of growth on terminal capacity. Trailers are the preferred equipment for the great majority of motor carriers and are the dominant equipment on the nation's highways. The rail preference for containers is due to linehaul cost advantages and capacity utilization – but if capacity is sufficient, the linehaul can be managed. The reason for concern is that insistence on containers creates a substantial barrier to intermodal use and a limitation on fleet utilization, which act as a disincentive for motor carrier adoption of rail service. The upshot is continuation of the established trend by which intermodal is relegated to international transport, and domestic traffic stays on the road.

Quadrupling growth in intermodal traffic eventually will exhaust terminal capacity. The trend in other American cities has been for facilities in the central business district to close, and give way to ever-larger operations on the far rim of the metropolitan region. The consequence is that the urban area becomes entirely dependent on truck drayage, and rail alternatives exist strictly for exterior linehaul service. To prevent this requires three things: preservation of the in-town facilities as prime freight assets with material public benefits, their continued access to high-service trains via direct or shuttle connections, and land planning that anticipates rail requirements and treats them as deserving of integration in the city limits – instead of exile.

7.1.5 Potential Diversion of Through Truck Traffic

The trucking industry transports 70 percent of the total freight moved in the United States. In comparison, trucked freight represents nearly 84 percent of the freight tonnage moving in the Atlanta region with 53 percent of the outbound, 77 percent of the inbound and 79 percent of the through freight traveling by truck. Because of the heavy reliance on truck transportation, the highway system is instrumental in the efficient movement of freight in the Atlanta region. Motor carriers utilize the highway system to transport freight to customers throughout the region and to distribute goods to consolidation and intermodal freight facilities. The roadway network is a critical factor in enabling effective connections for the regions economy.

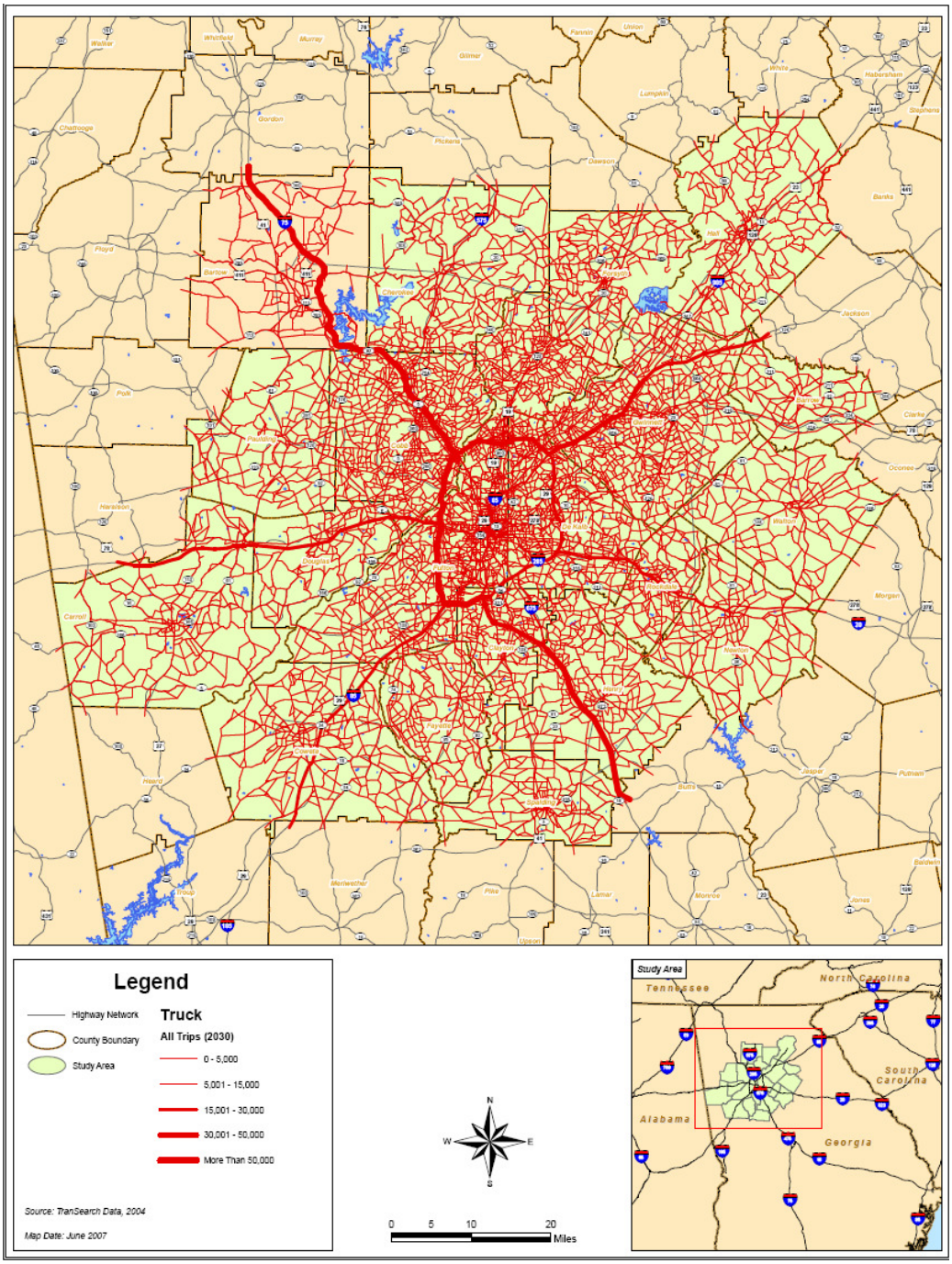
However, as demonstrated above, the highway network is experiencing severe congestion during morning and evening peaks. The volume of freight, combined with the fact that local traffic is forced to use the same system as through traffic due to the lack of viable alternatives, has contributed to conditions that drivers describe as some of the worse in the nation. Exacerbating the current capacity constraints is the fact that the number of trucks in the region is expected to increase by 91 percent between 2005 and 2030. This translates into an additional 141,000 trucks daily on the region’s highway system, of which over 37,000 will represent through traffic.

