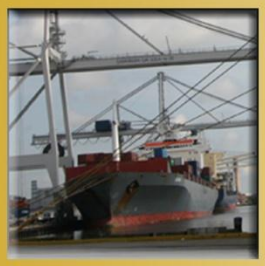
Georgia Department of Transportation
Office of Planning

Georgia Statewide Freight and Logistics Plan, 2010-2050

Air Cargo
Modal Profile



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1.0 Background and Introduction

This air cargo profile is one of four *detailed* modal profiles developed for the Georgia Statewide Freight & Logistics Plan; the other three cover trucking, freight rail, and marine cargo. This document is comprised of the following eight chapters as described below:

- Chapter 1 provides a primer on the air cargo industry – who is involved and how they interact.
- Chapter 2 describes the state's air cargo infrastructure including the top three air cargo airports and relevant access roads.
- Chapter 3 provides information on cargo volumes at Georgia's top ten air cargo airports.
- Chapter 4 provides detailed information on the air cargo activity at the state's top three air cargo airports based on data analysis and surveys.
- Chapter 5 provides information on the characteristics of air cargo demand.
- Chapter 6 describes air cargo carrier operations.
- Chapter 7 compares Georgia air cargo airports to other air cargo airports across the U.S.
- Chapter 8 provides initial considerations on methods to improve air cargo operations in Georgia.

1.1 AIR CARGO STAKEHOLDERS

Successful air cargo operations are typically predicated on the efficient interaction of a number of participants with different operating requirements and perspectives. These participants have different levels of involvement based on the commodity being moved and the geographic markets through which the air cargo move. Almost every passenger carrier in this country carries freight in the 'belly' of their aircraft. This section describes the other air cargo stakeholders and their roles.

Freight Forwarders are private companies that specialize in exporting goods. They serve as travel agents for a shipper's freight. For example, if a shipper wants to send 1,000 pairs of shoes to Borneo, or in some instances, Brooklyn, he will call a forwarder. Forwarders control the routing of about 70% of the international freight, and about 10% of the domestic freight. A forwarder facility will typically involve a small amount of office space and approximately 5,000 ft^2 warehouse, although some larger forwarder operations may require as much as 100,000 ft^2. Freight forwarders do not need to be located on the airport, nor are

they usually prepared to pay higher airport leasing rates. There are no traditional freight forwarders located on-airport in Georgia.

Customs Brokers facilitate the clearance of international cargo through local and federal customs processes. Like forwarders, they usually maintain minimal office space but also have little need for warehouse space -- preferring instead to form alliances with trucking companies that handle any large storage requirements. Customs brokers do not need to be located at the airport, and typically handle most of their business electronically with the federal clearance agencies.

Federal Agencies have dual responsibility for customs control and facilitation of goods movement. Most cargo activity involves the Transportation Security Administration (TSA) and the U.S. Customs and Border Protection agency. Law enforcement agencies at the federal, state, and local levels all provide assistance as required. At an airport with a substantial international presence, it is absolutely critical that these agencies have ready access to the cargo. A centralized facility where all the agencies are located together is ideal. Such an arrangement allows for rapid coordination on clearance issues and minimizes ground traffic by shippers and consignees. There are no issues indicated with any federal agencies related to cargo at Georgia airports.

Consolidators work with freight forwarders providing assembly points for cargo prior to its delivery to a carrier on the airport. This consolidation of different products on to specific flights and to specific destinations is critical in that it creates shipping economies of scale and reduces the shipping cost per pound. The ability to consolidate shipments and the frequency of flights to such a broad range of destinations are important to Atlanta's continued success. Consolidators, although they require warehouse space, do not have to be on the airport, however, similar to forwarders and brokers relatively easy access is important to allow for delivery of the cargo to the carriers on the airport.

Container Freight Stations are typically located off-airport and handle the breakdown of inbound international air freight. Their function is similar to a consolidator in that they provide relatively inexpensive space for redistribution to a number of clients. In many instances, these operations are bonded to allow for the rapid movement of inbound cargo through the customs process.

Freighter Airlines are those dedicated freight carriers that specialize in heavy freight as opposed to small packages or mail. Examples at Hartsfield-Jackson airport include: UPS, Federal Express ("FedEx"), Cargolux (based in Luxembourg), Atlas Air (US), Polar Air (US) and DHL Express (Germany). A recent trend in this industry is the growth in "wet leases", which provides carriers with an option of leasing aircraft, crew, maintenance, and insurance (ACMI) through companies that specialize in supporting the industry.

Integrators are carriers like FedEx and UPS that operate a trucking component as well as aircraft and offer point-to-point as opposed to airport-to-airport delivery. Their business is driven by time definite delivery and proximity to the regional

business districts is important to their operation, as well as offering specialized service such as overnight express. Depending on their level of activity at an airport, they tend to require substantial amounts of aircraft parking although they may not require a large amount of building space. Depending on the facility, they also may require significant amounts of truck and employee parking.

Combination Carriers are defined as airlines such as Asiana, Korean Air and Cathay Pacific that fly separate air freighters and passenger aircraft. These carriers prefer to process both belly and freighter cargo in the same facility when possible. In rare instances, a carrier will split their belly cargo and freighter operations between airports when capacity becomes a factor, but this is typically a last resort because of the added cost factors.

Cargo Handling Companies operate on a contract basis providing service to carriers on the apron where they load and unload the aircraft and/or in the warehouse where they assemble or breakdown the freight. Their business is typically conducted on the airport grounds. Revenues are generated on a fee for services basis, ranging from 2.5 to 6 cents per pound of cargo handled. At Hartsfield Jackson airport, the existing buildings in the South Cargo Complex are leased directly to cargo handling companies.

Trucking Companies make up the ground component of air cargo operations. While these companies rarely lease space on an airport, it is very important that air cargo facilities be designed to accommodate trucking, including frontage, access, and roadway geometry.

In an ideal environment, most of these entities would be co-located on the airport, creating an efficient, integrated, air cargo community. Operating costs are lower, economies of scale can be achieved, and international goods can be cleared faster and with fewer problems. The realities of limited on-airport space and higher leasing costs have required that many of these businesses locate their operations that do not require ramp access at off airport locations.

1.2 KEY AIR CARGO CHARACTERISTICS

The Federal Aviation Administration (FAA) defines air cargo as freight and mail, as well as being categorized as either international or domestic. As described in more detail later, Georgia has three airports that handle measurable amounts of air cargo: Atlanta, Albany, and Savannah. Because of its role as an international passenger airport, Atlanta handles a large number of international, wide body aircraft with substantial amounts of belly capacity. Albany handles smaller UPS air shipments, and Savannah handles a mix of small regional aircraft.

Regardless of the airport, many passenger carriers also operate freighters. This creates an ideal environment to transfer cargo between the diverse domestic passenger and growing integrator operations. The presence of the Delta hub and

its substantial connections at Atlanta creates one of the most far-reaching air distribution systems in the industry.

Products that move by air vary greatly, but have a number of things in common. For the most part they are higher-cost products that move by other modes, are lighter weight, and have a certain level of time sensitivity or urgency. Many products are perishable either because of their inherent nature – vegetables, fish, fruit, flowers, etc., -- or because they have a seasonal element that requires them to be in retail outlets by a required date for an occasion such as Christmas, Valentine's Day, or for a season's fashion line.

When appropriate alternatives present themselves, shippers typically will not use air because of the higher cost. Depending upon a wide set of variables, shipping by air can cost from six to 10 times as much as trucking (domestic) and 15 times as much by sea (internationally). The trade-off is time; trans-oceanic shipping by air takes no more than one day, while by sea it can average two weeks. For domestic shipping, the time savings is far less dramatic: transcontinental shipping by truck averages only three days.

Because shippers must constantly balance the time-versus-cost equation, domestic air cargo is trending more and more to using trucking instead. Because virtually all air cargo begins or ends its journey on a truck, the ground distribution system is as important as air routes. The design and location of airports and their cargo facilities must take this into consideration and be capable of accommodating growth in the landside component of the operations commensurate with growth on the airside.

Freight forwarders (who effectively function as booking links between manufacturers, shippers and logistics operations) and the non-integrated carriers control about 70% of international cargo. Typically, to keep costs down they book blocks of space with carriers in the belly of passenger aircraft. The other 30% is carried by the integrators who will accept shipments directly from shippers and, upon occasion will take bookings from a forwarder.

On international shipments, integrators may compete directly with airline/forwarder alliances for business but overnight delivery does not necessarily play as vital a role in international shipping. Forwarders and shippers will also utilize freighters operated either independently or by the passenger carriers. In certain instances, carriers may lease freighter aircraft, but the numbers of such operations and their impact on airport handling requirements and infrastructure are not typically significant.

One key to successful international goods movement is clearance by the federal agencies. Easy and timely access for inspection is vital. If the federal agencies do not have the staffing to accommodate timely inspection and clearance, the benefit of efficient facilities and prime location will not speed the flow of international cargo.

Domestic cargo differs dramatically from international, but not because of the lack of a customs clearance requirement. Instead, it is dominated by the

integrators, with very little influence by forwarders. Domestic air cargo also has an enormous trucking component, and creates substantial demands on airport aeronautical infrastructure. Integrators typically carry up to 90% of domestic cargo. Competition among the integrated carriers is driven by guaranteed overnight (or other time definite) delivery to almost any location. Integrators operate with a very tight shipping window to their Midwestern distribution hubs, creating a concentration of ground traffic in a region as trucks bring the packages to the airport at the last possible minute.

Large volumes of domestic freight also move in the bellies of passenger aircraft. At Hartsfield-Jackson, Delta is the largest cargo carrier based on the sheer numbers of flights it operates. The cargo they handle are not typically as time-sensitive and arrive at the cargo facilities (both origin and destination) in smaller concentrations, but with much greater frequency, and without the well-defined shipping windows.

Together, these segments of the cargo business create pressure on airports to:

- Provide more passenger terminal capacity and proximate aircraft apron;
- Expand warehousing, Ground Service Equipment (GSE), and office space;
- Create a more extensive network of restricted service roads
- Develop more remote apron and accessing taxiways;
- Construct significant building frontage, customer and employee parking; and
- Improve roadway access and geometry.

Few airports are positioned to deal effectively with the future requirements of both the passenger and cargo segments of their business.

In an ideal environment, space for the on-airport cargo community would be expansive enough to include a full complement of the supporting and ancillary businesses that are important components of an air cargo operation. Geographic proximity to the carriers allows these other businesses to realize operational and financial benefits, while providing higher levels of service to their customers.

1.3 AIR CARGO SUCCESS FACTORS

This section describes the basic ingredients of an airport's successful air cargo operations and describes each in relationship to Hartsfield-Jackson airport.

As airports mature, regional growth and evolving goods movement dynamics can negatively impact the airport's ability to meet the needs of the air cargo industry, and eventually force shifts in operations to alternate facilities. In looking at these factors, there are indications that some challenges pertaining specifically to Atlanta may exist, however the attractiveness of the region for air cargo remains strong. The challenges create opportunities to be explored regarding more efficient utilization of existing airport assets as well as development of new facilities and infrastructure.

Substantial passenger market – final origins, destinations and transfers: Passenger flights provide carriers with the opportunity to use capacity in the belly of passenger planes to ship cargo. Atlanta's priority in maintaining its preeminent position in passenger traffic will require the Airport to accommodate substantial amounts of belly cargo and, in the instances of combination carriers, provide adequate aircraft apron for the freighter component of the business. Given the existing high levels of passenger activity and the projected growth for the industry, the Atlanta airport is exceptionally well positioned to achieve this goal. This assumes it can address geographic competition from other airports and physical constraints that include competing uses for passenger, maintenance, and general aviation activities, and limited available space to add parking for international freighters.

Large regional consuming *and* producing marketplace: A balance between inbound and outbound air cargo freight is critical to the financial success of an air cargo operation. The flow of cargo to and from certain global regions will vary based on economic trends; in the event the economics substantially decrease in either direction there is a strong probability that freighter traffic will be reduced accordingly. The large and growing population of the Atlanta region and southeastern states could generate increased volumes of inbound and outbound freight for Atlanta to handle.

Substantial "lift" to a large number of markets: A substantial number of flights to global markets and sufficient volumes of cargo to each destination enables shippers to consolidate shipments thus reducing overall shipping rates. Atlanta has the large and diverse customer base that enables efficient interlining (transferring cargo) between passenger and freighter aircraft with a resultant global reach.

Supporting business infrastructure of freight forwarders, customs brokers, and trucking: While integrated carriers such as FedEx and UPS control nearly 90% of domestic cargo shipments, freight forwarders and customs brokers control

approximately 70% of the international market. This is due to consolidations where they can lower costs as well as use, through their multiple airline contacts, giving a wide range of shipping options. Typically these businesses cluster on or near the transportation facility they wish to utilize. The result is the existence, in the area immediately surrounding the Atlanta Airport, of several million ft^2 of such facilities. This broker/forwarder community is in large part supported by the increasing international use of their services for marine shipping through the Port of Savannah. Nevertheless, growth of all cargo – both air and ocean-borne – will continue to generate regional growth and demand for space.

Adequate roadway infrastructure between the airport and an effective highway distribution system: One of the side effects of air cargo growth is a corresponding increase in trucking traffic which therefore impacts regional traffic patterns and flows. One of the original factors of air cargo success at the Atlanta Airport was the excellent regional roadway infrastructure and the links it provided between the Airport and the regional highway network. Given the growth in passengers and cargo, as well as overall regional growth, congestion could eventually cause facility access and efficient rates of travel to become increasingly problematic. This will be more of an issue for passenger activity than for cargo because trucking tends to operate at off-peak hours.

Connectivity to the highways from the cargo complexes is not currently an issue nor do forecast volumes suggest that this will become an issue in the future. There are separate landside operating concerns at the cargo complexes discussed later in this document. Future business strategies must consider optimizing traffic flow and maneuverability in these complexes that are shown in Chapter 4 of this document.

Physical capacity to accommodate growth: The most obvious criterion for the future success of an air cargo program is the physical capacity to accommodate the airside and landside requirements of both tenants and users. This includes aeronautical infrastructure, physical facilities, landside parking and queuing, and roadway geometry. The latter two elements are important to ensure that the airport functions efficiently as an inter-modal facility. While cargo operations continue to experience solid growth, there are some constraints facing the Atlanta airport as it approaches its practical limitations.

Geographic positioning for cargo operations with clear advantages over potential competitors: The geographic location of an airport is a prime driver of its competitive position relative to other air cargo facilities. Capitalizing on the Delta hub and its ideal positioning in the Southeast, Atlanta is well situated to serve as a shipping facility for both domestic and international cargo. The airport can also function effectively as a consolidation and distribution center for north/south international goods movement as well. New and improved customs clearance technology and longer-range aircraft broaden the ability of the Airport to serve the global marketplace.

Bilateral and Open Skies Agreements: The use of U.S. airports by foreign carriers is based on international trade agreements which formally grant nations and carriers access to airports in other countries. Atlanta, because of its size and activity levels and ability to connect international passengers with domestic destinations, is usually one of the first markets which international carriers seek, and are granted access. The Delta acquisition of Northwest and its routes also broaden the international capacity and connectivity of Atlanta based operations. The acquisition has enabled Delta to reroute international passenger activity through Atlanta from former Northwest facilities, and to develop sufficient critical mass to warrant opening new routes to new destinations.

1.4 RECENT TRENDS IN THE AIR CARGO INDUSTRY

The goods movement industry has over the past decade experienced dramatic changes. Factors such as increased reliance on speed, e-commerce, and high speed logistics require that individual airports re-examine their business goals, market priorities, physical capacity, and the compatibility of the three in meeting the challenges of accelerating growth. Recent trends impacting the air cargo industry are described below. All of these trends impact Georgia's airports to varying degrees. From an industry perspective, the three highest cargo airports in the state are in Albany, Savannah, and Atlanta. Of these three, only Atlanta, with 95% of Georgia's total volume, has a significant international element and strongest domestic activity base. Although some of the variables are not air cargo specific, they reflect changes that affect air cargo volumes - particularly at Atlanta and its long-term compatibility with industry needs.

Growth in Air Passenger Traffic: Global forecasts indicate that the world passenger market could double over the next 20 years. All airports will be challenged to provide the resources to achieve targeted levels of service for both passenger and cargo growth. In instances where the capacity of an airport is exhausted, there will be pressure to shift the most easily relocated business segment – in most cases, cargo – to the nearest, most viable alternatives. Atlanta is the busiest passenger airport in the world and as such faces greater challenges than most airports in accommodating cargo growth, while addressing the critical needs of 90 million passengers. In the event it is eventually necessary to shift some cargo activity out of Atlanta, carriers would seek locations with low operating costs, existing infrastructure and levels of activity that would facilitate consolidations and transfer activity.

Key Shipping Windows: The general perception of the air cargo industry is that air cargo aircraft operate around the clock or operate only at night; however this is not the case. Integrators typically schedule departures on the west coast between 8 and 10 pm to reach Midwestern sort facilities by midnight. For Atlanta, this means substantial late-night operations to ensure timely departures (fortunately this coincides with the time of the most minimal chance of conflicts with passenger activity.) While not as time specific as the integrated carriers, freight carriers must also operate out of shipping windows to allow for

coordinated pickup and delivery at local and regional destinations, integration of transshipments, and restrictive overseas airport and government controls. The result is a clustering of operations and aircraft parking requirements. This causes a peaking of demand for aircraft parking in Atlanta on a daily basis in the morning and early evening.

