

Chapter 7

Florida Air Cargo Market and Opportunities Analysis

Previous chapters and tasks presented in the Florida Air Cargo System Plan have reviewed current trends in the air cargo industry, identified the role of Florida's SIS and Tier Two Airports in the air cargo industry, inventoried air cargo facilities on and off airports as well as forecasted air cargo demand in the State over a 20 year planning period. Capacity analysis for airport infrastructure was also provided.

This chapter focuses on Florida's market dynamics and provides an analysis of air cargo market opportunities within the State. This is presented using a SWOT analysis which identifies the Strengths, Weaknesses, Opportunities, and Threats as they pertain to the Florida market. This evaluation quantifies internal strengths and weaknesses as well as the external opportunities and threats within the State's air cargo market. The objective is to maintain and develop Florida's air cargo potential. Recommendations to achieve this objective are provided at the end of this Chapter.

STRENGTHS

Strengths are attributes of the Florida Market that are helpful to the achievement of the objective.

Florida's Geographic Advantage

Florida has been at the forefront of economic globalization for a long time. Florida's location at the southern tip of Southeast U.S. Region places it as "the end of the road" so to speak, making it a natural gateway to Central America, South America and the Caribbean Basin. As a result, Florida plays an ever more prominent role in the increasingly integrated global economy, where political and cultural barriers are quickly disappearing. In fact, one reason Miami International Airport has been so successful is that its cultural diversity and multilingual workforce has provided an additional element of connectivity to the region.

From Florida, companies can do business globally with increasing ease. Because Florida sits at the nexus of air links within the Americas, as well as between the Western Hemisphere and other parts of the world, firms can easily ship goods to customers around the world or take advantage of direct flights to most anywhere. An in depth review of Florida's strategic location as it relates to air transport is located in **Appendix G**.

Florida's History as a Transportation Hub

The State of Florida supports an extensive transportation network with origins back to the 1800s. In 1855, the legislature passed the Internal Improvement Act. This provided land at no or minimal cost to investors interested in developing transportation resources in the State. The largest returns to scale occurred in the years following the end of the Civil War and prior to the start of World War I. Extensive railroad networks were built during these years. In addition, the Internal Improvement Act also supported initiatives that converted the southern parts of Florida from swampland to farmland viable for agricultural use. By 1960, Florida supported an

extensive highway system, several international airports, and a top-quality university system.¹ To further support Florida's transportation system, Governor Jeb Bush enacted the MOBILITY 2000 Transportation Initiative. This plan outlined projects valued at almost \$4 billion. It is the largest of its kind in the State's history that does not require tax increases for funding support.²

Florida's transportation plans are also forward-looking. Continued growth in the State's population combined with a strong economy make long-term infrastructure planning all the more critical. In an effort to support future demand, Florida has developed a 2020 Transportation Plan. Under this plan, Florida's economic competitiveness should strengthen from appropriate infrastructure resources. As such, Florida's transportation system will be managed as follows³:

- Strategic Intermodal System (SIS) Component: Pertaining to the most critical facilities throughout the State in terms of transporting people and goods within the State and to other states and nations.
- Emerging Component: Pertaining to highly significant facilities within the State or on a regional level within Florida.
- Other Component: Facilities with local or regional significance to the State of Florida that are not classified within the bounds of SIS or Emerging Component categories.

Interstate Highway System

Florida's robust economy both supports and depends upon extensive infrastructure resources to move goods from origin to destination. Per the Florida Department of Transportation, the primary goal of the Highway System is to serve interstate and regional commerce and long distance trips. In 2003, the Florida Legislature established the Strategic Intermodal System (SIS). This System includes a Highway Component focusing on⁴:

- Interstate Highways
- The Florida Turnpike
- Urban Expressways
- Major Arterial Highways
- Intermodal connectors linking SIS and Emerging SIS hubs and SIS corridors

There are four primary interstate highways in the State of Florida offering 12,000 miles of paved surface.⁵ These four highways supporting the Florida Strategic Intermodal System (SIS) Airports are outlined below:

- I-4 connecting Tampa, Lakeland, Orlando, and Daytona
- I-10 connects Jacksonville, Lake City, Tallahassee, and Pensacola and continues on to Los Angeles. It is considered the only snow-free east-west interstate highway in the U.S.
- I-75 starts in the State of Michigan at the Canadian border and flows through the Midwest and Southeast eventually connecting Gainesville, Ocala, Bradenton, Sarasota, Ft. Myers, Naples, Ft. Lauderdale, and Hialeah

¹ Florida Heritage Collection

² Florida Transportation Commission Mobility 2000 Statement, January 2000.

³ Florida Department of Transportation, "Recommendations for Designating a Strategic Intermodal System," March 2003.

⁴ Florida Department of Transportation

⁵ Enterprise Florida

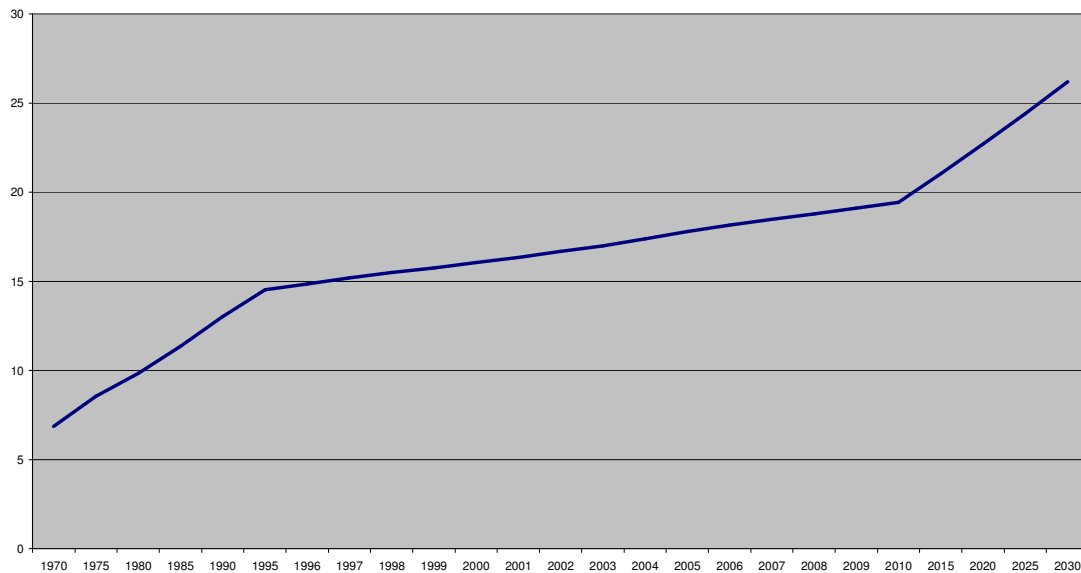
- I-95 starts in the State of Maine and traverses the east coast connecting Melbourne, West Palm Beach, and Miami

Additionally, there are eight secondary interstate routes connecting various Florida cities. As a group, these roads move nearly 30 percent of all Florida surface traffic. Regarding trucks, almost 70 percent of all vehicles use the SIS or Emerging SIS road system. In terms of value, nearly 80 percent of all Florida goods shipped move via trucks. Also, 80 percent of the industrial and warehousing facilities located throughout the State of Florida are located within 5 miles of the SIS and Emerging SIS Highway System.⁶

Quality of Workforce

In terms of labor force dynamics, the median age of Florida residents is expected to increase in the coming years. Florida’s strong economic growth will continue to support more jobs. Per Woods & Poole, the total number of jobs available in Florida will expand through 2030 (see **Exhibit 7.1**). Jobs in the transportation sector will also increase over the next twenty-five years (see **Exhibit 7.2**). However, as a percent of the total jobs available, the transportation sector will actually employ an increasingly smaller share of the total labor pool. Support from Florida’s leading Industry Clusters: Life Sciences, Aviation and Defense, and Information Technology is crucial to ensuring strong employment growth of high-wage jobs. Hence, it is critical for Florida’s educational institutions to provide opportunities for the State’s residents seeking training. Forming partnerships between companies and universities provides additional incentives for students to remain within the State and support Florida’s economy.