A common theme during stakeholder interviews, which included stakeholders from both the public and private sectors, was the potential capacity that could be freed up by

diverting through traffic away from the freight system directly serving the region. Private sector stakeholders routinely noted the need for an "outer" beltway to accommodate freight movement that did not need direct access to the region's core. A popular option among public sector stakeholders, as well as the general public comments received, was the possibility of diverting truck traffic to the rail system. Other studies examining the Atlanta capacity issues suggested various options for relieving congestion including a tunnel running under the City, connecting I-285N to I-285S.

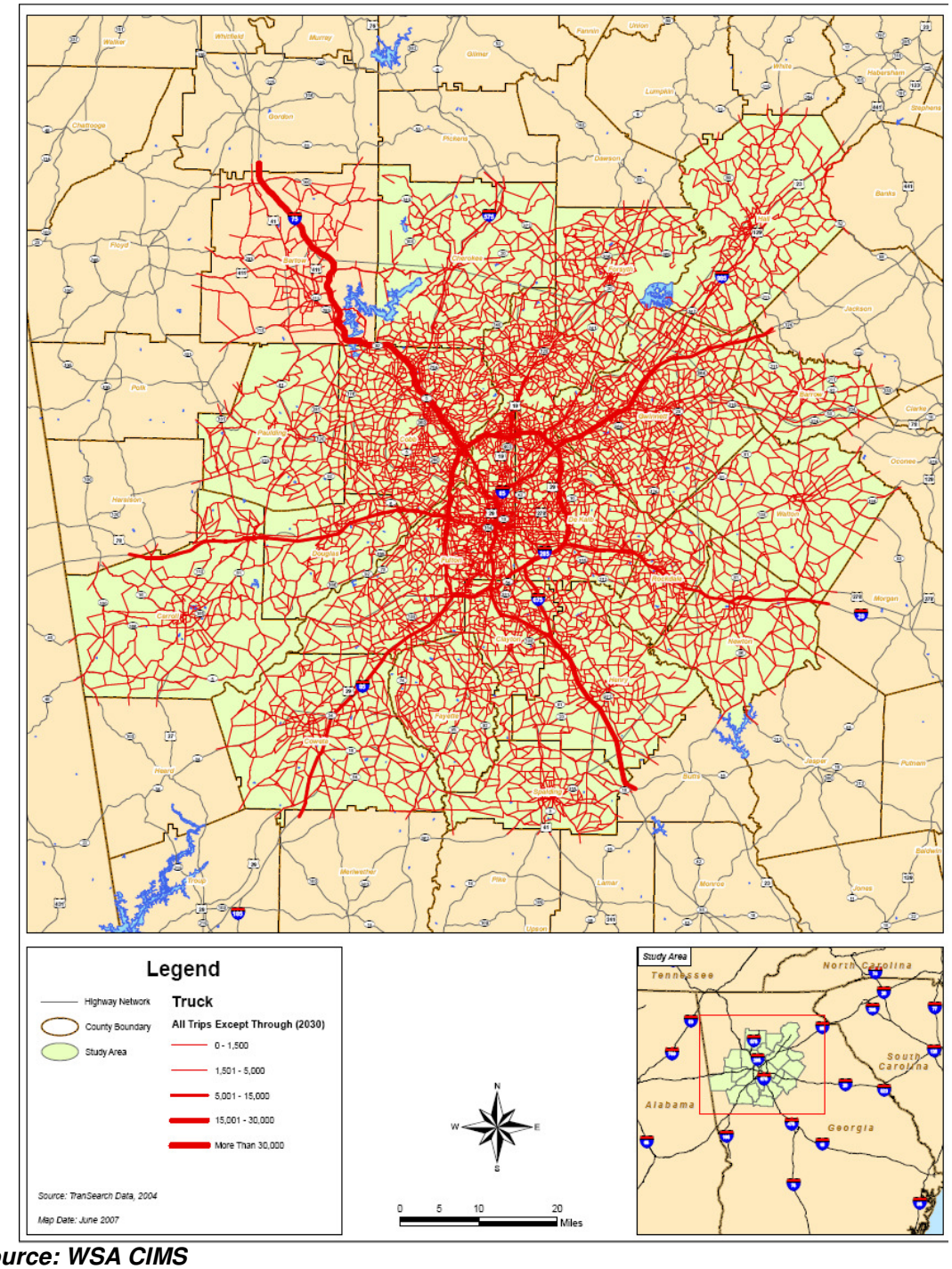
While it is outside the scope of the current effort to conduct an analysis of the most feasible options for diverting traffic, a comparison of future truck volumes with and without through traffic was conducted. Exhibits 7.3 and 7.4 display truck volumes on the region's freight network assuming no diversion of through traffic and assuming all through truck traffic is diverted to an alternative facility. While this exercise does not provide definitive analysis on the benefits of removing all through traffic, it does demonstrate that doing so could have significant impacts on the overall demand on the region's priority freight subsystem. The examination suggests that diverting through trucks away from the region's existing interstate system would lead to a reduction of, on average, approximately 20,000 trucks daily from the I-75 corridor alone.