Aircraft Parking: The increasing need for time-definite delivery and the growth of the global air cargo market in general (the 2009 recession not withstanding) continue to drive the market. In many instances, the cargo cannot be carried in the belly of passenger aircraft (because of size or volume of the total shipment). This has accelerated the utilization of freighter operations. While this trend impacts airports differently, Hartsfield-Jackson is an attractive market for international shippers, and based on long-term projections should see its freighter operations recover from the recent reductions. Albany handles the presence of UPS who have established a niche market served by air. Savannah has an air cargo market that is almost exclusively based on FedEx activity and should grow in line with the local demographics. The anticipated result at a macro level will be increased demand for aircraft parking at airports that typically handle in excess of 100,000 tons of air cargo annually, while smaller niche airports could gain or lose freighter traffic based on truck substitution and integrator strategies.

The Growth of Truck Substitution: One of the most difficult variables to evaluate in air cargo is the truck substitution component. Many air cargo facilities are operating to a great extent as truck terminals in which some shipments into the terminals are being delivered to their final destination by truck and others are being delivered through the use of air cargo. However, it is difficult to measure the volume of truck-to-truck traffic because reporting is not systematically done for truck traffic at airports. Airports cannot realistically evaluate space demands, effectively plan for and phase new development, or fully capture business opportunities without careful consideration of the truck substitution component. Additionally, as truck substitution continues to play a greater role because of cost and security constraints, airports must address the fact that an air cargo facility is an inter-modal facility, and must be designed to accommodate trucks as well as aircraft.

E-Commerce: Many of the shipments generated by home shopping networks, catalogue shopping, and most recently, e-commerce, require specialized facilities for efficient processing and expedited delivery. Accordingly, these shipments have a greater tendency to move by air or expedited trucking. This has accelerated demand for air cargo operations in general and freighter operations in particular.

Manufacturing Creep: Manufacturing facilities, particularly those focused on time sensitive products, in response to demand for faster delivery are moving and/or locating key warehouse facilities closer to airports, or on airport property. This reduces inventory, trucking costs, and staffing requirements, while increasing levels of customer service. The significant and growing amount of state-of-the-art distribution center facilities in proximity to airports makes this trend important to track.

High-speed Logistics: The changes in manufacturing and shipping are giving rise to the design of new high-speed logistics facilities that can effectively integrate a number of diverse industry segments. The facilities can handle throughput and sortation, kitting (minor assembly), and returns, as well as traditional operations. These value added distribution centers can be major job generators, in some cases, approaching the employment levels of traditional manufacturing operations. While the size of these buildings (often exceeding 500,000 ft^2) makes them unlikely to occur on airports, they can be accommodated in some of the newer industrial parks that have been developed throughout Georgia such as the new parks in Braselton along I-85 or the Centerpoint Intermodal Center in Savannah.

Building Technology: As a result of the escalating cost of storing goods, and the shortage of on-airport property, modern cargo facilities are being designed to emphasize speed of transition rather than warehousing. The result is taller buildings to handle highly mechanized equipment with sufficient depth and adequate airside and landside doors. It should be noted, however that not every air cargo operation requires sophisticated equipment. The demand is a function of the size of the operation, the nature of the cargo, the scheduling needs of the shippers and forwarders, and budget. New security requirements may eventually necessitate facility modifications that could reduce existing floor capacity and require more internal storage.

Aircraft Technology: Modern freighters are more fuel-efficient, have greater range, and carry larger payloads. This trend is most clearly illustrated by the number of orders for the Boeing 777 and Boeing 747-800. The ability of new aircraft to over-fly traditional points of entry, as well as the inability of many airports to accommodate the new aircraft will affect the selection of origin and destination airports. The Boeing 747 will carry 110-120 tons of cargo while a Boeing 777 can carry approximately 90 tons of cargo. The belly component of the new Airbus 380 passenger aircraft will deliver cargo volumes similar to what is typically handled in today's routine shipments on Boeing 747's.

2.0 Georgia Air Cargo Infrastructure

This report's air cargo assessment was approached from both a quantitative and qualitative perspective. While historical data and trend lines are important considerations in understanding present and future demand for air cargo, the economic swings of the past decade create substantial issues with trend line analysis. The air cargo industry changed significantly after September 2001. Carriers reevaluated their business strategies to include routings, profit centers, and fleet mix. The shift to regional jets as airlines "right-sized" their fleets reduced belly capacity and continued to push domestic air cargo to trucks. After a brief recovery period in the mid-2000s, Severe Acute Respiratory Syndrome SARS, the fuel crunch, and the recession of 2009 have distorted trend lines substantially.

Applying typical forecasting techniques to recent experience would indicate negative growth. Therefore, while the statistical information is available, to anticipate future growth FAA forecast information was utilized and supplemented by a survey and interview process with the airports, key carriers, and ancillary and supporting businesses. In addition, the consulting team drew from information done recently in broad market analyses and reviews of industry data to create a more comprehensive base for understanding the regional air cargo demand dynamic.

The analysis incorporated two other elements – a review of the infrastructure and facilities at Georgia's primary air cargo airports and a comparative analysis of activity at other airports to place Georgia air cargo in a more comprehensive context.

2.1 AIR CARGO INFRASTRUCTURE AND OPERATIONS

The location and success of an air cargo operation is dependent on several key factors that were discussed earlier in this report. In the state there are more than 100 public access airports, however not all could be considered ideal for supporting air cargo operations. **Exhibit 2-1** illustrates the Georgia airports identified as theoretically most suitable for cargo activity.

EXHIBIT 2-1
GEORGIA AIR CARGO FACILITY (EXISTING OR POTENTIAL) BASED ON RUNWAY LENGTH

CODE	FACILITY NAME
ATL	HARTSFIELD–JACKSON ATLANTA INT'L.
AGS	AUGUSTA REGIONAL AT BUSH FIELD
BQK	BRUNSWICK GOLDEN ISLES
LSF	LAWSON ARMY AIR FIELD (FORT BENNING)
MGE	DOBBINS AIR RESERVE BASE
SVN	HUNTER ARMY AIRFIELD
SAV	SAVANNAH/HILTON HEAD INT'L.
VLD	VALDOSTA REGIONAL
VAD	MOODY AIR FORCE BASE
WRB	ROBINS AIR FORCE BASE

Runway Length

To identify the airports with cargo activity and that are most relevant to this analysis several criteria were applied. The primary criterion was the basic requirement that virtually all commercial carriers have for cargo operations: adequate runway length. An air cargo operation that includes commercial aircraft typically requires a runway length of 8,000 feet for domestic operations and 10,000 feet for international. (Although aircraft can operate from shorter runways the determining factor is the weight of a fully loaded plane for takeoff).

Hartsfield-Jackson has a maximum runway length of 11,890 ft. Its other runways are 10,000 ft. and three at 9,000 ft. which enables it to comfortably accommodate the needs of international carriers that fly large wide body aircraft. SAV has a runway length of 9,351 ft. -- longer than the 8,000 ft. minimum -- which enables it to meet the needs of the domestic fleet they serve. ABY has a runway length of 6,601 ft.; normally this would not be acceptable for commercial service, but meets the service needs of UPS which flies relatively smaller aircraft into the facility and operates those aircraft for relatively short distances.

These ten airports were then qualitatively measured against the Air Cargo Success Factors and the results were summarized in Table 1 on the next page. The potential for each factor is indicated as green for "high", yellow for "medium", and red for "low". Designation as a military facility was not considered other than from the perspective that if available, there would be substantial physical capacity.

As the graphic indicates, only Atlanta, and to a lesser extent Savannah meet most of the criteria. This is because the growth of an airport as a cargo facility extends well beyond its physical attributes.

TABLE 1
AIRPORT AIR CARGO COMPATIBILITY

Code	Facility Name	Passenger Demand	Production/ Consumption	Lift	Business Infrastructure	Physical Capacity	Bilaterals	Access	Geographic Location
ATL	Hartsfield - Jackson Atlanta Intl	High	High	High	High	Medium	High	High	High
AGS	Augusta Regional At Bush Field	Low	Low	Low	Low	Medium	Low	Medium	Medium
BQK	Brunswick Golden Isles	Low	Low	Low	Low	Medium	Low	Medium	Medium
LSF	Lawson AAF (Fort Benning)	Low	Low	Low	Low	High	Low	Medium	Medium
MGE	Dobbins Air Reserve Base	Low	Low	Low	Low	High	Low	Medium	Medium
SVN	Hunter AAF	Low	Low	Low	Low	High	Low	Medium	Medium
SAV	Savannah/Hilton Head Intl	Medium	Medium	Medium	High	Medium	Low	High	High
VLD	Valdosta Regional	Low	Low	Low	Low	Medium	Low	Medium	Medium
VAD	Moody AFB	Low	Low	Low	Low	High	Low	Medium	Medium
WRB	Robins AFB	Low	Low	Low	Low	High	Low	Medium	Medium

Legend:
High
Medium
Low

Annual Tonnages

The consultant team also examined volumes at Georgia's airports to identify where air cargo is currently moving. As indicated in Table 2 on the next page, the airports with measurable activity levels above 1,000 annual tons based on cargo volumes for years 2008 and 2009 were:

1) Hartsfield-Jackson airport (ATL),
2) Southwest Georgia Regional Airport in Albany, and
3) Savannah International Airport.

The tonnage volumes at these three airports were: 663,724 tons; 26,076 tons; and 5,666 tons respectively. None of the other airports in the state moved more than 600 tons for the year of 2009. Therefore, developing an understanding of air cargo at these three airports is the critical element to understanding air cargo for the state.

TABLE 2
GEORGIA ANNUAL AIR CARGO VOLUMES, 2008 & 2009

	Month	ATL (Atlanta, Hartsfield-Jackson)	ABY (Albany Dougherty County)	SAV (Savannah International)	SVN (Savannah, Hunter Army Air Field)	CSG (Columbus Metropolitan)	WRB (Macon, Robins Air Force Base)	AGS (Augusta, Bush Field)	Others (14)
2008	Jan	62,622	2,688	654	-	15	-	2	2
	Feb	67,228	2,520	630	-	14	-	4	2
	Mar	59,628	2,594	170	-	2	-	2	4
	Apr	69,588	2,787	505	84	16	145	6	8
	May	67,613	2,922	510	90	16	-	2	2
	Jun	64,202	2,550	453	137	16	-	3	3
	Jul	62,107	2,613	463	-	15	-	2	-
	Aug	62,744	2,650	487	39	15	-	1	5
	Sep	59,483	2,508	476	-	14	-	4	7
	Oct	64,539	2,795	514	-	16	-	3	5
	Nov	54,515	2,214	428	-	13	-	2	-
	Dec	53,768	2,183	385	-	11	-	1	-
	Total	**748,037**	**31,024**	**5,675**	**350**	**163**	**145**	**32**	**38**
2009	Jan	48,933	2,306	380	-	15	-	1	-
	Feb	47,287	2,064	350	-	15	-	1	2
	Mar	58,634	2,046	509	-	15	102	3	-
	Apr	52,958	2,148	361	15	13	-	2	-
	May	51,934	2,280	528	-	13	39	1	3
	Jun	51,400	2,235	356	-	13	-	2	-
	Jul	57,349	2,249	523	-	17	-	2	-
	Aug	54,898	2,070	491	-	13	-	1	-
	Sep	56,131	2,203	537	37	14	-	2	-
	Oct	69,978	2,270	575	-	25	-	2	3
	Nov	56,350	1,880	480	361	11	-	1	-
	Dec	57,872	2,325	576	108	11	-	1	-
	Total	**663,724**	**26,076**	**5,666**	**521**	**175**	**141**	**19**	**8**

Source: US DOT Schedule T-100 data

2.2 APPROACH PROCEDURES

Also important for air cargo considerations were the airport's navigational aids that assist in landings. An aircraft preparing for a landing is considered to be "on approach". Modern commercial aircraft rely on technology and equipment to help guide the plane to a successful landing. A precision approach is both sophisticated and expensive. The price is a critical factor in determining the cost-benefit of its installation. It includes an Instrument Landing System (ILS), and specific lighting requirements and runway markings. There are three levels of refinement for an instrument landing system - CAT I, II and III. Each brings the aircraft in with a more precise degree of guidance from the least to the greatest.

As the plane is flying in, electronics of the ILS are linked to the precision markings on the runway to aid pilots. Commercial cargo aircraft typically will not utilize an airport that does not have an ILS.

Runway lengths & approach procedures for 15 major U.S. airports are in Table 3.

TABLE 3
COMPARATIVE CARGO AIRPORT INFRASTRUCTURE
RUNWAY LENGTH AND APPROACH SYSTEM

Airport		Runways		ILS
Facility Name	**Code**	**Number**	**Longest**	**CAT**
Dallas/Fort Worth International	DFW	7	13,401	II & III
Chicago O'Hare International	ORD	7	13,001	II & III
Houston/George Bush Intercontinental	IAH	5	12,001	II & III
Hartsfield - Jackson Atlanta International	**ATL**	**5**	**11,890**	**II & III**
John F Kennedy International	JFK	4	14,511	II & III
Miami International	MIA	4	13,000	I
Orlando International	MCO	4	12,005	II & III
Cincinnati/Northern Kentucky International	CVG	4	12,000	II & III
Washington Dulles International	IAD	4	11,501	II & III
Memphis International	MEM	4	11,120	II & III
Nashville International	BNA	4	11,030	II & III
Lambert-St Louis International	STL	4	11,019	II & III
Charlotte/Douglas International	CLT	4	10,000	II & III
Louisville International	SDF	3	11,890	II & III
Piedmont Triad International	GSO	3	10,001	II & III
Huntsville International	HSV	2	12,600	II
Savannah/Hilton Head International	**SAV**	**2**	**9,351**	**I**
Southwest Georgia Regional	**ABY**	**2**	**6,601**	**I**

All 15 airports in the table have at least one 10,000+ ft. runway and have precision approach procedures which are detailed in the next section of this report.

The last broad screening criterion to consider for cargo-ready airports is available capacity. In Georgia, state air cargo volumes during the recent economic downturn decreased by nearly 25% since 2006. A review of the available capacity at Georgia airports indicates sufficient room for expansion to accommodate growth for the next twenty years.

3.0 Georgia Air Cargo Volumes

3.1 HISTORICAL AND EXISTING CARGO VOLUMES

As an introductory step in the analysis, the consultant team looked at the historic cargo volume data at the three Georgia target airports. That review, which focused most closely on statistics that were available at the time for the years 2006 to 2009, showed cargo volumes declining as the national economic slowdown occurred.

As indicated in **Table 4**, the tonnage decline in 2007 was relatively small at Atlanta compared to 2006, while the other two Georgia airports studied showed modest increases. The decline for all three facilities started in 2008; in 2009 the drop was in double-digit percentages. This pattern was largely driven by the following industry trends;

- Reduced domestic air cargo capacity based on greater use of regional jets
- Depletion of existing inventory levels for economic reasons
- Increased use of trucks to substitute for shorter-haul cargo trips

TABLE 4
GEORGIA TOP THREE CARGO AIRPORT STATISTICS:
REPORTED CARGO VOLUMES DURING 2006-2009 (METRIC TONS)

	2009	% Change	2008	% Change	2007	% Change	2006
Hartsfield - Jackson Atlanta International (ATL)	563,139	-14.1%	655,277	-8.4%	715,359	-3.1%	738,180
Savannah / Hilton Head International (SAV)	6,469	-20.9%	8,181	-16.3%	9,780	6.1%	9,222
Southwest Georgia Regional (ABY)	23,282	-15.9%	27,700	-5.1%	29,183	3.2%	28,269

Source: ATL and SAV source is ACI-NA; ABY source is the L&B T-100 Database
NOTE: Rounded to the nearest whole number

For the years that data was available, declining cargo numbers in Georgia were in line with the national market trends. In fact, 15 major U.S. airports in the eastern U.S. saw cargo tonnage down across the board with the exception of two markets: Cincinnati / Northern Kentucky International Airport (CVG) and Saint Louis-Lambert International Airport (STL). CVG saw an increase due to DHL's relocation of international operations back to CVG after shutting down their operation at Wilmington, Ohio. STL's data was due to a series of Asian test

flights which contributed to a temporary spike in volumes -- not a sustained increase. Table 5 tracks cargo activity for all 15 major U.S. airports between 2006 and 2009.