**Exhibit 7.1
Florida’s Historic and Forecasted Population (in Millions)**

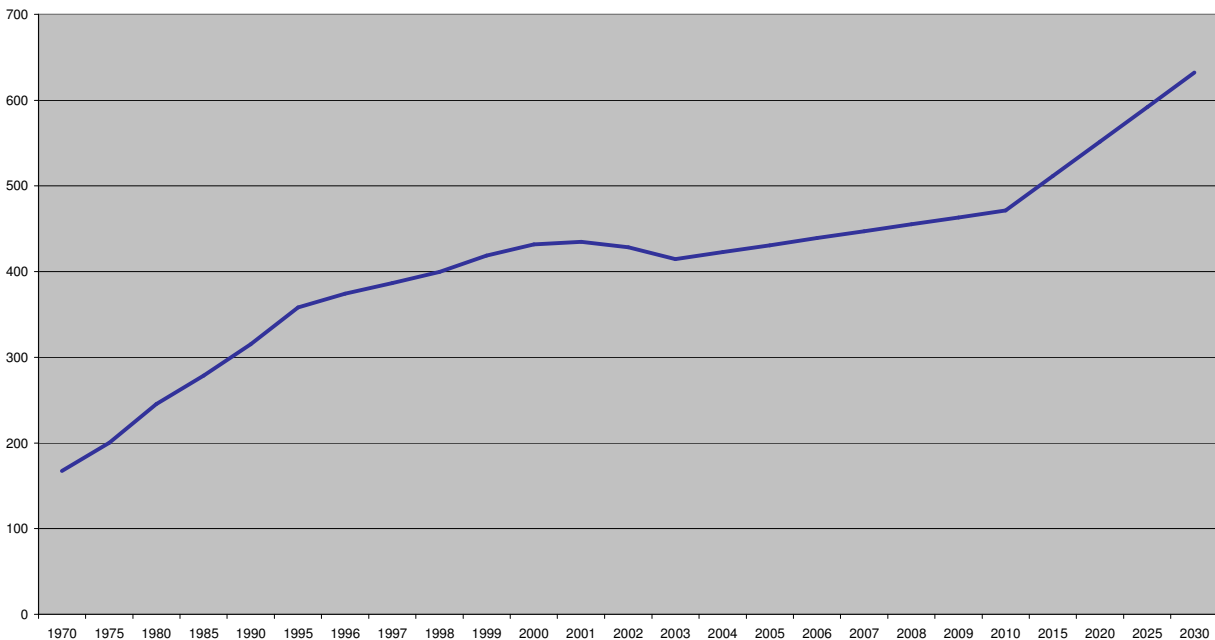


Source: Woods & Poole, Wilbur Smith Associates

⁶ Florida Department of Transportation

As Florida’s population continues to expand, a larger labor pool is created to support the State’s leading industries. Florida continues to provide very strong job growth and the unemployment rate as of June 2006 was three percent. Of note, all Florida residents are located within 50 miles of a post-secondary education institution. There are 11 State supported Universities throughout Florida. These institutions lead national rankings in research and development. There is also strong support for quality primary education ranging from kindergarten through high school. As part of a comprehensive education plan, Florida Governor Jeb Bush plans to increase funding for primary and secondary education by \$1 billion. In terms of secondary school completion, eighty-five percent of Florida students graduate from high school or attain a GED by age 24. The State ranks fourth in terms of community college enrollment and awards one out of every 10 community college degrees conferred in the United States.⁷

**Exhibit 7.2
Florida’s Historic and Forecasted Employment in
Transportation, Communication, and Public Utilities (in Thousands)**



Source: Woods & Poole, Wilbur Smith Associates

Additional Strengths

Quality of Life - Florida’s business leaders consider its remarkable quality of life to be one of the State’s biggest assets. With no personal income tax and year-round sunshine, Florida attracts newcomers every year. The average annual high temperature is 81 degrees, while the average annual low temperature remains a comfortable 60 degrees.

Entrepreneurial Atmosphere - Florida offers the resources needed for an entrepreneur to turn an innovative idea into a successful business. Located throughout Florida are incubators and accelerators, as well as the National Entrepreneur Center, which provide consultative and

⁷ Enterprise Florida

training services, office space and front office operations to help jump start a business. Additionally, Florida universities, tech transfer offices and research parks can serve as valuable sources of technical and scientific expertise. With regards to seed funding, the state has a number of venture capital firms and angel investors that entrepreneurs can contact for financial support.

High Tech Role - Florida has a large and impressive technology base and a strong historical role in technology development. From the birth of the nation's space program in the 1950s in Cape Canaveral, to work with early laser technology during the 1960s in Central Florida, to the development of the IBM personal computer in Boca Raton in the early 1980s, the State has long been at the forefront of technological advances. Today, Florida's key industries are continuing to develop new state-of-the-art technologies. Innovative organizations in the information technology, life sciences, aviation/aerospace, homeland security/defense, financial/professional services sectors are molding the future, and continue to make Florida a key player in the New Economy.

How Florida ranks as a high-tech state⁸:

- 3rd in highest dollar volume of high-tech exports
- 4th in highest number of high-tech workers
- 3rd in highest number of high-tech establishments

WEAKNESSES

Weaknesses are attributes of the Florida Market that are harmful to the achievement of the objective.

Distance to U.S. Population

Air cargo activity thrives in markets where trans-loading of cargo from aircraft to aircraft occurs on a regular basis and where a significant portion of the air cargo traffic is origin and destination cargo from the airport's market area. One exception to this rule is Ted Stevens Anchorage International Airport where the airport functions as an intercontinental hub. One method of estimating the potential of air cargo is to determine the number of people living in proximity to the airport. This initial measure provides insight into whether an airport has the critical mass needed to support air cargo activity.

As part of this analysis, population estimates for 100- and 500-mile radii were calculated for the top 20 air cargo airports in North America. **Exhibit 7.3** identifies the population within a 100-mile radius of each airport as well as the percent of the total U.S. population. Miami International Airport is the only Florida airport included in the top 20 air cargo airports in North America. All data is based on 2000 U.S. Census data, which estimated the total U.S. population at 281,421,900.

⁸ Enterprise Florida Inc.

**Exhibit 7.3
Top 20 Air Cargo Airports
Population Within 100-Mile Radius**

Airport Name	ID	ACI NA Rank*	Population Within 100 Mile Radius	Percent of U.S. Population
Newark Liberty International	EWR	9	28,881,795	10.3%
JFK International	JFK	5	27,873,788	9.9%
Philadelphia International	PHL	15	26,264,558	9.3%
Ontario International	ONT	14	18,777,151	6.7%
Los Angeles International	LAX	3	17,049,078	6.1%
Chicago O'Hare International	ORD	7	12,694,736	4.5%
Metro Oakland International	OAK	12	10,379,169	3.7%
San Francisco International	SFO	13	10,110,467	3.6%
Boston-Logan International	BOS	19	9,844,499	3.5%
Cincinnati/Northern Kentucky	CVG	16	7,316,219	2.6%
Hartsfield Atlanta International	ATL	10	6,629,733	2.4%
Dallas/Ft Worth International	DFW	11	6,132,505	2.2%
George Bush Intercontinental	IAH	17	5,698,441	2.0%
Miami International	MIA	4	5,469,868	1.9%
Louisville International	SDF	6	4,648,615	1.7%
Indianapolis International	IND	8	4,545,986	1.6%
Seattle/Tacoma International	SEA	20	4,303,055	1.5%
Memphis International	MEM	1	2,479,318	0.9%
Ted Stevens Anchorage Int'l	ANC	2	358,493	0.1%

Source: U.S. Census, Claritas, Airports Council International, Wilbur Smith Associates

*Honolulu ranks 16 but is not included in the analysis

Miami has nearly 5.5 million people living within a 100-mile radius of the airport. When comparing Miami to the top 20 air cargo airports it ranks 14th, with more population than Memphis, (FedEx’s hub), Louisville (UPS’ Hub), Indianapolis (FedEx Regional Hub), SeaTac, and Anchorage, Alaska. Miami’s 100-mile radius captures 1.9 percent of the U.S. population. Newark Liberty International Airport ranks highest capturing over 10 percent of the U.S population within a 100-mile radius.

A 500-mile radius was also used to determine the number of people living within each airport’s extended market area (see **Exhibit 7.4**). Findings indicate that Miami captures over 17.8 million people or 6.3 percent of the total U.S. population within 500 miles. In comparison, the integrated express carrier hubs located in Cincinnati, Louisville, Indianapolis and Memphis are located at sites which capture over 25 percent of the U.S. population. Cincinnati leads all airports in population capture with over 39 percent of the U.S. population within its 500-mile radius and is most likely one of the reasons DHL chose the airport for its centralized domestic hub⁹.

⁹ DHL Express moved its hub operation 54 miles north to Wilmington, Ohio in 2005.

**Exhibit 7.4
Top 20 Air Cargo Airports
Population Within 500-Mile Radius**

Airport Name	ID	ACI NA Rank*	Population Within 500 Mile Radius	Percent of U.S. Population
Cincinnati/Northern Kentucky	CVG	16	110,185,183	39.2%
Louisville International	SDF	6	107,503,611	38.2%
Indianapolis International	IND	8	100,012,480	35.5%
Philadelphia International	PHL	15	95,969,341	34.1%
Newark Liberty International	EWR	9	86,876,315	30.9%
JFK International	JFK	5	83,060,784	29.5%
Memphis International	MEM	1	80,272,544	28.5%
Chicago O'Hare International	ORD	7	78,449,643	27.9%
Hartsfield Atlanta International	ATL	10	70,847,828	25.2%
Boston-Logan International	BOS	19	65,782,119	23.4%
Ontario International	ONT	14	40,742,497	14.5%
Los Angeles International	LAX	3	40,585,590	14.4%
Dallas/Ft Worth International	DFW	11	40,249,244	14.3%
Metro Oakland International	OAK	12	37,315,408	13.3%
San Francisco International	SFO	13	37,160,353	13.2%
George Bush Intercontinental	IAH	17	35,350,457	12.6%
Miami International	MIA	4	17,864,341	6.3%
Seattle Tacoma International	SEA	20	11,024,535	3.9%
Ted Stevens Anchorage Int'l	ANC	2	519,071	0.2%

Source: U.S. Census, Claritas, Airports Council International, Wilbur Smith Associates

*Honolulu ranks 16 but is not included in the analysis

Population estimates for 100- and 500-mile radii were also calculated for the select Southeast U.S. airports. These calculations were then compared to the LTC location. **Exhibit 7.5** identifies the population within a 100-mile radius of each airport as well as the percent of the total U.S. population. Florida airports are presented in bold. Orlando International Airport captures 2.3 percent of the U.S. population and has over 6.5 million people living within a 100-mile radius of the airport, ranking second behind Atlanta-Hartsfield. Hartsfield Atlanta International Airport ranks highest capturing over 2.4 percent of the U.S. population within a 100-mile radius.