Exhibit 7.3: Projected 2030 Truck Volumes, All Traffic



Source: WSA CIMS

Exhibit 7.4: Truck Volumes with Diversion of all Through Trucks, 2030



Source: WSA CIMS

7.1.6 Freight Operations

Throughout the stakeholder input process and the ground observations of operating conditions conducted by the consultant team, operational issues including the need for improved network management, updated design standards to accommodate newer commercial vehicle requirements and an updated and properly signed regional truck route system. While these were not the only operational issues that arose, these three represent the most commonly identified needs across a spectrum of users.

7.1.6.1 Using ITS for Network Management

One of the more notable insights arising from the engagement of the private sector in the needs assessment was with regards to the priority placed on more effective management of existing infrastructure relative to investing in new infrastructure. One area of focus for the private sector is the availability of real-time information. Meetings with local stakeholders generated a wealth of ideas and recommendations for improvement of the region's conditions, and especially methods for managing congestion. One method the project team specifically inquired about was the functionality of Georgia Navigator, and whether this could be improved if some type of email or audible alert from the website were issued to drivers or dispatchers. Some companies applied the website's information on traffic delays, construction-related backups, and accidents to work out alternate routes, essentially tracing backwards from the bottlenecks. However, more common were companies who were unaware of the Navigator, or who knew of it but hardly used it. Perhaps because it is a passive system, the Navigator appears to be employed reactively and sporadically, and even among active users, no one was observed who had the website up and visible.

The idea of expanded uses of the Navigator information had wide appeal (even among those who were previously unfamiliar with the resource) as a means of enhancing communication, diverting drivers away from trouble spots and assisting drivers stuck in traffic to get out.

7.1.6.2 Design Standards to Accommodate Freight Requirements

The field work uncovered countless examples of inadequate consideration of freight needs in terms of facility design. Design deficiencies were documented on some of the key freight routes in the study region as well at specific facilities. The deficiencies include design elements such as inadequate turning radii, acceleration lanes, signal timing and pavement standards.

In many cases, facility-specific problems involve the inability of trucks to turn in and out of facilities. For example, one grocery store chain has access problems at one of its downtown Atlanta locations. The chain, which mainly uses 48' trucks, has been forced to purchase 43' trucks (which haul less product) to make the tight turn from the street into its loading area. Similarly, a paper manufacturer has major problems with Eagles Landing Parkway, which runs in between the company's two local locations. The

company's operations require trucks to turn left out of the manufacturing facility and cross Eagles Landing to reach the warehouse. Due to the turn radius between the two facilities, it is difficult for 53' trucks to make the turn and both lanes of Eagles Landing are blocked in the process. Other specific examples are provided in the Data Technical Report.