TABLE 5
COMPARATIVE AIRPORT CARGO STATISTICS
CARGO VOLUME COMPARISON 2006-2009 (METRIC TONS)

	2009	% Change	2008	% Change	2007	% Change	2006
Memphis International (MEM)	3,697,054	0.0%	3,695,438	-3.8%	3,840,491	4.0%	3,692,081
Louisville International (SDF)	1,949,528	-1.3%	1,974,276	-5.0%	2,078,947	4.8%	1,983,032
Miami International (MIA)	1,557,401	-13.8%	1,806,770	-6.0%	1,922,985	5.0%	1,830,591
John F. Kennedy International (JFK)	1,144,894	-21.1%	1,450,605	-9.7%	1,607,050	-1.8%	1,636,357
Chicago O'Hare International (ORD)	1,047,917	-21.3%	1,332,123	-13.1%	1,533,606	-1.6%	1,558,235
Dallas / Fort Worth International (DFW)	578,906	-12.1%	658,544	-9.1%	724,140	-4.4%	757,856
Hartsfield - Jackson Atlanta International (ATL)	**563,139**	**-14.1%**	**655,277**	**-8.4%**	**715,359**	**-3.1%**	**738,180**
George Bush Intercontinental (IAH)	372,662	-9.6%	412,217	0.7%	409,193	0.0%	409,122
Dulles International (IAD)	292,769	-12.3%	333,845	-6.9%	358,527	2.2%	350,826
Orlando International (MCO)	137,150	-14.1%	159,608	-12.8%	183,070	-7.5%	198,009
Cincinnati / Northern Kentucky International (CVG)	133,125	266.7%	36,300	-8.5%	39,691	-8.3%	43,289
Lambert - St. Louis International (STL)	110,551	36.4%	81,065	-2.6%	83,251	-2.7%	85,551
Charlotte / Douglas International (CLT)	94,098	-18.1%	114,916	-5.9%	122,149	-17.7%	148,463
Piedmont Triad International (GSO)	80,639	16.2%	69,421	-3.8%	72,194	-5.5%	76,363
Huntsville International (HSV)	59,546	-19.2%	73,731	-7.0%	79,307	14.2%	69,448
Nashville International (BNA)	49,030	-28.3%	68,418	0.7%	67,917	0.0%	67,893
Southwest Georgia Regional (ABY)	**23,282**	**-15.9%**	**27,700**	**-5.1%**	**29,183**	**3.2%**	**28,269**
Savannah / Hilton Head International (SAV)	**6,469**	**-20.9%**	**8,181**	**-16.3%**	**9,780**	**6.1%**	**9,222**

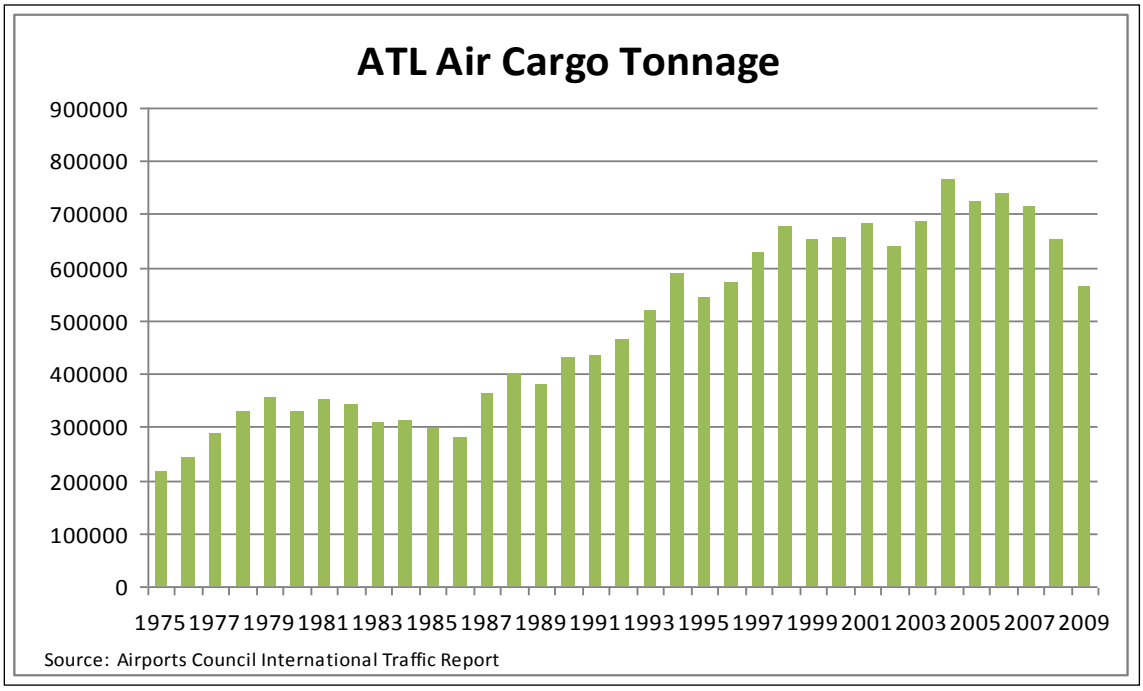
Source: ATL and SAV data came from ACI-NA Statistics

Table 6 reflects a 35 year history for cargo data at Hartsfield-Jackson. At the time of this writing, it is anticipated that volumes will recover to a certain extent in 2010. However, it will be necessary to look at a three year trend to get a more accurate determination on the extent to which the Atlanta market has recovered and stabilized.

It is worth noting that in 2010, Hartsfield-Jackson broke into the top 10 air cargo airports in North America. That year it clinched the #10 spot which it has held to the current day (Source: ACI-NA).

Table 7 reflects the market reversal that the industry has experienced in the first six months of 2010, compared to the levels of activity in the years 2008 and 2009. The data are for six large airports and include Hartsfield-Jackson. All of the airports experienced declines for the first six months of the preceding years and show positive growth for the corresponding period in 2010.

TABLE 6
HARTSFIELD-JACKSON AIR CARGO TONNAGE



As Table 7 indicates, while the industry was recovering, at the time of this report's original release the rebound had not yet brought the primary cargo airports that compete with Atlanta back to 2008 levels.

TABLE 7
JANUARY – JUNE CARGO VOLUMES, 2008-2010 (METRIC TONS)
COMPETITIVE AIRPORTS - FIRST 6 MONTHS OF YEAR COMPARISON

	YTD 2010	% Change	YTD 2009	% Change	2008
ATL	312,121	20	260,081	-24	344,109
DFW	310,498	19	259,347	-22	334,888
EWR	366,692	14	320,154	-20	400,679
JFK	631,727	25	502,503	-24	669,577
MIA	896,263	10	814,002	-12.7	933,488
ORD	609,501	11	547,590	-27	758,395

Based on the 2007 Global Insight Transearch freight flow database, the origins and destinations for Georgia's domestic air cargo were fairly dispersed throughout the U.S. As shown in Tables 8 and 9, California was the highest origin state comprising 13 percent of the originating air cargo traffic and Tennessee was the largest destination of domestic air cargo with 18 percent of the flows.

Transearch data also provided estimates of the commodity distribution for air cargo. Table 10 shows that roughly one-third of all of Georgia air cargo can be categorized as "miscellaneous mixed shipments". "Mail and contract traffic" represents another 21 percent of total volume. Over half of the air cargo in Georgia is from one of these two commodities; the other 18 commodities represent the remaining portion of the air cargo for Georgia.

TABLE 8
TOP ORIGIN STATES FOR GEORGIA'S DOMESTIC AIR CARGO, 2007

Domestic Origins of Air Cargo Traffic	Percent of Total Tons
California	13%
Texas	7%
Indiana	7%
New York	7%
Tennessee	6%
Other States	58%
Total	**100%**

TABLE 9
TOP DESTINATION STATES FOR GEORGIA'S DOMESTIC AIR CARGO, 2007

Domestic Destinations of Air Cargo Traffic	Percent of Total Tons
Tennessee	18%
Texas	16%
Florida	14%
California	6%
Ohio	5%
Other States	42%
Total	**100%**

TABLE 10
COMMODITY DISTRIBUTION FOR GEORGIA AIR CARGO, 2007

Commodity	Percent of Total Tons
Misc. Mixed Shipments	33%
Mail Or Contract Traffic	21%
Machinery	9%
Chemicals Or Allied Products	9%
Transportation Equipment	8%
Electrical Equipment	5%
Printed Matter	3%
Precision Instruments, Photo Equipment, Optical Equipment	2%
Apparel Or Related Products	2%
Fabricated Metal Products	2%
Pulp, Paper Or Allied Products	1%
Rubber Or Misc. Plastics	1%
Food Or Kindred Products	1%
Fresh Fish Or Marine Products	1%
Misc. Manufacturing Products	1%
Farm Products	1%
Textile Mill Products	< 1%
Clay, Concrete, Glass Or Stone	< 1%
Leather Or Leather Products	< 1%
Primary Metal Products	< 1%
Total	100%

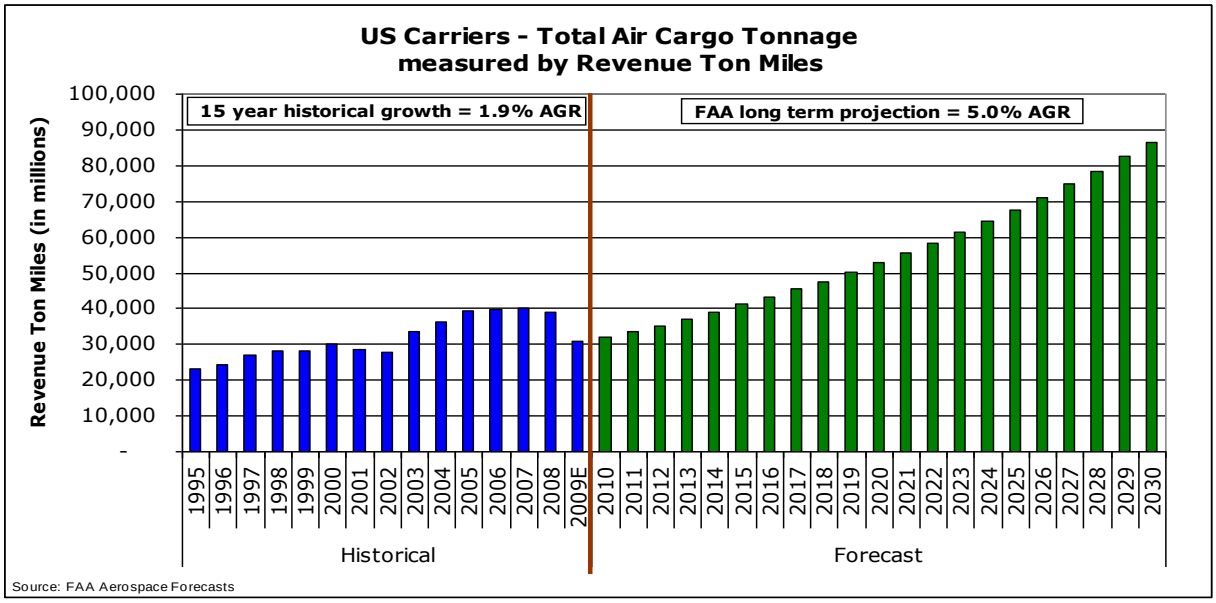
3.2 Cargo Volume Forecast

Globally, forecasts of air cargo volumes over the next 25 years predict a tripling over current volumes. Within the U.S., data supplied by the Federal Aviation Administration (FAA) data in Table 11 depicts historical and forecast cargo. For the U.S., the historical aggregate growth rate (AGR) from 1995-2009 was 1.9 percent (note: this historical growth was tempered by the 9/11 incidents and the recent economic downturn). The FAA Forecast AGR for the years 2010 to 2030 predicst 5.0 percent nationwide; locally, this growth could be slightly greater or less for Atlanta, but it is a reasonable planning guide. The long-term FAA growth forecast is consistent with predictions from the International Air Transport Association and Boeing which forecast growth from 4 to 6 percent.

In conjunction with this long-term air cargo growth, additional on-airport roadway access and truck parking will be needed in the long run to prevent

queuing, maneuvering, and loading problems. When combined with passenger growth, particularly at Hartsfield-Jackson, the constraints of the land envelope warrant business strategies, lease management practices, and physical planning that will optimize airport property and its ability to serve customers.

TABLE 11
FAA FORECAST CARGO GROWTH: REVENUE TON MILES



4.0 Survey of Air Cargo Stakeholders

As part of this report, discussions were held with major air cargo stakeholders in Georgia to collect information and learn industry perspectives. The focus of these discussions centered on Georgia's three prime air cargo airports: Hartsfield-Jackson Atlanta, Albany, and Savannah. Key businesses at each were identified and an informal questionnaire was sent with a telephone follow-up. The targeted organizations included the airport administration; carriers; freight forwarders; trucking companies who move freight; and Federal agencies such as Customs and Border Protection (CBP) and the Transportation Security Administration (TSA). In addition, economic development agencies and other companies that promote, monitor, and/or provide safeguards for air cargo activity were contacted. Each airport has unique characteristics and these aspects helped inform the identification of participants in the process.

Hartsfield–Jackson Atlanta International Airport (HJAIA)

This airport is considered one of the larger cargo gateways in North America, even though cargo volumes have decreased over the past decade. As of the time this report was produced -- prior to the growing presence of Southwest Airlines - Delta airlines was a focus as most of the airport's cargo tonnage is carried in the bellies of its passenger fleet. Not surprisingly, the air cargo community located in the Atlanta area is the largest of the three airports. Because of the presence of the Port of Savannah, there are a large number of freight forwarders in the State that focus on ocean-borne cargo and also utilize air cargo services.

The main cargo carriers (by volume) were provided by the airport. These carriers were contacted to provide input on their air cargo activities. They helped identify the top twenty regional freight forwarders.

Southwest Georgia Regional Airport (ABY)

UPS is the dominant air cargo carrier at the Albany Airport. There is also a small aircraft cargo operator and a small charter flight operation at this airport. Airport staff was the main source of information on air cargo activity at that airport.

Savannah International Airport (SAV)

Air cargo activity at Savannah is limited to regional jets or smaller aircraft with constrained belly cargo capacity. The annual air cargo tonnage was less than 7,000 tons – approximately one percent of the air cargo through the Atlanta

airport. The Savannah Airport staff provided most of the data which was supplemented by input from one main carrier. They reported a large freight forwarder 'community' in Savannah; however, their business is largely focused on ocean shipments and not air cargo.

4.1 REGULATORY AGENCIES

Airport stakeholders were asked about agencies, policies and regulations that impact their business. This produced a list of the most involved Federal agencies and their relevant guidelines. Since 9/11 the operations of the air cargo community have become increasingly influenced by the governmental entities that, in part, oversee shipments. These agencies collectively have two functions: interdiction and facilitation. Interdiction includes the monitoring and control of regulated goods and the enforcement of rules and regulations regarding safety and security. Facilitation is the responsibility of ensuring that the flow of goods into the U.S. is maintained without adverse impact on the business community. The focus of this discussion is on the supervision of goods movement by the following organizations:

- Transportation Security Administration (TSA);
- Customs and Border Protection (CBP);
- Food and Drug Administration (FDA);
- Department of Agriculture (DOA); and
- U.S. Fish and Wildlife (FWS)

The TSA, CBP and DOA are part of the Department of Homeland Security (DHS) and have the most interaction with the air cargo industry of all Federal agencies. TSA is charged with nationwide implementation of security measures for screening and inspecting all cargo. The organization was formed as a result of the events of the 9/11 attacks on the U.S. In August 2010, TSA achieved one of its mandated milestones - 100% screening of cargo loaded into the belly of passenger planes.

In general, air cargo industry participants proceed under the assumptions that:

- Screening and inspection processes will eventually be extended to non-passenger cargo aircraft, which will include the fleets of freighter operators and possibly integrators;
- There will be a continuing effort to push screening to the initial points of origin (the shippers); and
- Tracking of manufacturers that ship freight will continue.

On the facilitation side, CBP is primarily in charge of collecting duties from international cargo coming into the U.S. and reviewing the accuracy of the data on the paperwork that accompanies international shipments. Historically, CBP has been focused on safety and security - ensuring that imported cargoes were

inspected and cleared and outbound cargo is screened according to the latest guidelines. As part of DHS, new cross training strategies are being developed to utilize CBP to their full staffing potential and capitalize on and enhance their industry knowledge base. This means that staff will now be able to shift between the passenger and cargo sides of the business, as well as assume some duties formally reserved for the Department of Agriculture. The CBP considers its challenge to identify and adapt the latest technology or combination of technologies that will address the security mandates while still enabling the smooth entry and flow of air cargo in the system. This pertains to their primary elements focused on air cargo – Customs, Agriculture, and Fish and Wildlife.

Air Cargo Community - Agency Issues

Interviews with the air cargo community identified several concerns which could impact future shipping patterns.

- Despite the efforts of the TSA to cross-train staff and increase their flexibility, they thought the overall availability of staff with adequate industry knowledge to perform the necessary tasks to ensure the smooth flow of goods varies from airport to airport. No issues were brought up for Hartsfield-Jackson or the other two Georgia airports.
- They thought increasing industry costs could partly be attributed to the increased screening and inspection of air cargo. It was unclear, in their opinion, whether the industry could sustain these costs over the long-term and what the overall impact could be on air cargo volumes. (Costs are completely borne by the private sector air cargo community and not subsidized by the federal government. Some thought these additional costs may possibly contribute to a shift of domestic belly air cargo to the trucking mode.)
- There was a thought that new security costs could deter demand for smaller-to-mid-size airports resulting in a loss of revenue and Federal funding, and potentially shifting domestic air cargo onto trucks.