A 500-mile radius was used to also determine the number of people living within each Southeast U.S. airport's extended market area (see **Exhibit 7.6**). Florida airports are presented in bold. Findings indicate that airports in Northern Florida capture larger percentages of the U.S. population due to proximity to northern population centers. Tallahassee Regional Airport captures over 52.5 million people or 18.7 percent of the U.S. population within 500 miles. When comparing Miami International Airport, located on the southern tip of the Florida peninsula, to

the other airports in the Southeast U.S., it ranks 35th when compared to the 36 select airports. Piedmont Triad International Airport (GSO) ranks highest capturing over 38 percent, or nearly 108 million of the U.S population within a 500-mile radius. It is noteworthy to point out that this airport was selected by FedEx for its future location of their mid-Atlantic regional hub to be completed in 2009.

**Exhibit 7.5
Southeast U.S. Airports
Population Within 100-Mile Radius**

Airport Name	ID	Rank	Population	Percent
			Within 100 Mile Radius	of U.S. Population
Hartsfield Atlanta International	ATL	1	6,629,733	2.4%
Orlando International	MCO	2	6,550,589	2.3%
Piedmont Triad International	GSO	3	6,442,316	2.3%
Charlotte-Douglas International	CLT	4	6,240,605	2.2%
Dallas/Ft Worth International	DFW	5	6,132,505	2.2%
Fort Worth Alliance	AFW	6	6,049,956	2.1%
Tampa International	TPA	7	5,968,787	2.1%
Orlando Sanford International	SFB	8	5,738,111	2.0%
Palm Beach International	PBI	9	5,737,517	2.0%
George Bush Intercontinental	IAH	10	5,698,441	2.0%
Ellington Field/Houston	EFD	11	5,594,883	2.0%
Ft Lauderdale-Hollywood	FLL	12	5,569,292	2.0%
Miami International	MIA	13	5,469,868	1.9%
Daytona Beach International	DAB	14	4,978,101	1.8%
Raleigh-Durham International	RDU	15	4,862,727	1.7%
Sarasota Bradenton International	SRQ	16	4,815,473	1.7%
Columbia Metropolitan	CAE	17	4,558,332	1.6%
Melbourne International	MLB	18	4,223,696	1.5%
Austin-Bergstrom International	AUS	19	3,984,710	1.4%
Huntsville International	HSV	20	3,819,517	1.4%
North Carolina Global Transpark	ISO	21	3,417,508	1.2%
Stennis International	HSA	22	3,352,665	1.2%
Birmingham International	BHM	23	3,300,118	1.2%
San Antonio International	SAT	24	3,289,858	1.2%
Kelly USA	SKF	25	3,278,766	1.2%
Gulfport-Biloxi Regional	GPT	27	2,841,741	1.0%
Southwest Florida International	RSW	28	2,743,697	1.0%
Cecil Field - Jacksonville FL	VQQ	29	2,466,639	0.9%
Jacksonville International	JAX	30	2,442,939	0.9%
Mobile Downtown	BFM	31	1,986,615	0.7%
Savannah/Hilton Head International	SAV	32	1,765,857	0.6%
Elgin AFB-Okaloosa Regional	VPS	33	1,678,594	0.6%
Jackson International	JAN	34	1,627,477	0.6%
Tallahassee	TLH	35	1,404,782	0.5%
El Paso International	ELP	36	944,051	0.3%

Source: Claritas, Wilbur Smith Associates

Exhibit 7.6
Southeast U.S. Airports
Population Within 500-Mile Radius

Airport Name	ID	Rank	Population	Percent
			Within 500 Mile Radius	of U.S. Population
Piedmont Triad International	GSO	1	107,770,455	38.3%
Raleigh-Durham International	RDU	2	101,047,313	35.9%
North Carolina Global Transpark	ISO	3	90,825,631	32.3%
Charlotte-Douglas International	CLT	4	87,304,049	31.0%
Columbia Metropolitan	CAE	5	74,823,405	26.6%
Huntsville International	HSV	6	73,078,469	26.0%
Hartsfield Atlanta International	ATL	7	70,847,828	25.2%
Birmingham International	BHM	8	69,917,074	24.8%
Jackson International	JAN	9	57,522,861	20.4%
Savannah/Hilton Head International	SAV	10	56,334,660	20.0%
Tallahassee	TLH	11	52,555,883	18.7%
Elgin AFB-Okaloosa Regional	VPS	12	51,165,520	18.2%
Gulfport-Biloxi Regional	GPT	13	50,157,921	17.8%
Stennis International	HSA	14	50,138,954	17.8%
Mobile Downtown	BFM	15	49,949,865	17.7%
Jacksonville International	JAX	16	48,284,565	17.2%
Cecil Field - Jacksonville FL	VQQ	17	47,990,381	17.1%
Daytona Beach International	DAB	19	40,648,709	14.4%
Dallas/Ft Worth International	DFW	20	40,249,244	14.3%
Fort Worth Alliance	AFW	21	39,814,370	14.1%
Orlando Sanford International	SFB	22	37,219,020	13.2%
George Bush Intercontinental	IAH	23	35,350,457	12.6%
Orlando International	MCO	24	34,991,563	12.4%
Ellington Field/Houston	EFD	25	34,529,062	12.3%
Tampa International	TPA	26	34,024,076	12.1%
Austin-Bergstrom International	AUS	27	31,746,616	11.3%
Melbourne International	MLB	28	31,716,134	11.3%
Sarasota Bradenton International	SRQ	29	30,912,469	11.0%
San Antonio International	SAT	30	28,473,423	10.1%
Kelly USA	SKF	31	28,472,109	10.1%
Southwest Florida International	RSW	32	21,775,848	7.7%
Palm Beach International	PBI	33	20,054,949	7.1%
Ft Lauderdale-Hollywood	FLL	34	18,261,639	6.5%
Miami International	MIA	35	17,864,341	6.3%
El Paso International	ELP	36	12,039,946	4.3%

Source: Claritas, Wilbur Smith Associates

Highway and Roadway Congestion

Several recent highway congestion studies by various entities have addressed increased highway congestion in Florida as well as major metropolitan areas throughout the United States. Findings indicate that highway congestion across the U.S. is severely impacting business and personal finances as well as taking valuable time. Financial and operational impacts to the air cargo industry, an industry which measures performance by the minute, are significant. The 2005 Urban Mobility Report¹⁰ by Texas Transportation Institute provides historic trends in urban highway congestion. (A summary of the study's findings related to Florida are found in **Appendix CC**). This study indicates that:

Congestion has grown in communities of every size. Measures in all of the population size categories show more severe congestion that lasts a longer period of time and affects more of the transportation network in 2003 than in 1982. The average annual delay for every person using motorized travel in the peak periods in the 85 urban areas studied climbed from 16 hours in 1982 to 47 hours in 2003.

The Washington, DC based TRIP Foundation recently studied a report on the condition, impact, use and future needs of Florida's interstate highway system¹¹. Florida has four major Interstate routes running the length and breadth of the State and connecting the State's major urban areas. Together with eight spur routes, Florida has 1,471 miles of Interstates. This study found Florida's Interstate system, which includes three percent of all roadway lane miles in the State, carries 17 percent of all vehicle travel in the State. It also concluded that:

- Since funding of the Interstate system was approved in 1956, vehicle miles of travel in Florida have increased more than twelve fold, from approximately 16 billion miles driven annually to approximately 196 billion miles driven annually.
- More than half – 51 percent -- of Florida's urban Interstates are considered congested because they carry traffic levels that result in significant delays during peak travel hours (349 of 687 miles).
- Between 1990 and 2004, vehicle travel on Florida's Interstates increased by 73 percent, while lane miles on the system only increased by 15 percent.
- Between 1990 and 2004, the average annual amount of travel per Interstate-lane-mile in Florida increased by 50 percent.
- Travel on Florida's Interstate highways is expected to increase by 60 percent by the year 2026.

The downside to Florida's population and prosperity growth is that its roadways and highways are becoming more congested and impacts to the air cargo industry are becoming more significant. If there is a silver lining to the congestion problem it is that competing airports in other states are facing similar issues.

Airport Congestion

Congested airports and highways disrupt air cargo activity and this is a concern to the industry. Congestion impacts schedules, fuel consumption, and labor costs to air carriers. Cargo carriers and airports have come up with innovative approaches to deal with congestion. Congested

¹⁰ http://tti.tamu.edu/documents/mobility_report_2005.pdf

¹¹ <http://www.tripnet.org/FloridaInterstateReport062906.pdf>

airports must develop and implement innovative plans to retain cargo carriers, increase capacity, and attract new cargo carriers. Cargo carriers find innovative strategies to continue serving their customers and increase efficiency and performance.

Congested Airports – Some of the smallest airports in acreage are in the top 20 cargo airports in North America in terms of total annual cargo tonnage. Los Angeles International Airport (LAX) is only 3,500 acres in size yet accommodated over 1.9 million tons in 2005. JFK airport in New York is 5,200 acres in size yet is the sixth busiest cargo airport in the U.S. Cargo carriers “work around” the congestion issues at these airports due to the fact that these airports offer strategic advantages and are located close to their core customers.

Airport management plans and implements changes to accommodate for air cargo growth. Large commercial airports, such as Miami International, have taken steps to increase efficiency for cargo operators. Miami’s recently completed \$500 million Cargo Development Program includes 15 new cargo buildings, increasing cargo warehouse space from 1.4 million square feet to approximately 2.7 million square feet; it provides 65 DC-10F/B747 cargo parking positions and a planned roadway system from the cargo areas to other major highways around the airport. Airport management also constructed a cargo tunnel beneath one of the runways at MIA. This cargo access tunnel is used to transport aircraft belly cargo from the east side terminal area to the west side cargo areas of the airport. The tunnel has cut the trip down from an average of 45 minutes to just 15 minutes. In addition, to create more space for warehouse, MIA constructed cargo warehouses with roof top parking to increase land availability for cargo development.