Design deficiencies can have significant cost implications for operators in the region. For example, tight maneuvering can lead to increased travel times, increased safety hazards and property damage. In some instances, where design deficiencies prohibit the use of the operators' traditional fleet, investment in new equipment is required. These costs directly effect the price of transporting fright in the region, thereby impacting regional economic competitiveness.

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7.1.6.3 Need for Regional Truck Route System

The designated roadway truck route system is instrumental in supporting the efficient and reliable movement of freight. Commercial vehicles rely on properly engineered and constructed roads to move through the region to deliver freight in a timely and safe manner. Identifying, designating and designing truck routes can be an important component of freight mobility and mitigation of freight-passenger conflicts. Designated truck routes should consist of the following:

- Targeted design standards: Truck routes provide a means for targeting truck supporting design standards and policies towards for specific corridors rather than across-the board

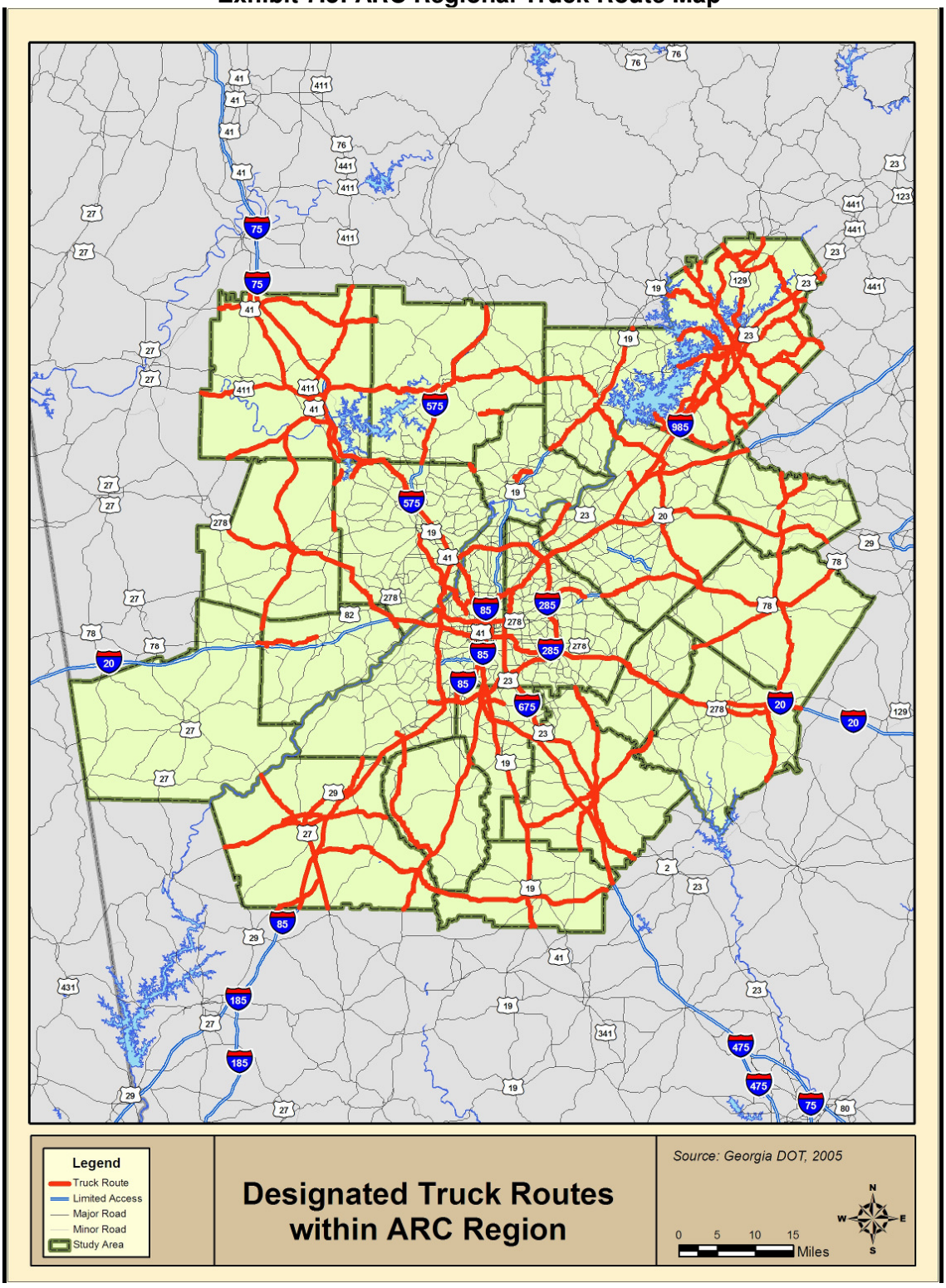
- Cost effectiveness: Improving roads to accommodate larger trucks requires significant investment. Designated routes provide a means to more rationally allocate resources to specific corridors with higher benefits. Truck routes also allow favorable opportunities to implement the use of ITS systems.