4.2 CARGO FACILITY AND INFRASTRUCTURE PROFILE

The following section of the report describes the capacity of cargo facilities and aeronautical infrastructure at the Atlanta, Albany and Savannah airports using their data and inventory of available facilities and infrastructure along with details on their specifications, condition and occupancy. Tenants provided insights into building, ramp, roadway utilization, and the ability to accommodate operational processes.

Hartsfield-Jackson Atlanta International Airport (ATL)

The Atlanta airport has vibrant air cargo activity, with 13 air cargo carriers with regular operations at the airport and five charter air cargo airlines at the time of this report's completion. Being within a two-hour flight or one day of transport by truck to over 200 million people, it can reach 80 percent of American consumers.

Located eight miles south of downtown Atlanta and with ready access to four interstates (I-75, I-85, I-285, and I-20), the airport is also located within a 250-acre Georgia Free Trade Zone, FTZ #26. This facilitates trade and increases efficiency of companies doing business in the state by reducing operating costs and fees associated with international trade. More than 100 motor carriers provide expedited ground transportation for air cargo shipments to the Atlanta airport. The cargo services feature operations by more than 100 licensed customs brokers and 200 domestic and international freight forwarders.

Based on the cargo volumes and the logistics practices of the air cargo business community, Hartsfield-Jackson is positioned as a main consolidation point in the southeastern U.S. It has 11 buildings used for air cargo totaling approximately 1.55 million ft^2 and with relatively young building ages ranging from 10 to 35+ years. As of the date of this report, one older facility is being removed and a replacement facility is planned in its place.

As the air cargo industry continues to evolve, the general design and configuration of cargo facilities world-wide have been modified to accommodate faster 'throughput' to minimize 'dwell time' at the airport. This includes changing building depths to accommodate the needs of specific tenants or cargo operations and adding areas for specialized cargo such as perishables, high value goods, and live animals. Changes are occurring on the 'landside' to improve access for trucking and automobile needs: wider truck courts to handle larger trucks and relocating auto parking away from the areas in which the trucks typically operate.

To compile this report, available specifications and data on existing facilities were examined, and information from previous site visits to all cargo buildings was utilized to assess operating conditions and the compatibility of the buildings with demand. Hartsfield-Jackson is developing Building C in the South Cargo Complex subject to industry demand. Scheduled for completion in November 2015, the new Cargo C building will complete the South Cargo Facility complex on South Loop Road. It will be the same size, appearance and function as the three existing facilities and is developed with the intent to accommodate multiple tenant operations. The facility will have high bay central cargo operations with supporting facilities on a partial second floor. There will be a total of 128,566 gross square feet consisting of 104,538 square feet on the first

floor and 22,814 square feet on the second floor. In addition, the project will include landside improvements such as new employee parking and truck staging as well as relocation of an airfield access gate.[1]

Buildings and roadways were generally designed to accommodate tractor trailers. With today's trucks reaching 65 plus feet, most of the buildings have sufficient frontage (building to road distance) to accommodate parking without too much difficulty, but have limited truck queuing capacity. In the North Cargo Complex, access to full-length tractor-trailers is somewhat limited by relatively narrow building frontages, inadequate space for queuing, and need for improved roadway geometry. Overall, the major components of the operation function adequately although future growth will be constrained. The positioning of other landside infrastructure and facilities make correcting this a challenging issue.

Assuming an average weight of 15 tons per truck (per the American Trucking Association), each 100,000 tons of cargo over a 286-day cargo year would generate about 24 truck trips a day. (Note: This could vary substantially based on the nature of the cargo and the size of the trucks -- vans versus tractor-trailers). Using those figures, a very rough estimate of the total number of truck trips generated at the three Georgia airports is approximately 150 per day, which could have a substantial impact over the long-term. This could have one impact at the airport's cargo facilities where they typically have fairly limited parking for customers and employees, with the auto parking facilities usually not separate from trucking operations.

As a basis for this report's assessment of cargo facilities, the consultant team utilized planning criteria prepared in January 2001 by the McClier Aviation Group for the Air Transport Association (ATA). These criteria are shown in Table 12 and are rough estimates, which could vary based on specific tenant operations at each airport; in certain locations, the criteria may not be implementable because of physical constraints at the airport.

[1] www.atlanta-airport.com/Airport/Construction *(as of June 2, 2014)*

TABLE 12
ATA-PROMULGATED CARGO FACILITY SPECIFICATIONS

Trucking:	
Frontage:	Measuring approximately 130′ – 150′ from building to road
Separation:	12′6″ from centerline of truck to centerline of truck
Parking:	
Autos:	300 ft^2 per auto, 150 spaces per acre
Ratios:	3 – 8 auto spaces per 10,000 ft^2 of warehouse (based on operation)
Buildings:	
Depth:	150 feet
Spacing:	50 feet between columns
Height:	24 feet
Office:	10% - 15% of the total square footage
Doors:	
Trucking:	10′ x 10′
Container:	12′ x 12′
Airside:	18′ x 12′ high. At least 2 per leasehold
Ramp:	
Setback:	Aircraft 50 feet from the building
Ratios:	
Freighters:	1.50 – 1.75 ft^2 of ramp per square foot of warehouse
Integrator Spoke:	1.75 – 2.50 ft^2 of ramp per square foot of warehouse
Integrator Hub:	2.50+ ft^2 of ramp per square foot of warehouse

Source: Facility Planning Guidelines, Air Cargo Facilities, McClier Aviation Group, January 2001

The existing facilities at Hartsfield-Jackson were evaluated from two perspectives: compatibility of the buildings with the ATA guidelines and the how the current buildings and infrastructure could accommodate future growth. There are challenges on both levels because most buildings have characteristics that vary from ATA standards (which does not impact the operation) and have issues on the landside, where the dimensions, particularly the depth of the truck apron, can impede the operation of tractor-trailers and parking for employees and customers.

Airside Facilities

Exhibit 4.1 illustrates the location of the cargo complexes on the Airport. The three Atlanta cargo complexes known as North, Midfield, and South are illustrated in Exhibits 4.2, 4.3, and 4.4. As the exhibits indicate, there are a total of 27 aircraft parking pads distributed across two of the three cargo complexes – the North and the South. Specific patterns of use for available cargo ramp are difficult to isolate, given the split between public and leased ramp and the increasing use of ACMIs (charters that include Aircraft, Crew, Maintenance and Insurance). It is however, apparent that the need for more ramp and effective management of that ramp could be substantial areas of interest as cargo activity levels recover from the recent economic downturn.

Aircraft parking positions alone are not entirely representative of the total impact that ramp requirements have on the airport; carriers can have aircraft with an extended dwell time virtually eliminating the possibility of multiple uses of the parking position. When factored into the timing of shipping windows, available ramp space is further reduced. The ramp area is a 'common use area' and tenants noted that the assignment of available apron on an as-needed basis is acceptable but that the actual space can become constrained due to cargo activity.

Connections Within Airport and to Adjacent Routes

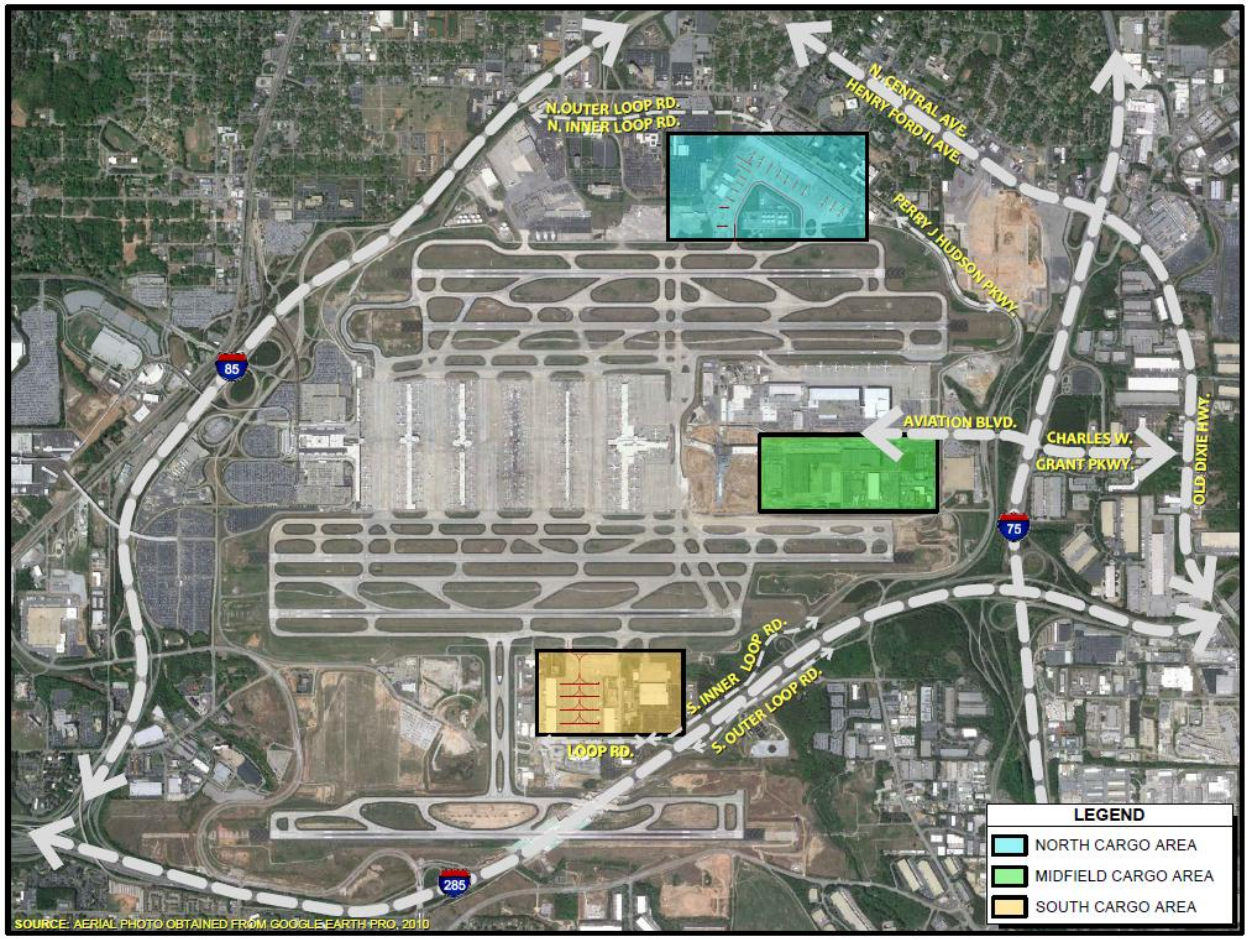
The location of Hartsfield-Jackson is generally bordered by Interstates 75, 85, and 285 which are important to air cargo ground access in/out the airport. The main circulation road on airport grounds is Loop Road which is an artery providing primary access to the individual cargo areas. North Loop Road provides access to the North Cargo Area from Interstate 85, South Inner Loop Road provides access to the South Cargo Area from Interstate 285, and Aviation Boulevard provides access to the Midfield Cargo Area from Interstate 75. This network of local access roads and interstate access locations provide a significant amount of capacity to connect Hartsfield-Jackson's air cargo traffic to other locations in the Atlanta metropolitan region and the southeast as a whole.

Cargo Building Summary

Table 13 provides a summary of the three Hartsfield-Jackson cargo buildings.

The North Cargo Complex is the largest in terms of office square footage and ramp square footage. It also has the most parking positions for aircraft and truck bays of all of the facilities. The North Cargo Terminal building contains 378,000 ft^2 of floor space plus additional space on a mezzanine level. The North Cargo Complex also includes a 600,000 ft^2 aircraft ramp; a building leased by UPS; another building leased by DHL/Airborne; a perishable goods refrigerated facility; and an equine center.

EXHIBIT 4-1
HARTSFIELD-JACKSON AIR CARGO COMPLEXES



The Midfield Cargo Complex is the largest in terms of warehouse square footage with over 500,000 ft^2 available to store goods. However, it does not include any ramps.

The South Cargo Complex is the airport's newest air cargo facility. It was completed in 1999 and added roughly 300,000 ft^2 of warehousing space. This makes it the smallest of all of the cargo complexes at the airport. This complex includes three buildings of roughly equal size. It also includes 8 aircraft parking spots, 126 truck bays, and a ramp of 700,000 ft^2.

Geographic constraints, existing leases with non-cargo businesses, and a need to accommodate passenger growth would typically inhibit the airport's ability to address future warehousing needs for increasing cargo tonnage. At the same time, the growing use of freighters would increase demand for aircraft parking. A broader, but no less significant issue is that landside operations indicate problems with access, trucking operations and vehicle parking, however the

immediacy of these issues have become less critical than they were five years ago due to the economic downtown.

From a building perspective the airport should have sufficient capacity to easily accommodate growth for the next five to ten years. This is supported by a proposed new building "C" in the South Complex will add more than 100,000+ ft² of capacity. There are additional sites available for new cargo facilities that can be added to accommodate future growth on an as needed basis, including a cargo apron for parking international freighters.

TABLE 13
HARTSFIELD-JACKSON CARGO BUILDING INVENTORY

Buildings	Warehouse Sq. Feet	Office Sq. Feet	Total Sq. Feet	Ramp Sq. Feet	Aircaft Park. Pos.	Truck Bays
North Cargo Complex						
North Cargo Building	346,840	53,160	400,000	520,000	13	135
Perishable Facility	32,000	8,000	40,000	40,947	1	10
Equine Center	19,600	4,900	24,500	40,947	1	6
UPS	19,000	5,000	24,000	198,633	2	11
DHL/Airborne	51,800	13,200	65,000	80,000	2	8
Mercury Intermodal	0	0	0	0	0	0
North Complex Total:	**469,240**	**84,260**	**553,500**	**880,527**	**19**	**170**
Midfield Cargo Complex						
USPS	100,521	16,270	116,791	0	0	29
Delta Domestic	250,142	27,794	277,935	No Ramp		97
Delta International	222,300	24,700	247,000			
Total Delta Air Lines	472,442	52,494	524,935			
Midfield Complex Total:	**572,963**	**68,764**	**641,726**	**0**	**0**	**126**
South Cargo Complex						
Building - A	100,000	20,000	120,000	700,000	2	34
Building - B	100,000	20,000	120,000		2	34
Building - D	100,000	20,000	120,000		2	34
South Complex Total:	**300,000**	**60,000**	**360,000**	**700,000**	**8[1]**	**102**
HJAIA Total Existing:	**1,342,203**	**213,024**	**1,555,226**	**1,580,527**	**27**	**398**

[1] Includes 2 aircraft parking positions for future Building C.

Sources: HJAIA Properties and Leasing; HJAIA Master Plan; 1995 HJAIA Cargo Report; Department of Aviation; Consultant Calculations.

EXHIBIT 4-2
HARTSFIELD-JACKSON NORTH CARGO COMPLEX

The North Cargo Complex is home to FedEx and UPS along with domestic carriers (other than Delta). A number of small cargo support operations are also housed in the facilities. There is a large concentration of freighter aircraft parking for FedEx and UPS (19 positions). The main buildings were built approximately 30 years ago and are narrower than the relatively newer facilities in the South Complex. The truck apron does not offer sufficient capacity to accommodate the massive daily queuing requirement for the FedEx operation and a solution to add space would be challenging due to existing infrastructure.