Airport authorities have also encouraged air cargo development at other airports in their system of airports. Port Columbus International Airport in Columbus, Ohio prefers all cargo carrier activity take place at Rickenbacker International Airport on the south side of the city. Los Angeles World Airports (LAWA) has developed cargo facilities at their airport in Ontario (ONT). As a result, ONT has become one of the top 20 cargo airports in the U.S. and serves the eastern portion of the Los Angeles basin. In the In Los Angeles area, air cargo activity has incrementally grown eastward with the metropolitan area. Cargo activity has progressed eastward from LAX to ONT and in 2005, to March AFB (RIV) where DHL maintains its western regional hub.

Cargo Carrier Strategies - Cargo carriers, particularly integrated express carriers, do not abandon a market due to congestion at an airport. In large markets they will maintain a presence at the market’s primary airport, working around the congestion, then may choose to expand at another nearby airport if demand warrants.

As cargo carriers have expanded in congested markets they have used innovative strategies to compensate. For example, as FedEx has grown in the Los Angeles market, and as highway and airport congestion has interfered with the carrier’s efficiency, the carrier has had to place aircraft at secondary airports in order to serve the market with the same reliable service. FedEx in the Los Angeles market has wide-body aircraft (MD11) serving LAX and narrow-body B727 aircraft serving eastern portions of L.A. out of Ontario and a narrow-body B727 aircraft serving southern portions of L.A. out of Long Beach. In addition, many integrated express carriers utilize feeder aircraft to avoid congested highways. DHL for example uses an LAX based feeder aircraft to service the California cities of Santa Barbara, Santa Maria and Oxnard. Santa Barbara is 87 miles from LAX and would normally be accommodated with a truck if roadways were less congested. In addition, in 2004, DHL chose to service the Los Angeles market from Riverside

Airport, 75 miles east of LAX, but recently had to schedule a DC9 from LAX to Riverside due to highway congestion.

Congestion is an issue carriers consider when adding an international route to the U.S. In recent years, some carriers have chosen to locate freighter aircraft at airports near international gateways, and in effect, create a new “gateway” airport. For example, Panalpina introduced freighter service in 1996 at Bradley International Airport in Hartford, CT. The airline chose this location due to its proximity to Boston and New York. Air China operates at Portland International Airport (PDX) rather than SEATAC. These carriers prefer trucking four hours to PDX rather than deal with the overcrowded conditions at SEA. Nashville International Airport gained its freighter service from China Airlines in 2000 on the strength of important forwarder-managed business from Dell Computers. But it should be noted that the Taiwanese airline brought its B747 in only after looking at the road feeder service that would bring more traffic in from a larger geographic area. In addition, the carrier “shares” the aircraft with their Chicago operation. Airports such as Nashville International, Huntsville International, and Rickenbacker International have essentially become “inland” international gateways with congestion avoidance being one of the driving factors.

Natural Disasters

Of all the recorded hurricanes to hit the U.S. since 1851, 36 percent have made landfall in Florida. Hurricanes of at least Category 3 strength making landfall on Florida’s shores, surprisingly, were quite rare in the latter half of the 20th century. However, six hurricanes of such intensity hit the Florida coast in the 50-year time span -- roughly only one per decade. Historic statistics indicate that South Florida has a high propensity for hurricane activity.

Hurricane activity varies greatly throughout Latin America and the Caribbean. All portions of Latin America ~including Central America and South America, south of 10°N latitude, had a less than 1 percent chance of a hurricane strike per year. The annual likelihood of hurricane activity increased farther from the equator to a maximum of .20 percent northeast of the Bahamas. While the coastal region with the greatest hurricane activity anywhere in the Atlantic basin was extreme South Florida (15 percent annual chance), many locations throughout Latin America and the Caribbean had at least a 10 percent annual chance of experiencing a hurricane.¹²

An unprecedented number of strong hurricanes, including the most powerful hurricane ever measured, Hurricane Wilma, caused unprecedented devastation in 2004 and 2005. Eight hurricanes rated Category 3 or higher blew past or across Florida in just two years.

Local economies of the affected regions, at least in Florida, generally rebounded quickly after the storms in 2004 and 2005. The job markets strengthened following the hurricanes, due to reconstruction efforts in the region. Tourism and retail businesses, however, were less quick to recover. In addition, federal assistance and private insurance payouts surely contributed to the quick rebound.

During hurricanes international cargo shipping is hampered making weather-related delays unavoidable. These interruptions can severely impact an air cargo carrier’s operations by:

¹² Natural Hazards Review ASCE / August 2003 / page 101

causing aircraft to be relocated, rerouting routes to bypass Florida airports, damaging carrier buildings and ground equipment, and relocating personnel due to evacuations. These impacts can create millions of dollars in lost revenue as well as costs associated with reconstruction. Although the weeks and months following a hurricane will create a flurry of activity in the air cargo industry, it almost always is followed by a lull in activity as the local economy regains momentum.

OPPORTUNITIES

Opportunities are external conditions that are helpful to the achievement of the objective.

Bilateral Agreements

Bilateral agreements permit civil aviation between countries. These agreements minimize government intervention and encompass both passenger and freighter aircraft. Prior to crossing another country's airspace, the aircraft's crew must request permission to fly over the territory. In 1944, the Convention on International Civil Aviation (ICAO), also known as the "Chicago Convention" was enacted to establish guidelines for the development of civil air transport. Under bilateral agreements, nations abiding by ICAO can enjoy the freedoms of air as depicted in **Exhibit 7.7**. At a minimum, an air cargo carrier requires both the third and fourth freedom. If a carrier has fifth and seventh freedoms they can operate with greater efficiency.

Revisions to bilateral agreements will create increased opportunities for moving air cargo on trade lanes with China. Between 2004 and 2010 it is expected that the number of weekly aircraft freighter rotations flown between China and the U.S. will increase by 111.¹³ In April 2001, integrated express carrier UPS began flying freighter aircraft to China six days per week.¹⁴ In August 2006, UPS opened two retail centers in Shanghai. In total, UPS employs 4,000 people in China and serves more points in the Country than any other U.S. cargo or passenger carrier.¹⁵ As of April 2006, integrated express carrier FedEx operated 26 weekly flights to China.¹⁶

Under the eighth freedom of the air, also known as cabotage, foreign carriers cannot transport air cargo traffic between to cities in a country. As an example, Varig operates a Boeing 747 freighter from Los Angeles to Miami and terminating in Santiago, Chile. As a result of rules against cabotage, the airline cannot transport traffic between the Los Angeles and Miami sector. To do so would be cabotage.

The dramatic increase in international air travel lends support to Open Skies agreements. Per the Bureau of Transportation Statistics, nonstop passenger trips between the United States and foreign countries increased nearly 70 percent between 1990 and 2000. Under Open Skies agreements, an airline can serve any city in its home country and fly to any city in a participating foreign country.¹⁷

¹³ GCW Consulting, "China's Rapidly Growing Air Cargo Industry," April 2005.

¹⁴ People's Daily, "UPS Wins Final Award of China Air Rights," January 2001.

¹⁵ Logistics Management, "UPS Rolls Out China-based Retail Centers," August 2006.

¹⁶ Atlanta Business Chronicle, "UPS China Growth Continues With New Flights," April 2006.

¹⁷ Bureau of Transportation Statistics

**Exhibit 7.7
Air Freedom Rights in Air Services Agreements**

<p>FIRST FREEDOM To overfly one-country en-route to another</p>	
<p>SECOND FREEDOM To make a Technical Stop in another country</p>	
<p>THIRD FREEDOM To carry freight and passengers FROM the home country to another country</p>	
<p>FOURTH FREEDOM To carry freight and passengers TO the home country from another country</p>	
<p>FIFTH FREEDOM To carry freight and passengers between two countries by an airline of a third country on a route with origin and destination in its home country</p>	
<p>SIXTH FREEDOM To carry freight and passengers between two countries by an airline of a third country on two routes connecting in its home country</p>	
<p>SEVENTH FREEDOM To carry freight and passengers between two countries by an airline of a third country on a route with no connection in its home country</p>	
<p>EIGHTH FREEDOM (CABATOGE) To carry freight and passengers within a country by an airline of another country on a route with origin/destination in its home country</p>	
<p>TRUE DOMESTIC To carry freight and passengers within a foreign country by an airline with no connections with the home country.</p>	

Source: World Trade Report 2005, Wilbur Smith Associates

Central American Free Trade Agreement (CAFTA)

The Central American Free Trade Agreement will likely increase Florida air cargo traffic in the coming years. When the Dominican Republic was added to CAFTA, the agreement became know as DR-CAFTA. A primary goal of DR-CAFTA is to create a free trade zone between the United States and the DR-CAFTA member countries. This agreement parallels the North American Free Trade Agreement (NAFTA) with member countries the United States, Canada, and Mexico.

This proposal was signed into law by President George W. Bush in August 2005. Seven countries are now part of the agreement: Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and the United States. Three of the six non-U.S. member

countries are now operating under DR-CAFTA: El Salvador, Honduras, and Nicaragua. Costa Rica is the only DR-CAFTA country that has not yet ratified the agreement. The Dominican Republic and Guatemala are actively working to implement the DR-CAFTA program.¹⁸

This agreement will eliminate tariffs paid on approximately 80 percent of U.S. exports to member countries. Goods benefiting from tariff elimination include nonagricultural and nontextile exports from DR-CAFTA countries to the US. The combined population of DR-CAFTA member countries is 45 million people. The Dominican Republic and five other Central American countries participating in DR-CAFTA purchase \$15 billion dollars worth of U.S. goods each year.¹⁹ In 2004, DR-CAFTA countries exported \$17.7 billion dollars of goods to the U.S.