- Safety: Improving design standards and segregating freight traffic along specific corridors would also reduce operating incompatibilities and diminish the incidence of accidents.

- Productivity: Improving truck operations within trade corridors leads to increased productivity, lower truck operating costs and improved reliability.

The 20-County Atlanta region has disparities in truck routes that have been officially designated. The lack of truck route connectivity is apparent throughout the region. The following map (Exhibit 7.5) depicts the current designated truck route network.

Exhibit 7.5: ARC Regional Truck Route Map



The officially designated truck routes shown above reveal the difference in the amount of truck routes west of I-285 and north of I-285 in Fulton County. Cobb County also has limited truck route access throughout the county. Interestingly, both Fulton and Cobb Counties have the highest volume of freight moving inbound and outbound in the region; yet, the counties have extremely limited options for truck carriers to travel eastward into the counties from the other regions of the country. Also notable is that truck route plan for the City of Atlanta has not been updated in over 25 years.

A region-wide identifiable truck route system will create increased opportunities to promote connectivity throughout the region, county by county thereby improving the efficiency of the entire roadway system and economic competitiveness of the region.

7.1.6.4 Changes in Commercial Practices

In response to capacity constraints, combined with the increased service requirements of today's economy, private sector stakeholders have implemented changes in their shipping and receiving practices. However, the extent to which these practices can be mainstreamed are constrained by several factors including potential negative community impacts such as noise, labor force constraints and coordination difficulties.

Off-Peak Delivery Options

Exhibits 5.6-5.9 above demonstrate that the roadway system is severely congested along all major arteries in the region during the morning and evening rush timeframes while the off-peak timeframes offer much better operating conditions.

Many of the food distributors interviewed introduced their experience of delivery during the Olympics as a time when congestion posed fewer problems and deliveries were on time. Because of the influx of tourist traffic into Atlanta during the Olympics, city officials mandated that freight deliveries be made at night. This forced receiving windows to remain open while trucks were able to move off the road during peak transit hours. When discussing possible remedies to dealing with congestion, some food distributors hearkened back to the system implemented during the Olympics with a sense of nostalgia and accomplishment. Even those distributors who referred to the Olympics as "two weeks from hell" (due to the unusually late hours kept and the failure of receivers to have staff awake and available) agreed that delivering at night avoided congestion and made delivery times more predictable.

Coca-Cola Enterprises (the bottling company) is one of several distributors keenly interested in moving a portion of their operations to off-peak. They explained this with two points. First, the company's market objective is to have product within ten minutes of any consumer, and to remind the consumer of its availability by a variety of means. This means that distribution is a fundamental part of business strategy. Second, they are evaluated by Wall Street in terms of their return on invested capital, and the investment in their private truck fleet is one component. The more productive the private fleet becomes through less time spent in traffic, the lower the capital requirement and

the better the return. Thus for this leading company, whose association with Atlanta goes back over a century, congestion on the roadways has a direct influence on their market effectiveness and their attraction of capital. In their evaluation, roadway improvements can be helpful at the margins, but no investment the region could make would produce benefits comparable to evening operations. Even Coca-Cola could not move all of its business off-peak: its vending machine operations, for example, require drivers to handle cash, and there are safety concerns associated with the drivers working alone at night. Nevertheless, moving just a portion of deliveries off-peak would begin to alleviate Atlanta congestion. The question is can receivers be encouraged to accommodate this and what role may the public sector play?

The majority of food distributors interviewed expressed an interest in moving to night deliveries but are currently hindered by the unwillingness of many receivers (e.g. grocery store receiving docks) to accept deliveries at night. The receivers have their own business reasons for resistance: at minimum, it requires a staff member on night shift (although there is precedence for drivers to become qualified for key access). Sixty-two percent of food distributors interviewed that are willing to move to night deliveries under the right circumstances.