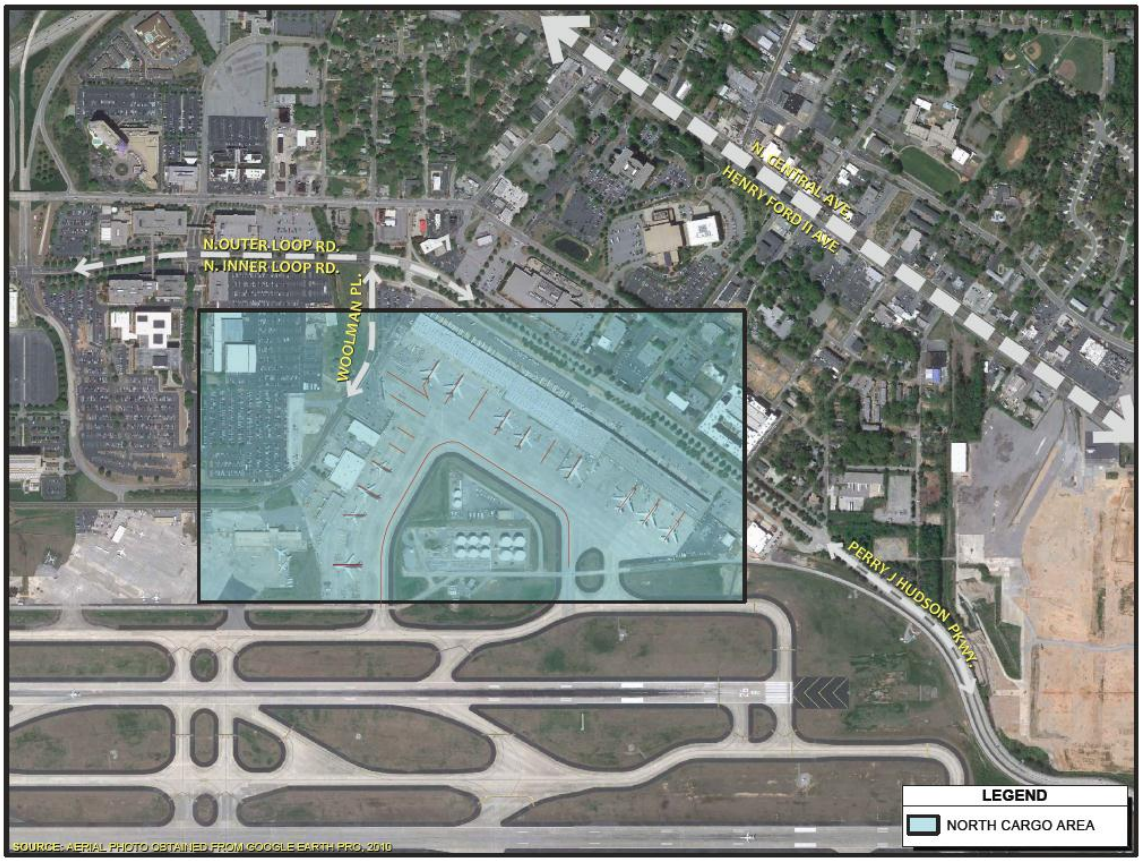


EXHIBIT 4-3
HARTSFIELD-JACKSON MIDFIELD CARGO COMPLEX

The Midfield Cargo Complex is essentially Delta's primary cargo hub. From an operating perspective, the cargo capacity is well within its constraints and has the ability to comfortably accommodate growth for the foreseeable future. Access to the Midfield Cargo Complex is provided via Aviation Boulevard. Since Delta does not fly cargo-only freighters, shipments are typically smaller. The large cargo volumes are attributable to the high numbers of Delta aircraft. There is available aircraft apron that is not used for cargo aircraft operations.

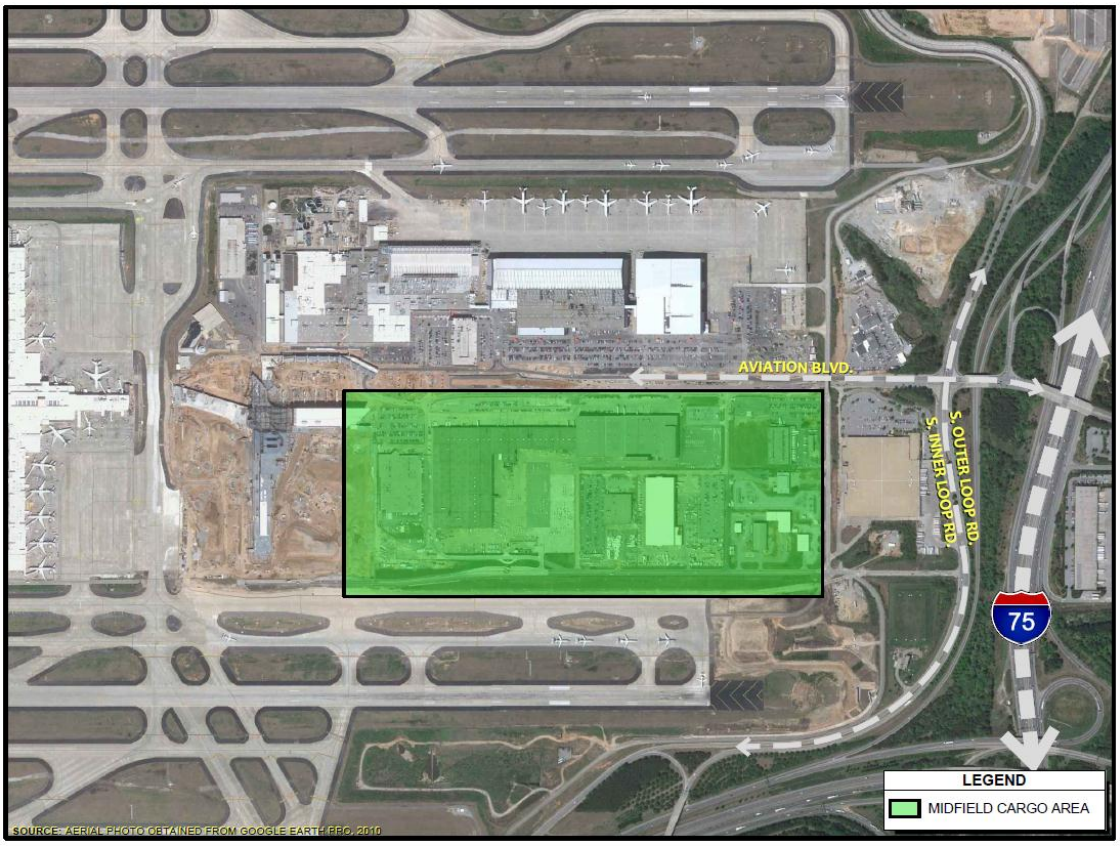
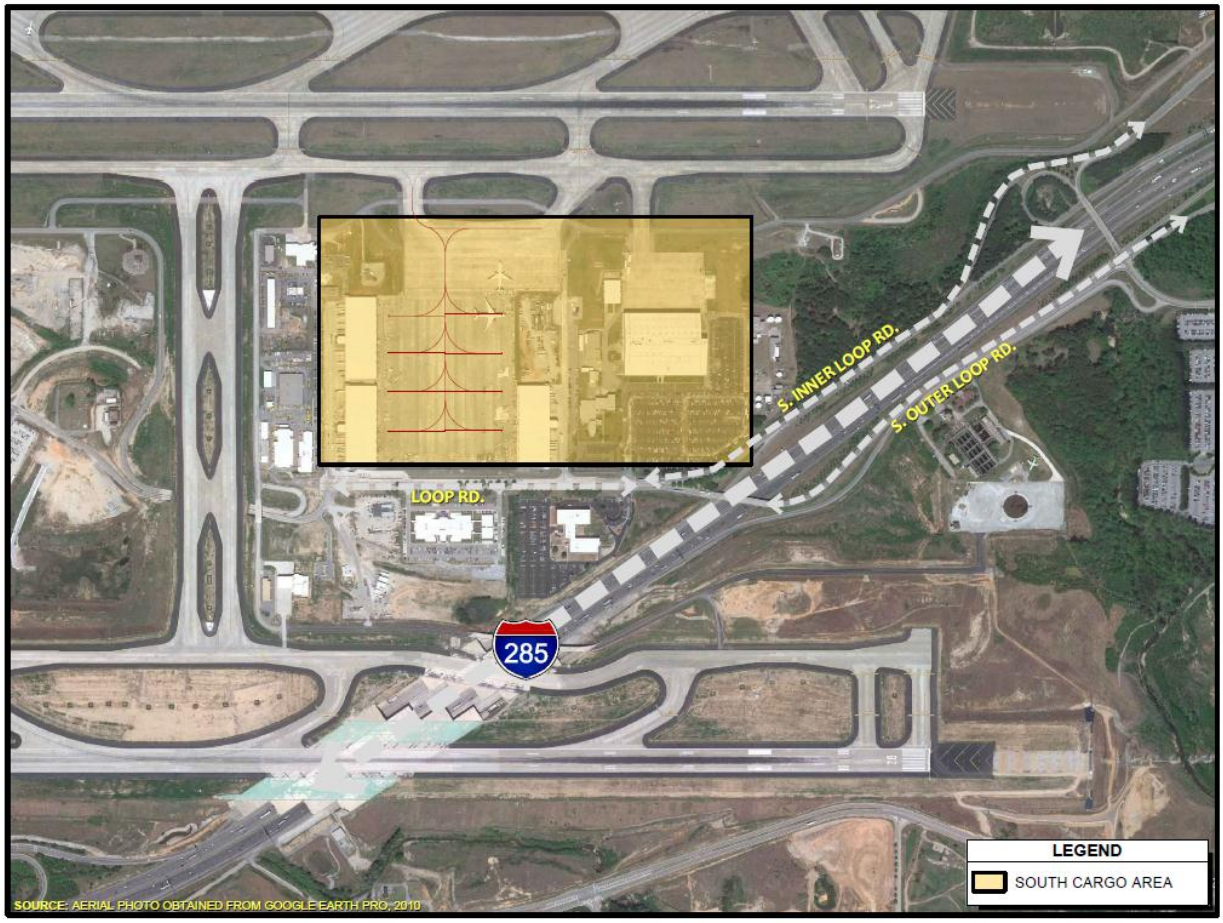


EXHIBIT 4-4
HARTSFIELD-JACKSON SOUTH CARGO COMPLEX

The South Cargo Complex has emerged as the Airport's international cargo center. It is the newest Complex with three of the four planned facilities already in place. There are eight formal aircraft parking positions (two per building) but the demand for wide-body freighter parking frequently exceeds that. There are some operating issues in the truck aprons regarding queuing and docking, however access to this complex is not an issue.



As cargo volumes rebound from the current recession and achieve the growth rates projected by the Air Transport Association, there are three critical challenges that the Atlanta airport cargo community faces over the longer term as air cargo volumes return to pre-recession levels:

- ***The need to develop additional aircraft parking, warehouse and office capacity for tenants and users in a constrained environment.*** More efficient building design and utilization, efficient use of all available suitable property, increased reliance on third party handling, and

reconfiguration of some existing areas should accommodate growth for the foreseeable future, but not without substantial investment. The actual amount of future demand for aircraft parking will depend on future demand, aircraft size, and carrier scheduling. Assuming a projected 50% increase in freighter demand, this could translate into the need for 13 positions and 800,000 ft^2 of apron over the next 40 years.

- ***The ability to facilitate and accommodate increased automobile and truck operations and parking requirements on frontages that are defined by an existing roadway infrastructure.*** Modifications to the North Loop Road and the entire Loop Road in general are difficult given the surrounding roadway infrastructure of the North and Midfield Cargo Complexes. The FedEx Facility in the North Complex **(Exhibit 4.2)** experiences congestion because of a constrained truck apron but this is not a function of the primary access road.

  There are currently some operating constraints at the South Complex **(Exhibit 4.4).** These however are also not as a result of the Loop Road, rather they reflect *maneuvering and parking issues in the truck aprons within the Complex*. If cargo volumes grow at the FAA forecast rate, there will be a substantial increase in truck traffic over the next 40 years. New facilities with improved landside capacity are important; fortunately, Hartsfield-Jackson has sufficient capacity to accommodate growth.

- ***The ability to accommodate long-term airport access issues in light of anticipated passenger and cargo growth.*** The primary access roads to the Airport could be faced with substantial growth in automobile traffic. This will occur primarily at I-85 Exits 71 (Riverdale Road) and 72 (Camp Creek Road) and I-285 Exit 61 (Atlanta Airport/Montgomery). One of the primary challenges of airports today is the delay factor caused by regional traffic. While there are currently no issues, and it is unlikely that increases in cargo activity will generate sufficient volumes of trucking to be problematic, it will be important for the Hartsfield-Jackson to monitor traffic levels relative to cargo access on the roadway side.

  As the Atlanta airport continues to grow, the airport will be confronted with the need to address forecast growth in a mature business environment, constrained physically and operationally by the internal and external roadway infrastructure, and paradoxically by the economic prosperity of the region. Regardless of improvements that can be made to the Airport's facilities, the internal roadway and access issues will need to be addressed over the long term.

Facility Observations

Facility observations in the North, Midfield, and South Cargo Complexes include ramp, building, and access to the facilities. Overall the facilities appear to be in

average-to-good condition with sufficient capacity to accommodate near-term requirements of the tenants and users with some considerations.

On the North Side, landside space is a concern for the integrators, both for employee parking and truck queuing. The airside ramp space is tight and in the event additional freighter parking is needed there may be maneuvering issues. When capacity constraints occur on the ramp, space is leased from a third party.

The major concern of the consultant team, confirmed by both direct observation and tenant and user feedback, is the on-airport roadway access and ability to queue and maneuver trucks. Roadway level of service is not good during FedEx peak hours in the late evening around the North Cargo, with a observable queuing extending from a quarter- to a half-mile (one lane of the two lane North Cargo Road is completely blocked). While this condition lasts for only about two hours, it represents inefficient operations for users. The most used route to access this part of the airport is South Fulton Parkway to Loop Road.

The air cargo stakeholders did have the following concerns:

- The truck queuing area for the south cargo facility is less than the space needed impeding flow and causing traffic congestion to the public roads. It takes three to four hours at times for trucks to reach the facility dock doors.
- Because cargo arriving on trucks sometimes travels hundreds of miles and drivers may be unfamiliar with the three cargo complexes at Hartsfield-Jackson, the freight forwarding community indicated that improved signage on and off airport to each cargo area might improve traffic flow.

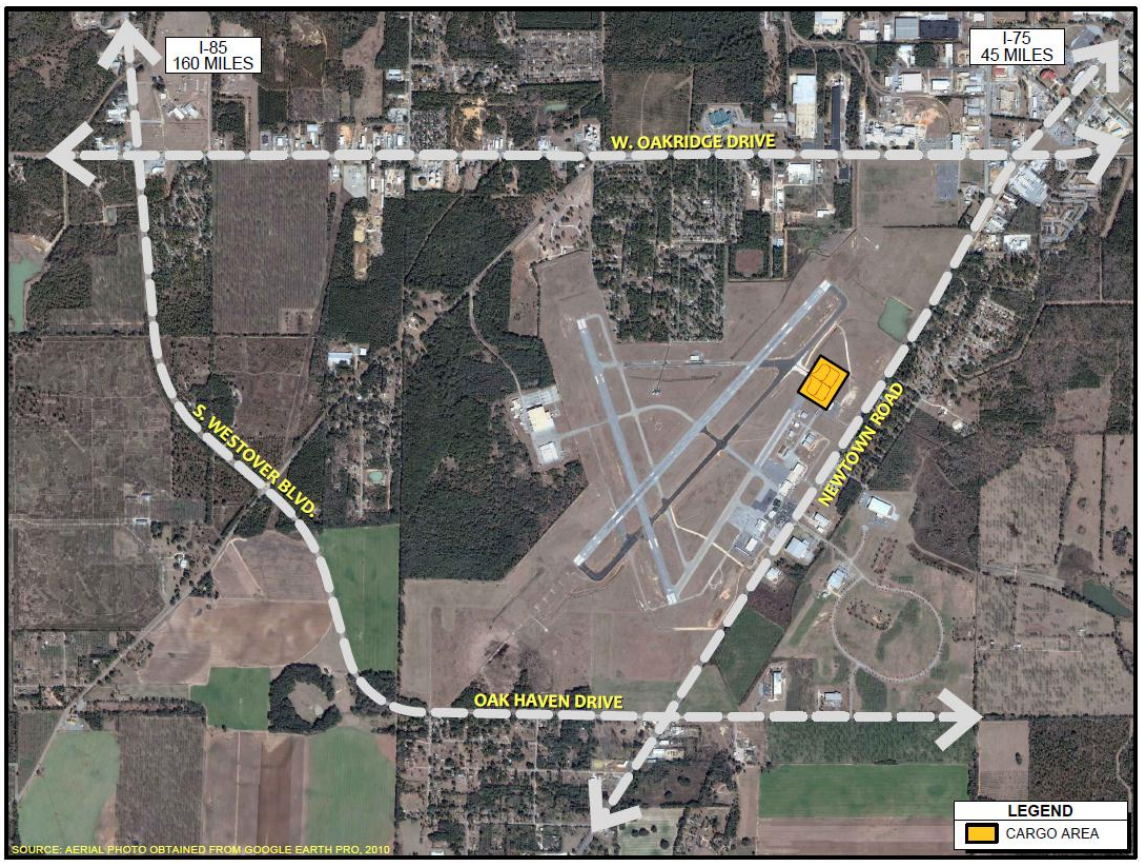
Southwest Georgia Regional Airport in Albany, Ga. (ABY)

ABY's cargo activity is focused on a UPS operation that connects to the main hub in Louisville, Kentucky. To inform this report, both the Albany Airport and UPS were contacted by phone to provide input. The airport is dependent on UPS for cargo volumes and impact to the local community. The information from the airport is based in large part on direct discussions with UPS.

Facility and Infrastructure Inventory

The Albany Airport has a single cargo facility that serves United Parcel Service (UPS) as shown in Exhibit 4-5. It is a stand-alone 5,265 ft² building that includes a 34,260 ft² cargo ramp area adjacent to 30,000 ft² of apron space leased for ground service equipment staging.

EXHIBIT 4-5
SOUTHWEST GEORGIA REGIONAL AIRPORT VICINITY MAP



Roadways

Given the relatively limited amount of trucking activity, the evening hours of operation, and the absence of passenger-related congestion, no issues were reported with the regional roadways or with highway access to the Airport's cargo facility. From the airport, trucks travel to the major interstates using various four-lane U.S. Routes and Georgia State Routes. Trucks destined for I-75 in the northbound direction likely travel approximately 45 miles on four-laned SR 300 to reach the interstate at Exit 99 near the city of Cordele. Trucks destined for I-75 in the southbound direction travel approximately 45 miles on four-laned US 82 before to reach I-75 near the City of Tifton. Trucks heading I-85 travel approximately 160 miles on four-laned US 82 in Georgia to ultimately reach the interstate near Montgomery, Alabama. Trucks destined to-or-through metro Atlanta also head northwest along four-laned US 82 to directly access I-185 in Columbus, which continued to merge onto I-85.