Regarding exports, 40 percent of all perishable goods from Central and South America entering the U.S. do so through Florida.²⁰ The International Monetary Fund (IMF) projects that upon full implementation by all member countries, the combined export activity from DR-CAFTA countries to the U.S. could increase up to 28 percent. Further, IMF economists anticipate a 1.5 percent increase in the Gross Domestic Product (GDP) across DR-CAFTA member countries.

Through free trade, the DR-CAFTA agreement has the potential to increase political stability in the region. In turn, this will protect Foreign Direct Investment (FDI) and encourage future inflows to DR-CAFTA member countries as well. The similar agreement, NAFTA, spurred FDI inflows for Mexico.²¹

Asia Bound Perishables

Continued economic expansion in Asia provides significant opportunities for exporting cargo from the U.S. High demand for perishable goods: fruits, flowers, and vegetables present opportunities for air cargo growth from the U.S. to Asia. Of particular interest, perishable products imported to the U.S. from the Americas have an emerging market in the Far East. These goods, first imported at the Miami International Airport, can move to the West Coast for export to Asia via the Los Angeles gateway. Flowers are also popular import perishables in Asia and auctions are conducted in Japan selling roses and orchids.²² As a member of the Cool Chain Association, Tampa Cargo provides refrigerated transit for perishables at all points along the supply chain. The carrier's operation in Bogota is set up to cool flowers to two degrees Celsius within 20 minutes.²³ In turn, flowers imported via Miami International and routed to Los Angeles can move to Asia as long as a Cool Chain is in place ensuring controlled temperature transport from origin to destination.

The difficulty with transporting perishables lies in the name itself; perishable goods must be kept at controlled temperatures at every point along their routing from origin to final destination. These high value products become instantly worthless when spoilage occurs. As Asian demand for perishables has accelerated in recent years, strategic partnerships between growers, packers, cargo carriers, insurance providers, and retailers have evolved to support

¹⁸ Office of the United States Trade Representative

¹⁹ Wikipedia.org

²⁰ Food Production Daily.com, "Supply Chain Project Links RFID With Internet," August 2005.

²¹ Latin Business Chronicle, "CAFTA: Positive Outlook," August 2005.

²² The Asahi Shinbun Company, "Weekend Beat/Japan at Work: Flower Auctioneer," March 2005.

²³ Tampa Cargo

market dynamics.²⁴ Consulting firms such as Cold Chain Asia assist firms with developing transportation strategies for perishable food and pharmaceutical items.²⁵

Agricultural producers throughout the United States are recognizing the potential of Asian consumers, and the growing middle-class in Asia, and are promoting their products there. For example, California growers offer an array of agricultural perishable products for export to Asia. During the summer months, produce from California's Central Valley is transported to Asia on cargo aircraft. Of the fruits and vegetables grown in the Valley, Japanese demand for cherries is particularly strong; one-third of all cherries produced are exported to Japan consumers. Cherries are purchased at prices 275 percent higher than U.S. prices. Again, given that cherries are subject to spoilage, fast and efficient transport is critical. In terms of volume exported, the leaders in U.S. air exports are: cherries, strawberries, grapes, asparagus, and lettuce.²⁶ Asian consumers also demand blueberries and raspberries. Once loaded onto a cargo aircraft, these perishables arrive at final destination in 20 to 24 hours.

Overall, U.S. demand for China air cargo exports exceeds China demand for U.S. air cargo exports. This trade imbalance creates aircraft with only 50 to 60 percent capacity utilized on Asia bound routes. Integrated express carrier FedEx has difficulty filling the return sector on its aircraft from the U.S. to Asia. As a result, surplus air network capacity exists from the U.S. to Asia and, with strategic planning; this capacity can be filled, in large part, with perishables.

United Airlines is making an effort to sell this capacity to producers of perishable, staggered seasonal products such as: cherries, asparagus, grapes and onions. Florida and Latin American goods may also prove to be a commodity transported on these underutilized cargo aircraft sectors. Domestic "place-based"²⁷ agricultural products with potential consumption in Asia include: Florida citrus, Georgia Vidalia onions and Peaches, fish from the Caribbean, as well as Columbian flowers.

Since there is capacity available on already dedicated air lift to accommodate perishables. The challenge is in coordinating material availability and schedules to ensure perishables from Florida can connect to Asia flights and fulfill the promised transit commitment. Flying the perishables from Florida to the West Coast for connection to Asia is one option as is flying directly to Asia. It is important to note, however, that Florida economic development and trade officials and growers associations should build working relationships with Asian grocers and consumers to communicate the benefits of Florida and Latin American grown products. This communication will ultimately increase the level of demand for each commodity.

Asia Trade with Florida

Trade activity between Miami and Asia continues to increase. During 2005, Miami International's air trade grew 18 percent in weight and was valued at more than \$1.3 billion.²⁸ Korean Air's recent addition of twice-weekly Boeing 747-400 cargo flights between MIA and Seoul brings additional cargo capacity to support this trade lane. Miami will serve as a major distribution point for Korean Air's Latin America markets. Specifically, markets targeted for

²⁴ Rabobank, "The Importance of Cold Chain in the Asian Perishables Trade," July 2005.

²⁵ Cold Chain Asia, January 2006.

²⁶ ABC7 News Team, "California Produce is Big Business Overseas," June 2006.

²⁷ Effective place-based branding of agricultural products has the potential to raise farmer incomes, utilizing air cargo aircraft for transport while increasing Asian consumer awareness about the geographic uniqueness of these products.

²⁸ Miami International Airport

distribution and development include: Chile, Peru, Brazil, Venezuela, Guatemala, Colombia, Panama, and Honduras. According to Korean Air, most Asian cargo destined for Miami or Latin America is transported by air to New York, Chicago, or Atlanta. It is then moved via surface transport or flown on other air carriers to reach final destination. Commodities expected to move on this Seoul to Miami route are: cell phones and communications equipment, electronic appliances, automobile spare parts, textiles, and perishables.²⁹ Opportunity exists for additional air cargo carriers to establish operations in Florida and provide trade lane lift to the Far East.

Around the World Freighter

Trade lanes between Florida, Asia, and the Middle East present a cargo opportunity for an around-the-world-flight connecting import and export commodities between these points. The Boeing 747-400 Extended Range freighter can travel a maximum of 8,820 miles without stopping for fuel. Hence, this aircraft is one candidate identified for an around-the-world-flight. Trade flows could support a flight routing such as the one presented in **Exhibit 7.8** below. Also below, **Exhibit 7.9** maps this routing.

**Exhibit 7.8
Florida Origin Around-
The-World Flight**

Route	Mileage
MIA-LAX	2,342
LAX-HKG	7,260
HKG-DXB	3,684
DXB-NBO	2,205
NBO-MIA	7,949

Source: Great Circle Mapper,
Wilbur Smith Associates

²⁹ Miami International Airport, “*MIA Lands New Asian Cargo Route*,” August 2006.

Exhibit 7.9
Florida Origin Around-The-World Flight



Source: Great Circle Mapper, Wilbur Smith Associates

Miami to Los Angeles - Originating in Miami, the first destination for a Boeing 747-400 ER Freighter around-the-world-flight would be Los Angeles. This flight sector would transport Florida perishables: seafood, flowers, fruits, and vegetables to the West Coast for export to Asia. Another product category, aerospace products, would also be moved from Florida via Miami to Los Angeles for distribution on the West Coast and for connection to Asia.

Los Angeles to Hong Kong and the Middle East - Nearly nine percent of all private-sector jobs held by employees in the State of California are supported by cargo exports. In total, California businesses exported \$117 billion worth of goods in 2005. Of these exported products, the leading category is computers and electronic equipment, amounting to \$41.8 billion in value. Hong Kong is a leading California export partner. In return, there is a strong market for telecommunication equipment products manufactured in Hong Kong and destined for the U.S. Hence, on the around-the-world-flight, computer components would travel from Miami to Los Angeles and continue to final destinations in Asia or remain on the aircraft for offload in Hong Kong and the Middle East (via Dubai).³⁰ Road Feeder Service trucks from Houston to Miami would transport oil and gas equipment, supplies and research and development materials to the oil fields of the Mid-East. On the Dubai to Miami segment oil and gas equipment would be transported to the U.S. This route would include a stop in Nairobi.

Africa Flower Exports to the US - Located in Kenya, floricultural farms near Nairobi supports an extensive flower industry. Floriculture is a cornerstone of Kenya's agricultural export activity. In 2004, Kenya exported 60,000 tons of flowers mostly bound for Europe, Asia and the Mid-

³⁰ Office of Trade and Industry Information, International Trade Administration, US Department of Commerce

East.³¹ Cargo carriers such as Jet Flowers, Ltd., transport these perishables from East Africa for distribution throughout the world. Given the extensive perishables facilities and extensive floriculture logistics capabilities found in Miami, one viable trade lane routing is to load flowers from Nairobi onto the around-the-world freighter for transport back to the U.S. via Miami. As the last sector on the flight, flowers from Nairobi would travel 7,949 miles non-stop to Miami on a B747-400ER freighter.