Consolidation Mechanisms for Local Deliveries

The impetus to minimize truck traffic on the road during the Olympics led another food distributor to suggest a consolidation technique. Under current (and non-Olympic) operations, each food vendor serving a restaurant typically makes independent restaurant deliveries. This generates a multiple vehicles on surface routes, all attempting to unload at difficult-to-access restaurants. During the Olympics, a single food distributor accepted deliveries from a range of vendors all destined for Restaurant "A", and then made one consolidated delivery to Restaurant "A". The result was that small vendors delivered to one large (easier to access) loading facility and one large truck delivered once to a restaurant, thereby reducing the number of trucks on the road. If companies could be encouraged to operate this way under normal circumstances, truck traffic could be reduced and efficiency enhanced. The drawback to this system is the fact that restaurant delivery drivers are also salesmen who work to maintain relationships with their restaurants and risk losing sales if they delivered to a consolidation point, rather than directly to the restaurant. If a middle ground can be reached between the vendor and the consolidator, heightened efficiency and reduced traffic could be the result.

7.2 Land Use Conflicts

Given that industrial, warehouse, and distribution activities will continue to grow in the Atlanta region regardless of the desire to attract or stave them off, it is important for municipalities, counties, and the ARC to plan for these activities. Moreover, it is important for those who shape urban design through municipal and regional policies and plans to provide guidance for accommodating these activities. When structured appropriately, such guidance can help reduce the sprawl of freight activities by

developing goods and trade-related distribution facilities within existing transportation corridors and zones. This can also help ensure a balance between the movement of people and the movement of goods across key corridors in the region and create an environment that enhances economic competitiveness and sustainability. Two key areas of concern with regards to land use conflicts impacting freight mobility are noted below.

7.2.1 Encroachment of Traditionally Industrial Corridors/Areas

One distributor interviewed complained of noise abatement policies interfering with delivery times in certain areas. Such noise abatement policies restrict deliveries before and after certain times of the day in areas where there is a residential population, often preventing drivers from arriving at a location before or after rush hour. Noise abatement policies are just one of many issues arising from the encroachment of residential areas on freight areas. These land-use conflicts are commonplace and are becoming increasingly problematic in locations where freight traffic can no longer access established industrial areas due to neighborhood restrictions, no-truck routes requiring a circuitous approach, and heavy congestion along previously adequate access routes.

The issue is not really that industrial and residential areas need to be made separate, which may be undesirable and probably is impractical. From a freight logistics standpoint, the issue is access, through the retention of clear, efficient truck routes into industrial centers as residential areas move in.

7.2.2 Protect and Promote Freight Intensive Areas

Given the significance of logistics and distribution in the Atlanta economy, it is vital that distribution companies continue to be attracted to the city and can operate efficiently in the future. Development growth for distribution and other industrial facilities is occurring in several areas. Specifically, on the I-85 north corridor up to Braselton and Jackson County (approximately 75 miles North East of Atlanta), on I-75 around McDonough, and the area between I-85 S, 75 S, and I-20 (an area that allows distribution centers to efficiently serve Florida. Other key areas of industrial growth include the intersection of I-85 and I-285, between I-85 and I-20 (an area that has good access to three rail yards), and the I-85 south corridor to Macon.

Atlanta used to be classified as city that could expand without barriers. In other words, as areas grew congested, companies could pack up and move down to the next exit. The result of this ongoing pattern in Atlanta is that companies have begun to find themselves facing possible locations that are too far away from the local market. The solution to this is redevelopment of older freight areas. This is already happening with Atlanta's residential population, as people tired of long commutes are moving back into redeveloped areas of town. One problem facing redevelopment of industrial areas is that large distributors want new facilities that are nicer and larger than un-used facilities

currently in place. This is particularly evident in the Fulton Industrial area where there are several small pieces of land held by different owners. As companies look to build facilities on larger plots of land, the Atlanta Regional Commission can help by forming land parcels to make multiple small plots of land into larger plots that suit large distributors. Fulton Industrial's superb road access and perimeter location make it an ideal candidate for redevelopment, with a real benefit for truck travel and its associated effects. Even so, with old buildings and various signs of deterioration, Fulton will require a variety of upgrade investments before it rises to the world-class standard that Atlanta otherwise offers the world.