Savannah/Hilton Head International Airport (SAV)

Of the three Georgia airports discussed in detail in this report, Savannah has the lowest cargo activity levels. Data and analysis sometimes over-estimates the potential air cargo activity levels at SAV due to its proximity to the Port of Savannah. Despite the multi-modal infrastructure in the region, air cargoes and ocean borne cargoes are rarely compatible and "sea-air" shipping is very often not feasible for transporting goods. Air products are typically time sensitive, smaller, and lighter and far more expensive than the 'bulk' items moved on ships.

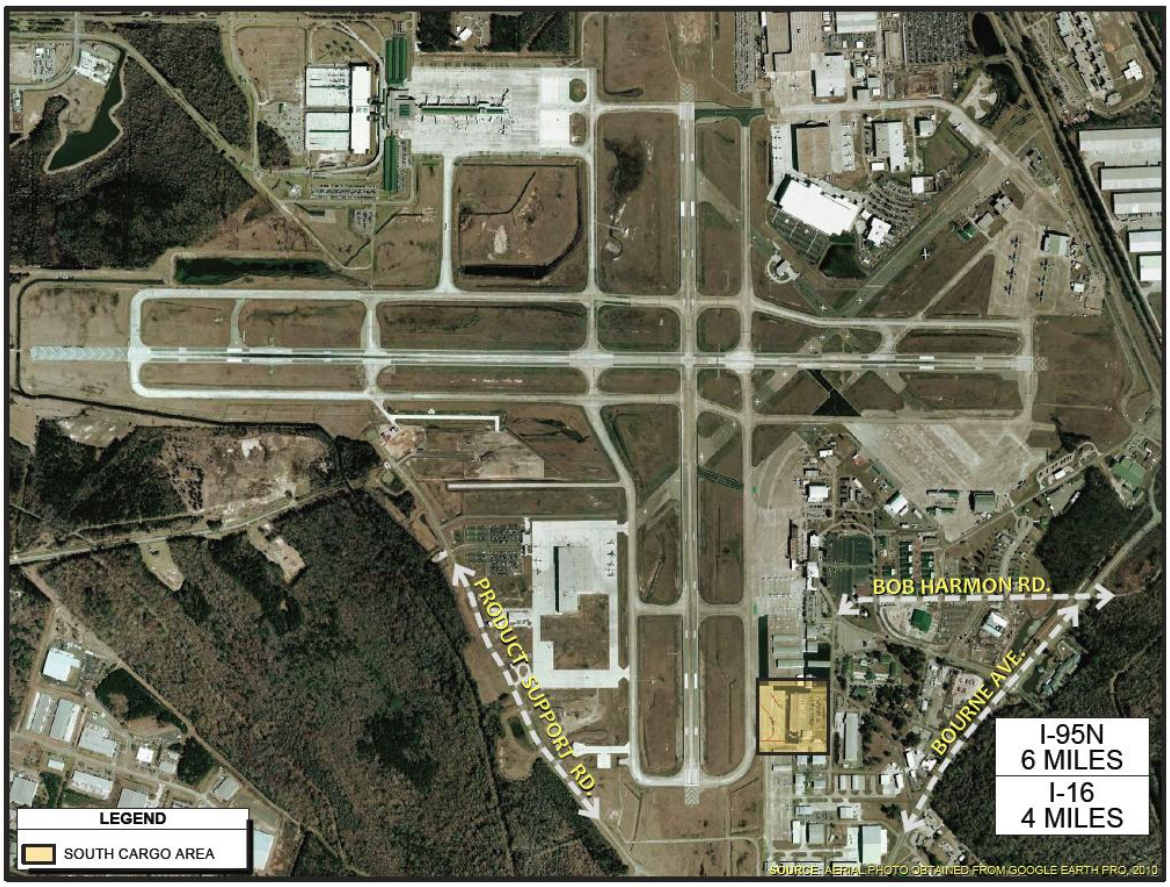
At the time this report was authored, the number of passenger enplanements is was estimated to increase from 821,000 in 2009 to 830,000 in 2010. The fleet mix at the Savannah airport is primarily regional jets with a number of smaller propeller-driven aircraft, none of which traditionally lend themselves to the efficient transport of significant amounts of cargo.

Facility Inventory

All of the airport cargo facilities are owned by the airport and the main cargo tenant is FedEx. As shown on Exhibit 4-6, there are only two facilities that are used for cargo operations and are shared by multiple tenants.

The larger air cargo building (Number 1224) is 26 years old. Its primary tenant is FedEx who shares the facility with DHL; Orange Peel Transport; Velocity Express; Northrop Grumman; and AirTran Airways (Southwest Airlines). Despite the multiple tenants, the 49,000 ft^2 still has unused capacity. The Terminal Services Freight Facility (Number 560) is five years old and all of its 9,200 ft^2 are leased to Delta; Paradies Shop; HMS Host; and DAL Global Services.

EXHIBIT 4-6
SAVANNAH/HILTON HEAD INTERNATIONAL AIRPORT VICINITY MAP



Infrastructure

There are no reported or customer perceived issues with the cargo apron or accessing aeronautical infrastructure.

While airline passengers are able to access the passenger terminal directly from I-95 at Exit 104, the route connecting into the airports cargo terminals is Bourne Avenue/SR 307. In fact, respondents interviewed as part of this report commented that the only highway issue they had was the occasional congestion on Bourne Avenue/SR 307 which experiences significant truck traffic associated with the Port of Savannah. (Bourne Avenue/SR 307 directly connects the Port of Savannah's main gate with I-16 at Exit 160.)

5.0 Air Cargo Demand

5.1 GLOBAL MARKET

To better understand current and future demand for air cargo facilities and infrastructure in the state, it is important to consider that global market trends impact carriers, airports, and the ancillary and supporting services within the industry. While specific forecasts were not developed for any airports, compilation of this report relied on existing standardized information produced by the FAA and the Boeing Corporation to provide a forecast framework for this effort.

The recent economic downturn saw most airports handling cargo lower volumes than in previous years. The recent increased levels of belly cargo screening could create some shift of air cargo to trucks and slow the growth curves that the industry is seeing. Much of that growth may be artificially driven with businesses pushing shipments to replenish inventory levels that were depleted as a result of the recent economic slowdown.

Trans-Pacific goods movement especially experienced decreases during the 2008-2009 timeframe. As a result, a number of ocean freighters were pulled 'off line' and containers were stockpiled. As the recovery began, it was easier, cheaper and faster to bring air cargo capacity back on line. This initially resulted in greater use of aircraft to move goods that would normally have moved by sea. As the ocean fleet returns to full strength and inventory levels stabilize, the growth of air cargo is expected to slow; overall forecasts are for air cargo growth more in the international market rather than domestic. As Hartsfield-Jackson continues its push to capture a portion of this growth, it will encounter competition from other gateway airports and will need to differentiate its services to attract new carriers.

Every major U.S. gateway has lost substantial amounts of traffic over the past several years, partly due to global shifts in shipping patterns and changing production schedules to allow for longer transportation times and shipping by sea. The rising costs of labor in Asia and the increase in the size of the Asian middle class have created local demand for manufactured products. As they examine the impacts of fuel costs and security costs on the bottom line, businesses are considering the decentralization of manufacturing and distribution and exploring globalization. The potential shift of some of these functions back to Europe and North America will eventually have an impact on international air cargo demand and growth.

5.2 NATIONAL MARKET

Within the U.S., a major component for forecasting air cargo growth has historically been the gross domestic product (GDP), however this has become a problematic barometer for air cargo as opposed to goods movement in general. Many of the fundamental elements that have historically driven air cargo are changing. Carriers have 'right sized' their fleets to match the aircraft mix to the routes they fly, resulting in smaller aircraft with less belly capacity and reduced cargo volumes. This has partly contributed to increased use of trucking, which is accelerated by increased jet fuel costs and the imposition of security surcharges on air shipments.

The concept of just-in-time inventory management has been refined over the past several years to reflect time definite delivery as opposed to speed. A similar strategy has been adopted throughout the industry and is most evident in the increased levels of second and third day delivery schedules implemented by the integrators' shifts in cargo transport.

Lastly, the global trend towards decentralized manufacturing and distribution is being replicated domestically. As a result, trucking is becoming the dominant mode of goods movement overall and is increasingly attractive compared to air:

- Essentially all air cargo gets to and from an airport by truck. For shipments of approximately 500 miles or less, the modal shifts and related waiting time result in a very competitive delivery process particularly given improved network configurations;
- A modal shift is estimated at 5 cents/pound for a shipment;
- The options and levels of competition for trucking keep costs much lower than shipping by air; and
- Trucking companies, like airlines are willing to book regular block shipments at discounted rates.

5.3 VALUE OF AIR CARGO

Utilizing air cargo services is the most costly on a per-mile basis of all freight modes and is typically reserved for products that are time sensitive, lighter in weight, and/or of higher value than products shipped by truck, rail or ocean. Shipments can be domestic and international.

The value domestic freight shipments is recorded only in the few instances when the shipment is insured, and then the value is determined by the amount to be insured, not the true value. International cargo is recorded by U.S. Customs and

Border Protection (CBP), the government entity responsible for recording the value of shipped goods in order to levy import taxes and record export goods.

According to the U.S. Bureau of Transportation Statistics (BTS):

> "Economic growth shifts the pattern of transportation in important ways. As people's incomes grow, they tend to buy more expensive goods, with a higher value per unit weight. The higher value of these goods means that the time they spend in transit is more costly to the shipper, so the shipper is more willing to pay extra for more expedited forms of transportation. As a result, air freight has been the fastest growing form of freight transportation over the past decade, with trucking close behind."

While this trend will be fairly consistent for international shipping, for domestic shipping there are cheaper alternatives available and shipping patterns often favor trucking. In 2008, the Research Innovation Technology Association (RITA) recorded Atlanta's air cargo value at $32.3 billion: $12.3 billion in exports and $20.0 billion in imports, ranking it 28th of the top 125 U.S. Airports by value.

5.4 TENANT INTEREST, SPACE AVAILABILITY AND MARKETING INITIATIVES

In an effort to identify potential new cargo-related initiatives at the three Georgia airports analyzed, information was requested on new tenants, cargo space available and marketing initiatives. Hartsfield-Jackson indicated that they had a commitment from Korea-based Asiana to start service, which has begun since the completion of this report. ABY indicated that there was nothing currently in process, and Savannah indicated that a number of projects were under consideration.

5.5 CORRIDORS AND HUBS

Hartsfield-Jackson is the main passenger hub for Delta Airlines, as well as the site of Delta's largest cargo facility and biggest cargo operation. This makes it attractive to international carriers primarily because of its interlining capability with Delta.

The main highways providing access to the Airport are I-85, I-75, I-285, I-20 and GA 85. All of these roadways connect to and draw cargo from a large "catchment area" within the southeastern U.S. region.

6.0 Operations

6.1 CARRIER ACTIVITY

Future growth as well as the characteristics and size of air cargo facilities and infrastructure is largely predicated upon the fleet mix and operating characteristics of the carriers serving the airport. The operations at both SAV and ABY are domestic and dominated by a single cargo carrier as shown in Table 14.

TABLE 14
CARGO ACTIVITY IN ABY **AND** SAV**, BY CARRIER**
(US TONS, IN+OUT, FREIGHT+MAIL)

	ABY		SAV	
Operating Carrier/Type	**2008**	**2009**	**2008**	**2009**
United Parcel Service	31,010	26,074	-	-
Federal Express Corporation	2	2	4,110	5,377
Abx Air, Inc.	-	-	1,206	13
Delta Air Lines Inc.	-	-	291	259
Antonov Design Bureau	-	-	30	8
Polyot Airlines	-	-	24	-
Kalitta Charters II	12	-	-	-
Lynden Air Cargo Airlines	-	-	5	-
Mesa Airlines, Inc.	-	-	4	1
Tradewinds Airlines	-	-	-	4
PSA Airlines- Inc.	-	-	4	-
Atlantic Southeast Airlines	-	-	-	2
American Eagle Airlines Inc.	-	-	-	1
Executive Airlines	-	-	-	1
Piedmont Airlines	-	-	1	-
Total	**31,024**	**26,076**	**5,675**	**5,666**

Hartsfield-Jackson, with the greatest impact to the State economy, has a mix of domestic and international freight and a diverse range of carriers and aircraft that determine the nature of the cargo operations. At Hartsfield-Jackson, Delta and FedEx account for 50% of the cargo volumes when measured in metric tons. The other 50% reflects the contribution of a combination of eight other carriers.

Roughly 60 percent of the traffic is international, while 40 percent is domestic. As might be expected, the domestic flow of cargo is just about equally balanced

between inbound and outbound shipments. Internationally, Atlanta has historically experienced greater import volumes than export volumes. Over the past several years, while both domestic and international cargo volumes have decreased, international cargo activity has decreased somewhat less than domestic traffic. Therefore international cargo, as a percentage of operations has increased by a few percentage points.

Carrier's Fleet Mix and Future Plans

Atlanta has both the aeronautical infrastructure and physical capacity to make it financially viable to utilize wide body aircraft. When this report was completed, carriers flew the Boeing 747-400, Boeing 777 and Lockheed-Martin MD-11, as well as smaller cargo aircraft. Airline freighter operations focus primarily on international markets for commercial service with flights to Europe two to five times a week and flights to Asia five to seven days a week.

Connections out of Hartsfield-Jackson vary for each cargo operator. Of the eight cargo carriers surveyed, two are main 'integrators' (FedEx and UPS) and six are commercial carriers. From Atlanta, UPS connects to airports in Rockford, IL Philadelphia, PA and Louisville, KY. FedEx stated they have operations out of Atlanta, Savannah and Columbus (CSG) airports, but did not mention how the network is structured for connecting cities; earlier discussions with FedEx indicated that a substantial amount of their connectivity is with Memphis and that a large portion of this is trucking.

As of the date of this report, the main cargo carriers flying out of Atlanta with varying frequencies to a number of locations, such as:

- Two flights to London Stansted Airport;
- Seven flights to Taiwan International Airport;
- Five flights to Frankfurt, Germany;
- Six flights to Hong Kong; and
- Two flights to Luxemburg.

Delta does not have any cargo-only freighters, but flies wide-body passenger aircraft to Dubai and Shanghai and has recently added destinations in Japan, Vietnam, South Africa, Liberia, Nigeria, Angola, Equatorial Guinea, Sweden, Spain, the Czech Republic, Switzerland, and Israel. These passenger flights also handle cargo and provide the frequencies and capacities to maintain Atlanta as an international air cargo gateway.

Carriers' Future Plans at Hartsfield-Jackson

At the time of this report, one international commercial carrier was planning for additional service to London, England beginning in the spring of 2011. One Asian carrier was planning to divert one of its flights to Hong Kong from

Hartsfield Jackson to a different undisclosed U.S. market. The industry will be focused on the launch of new service by Asiana to Seoul. Otherwise, there were no indications of other shifts in the market and all other integrators and carriers were expected to maintain their levels of operations.

Carrier Operations at the Albany and Savannah Airports

Cargo transport at these airports is dominated by 'integrator' service. UPS operates at Albany carrying 100% of the Airport's reported cargo volume utilizing Boeing 737's. The daily operation (five flights a week) is a connection to the main UPS hub at Louisville, KY.

At Savannah airport, cargo transport is mixed between FedEx who handles 95% of the cargo using Boeing 727's five days a week to the FedEx hub in Memphis, TN. The remaining five percent is carried by Delta in the belly of passenger aircraft. The Savannah airport staff reported that there is also limited feeder service on smaller general aviation aircraft contracted by UPS and ABX using Cessna208 and SH36 airplanes.

6.2 CARGO OPERATION KEY METRICS

Carrier cargo operations are primarily concerned with three key elements: costs, connectivity, and consolidation. The nature of each is described in the following section.

Costs

Air cargo operations are a low-margin business, which means it is essential that costs are contained as much as possible. This includes not only their own operating costs, but the charges at the airports they use and the costs of the support services necessary to sustain and grow their operations. Once issues with the airport have been identified, the carrier will explore support services and possible ways of reducing costs; on the outbound side they typically examine the potential for creating 'backhaul' either directly or through multi-stop flights. It is also important to open a dialogue with handling companies to attempt to create opportunities for further cost reductions.

For supporting businesses it is important to create a package that can demonstrate certain cost benefits of operating through that airport. For a region, their involvement may involve a combination of incentives from different participants with vested interests in the financial and economic success of the development and, on a broader sense, the region.

Connectivity

It is only at major population centers that air cargo is largely considered "origin and destination." Most cargo at Atlanta is 'transferred' cargo moving from one aircraft to another or to a truck. The enormous 'lift' capabilities provided by Delta through their numerous domestic and international destinations, coupled with the metro Atlanta's trucking infrastructure, provides carriers with the connectivity they need to get cargo to and from a variety of destinations. The domestic operations provide the interlining ability that is often a requirement of international carriers.