Europe's Ties to the Florida Aerospace and Defense Industry Cluster

On a national scale, the U.S. aerospace and defense cluster provides above average wages to the workers it employs. The Bureau of Labor Statistics reports that, on average, these workers earn 1.4 times the average wage paid to all U.S. workers. Compared to the retail trade sector, workers employed in the aerospace and defense cluster earn 2.2 times more.³² At the State level, the aerospace and defense cluster is a major component of Florida's economy. In 2004, over \$4 billion in payroll was distributed to nearly 80,000 workers.³³ Europe is a leading importer of U.S. Aerospace and Defense products and Florida is a critical producer for this industry. Historically, European aerospace and defense product imports from the U.S. have outpaced U.S. imports from Europe.³⁴ In recent years this trend has reversed. European defense exports increased 31 percent between 2002 and 2003. In 2004 this rapid growth translated into European aerospace exports exceeding imports. However, Aerospace America cites three issues plaguing the European aerospace industry:

- Comparative labor inefficiencies in Europe versus the U.S.
- Underperformance in the space sector
- Subdued levels of defense spending among EU states

Regarding labor, gross domestic product per U.S. worker increased 16.2 percent between 1995 and 2002. Among European workers, the realized increase was only 7.2 percent; less than half that realized among U.S. aerospace and defense industry workers.³⁵ Hence, the U.S. is poised to remain a leading producer of aerospace and defense products for export to Europe.

A380 Opportunities

The European Airbus A380 has been designed and built as the world's largest passenger airplane. The aircraft boasts a double-decker, twin-aisle design with an oval cross-section fuselage, the first of its kind. Currently, the largest aircraft commercial airports accommodate is the Boeing 747, which has a wingspan of 210 feet and a maximum takeoff weight of approximately 850,000 pounds. By comparison, the wingspan of the A380 is 261 feet and maximum takeoff weight is 1.24 million pounds. The A380 family's baseline passenger aircraft has a capacity of 555 passengers in three classes, and a range of up to 8,000 nautical miles. The freighter version, the A380-800F, will carry a payload of 150 tons (330,000 lbs) over 5,600 nautical miles.

³¹ The Standard, "Kenya's Wealth in Foreign Hands," April 2005.

³² Economic Policy Institute, "The Aerospace Sector as a National Asset," May 2002.

³³ eFlorida.com, "Florida's Aviation & Aerospace Industry," 2004.

³⁴ AAIA.org, "Europe's Defense Industry Makes Quiet Progress," November 2002.

³⁵ Aerospace America, "European Aerospace Grows, But Problems Remain," September 2004.

Given the size and design of the aircraft, the A380 will play a limited role in the world's air transport system. For passenger service, it will operate between congested international gateway airports. The freighter version of the A380 will operate on high-volume, long-haul routes. To date, five cargo carriers have ordered freighter versions; FedEx, UPS, Lufthansa, Air France, and Emirates. It is anticipated that FedEx and UPS will route A380s through their respective national hubs on transpacific routes where pure freighter demand is greatest (limited belly capacity in relation to freight demand). Freight density on Air France and Lufthansa all-cargo routes indicates these aircraft will be utilized on Europe-Asia routes and Europe-North America routes. Based on current Air France and Lufthansa gateway usage (both cargo and passenger), the U.S. airports most likely to see A380 freighters initially are New York's JFK and Miami International, with additional potential at Atlanta's Jackson-Hartsfield International and Chicago O'Hare International. Emirates core markets for both freight and passengers are in connecting the Middle East with Europe and Asia. It is anticipated that few, if any, Emirates freighters will serve U.S. markets in the foreseeable future.

Airports seeking to accommodate the A380 will likely not need lengthy extensions to runways. At sea level under ISA conditions, an A380 with a typical load of 80 percent of maximum payload will require as little as 9,000 feet of runway to take off, according to Airbus' "Airplane Characteristics for Airport Planning" advisory circular. The A380-800 Freighter will require approximately 11,000 feet of runway. Most international passenger and cargo gateways have runways built to at least 10,000 feet. Taxiways, however, may require redesign to accommodate the A380. While most taxiways are wide enough to accommodate the aircraft (Airbus illustrates the aircraft taxiing on 75-foot and larger taxiways), the wingspan and turning radius of the aircraft may require increased separation of taxiways and additional pavement at taxiway intersections. Likewise, the weight of the aircraft may force some airports to reinforce pavements on taxiways and ramps.

As a result of the design characteristics forced by the plane's size, most airports are not undertaking the costs of accommodating the A380. Airports in the United States that have stated they are working to accommodate the aircraft include John F. Kennedy in New York, San Francisco, Los Angeles Orlando International and Miami. Additionally, Anchorage, Huntsville, Louisville, Rickenbacker in Columbus, Ohio and Memphis International airports are working to accommodate the aircraft for cargo operations. Overseas airports that are making preparations include the new Bangkok International Airport, Changi International Airport in Singapore, Frankfurt, London's Heathrow, Paris-Charles de Gaulle, Tokyo-Narita, Incheon in Seoul, and Sydney International Airport. The costs to airports for such changes are high; for example, Frankfurt is spending U.S. \$130 million, Los Angeles \$53 million, and Heathrow \$842 million.

Cuba

Fidel Castro assumed power as Cuba's Prime Minister in 1959. At 80 years of age and in poor health, the role of Prime Minister transitioned to Fidel's younger brother Raul Castro late in July of 2006.³⁶ This transfer of power to Raul Castro, 75 years of age, has generated speculation about future trading opportunities between the U.S. and Cuba. In fact, in August 2006, New York State Democrats from the U.S. Senate proposed developing a task force to assess economic development options between New York and Cuba. One objective of this newly

³⁶ Forbes, "Post-Castro Capitalism?," August 2006

formed task force is to provide recommendations on policies to reestablish fair trade practices with Cuba.³⁷

In 1960, Fidel Castro aligned Cuba with the Soviet Union and declared Cuba a socialist republic. In light of this action, the U.S. initiated a trade embargo with Cuba later in the year. Under Fidel Castro's reign, it is believed that various types of human rights abuses have frequently occurred within the Island nation. Economic sanctions imposed by the U.S. are viewed by some as a mechanism for punishing this behavior. Yet, others argue that this further feeds repression of the Cuban citizens by limiting their earning potential and access to goods and services.³⁸

Prior to 1959, 85 percent of all tourists visiting Cuba were from the U.S. On an annual basis, the Cuban Tourist industry currently generates \$2 billion. Should trade restrictions be lifted, the Cuban tourism industry would benefit tremendously. Cuba's current mix of lodging is heavily weighted toward luxury properties with 70 percent of all available lodging categorized as luxury accommodations. Hotel chains such as Marriott and Hilton providing non-luxury properties would benefit the most. Mining companies would also prosper as nickel is a primary export commodity for Cuba.³⁹ Also, opportunities exist for exploratory energy firms such as Haliburton. It is believed that extensive oil reserves exist in the waters off the northwest portion of the Island. Cuba currently has a government monopoly on the Telecom industry. U.S. firms Sprint Nextel and AT&T would benefit upon dissolution of this uniform government control. The low per capita income of Cuba residents, \$3,500 per year, does not lend support for strong opportunities among consumer products firms.⁴⁰ As the Tourism, Mining, Energy, and Telecom industries evolve in Cuba this economic activity will translate into higher incomes and more purchasing power for Cuban citizens.⁴¹

Limited trade reforms between the U.S. and Cuba have occurred since 1959. In 2000, the Trade Sanctions Reform Act (TSRA) opened sales of U.S. agricultural goods to Cuba. Between 2000 and 2005, an estimated \$1 billion worth of agricultural goods were exported from the U.S. to Cuba.⁴² In 2001, the International Trade Commission published findings that the value of lost trade between the U.S. and Cuba amounts to \$1 billion annually. It is further indicated that the State of Florida would experience a substantial portion of this economic benefit should trade embargos be eliminated.⁴³ In 2004, the total value of agricultural sales from the U.S. to Cuba totaled \$400 million.⁴⁴

In terms of population, Cuba is home to more people than any other country in the Caribbean.⁴⁵ Cuba's leading export commodities are: sugar, nickel, tobacco, fish, medical products, citrus, and coffee. In 2005, Cuba's leading export trading partners were: the Netherlands, Canada, China, Spain, and Venezuela. Cuba's leading import trading partners for the year were: China, Venezuela, Spain, the U.S., Canada, Germany, Italy, and Mexico. In 2005, the U.S. accounted

³⁷ The Business Review, "Task Force to Examine Possible Economic Future Between New York and Cuba," August 2006.

³⁸

³⁹ CIA World Factbook

⁴⁰ Forbes, "Post-Castro Capitalism," August 2006.

⁴¹ Washington Office on Latin America

⁴² www.senate.gov, "Cuba Trade Agreement Will Boost Rural Economy," August 2005.

⁴³ HeraldToday.com, "Cuba Trade: What's Next?," August 2006.

⁴⁴ Washington Office On Latin America

⁴⁵ Wikipedia.org

for less than 8 percent of all Cuban import products.⁴⁶ As the political climate in Cuba continues to evolve into a less authoritarian government structure, it is increasingly likely that Cuba will make strides towards becoming a free market economy. In theory, this would open the door for trading between Cuba and U.S. to resume which would include aircraft flights for passenger and air cargo service.

In order to secure Cuba's economic viability as a U.S. trading partner, reinstating a viable air network is crucial. U.S. citizens must currently obtain a Treasury license from the Treasury's Office of Foreign Assets Control in order to fly to Cuba. Direct U.S. air charter flights to Cuba are available from three major U.S. cities: Miami, Los Angeles, and New York's JFK International Airport. The only scheduled air cargo service from Florida to Miami is provided on Lynx Air International. This carrier operates a Metroliner five days per week between Ft. Lauderdale and Guantanamo Bay.

THREATS

Threats are external conditions that are harmful to the achievement of the objective.