7.3 Safety

Safety is always a focus of both planning organizations and private sector freight stakeholders. Carriers wish to operate effectively and efficiently and maintain high safety standards. Any breach in safety standards place carriers in a vulnerable position and at high risk to be liable for damage endured as result of a driver's negligence. Accidents lead to high insurance premiums as well as potential settlements which raise costs tremendously. Therefore the freight industry has a vested interest in ensuring the region's infrastructure is conducive for safe travel for all motorists. After conducting analysis of the CARE database, several elements were identified and brought to the forefront:

- Although on-third of all commercial vehicle crashes occur at intersections, identifying the amount of crashes at intersections can provide additional insight to identifying problem areas. Issues such as geometric design and turning radii could be the primary reasons for crashes that occur at intersection. Collecting and recording more detailed data on crashes involving commercial vehicles will provide more insight into the root causes.
- The data does pinpoint key safety hotspots and corridors that should receive attention:
    - I-285 in Clayton, Dekalb and Fulton County;
    - I-75 between SR140 and I-20 in Bartow County;
    - I-285 to SR 135 in Clayton County;
    - SR 5 to I-285 in Cobb County;
    - I-657 to SR 16 in Henry County;
    - I-85 in Coweta, Dekalb and Fulton County;
    - I-20 in Dekalb, Douglas, Fulton and Rockdale County;
    - SR 20 at SR 316 in Gwinnett County;
    - SR 78 in Gwinnett County;
    - SR 23 in Gwinnett County an at SR 129 junction;
    - SR 16 in Spaulding County

7.4 Education/Public Awareness

In discussing the goods movement industry, the key problem is the "common wisdom" that the sector provides low paying dead-end jobs and uses huge facilities that provide very few jobs per square foot of space. Further, many believe that in exchange for such limited economic rewards, the sectors saturate our transportation infrastructure and cause enormous health and safety issues. It is also commonly believed that the primary beneficiaries of the logistics sector are private businesses and consumers outside of the Atlanta Region who benefit from low cost imported goods while paying nothing for Atlanta's overburdened infrastructure. On the other hand, statements that the goods movement sector benefits the region's economy are generally so vague as to offer no answer to these objections.

The ability to advance the need for more proactive freight mobility planning and especially for freight specific projects will hinge on the level of public awareness with regards to the benefits of freight planning and the impact of freight mobility on regional competitiveness and quality of life. The communication of these benefits (as well as the cost of not providing for efficient freight mobility) is essential to move from a "not in my backyard" (NIMBY) mentality with regards to freight activity to one of accommodation while mitigating the negative impacts.

7.5 Regional Approaches

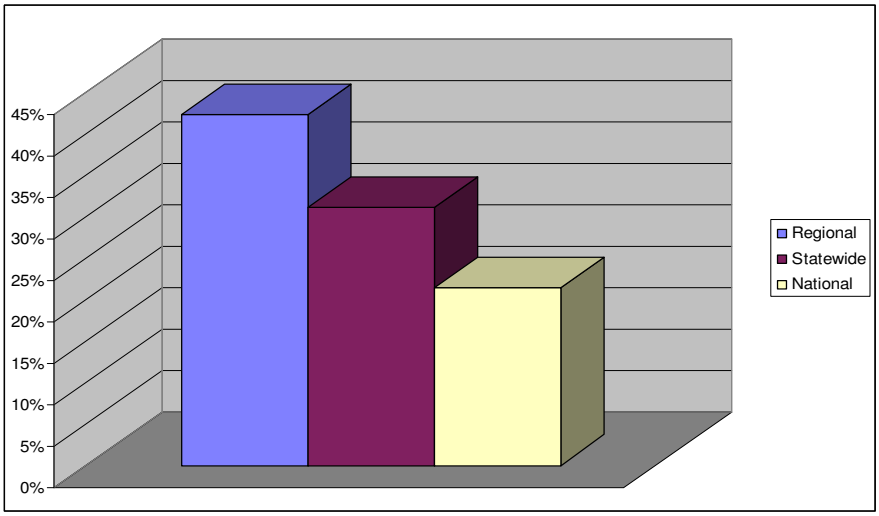
The freight mobility needs assessment revealed many needs across a wide spectrum of issues and potential responses. While there is much diversity among the categories of needs, ranging from new capacity to improved signage to integrated land-use, there is one common theme – the need for a regional approach to freight mobility and all the planning factors that impact the freight subsystem. Because of the interstate and intra-regional nature of freight movement, bottlenecks or inefficiencies in one local community impacts freight mobility throughout the 20-county region. Therefore, ensuring the efficiency of freight mobility throughout the region necessitates addressing the needs and issues at a regional as opposed to local level. However, many of the specific issues enumerated above are the domain of local governments and not subject to regional approval. While this may limit the role that ARC can play in implementing responses, it does not eliminate the possibility to influence the outcomes. Given the role of ARC as the regional planning body, it has access to resources to assist local governments in developing and implementing local plans. It is through these resources that ARC can influence and promote planning to accommodates and enhances freight mobility.