Consolidation

The air cargo industry is also largely based on economies-of-scale; this is most often achieved by shipping large volumes to specific destinations. There are two aspects of consolidation that bode well for Hartsfield-Jackson:

- The ability of Delta to 'draw' cargo from a wide area of Southeast, which enables carriers to build up larger loads for outbound shipments.
- The attractiveness of the hub to international carriers to consolidate trucking shipments reducing inbound costs, in a self-perpetuating way... Greater volumes of cargo reduce shipping costs; reduced shipping costs generate greater volumes of cargo.

7.0 Hartsfield-Jackson's Competitive Position

7.1 AIRPORT COMPARISONS

A common concern for growing cargo operations at an airport is competition from other airports. Hartsfield-Jackson possesses the necessary operating dynamics and physical capacity to compete in the global cargo market.

This section of the report discusses the general operating characteristics of several competing U.S. airports and provides insight into how the air cargo market is evolving. Information in this section represents plans which may or may not have funds which have been committed by relevant airport authorities.

Hartsfield – Jackson Atlanta International Airport (ATL)

Hartsfield-Jackson is the primary airport in Georgia and the hub for Delta Airlines. Its carrier's serving 250 destinations help make it the number one passenger airport in the U.S. in terms of volume and operations. In 2009 it served 88+ million domestic and international passengers -- up 3% over 2006.

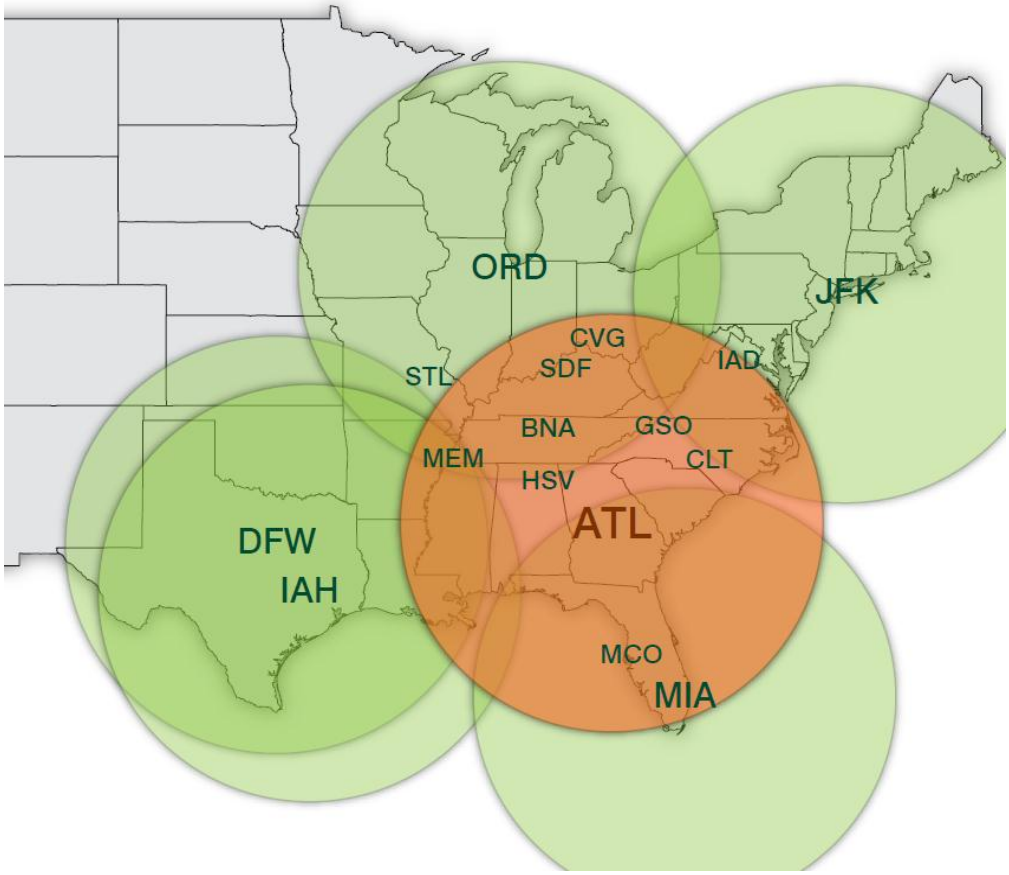
This number of passengers is carried on 1,300+ daily flights. Even if a plane has limited belly cargo capacity, the sheer number of destinations provides a wide range of options to shippers. Several years ago, the fifth runway added capacity and reduced delays making the airport even more attractive to the air cargo industry. Nevertheless there are challenges to growing the cargo operations.

JFK airport in the New York metro controls most air cargo business in the North, the Miami airport the South, Chicago O'Hare the Midwest, and Houston and Dallas the near-West. Shown in Exhibit 7-1, all of these airports offer services at least similar to, and extremely competitive with, the air cargo operations in the Atlanta region. This provides a challenge to the geographic area from which Hartsfield-Jackson can effectively attract cargo for outbound flights.

Hartsfield-Jackson resides in a geographic region that also contains a number of other airports offering viable alternatives that compete with Hartsfield-Jackson for market share. More or less, these include airports in Memphis and Louisville (FedEx and UPS hubs, respectively), Orlando, Washington/Dulles, and Cincinnati. Exhibit 7-1 also demonstrates the overlapping geography of the primary competitors is substantial.

EXHIBIT 7-1

AIR CARGO "CATCHMENT" AREAS



Charlotte / Douglas International Airport (CLT)

This airport is the hub for U.S. Airways and a joint military airport serving 135 destinations. Year 2009 data from ACI-NA places it 11th in North America for passenger volume places it 11th and 40th for cargo. The airport has 500,000 ft^2 of facilities, 50 acres of ramp, three runways (one that is 10,000 ft. long) and handles 1,483 operations per day.

Its air cargo presence includes 20 cargo airlines and almost 70 freight forwarders. The airport has completed a new runway as of January 2010 and has plans for a new highway interchange and international terminal to begin construction in 2012. The trend for this area has been the Charlotte region losing air cargo traffic to Atlanta via Hartsfield-Jackson.

Chicago O'Hare International Airport (ORD)

Both United and American Airlines have hub operations at O'Hare. United is the largest carrier with connections to approximately 1,000 cities worldwide.

With 2,409 operations per day, year 2009 data shows this airport is #2 for passenger volume and #7 for cargo in North America. The airport has seven runways (the longest is 13,001 ft.), over 2 million ft^2 of cargo facilities existing and planned, and many ramps (and ramps planned to accommodate 46 aircraft.)

There are 30 cargo carriers in operation and over 200 freight forwarders in the area. The airport has a modernization plan that includes a complete upgrade of the runway system and aeronautical infrastructure accessing the cargo facilities. Because of its wide-body frequencies to multiple destinations, O'Hare attracts cargo from a number of cities within a 500 mile radius – a geographic area that also overlaps with Hartsfield-Jackson's. Plans are to expand and add 1 million ft^2 of new cargo facilities and 17 wide-body parking positions.

Dallas / Fort Worth International Airport (DFW)

DFW is the largest of the five hubs for American Airlines, generating 85% of total operations at the Airport serving 260 cities. In North America, DFW is ranked 8th for passenger numbers and 10th for cargo in terms of volume, based on 2009 data. There are seven runways at DFW (the longest being 13,400 ft.) which all handle a total of 1,748 operations per day. DFW has approximately 14 cargo carriers servicing the airport and over 150 freight forwarders in the surrounding area. There are 3 million ft^2 of buildings and ramp for cargo. The region is home to a large manufacturing base and regional distribution area. For this reason and because of the connectivity with American's operation, the airport has attracted much Asian carrier interest in considering new service to the United States.

Washington Dulles International Airport (IAD)

As a United Airlines hub, the airport is rated 21st for passenger and 19th for cargo volumes, based on 2009 North American data. It handles 988 operations per day on four runways, the longest of which is 11,500 ft. IAD has historically had a strong focus on air cargo seeking to capitalize on a location overnight access to 49% of the U.S. population. The Airport serves 44 international destinations and 81 domestic. The cargo operation offers specialized facilities to include temperature controlled warehousing for perishables, live animal handling, and short term storage for high value items. With 515,000 ft^2 of cargo building having almost one million ft^2 of cargo apron, this airport competes heavily for international cargo traffic with JFK to the north and Atlanta to the south.

Houston Intercontinental Airport (IAH)

Situated along the Gulf of Mexico in north eastern Texas, Houston has attracted 28 cargo carriers. Based on reported 2009 North American data, IAH ranks 17th in terms of cargo activity and 8th for passenger service. The airport handles 1,473 operations per day with five runways, the longest of which is 12,000 ft. It has one million ft^2 of cargo space in two cargo zones, and there are plans for a new $180 million air cargo distribution center. IAH has been successful in cultivating ties with Latin and South America as it pursues the fresh flower import business, in competition with the Miami airport. While it does not compete directly with Atlanta, it is an increasingly viable alternative for Asian traffic seeking connections to South America.

Huntsville International Airport (HSV)

HSV ranks 60th in terms of cargo volume and 114th for passengers in North America according to 2009 data. It operates with four gates in a small terminal.

While not in the top ten, the Airport markets itself as a cargo facility and has a continued cargo presence surrounded by 4,000 acres of industrial park with air, rail, and truck transport facilities that offer potential interlining opportunities. The airport has two runways; the longest is 12,600 ft. which handle 168 daily operations. HSV in the 1990's successfully negotiated an arrangement with Cargolux, IBM, and Panalpina (a freight forwarder) to create a manufacturing and distribution operation that essentially could have gone anywhere, but placed HSV on the "cargo map". There is an on-site global logistics park that provides substantial warehouse and distribution capacity that includes specialized climate controlled facilities. Operators include a charter cargo carrier, two integrators, and two European commercial carriers. The Airport is fairly unique, but because of its location and limited commercial activity it doesn't represent a significant challenge to Atlanta.

John F. Kennedy International Airport (JFK)

JFK is the largest of three airports serving the New York metro area and has long been considered a major gateway for air cargo. Its domestic volumes have declined over the past decade but its international wide-body operations -- the largest and most diverse in North America -- continue to attract large volumes of cargo activity. Its longest runway, at 14,572 feet, (one of five) enables carriers to reach the most distant markets without a fuel penalty. The airport has 1,700 acres allocated to cargo use and includes approximately 4,000,000 ft^2 of facilities serving over 1,000 air cargo companies. A number of these are old and in need of upgrade, but the reduced cargo volumes over the past decade have mitigated the need to redevelop the buildings and infrastructures.

Miami International Airport (MIA)

Known as the gateway to South America, the Airport is a hub for American Airlines. Year 2009 North American data shows it ranks 12th for passenger activity with nearly 50% of that traffic international. This provides a substantial opportunity to the South and Latin American markets for shipping. There are four runways with the longest measuring 13,000 ft. The operations of the 30 carriers make MIA the 4th busiest cargo airport in North America. The property offers 2.7 million ft^2 of buildings and 3.8 million ft^2 of ramp. In the region, there are 1,000 air cargo companies brokering freight concentrated on perishables, fish, cut flowers, and vegetables. The Airport is congested and the rates are higher than for some competitor airports. What makes Miami unique is that there is an integrated social/ethnic and business infrastructure that makes it a challenge to divert traffic to other airports.

Orlando International Airport (MCO)

The Airport is located in Central Florida between Atlanta and Miami. Based on geography it would appear to be the main competition for Atlanta and a natural location to which cargo spilling out of Miami could relocate. Despite these factors, and an abundance of available acreage to develop logistics facilities, the cargo operations at MCO have not grown. This is due in part to the solid presence that Miami has in the South and that New York has on Europe. Another major factor is that Atlanta, its nearest major competitor, aggressively markets cargo, while Orlando's focus is primarily passenger oriented with cargo as a sidebar component of wide-body passenger activity. Forty percent of the 27 airlines servicing the Airport are international connecting to 100 cities in South America, Europe and Mexico in addition to the domestic U.S.

7.2 COMPARABLE FEES FOR AIR CARGO OPERATIONS

One of the critical concerns for attracting and growing cargo operations is cost. The industry is heavily focused on the bottom line and measures profits in fractions of cents per pound. Because Atlanta is the main cargo operation in Georgia (representing 95% of the state's cargo volumes), comparisons were drawn to the fee structure at larger airports, and to the smaller operation at Huntsville, Alabama which has aggressively pursued international traffic.

For airports in general there are a number of separate fees that contribute to the overall cost of cargo handling.

Landing Fees

Landing fees represent monies charged to a carrier by the airport when one of its aircraft lands. The rates in **Table 15** are for per 1,000 pounds, either charged by

Maximum Gross Landed Weight (MGLW) or Maximum Take Off Weight (MTOW). These rates differ from airport to airport based on a number of variables that include how the airport's revenue and cost centers are set up, profitability of other operations, levels of traffic, etc. These fees are sometimes classified as signatory (which means that are applicable to airlines that are a party to an airport use and lease agreement, non-signatory refers to those carriers who have not signed the agreement), and cargo which includes only freighter aircraft. It should be noted that the signatory fees may be negotiated for specific carriers.

It is also important to understand that fees can vary from year to year and are often based on complicated cost recovery formulae designed to help the airports recover their operating costs and the cost of capital improvements. Usually, fees are set through negotiation with signatory carriers serving the Airport.

TABLE 15
LANDING FEES (IN 2010)

	Comparative Airports	Signatory	Non-Signatory	Cargo	Special Charges
MLW / MGLW					
	Charlotte / Douglas International Airport (CLT)			$0.42	
	Dallas/Fort Worth International Airport (DFW)	4.6	5.41		
	Huntsville International Airport (HSV)	$1.65	$1.91		
	Washington Dulles International Airport (IAD)			$2.13	
	Orlando International Airport (MCO)			$1.61	
	Miami International Airport (MIA)	$1.92			
MTOW					
	Hartsfield-Jackson Atlanta International Airport (ATL)			1.52	
	Houston Intercontinental Airport (IAH)		$2.95		
	John F. Kennedy International Airport (JFK)		$5.85		Additional $100 between 3-10 pm

Occasionally, there may be an operating requirement resulting in the imposition of an additional fee to discourage traffic growth (see JFK above) at a peak hour.

Table 16 on the next page indicates the landing fees at the Georgia airports. All airports in Georgia record landing fees as charged per Maximum Landed Weight (MLW). The low rate at Albany (ABY) is a very attractive feature and is at least in part one of the reasons why UPS has chosen to operate there.

The data shows that the ABY landing fee is the lowest in the State and compares very favorably to the other national airports in Table 15. SAV currently has the highest landing fee rate of the three.

TABLE 16 STATE OF GEORGIA AIRPORT LANDING FEES (IN 2010)

Airport	Landing Fee
ATL	$1.52
ABY	Cargo $0.63 / UPS $0.58
SAV	$2.20

Aircraft Parking Rates

In an effort to generate additional revenues and to also discourage freighter aircraft from remaining on the ground and consequently limiting available aircraft apron, airports sometimes impose parking fees for freighter aircraft.

Of the six sample U.S. airports, only Houston does not charge parking fees. These airports essentially have a fixed rate which in some cases is linked to the length of time the aircraft is on the ramp. These costs are discussed in **Table 17**.

TABLE 17
COMPARATIVE AIRPORTS PARKING FEE -- RATES RECORDED FOR 2010

Comparative Airports	Parking Fees	Additional
Charlotte/Douglas International Airport (CLT)	City Ramp - Aircraft above 30,000 lbs. 0-3 hours =+50; More than 3 hours =+$100	Leased ramp is confidential
Dallas/Fort Worth International Airport (DFW)	$500 for up to 12 hours	
Huntsville International Airport (HSV)	$239 permitted / $259 non-permitted per 24 hours after landing	
Houston Intercontinental Airport (IAH)	$225-$450 after the first 3 hours (4 for livestock) and billed in 24 hour increments	
Orlando International Airport (MCO)	$250 remote parking / leased at $0.75 psf	
Miami International Airport (MIA)	$200 for 4 hours	$60 after 4 hours

Hartsfield Jackson Airport has a more detailed plan of parking fees based on a 12 hour block of time and the size of the aircraft categorized by maximum landing weight. The initial charge covers the first 12 hour block (i.e. if a plane parks for 1 hour or 10 hours, the full 12 hour block is billed). If longer than 12 hours, this is billed as a second 12 hour block as indicated in Table 18.

TABLE 18
HARTSFIELD-JACKSON ATLANTA -- 2010 AIRCRAFT PARKING FEES

Type of Aircraft	Definition	Assigned Charge
Large III	500,001 or greater	$650.00
Large II	350,001 - 500,000	$540.00
Large I	200,001 - 350,000	$450.00
Medium	100,001 - 200,000	$360.00
Small	50,001 - 100,00	$270.00
Light	50,000 or less	$180.00

NOTE: Definition is based on maximum landing weight; fees are per 12 hour block

Fuel Flowage Charges

In the U.S., into plane fueling or fuel flowage fees are one of the main revenue generators for airports. These fees can vary based on formulae linked to consumption but typically range from about two to seven cents a gallon. The rates are influenced by the total volumes that the airport sells, competition, negotiated rates with carriers (or fuel consortia), transportation costs, etc. Typically the revenues generated by fuel sales are factored into the financial model of the airport. The airport may choose to charge handlers a fee, take a percentage of their earnings or negotiate other monies for operating on airport non-specific to fuel. The fees for the State airports are indicated in Table 19 below. From a competitive perspective, these fees at the Miami and Orlando airports are less than two cents a gallon.