Florida Bypass

Air cargo routes over flying or bypassing Florida's airports are becoming more common as aircraft with long range fuel capacity allow air cargo carriers to fly directly from their hubs in the Midwest to airports in Central and South America. For example, FedEx flies directly to Sao Paulo, Brazil from it Memphis hub. In addition, some foreign carriers, such as Iberian Airlines, have chosen not to hub in Miami due to increased security regulations. Lufthansa has chosen to fly cargo directly from Germany to South America with aircraft that formerly stopped in Miami.

Rising fuel costs are also impacting the types of commodities arriving in Florida. Fish caught in the southern Caribbean basin used to be commonly flown on aircraft but due to increased fuel costs are now frozen by processors and transported on ships. Colombian flower exporters, which operate on thin profit margins, are also feeling the pressure of increased fuel costs and are looking for alternatives to save on transport costs.

While Miami International Airport is the predominate perishables import airport in North America with 69 percent market share, many competing airports are attempting to gain market share in this commodity. While New York's JFK and LAX in Los Angeles follow second and third respectively; airports in the Midwest are making efforts to attract cargo carriers with perishables experience to their airports. These airports tout their proximity to the U.S. population which is considerably closer than Florida airports.

Modal Shift

Since the mid-1990s, there have been significant changes in the way freight transport and distribution is organized. Today, the principles of logistics are applied to the distribution industry to achieve savings and efficiencies. These changes have come about as a result of competitive market forces, through political, economic and social pressures, and as a result of technological advances. Just-in-time service, lower operating costs, and rising security costs have all contributed to a significant modal shift forcing more air cargo to travel by trucks at many

⁴⁶ CIA World Factbook

airports. In fact, much of the flat or declining air cargo activity at Florida’s SIS and Tier Two airports can be attributed to the modal shift from aircraft to trucks. Another important influence has been the evolution of supply-chain management (SCM), which has forced managers to optimize the flow of goods by employing more efficient logistical practices.

The future holds many further developments as the business of freight logistics evolves and as greater economies and efficiencies are achieved. The sector is, therefore, at a dynamic and important stage in its evolution, presenting both risk and opportunity for those involved. Airport managers and local economic development officials should work together to continue to attract industries to their market which utilize air cargo services.

Fuel Prices

Over the past 25 years, the prices of three commodities: crude oil, diesel fuel, and jet fuel have increased dramatically. A fraction of a percent separates the growth rates for each. The category leader in terms of price increase is jet fuel, with crude oil and diesel fuel second and third respectively. Over the past five years the growth trends are more unique. Although jet fuel is the category leader in terms of price increase when evaluating 25 years of data, this series exhibits the slowest growth in price appreciation for the last five years. At the other end of the curve, crude oil prices increased the fastest during this time. At the close of 2005, an average barrel of West Texas intermediate crude oil fetched just under \$60. During the first seven months of 2006, the price of this commodity increased over 25 percent to more than \$74 per barrel. In late July 2006, oil prices hit a high of \$78 per barrel.

One statistical tool used to explain relationships between variables is the correlation coefficient. A correlation coefficient is a number between negative one and one measuring the extent to which two variables are linearly related. If there is a perfect linear relationship with positive slope between the two variables, the correlation coefficient is one. Conversely, if there is a perfect linear relationship with negative slope between the two variables, the correlation coefficient is a negative one. A correlation coefficient of zero indicates that there is no linear relationship between the variables.⁴⁷

As proof that trends in crude oil, diesel fuel, and jet fuel are closely linked over the long-term, **Exhibit 7.10** contains a correlation coefficient matrix built from the past 20 years (1985 – 2005) of annual data observations. The correlation between crude oil prices and jet fuel prices over the past twenty years is slightly higher than that observed between crude oil and diesel fuel.

**Exhibit 7.10 Series
Correlation Coefficient Matrix (1985-2005)**

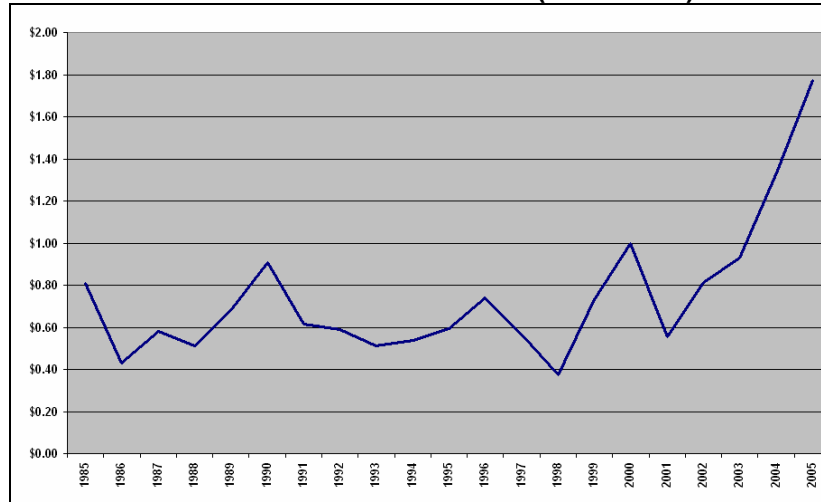
Category	Crude Oil Price	Diesel Fuel Price to End User	Jet Fuel Price
Crude Oil Price	1		
Diesel Fuel Price to End User	0.95	1	
Jet Fuel Price	0.99	0.95	1

Source: Economagic.com, Wilbur Smith Associates.

⁴⁷ http://www.stats.gla.ac.uk/steps/glossary/paired_data.html#corrcoeff

Jet fuel prices have more than doubled over the past twenty years. **Exhibit 7.11** depicts the trend over time. At the end of 2005, the average price for a gallon of jet fuel was \$1.77. In 1985, this same commodity could be purchased for \$.81 per gallon.

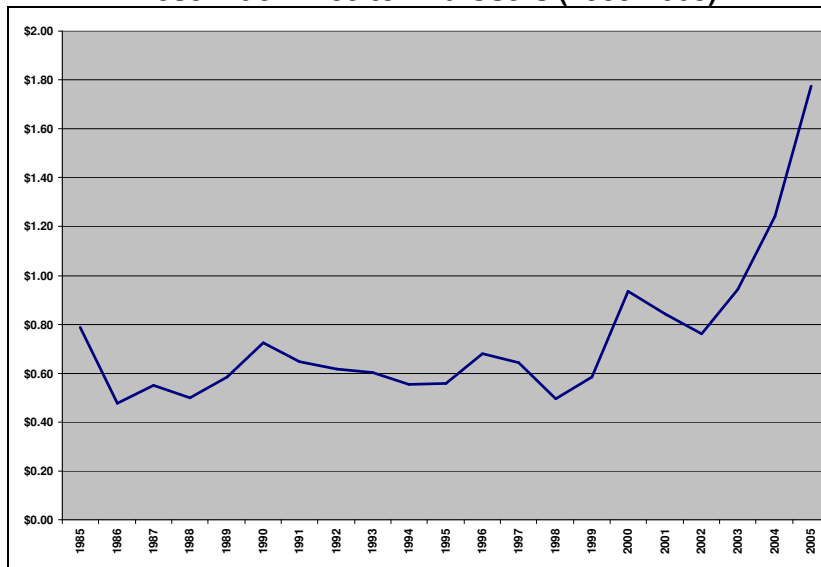
Exhibit 7.11
Jet Fuel Price to End Users (1985-2005)



Source: Economagic.com, Wilbur Smith Associates

Diesel fuel prices have also increased dramatically over the past 20 years and impacts air cargo trucking activity. **Exhibit 7.12** provides the price per gallon at the conclusion of each year from 1985 through 2005. Given the .95 correlation coefficient observed between diesel fuel and jet fuel prices, it follows that graphs for these two commodities are very similar. Over the past five years the growth rate for jet fuel prices has outpaced that of diesel. In 1985 one gallon of diesel fuel retailed for \$.79. At the end of 2005, this product's end users paid \$1.78 per gallon; one cent above the average observed price for a gallon of jet fuel.

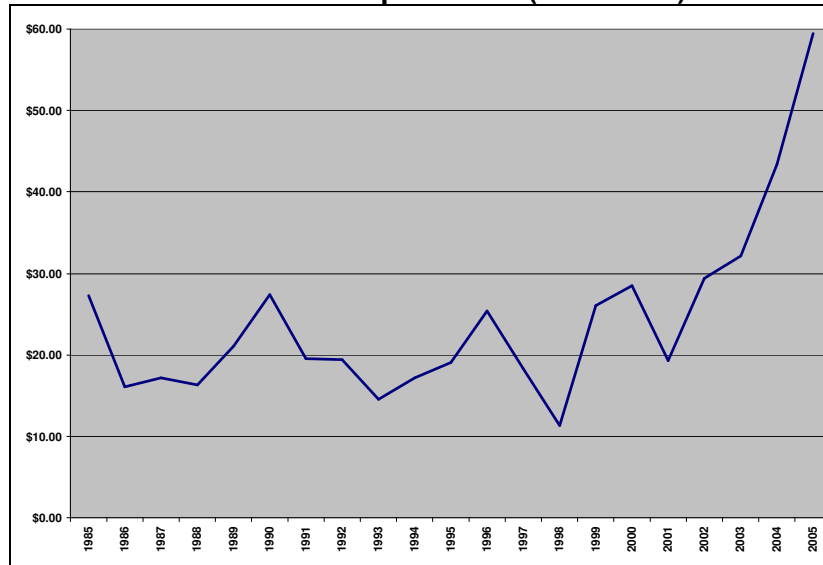
Exhibit 7.12
Diesel Fuel Price to End Users (1985-2005)



Source: Economagic.com, Wilbur Smith Associates

The commodity required for both diesel fuel and jet fuel production is crude oil. The time series data for this commodity is provided in **Exhibit 7.13**.