7.6 Economic Competitiveness

As one of the nation's fastest growing regions, metropolitan Atlanta has experienced rapid population growth to accompany the region's economic expansion. Exhibit 7.6 provides regional growth forecasts into 2020. As illustrated below, the 42 percent

projected population increase between 2000 and 2020 outpaces both statewide and national forecasts.

Exhibit 7.6: Population Forecast Comparison



Source: Woods and Poole

Much like the region's demographic growth, Atlanta's regional economy has also witnessed a sizable expansion in recent decades. As the region's economic base grows, cost-efficient freight movements are key. The extent to which freight and logistics sectors and freight-intensive industries comprise the regional economy is provided below in Exhibits 7.7 and 7.8.

Exhibit 7.7: Total Employment by Sector and Geographic Region

Sector	Metro Atlanta	Georgia	United States
Transportation and Logistics	99,331	143,212	3,606,460
Freight-Intensive	711,410	1,307,578	41,245,109
Other	1,266,753	1,936,547	68,546,474
Total	*2,077,494*	*3,387,337*	*113,398,043*

Source: *US Bureau of Economic Analysis, 2003 County Business Patterns*

Exhibit 7.8: Percentage of Employment by Sector and Geographic Region

Sector	Metro Atlanta	Georgia	United States
Transportation and Logistics	5%	4%	3%
Freight-Intensive	34%	39%	36%
Other	61%	57%	60%

Source: *US Bureau of Economic Analysis, 2003 County Business Patterns*

The sectoral composition of the regional economy closely mirrors that of the state of Georgia and the national economy. Transportation and logistics comprises a larger share of local employment regionally than it does statewide and nationally. Of major

importance is the extent to which the regional economy consists of employment that is freight-intensive, or relies heavily on the transportation and logistics sector. Both sectors employ nearly 40% of regional labor, 43% statewide and 39% nationally. The economic implications of policies that impact freight movements should weigh heavily in the decision-making process of regional policymakers given the prominent role that freight and freight-intensive industries play in creating jobs and supporting local tax bases.

Preserving the region's role as the crossroads for the southeastern economy is vital to its continued growth and prosperity. Not only is the efficient and safe transport of goods critical to the being able to serve the growing consumer market in the region, but it is also vital to ensuring a competitive environment for the region's manufacturers and service-based industries. If the freight system continues to become more congested and more hazardous in terms of safety, employers in the region may be forced to locate elsewhere to meet the effectively mange their supply chains and ensure their profitability. This will impact residents in terms of lost job opportunities and potentially lower wages and higher prices. It will also impact the tax bases of local and state governments. An examination of the impacts of inefficient freight mobility on the local, regional and state economy is required to fully understand the ramifications.

7.7 Community and Environmental Impacts

7.7.1 Environmental Justice Analysis

An environmental justice (EJ) community is defined as a community that has populations that exceed regional averages for certain population groups that are adversely or disproportionately affected by negative impacts in the area. In the case of this report, negative impacts refer to freight-based operations and facilities. As defined by the Atlanta Regional Commission (ARC) EJ communities in the Metropolitan Atlanta Area have greater than 9.1% of the population living in poverty, 30.4% African American, 3.6% Asian, or 7% of Hispanic origin.

Based on U.S. Census numbers from 2000, the environmental justice analysis in this report revealed that of the 74 census block groups in the five case study areas 64 meet at least one of the ARC's criteria for an environmental justice community; 37 meet at least two of the criteria; and nine meet three. What this demographic analysis shows is that the well-established freight-based study areas, Atlanta Road/Marietta Boulevard and Fulton Industrial Boulevard, have acute environmental justice concerns. Atlanta Road/Marietta Boulevard meets EJ criteria in 30 out of 34 block groups; Fulton Industrial Boulevard in 16 out of 17. The Fairburn study area has nine of its nine block groups meeting at least one EJ criteria. Gwinnett and Henry Counties have relatively few environmental justice concerns. Thus the well-established freight areas need to deal with the mitigation of EJ issues and the prevention of new EJ communities. While study areas defined by large amounts of natural space need to be cognizant that they do not produce EJ communities by allowing future residential development to encroach upon freight facilities.

7.7.2 Environmental Analysis

The land use analysis identified the key environmental elements present in five case study areas of freight intensive land mentioned above. The identified environmental sensitivities include: floodplains, steep topography, wetlands, reservoirs, agricultural and forest lands, and streams and rivers. This community and environmental impact technical memo describes in general how freight impacts these elements of the environment and what some of the specific issues are in each study area. Overarching trends indicate that: freight, particularly diesel-emitting freight, has a significant impact on air quality; the construction and operation of freight facilities can disrupt the functionality of natural habitats; and freight is a significant contributor to point- and non-point source water pollution.