TABLE 19 GEORGIA AIRPORTS -- FUEL FLOWAGE FEES FOR 2010

Airports	
ATL	$0.065 per gallon
ABY	$0.07 per gallon
SAV	$0.025 per gallon

Land and Facility Fees

Part of the cost of doing business for cargo operators at a number of larger airports is the expense for leasing land or facilities. A survey was conducted at airports throughout the country to place the rates at Atlanta in perspective. Each participant was asked for data on leasing rates for land with and without airside access, facilities with and without ramp, and if available - off airport warehouse rates. Work to prepare this report also explored whether any of the airports impose a fee on companies that are based off-airport but regularly shuttle cargo on and off the airport. This is known as a 'through the fence' operation. The findings are summarized in Table 20.

Overall the rates and charges that impact cargo operations in Georgia in general, and Atlanta in particular, are on-par with fees at other airports.

Market lease rates for each airport are triple net (NNN) and include applicable taxes, fees and costs other than maintenance. The facility size ranges from 10,000 to 100,000 ft^2 with loading and unloading capabilities, adequate door width, and ceiling height. These rates are for the building and land only and reflect either a range or in some instances, an average rate. To ensure that variables were minimized, discussions were held with each potential respondent to ensure that the stated costs were consistent and did not include miscellaneous add-on charges for such items as paving, loading dock, trailer and auto parking, temporary modular units, and janitorial services.

Based on these findings and using available comparative data, off-airport warehouse rates have fallen over the year and are nearly three times less than

comparable on-airport warehouse with ramp. This means that the disparity between on-airport and off-airport leasing rates has increased making airport owned leaseholds less attractive.

Airports indicated limited use of fees for 'through the fence' operations and in fact are attempting to discourage these operations for security purposes. The cost of facilities to tenants for both ABY and SAV are modest when compared to the national numbers. The rates at ABY are approximately $1.67/ft^2$ and at SAV are $4.04/ft^2$ for airline tenants and $1.00/ft^2$ for other tenants. As Table 20 indicates the numbers for Atlanta are comparable to national rental rates for on-airport properties.

TABLE 20
COMPARATIVE AIRPORT LAND AND FACILITY CHARGES

Airports	Land With Airside Access	Land Without Airside Access	On-Airport Cargo Warehouse With Ramp	On-Airport Cargo Warehouse Without Ramp	Through The Fence Operations	Off-Airport Distribution Warehouse
Anchorage	North Airpark $0.68-$0.80 East Airpark $0.72-$1.04 South Airpark $0.76		Carrier Owned		None	
Atlanta	$1.02	$1.10	$10.50-$13.50	N/A	None	$3.59
Cincinnati	$0.43	$0.38-$0.42	$9.71	$5.68	None	$2.70
Dalls / Fort Worth	$0.51	N/A	$8.00-$10.00	$5.00-$8.00	None	$3.10
Denver	$0.70	$0.65	$14.00-$16.00	$9.46	None	$3.75
Detroit	$0.31 land $0.96 ramp	$0.31	$8.00 bldg $0.96 ramp	$8.00	None	$4.24
Dulls, Washington	Negotiable	Negotiable	$18.50-$20.00	N/A	None	$8.29
Houston	$0.65	$0.63	$8.00-$10.00	$5.00-$8.00	YES	$5.20
Huntsville, AL	N/A	$0.80-$1.95	$7.25	N/A	None	$4.00 - $6.75
Kansas City	$0.23	$0.14	$7.00-$11.00 + $2.00-$4.00	$7.00-$11.00	None	$4.00
Miami	$1.85	$1.55	$5.75-$15.50		none	$8.18
Minneapolis	$0.40	$0.35	$15.45	$17.18	None	$4.35
New Jersey	$1.39 land $2.16 ramp	$1.39	$26.69 bldg $2.15 ramp	$26.69	None	$5.95
New York	$2.20	$2.20	$23.71	$23.72	None	$5.95
Phoenix	N/A	N/A	West $12.24 South $14.88	N/A	Yes	$5.33

NOTE: per square foot; N/N/N/; statistics from 12/2009 Landrum & Brown

Summary of Air Cargo Issues and Needs

7.3 NEAR-TERM AND LONG-TERM GROWTH

Overall, the volatility in air cargo volumes of the past decade made planning for future cargo operations a challenge for both airports and carriers. A 25 percent drop in cargo volumes between 2006 and 2009 for airports in Georgia reduced capacity-related concerns at the airports and to some extent the supporting regional roadways. Another near-term headwind for air cargo includes the increased security screening regulations which began in October of 2010 and the ongoing shift to smaller, regional aircraft by many of the nation's airlines.

Over the next ten years, the nature of the air cargo industry is expected to change. The continually escalating costs for security and fuel as well as rising labor costs globally will create ongoing pressure to decentralize manufacturing and shipping. This will be addressed by a shift in some critical manufacturing out of Asia and closer to consumer points in Europe and North America. The end result could be a slowing in the growth rates of air cargo (though the increasing size of the global market is expected to offset potential volume reductions.) It is also likely that the "fast ship" will become more in vogue reducing trans-oceanic shipping times by 50% - and attracting a number of shippers that historically have relied on air. Wide-body passenger aircraft will be used predominantly creating belly cargo capacity which carriers will continue to utilize to enhance their bottom line.

On the domestic front, trucking will continue to be the mainstay of shipping. Second- and third-day deliveries will likely be the core of the operations. The concept of "just in time" manufacturing will shift production dates so that product will still come directly off the line but then move on to a truck as the primary transport. Airline management will continue to "right size" its fleet mix to optimize the load factor (percentage of filled seats) on flights. This will continue to reduce belly cargo capacity and generate truck substitution. The rightsizing will also push more time-sensitive products to the integrators for movement.

However, these near-term obstacles can sharply contrast with the long-term growth rate for air cargo. The FAA, IATA, and Boeing all forecast annual growth rates between 4 percent and 6 percent for air cargo nationally. Applying this growth rate to the Atlanta airport would mean a doubling of 2010 air cargo

volumes sometime between 2022 and 2028. Extending this forecast to 2050 would potentially mean that air cargo volumes increase by four times relative to today's levels. This level of growth has significant implications for Georgia's air cargo infrastructure both on-airport and off-airport. This chapter discusses the implications for each of the three major air cargo airports in Georgia.

7.4 AIRPORT-SPECIFIC ISSUES AND NEEDS

Savannah International Airport

Because of its regional proximity to the Port of Savannah, the roadways surrounding the Savannah International Airport cargo facilities were reported as sometimes being congested. This is particularly true for Bourne Avenue/SR 307 which serves as an access road for both the airport and the main gate of the marine port. However, staff at the Savannah airport indicates the implementation of the many "last-mile projects" at the Port of Savannah (as shown in the Savannah MPO's Long Range Transportation Plan) will significantly reduce the occurrence of congestion along adjacent local roadways.

The Savannah airport currently has sufficient facility and infrastructure capacity to accommodate near-term cargo growth. Additionally, there is the capability to handle any unanticipated surges in air cargo volumes. There is also no near-term need to extend the runways at Savannah, because international air cargo in Georgia is handled through the Atlanta airport. Savannah's role as a domestic airport (from a cargo perspective) is likely to remain unchanged. The Airport expressed interest in expanding its cargo operations, but has not yet implemented any specific strategies to increase cargo, and was not currently in a position to provide details of potential expansion plans.

The primary aircraft for the Savannah airport is the regional jet which does not have the cargo space to handle large volumes of belly air cargo. About 95 percent of the total cargo volumes at the airport are carried by FedEx. Representatives of FedEx stated that they are comfortable in their operation and expect to continue to experience modest growth. It is likely that this growth will be fairly closely tied to rates of growth in the population and business sector in the Savannah region. Ensuring that FedEx has the facilities and necessary apron for aircraft should be the primary concern of the airport, but there currently appears to be no issue with either.

Over the longer term, the Savannah airport is likely to experience growth slightly less than the 4 to 6 percent that the Federal Aviation Administration has forecast for air cargo across the U.S. This is due in large part to the fact that the Savannah airport primarily carries domestic air cargo, and international air cargo generally has had a higher growth rate than domestic air cargo. The airport is also likely to be able to handle long-term growth based on its current 40 percent vacancy in

the larger of its two air cargo buildings. Additionally, there are multiple location options to expand the on-airport storage and aircraft parking needed to accommodate significant growth at the airport.

The larger long-term concern for the airport would be the operation of access routes to handle increased truck and auto volumes as the airport expands. In particular, the airport is located within two miles of the main entrance gates for the Port of Savannah which currently generates over 5,000 trucks per day and is also forecast to have rapid growth over the next 40 years. Both the airport and the marine port are located within a small subarea bounded by I-95 to the north and west, I-16 to the south, and the Savannah River to the east. The subarea also includes several million ft.^{2} of distribution center facilities which also generate a large volume of truck and auto traffic on to the local network.

The number of trucks from the Savannah airport is not likely to significantly increase local congestion. It is estimated that the Savannah airport generates no more than 20 trucks per day. However, congestion from the other activities in the subarea has the potential to significantly affect the accessibility of the airport for trucks handling air cargo. Additionally, the lack of a truck route network in the subarea complicates the process of identifying ideal routes for truck traffic to get in, out, and around the subarea.

Southwest Georgia Regional Airport

The cargo operations at the Albany airport primarily consist of a small UPS operation combined with a smaller military shipping presence. The length of the runway is prohibitive for large commercial service, but meets the current needs of these two customers. UPS has expressed interest in flying larger planes to this airport, and based on this request the Albany airport is considering lengthening the runway to allow for this capability.

Representatives of UPS in Albany have indicated that they are satisfied with the facilities and infrastructure. There are no strategic issues mentioned related to the air cargo activity at the airport. The cargo operation is considered to be successful and should continue to be so unless there is a strategic shift on the part of UPS to move to a ground operation for the region. There are no indicated access issues, and given the relatively modest volume of ground traffic associated with the air operation, there is not a perceived need for roadway improvements in the near-term. The Albany area is well-connected to the region via a series of existing four-lane highways.

Over the longer-term, there is the potential for significant growth of both the general cargo and the military cargo based on the national air cargo forecasts. However, given the relatively low truck volume served by the airport, even a tripling of air cargo would result in limited increase to approximately 50 more trucks per day accessing the facility. This volume can be easily handled by the

local access roads. The on-airport footprint of the airport also provides ample room for expansion of warehouse space and parking of aircraft. One concern which may need to be addressed in the Albany region is the routing of these trucks through downtown and residential areas in Albany. The airport is currently located on the southwest side of Albany, and trucks that access the airport via I-75 will need to travel through residential or commercial areas. To ensure that conflicts between the airport truck traffic and local use is minimized, the local transportation agencies may want to consider proactively developing a truck route network for trucks accessing the airport. The Albany MPO did the 2005 Albany-Dougherty County Regional Freight Plan that provided recommendations for a truck route network for consideration by the region.

Hartsfield – Jackson Atlanta International Airport (ATL)

In April of 2010, the Atlanta airport earned Air Cargo World magazine's Award of Excellence for North American cargo operations for airports that handled between 500,000 and 1,000,000 tons per year. The award was based on a survey of cargo airlines related to performance, value, facilities and operations. Despite this strong operating performance, there are several challenges the Atlanta airport is addressing in regards to their current and future air cargo volumes:

- Need for increasing the number of air cargo destination options;
- Competition for international volumes;
- Capacity of on-airport infrastructure and facilities; and
- Truck access to the airport.

Need for Increasing the Number of Air Cargo Destination Options. The expansion of Delta's international passenger operations and their acquisition of Northwest's routes provide expansion opportunities in the global market and make the Airport increasingly attractive from that perspective. However, dramatic and measurable growth is most easily achieved through the addition of freighter operations. A daily 747-400 could add as much as 40,000 tons a year to the Airport's totals (a seven percent increase based on 2009 figures). Additionally, an issue raised by the regional cargo community is a need for additional wide-body international 'lift' to Europe and Asia.

Competition for International Volumes. In terms of attracting international air cargo, Atlanta faces significant competition from larger cargo operations in Chicago, Miami, and New York, and to a lesser extent Houston and Dallas. Due to the geographic positioning of Atlanta, it faces challenges to attracting this additional traffic. Miami has an advantage capturing international traffic from Latin America; New York leads international traffic from Europe; and Chicago and Texas airports are positioned to capture international traffic from Asia destined for the Eastern half of the U.S. The Atlanta airport's domestic cargo

volumes are relatively stable given the major presence of the Delta hub; however due to increasing use of regional jets and narrow body aircraft on domestic routes, its domestic air cargo growth could lag that of international air cargo. (There is an upside with to the Atlanta airport's handling of domestic cargo due to Southwest Airlines' acquisition of Airtran, which has a hub in Atlanta -- Airtran does not handle cargo while Southwest does.)

Therefore, to achieve the 4 to 6 percent international cargo growth forecasted by the FAA, the Atlanta airport will need to identify a marketing strategy to attract a proportionate share of international air cargo traffic. The Atlanta airport has historically been very aggressive and successful in attracting new air cargo operations, as evidenced by the recent addition of the all freight carriers.

Capacity of on-airport infrastructure and facilities. The existing Airport infrastructure and facilities can accommodate a twenty to thirty percent growth in volumes, minimizing the need for near-term capital investment. While there are issues with the on-airport roadways and landside infrastructure for cargo, there are no indications that this has deterred cargo growth.

The aggressive marketing over the past five years has been successful in attracting international freighter traffic. Atlanta's South Cargo Complex was developed to provide the facilities and services that these operations require. However, with 75 percent of the development in place several issues have emerged including:

- Truck traffic is congested in part by the layout of the landside infrastructure.
- There is very limited space available for truck queuing. This combined with the layout frequently results in delays for trucks accessing the facilities.
- With the target of the marketing efforts the international freighter fleet, there is insufficient ramp to effectively handle future peaking requirements of the carriers, proximate to the cargo facilities. As the market recovers, and assuming that the market focus remains the same, the lack of available apron for cargo aircraft could affect future growth. The identification of a new development site on the Airport's south side for both cargo buildings and aircraft ramp should be given strong consideration over the next two years.

The roadway congestion at the FedEx facility on the Airport's north side could constrain FedEx growth at worst and at best constrain their operational efficiency and negatively affect costs. There is insufficient road and parking capacity at this location creating a 1,500 foot queue of holding trucks on the local road network. Modification of the access road to the North Cargo Complex (FedEx) would have an immediate benefit on operations, safety, and emissions and should be evaluated and considered for implementation. It should be noted however that

this was not raised as an issue by the airport or by FedEx -- the primary tenant at the location.

Delta is using about 50 percent of its facility's capacity for cargo operations. There is sufficient room in and proximate to the South Complex for the addition of new facilities and aeronautical infrastructure, as will be needed based on the long-term forecast for air cargo growth. Additionally, the lead time to build new on-airport facilities is significantly shorter than the lead time needed to build a new roadway. Therefore, it is appropriate to wait for demand to materialize prior to construction of new on-airport facilities. The actual amount of future demand for aircraft parking will depend on future demand, aircraft size, and carrier scheduling. Assuming a 50 percent increase in freighter demand, this could be as many as 13 positions and 800,000 square foot of apron over the next 40 years.

Truck access to the airport. The transport vehicles for delivering air cargo to their final origins and destinations are trucks that can range from specialized vans to 70 foot tractor-trailers. The State and local roadways nearby the Atlanta airport were considered satisfactory by the cargo community. There are no reported choke points nor were there issues raised about roadway geometry. The main concern for truck operators is adequate queuing space for trucks at the cargo facilities as they wait for drop-offs and pick-ups.

However, if cargo volumes grow at the FAA forecast rate, there will be a substantial increase in truck traffic over the next 40 years. New facilities with improved landside capacity will be essential. This could require additional capacity on the access roads to the Atlanta airport, Loop Road, Aviation Boulevard, and Henry Ford Avenue. Modifications to the North Loop Road and the entire Loop Road in general are difficult given the surrounding roadway infrastructure of the North and Midfield Cargo Complexes. Additionally, the ability to accommodate long-term airport access issues will be impacted due to anticipated passenger growth at the airport.

The primary access roads to the Airport could be faced with substantial growth in automobile traffic. This will occur primarily at I-85 Exits 71 (Riverdale Road) and 72 (Camp Creek Road) and I-285 Exit 61 (Atlanta Airport/Montgomery). One of the primary challenges of airports today is the delay factor caused by regional traffic. While there are currently no issues, and it is unlikely that increases in cargo activity will generate sufficient volumes of trucking to be problematic, it will be important to monitor traffic levels relative to cargo access.