Exhibit 7.13
Crude Oil Price per Barrel (1985-2005)



Source: Economagic.com, Wilbur Smith Associates

The U.S. air cargo market is mature and the overall domestic growth rate is expected to remain single-digit going forward. China and India, two rapidly developing nations, will support double-digit air cargo growth and in so doing will become increasingly reliant upon crude oil.

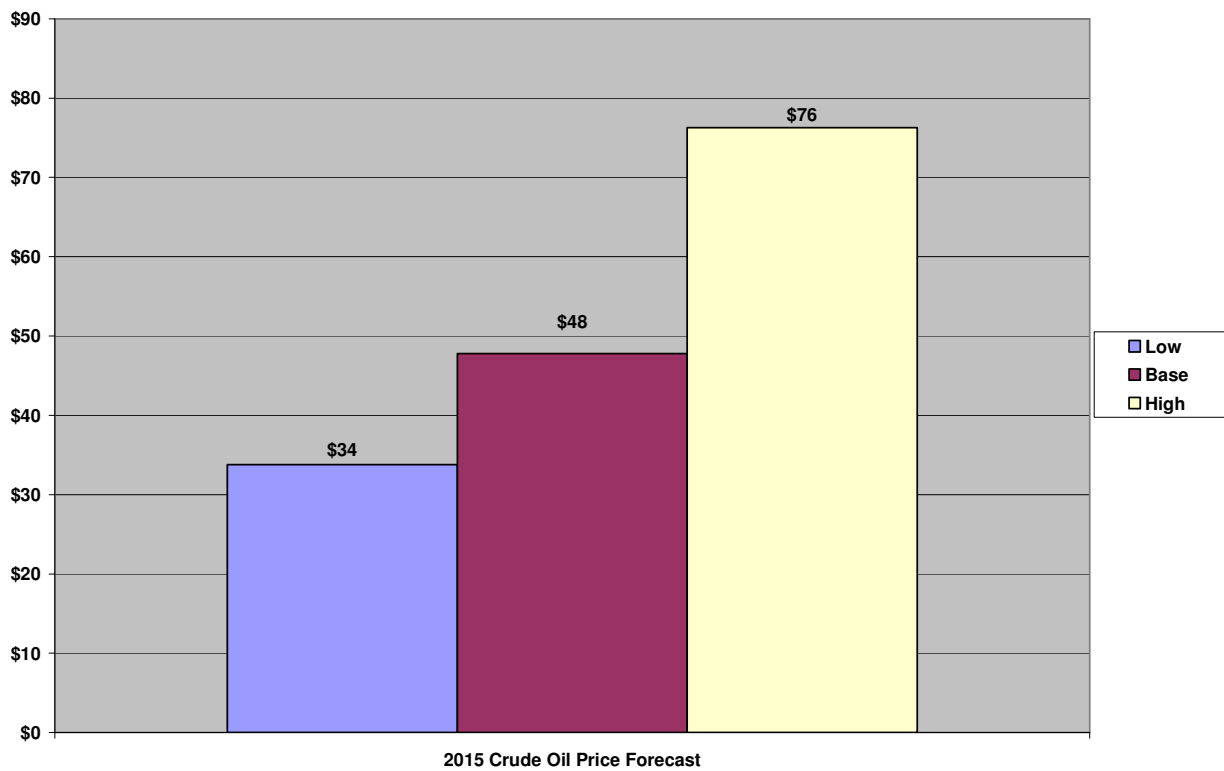
Within the United States, oil production is not keeping pace with demand. In order to combat this imbalance, both resource conservation and the use of alternative fuels have been employed. Worldwide, ground transport carries use more than half of all refined petroleum. These surface transport carriers, who spend approximately 20 percent of their operating budgets on fuel, have more flexibility in switching to alternative energy sources versus air carriers. In comparison, air carries use only six percent of all refined petroleum. As aircraft and aircraft engines have evolved, their associated fuel efficiency has increased. This is useful to the air cargo industry given that an average carrier spends 20 to 30 percent of its operating costs on fuel.

Infrastructure investment in the oil industry can amount to billions of dollars of capital commitment for a nation. Returns on investment are not immediate. As a finite resource, there is a fixed supply of oil in existence. The required level of oil production needs to be accurately predicted in advance of the actual event in order to provide sufficient lead time to position equipment and labor resources. As U.S. refineries operate at high capacity utilization, their ability to respond to supply shocks is limited. Without advance planning on resource allocation, the risk exists for supply shocks and resulting higher fuel prices.

Fuel price forecasts from the U.S. Department of Energy detail three possible scenarios: low price, base price, and high price. **Exhibit 7.14** below details these forecasts of a low price per barrel of \$34, a base case price of \$48 and a high price scenario of \$76 per barrel in the year

2015.⁴⁸ Historically, as fuel prices rise, the number of bankruptcies declared among ground transport firms increases. In spite of the positive correlation between these two variables, the rate of bankruptcy has actually trended downward from the high. One explanation for this trend is the relationship between market supply and the operating economics of firms in the industry. On average, Road Feeder Service (RFS) carriers net five percent profit margins.⁴⁹ An excessive amount of surface transport supply along with a subset of smaller carriers in poor financial health contributed to an increase in bankruptcy filings. As these firms left the market, the total available capacity decreased. By July of 2005, a recalibration of supply and demand, driven in part by deregulation, stabilized the rate of bankruptcy filings.

Exhibit 7.14
U.S. Department of Energy 2015 Crude Oil Price
Forecast (in \$s per barrel)



Source: U.S. Department of Energy, Wilbur Smith Associates.

Larger surface transport firms in the industry are positioned to benefit from techniques used to combat the negative impact of higher fuel prices. If used successfully, fuel hedging can protect firms from dramatic fuel price increases. Another mechanism, fuel surcharges, passes a portion of the burden from increased fuel prices onto customers who purchase shipping services. In June 2006, integrated express carriers DHL, FedEx, and UPS all assessed double-digit fuel surcharges on air cargo shipments. These surcharges ranged from 16 percent at FedEx and

⁴⁸US Department of Energy, "Annual Energy Outlook," December 2005.

⁴⁹ <http://ops.fhwa.dot.gov>

UPS to 18 percent at DHL. Also in June 2006, these carriers assessed a four percent surcharge on ground shipments.⁵⁰

Higher fuel prices consequently impact consumer spending. Consumers in the U.S. are paying more than \$3 per gallon for unleaded gasoline for the first time in decades. This erodes the portion of their income available to purchase other goods and services. Declines in consumer spending eventually translate into slower economic growth and corresponding lower levels of air cargo demand. As excess supply is created, both surface and air transport firms are placed at risk for profit margin erosion. Carriers with agile transportation networks capable of recalibrating to new levels of demand are in the best positions. Less adaptable firms will increasingly face profit margin pressure as they move less cargo traffic over the same routings with a higher cost structure.

Tankering

Crude oil prices and consequently fuel prices have risen dramatically in the past two years. As a result, air cargo companies operating vastly complex networks with multiple origin and destination service points have experienced higher operating costs from these higher jet fuel prices. At the airport level, there is a considerable amount of variability in the price paid. Jet fuel is not traded on a commodity exchange. Instead, air carriers purchase jet fuel from many suppliers and the price per gallon varies. Also, unless one supplier serves all markets that an air cargo carrier flies to, the firm must hold several agreements with different suppliers.⁵¹ According to *Aviation International News*, the fuel price variance from airport to airport can amount to as much as \$3 per gallon. It is common for an FBO to refill its supply of fuel at least once if not twice each week. There is typically a lag between the FBO purchasing fuel at a higher rate and the air cargo carrier paying a higher fuel price.⁵²

One way for cargo carriers to compensate for this variance in fuel prices is to refuel at airports offering the best prices and to not take on additional fuel at airports charging the highest rates. Fuel tankering is the practice of accepting more fuel at origin than required to reach destination.⁵³ Hence, cargo carriers can avoid paying higher fuel prices at a given airport when they have fuel reserves purchased from an FBO charging a lower price. Aircraft carrying more fuel than required to reach destination consequently have higher payloads and burn more fuel gallons per hour. Extra fuel translates into longer times required to reach cruising altitude. The average tradeoff between extra fuel carried and extra fuel burned is approximately three percent. For example, if a cargo carrier loads 1,000 additional pounds of fuel at origin it will burn 30 extra gallons of fuel each hour. Temperature and density altitude can affect this ratio as well. The cost savings paid per gallon of fuel must exceed the increased amount of fuel burned to realize a true cost savings. There are other costs associated with fuel tankering that are more difficult to measure including increased strain on engines and landing gear from carrying extra fuel. Consequently, a cargo firm regularly tankering fuel may have to replace engine parts and landing gear components more often than a firm that does not tanker.

⁵⁰ <http://www.fedex.com>

⁵¹ Statement of John P. Heimlich, "Commercial Jet Fuel Supply: Impact on US Airlines," February 2006.

⁵² *Aviation International News*, "Operators Take Another Look at Fuel Tankering," August 2006.

⁵³ GlobalAir.com, "The High Cost of Aviation Fuel," November 2005.

Fuel Conservation

Integrated express carrier UPS implemented several fuel conservation controls in 2005. These initiatives are listed below:⁵⁴

- Reduce the amount of extra fuel carried by aircraft
- Minimize the number of engines powered during aircraft taxi
- Minimize aircraft auxiliary power unit use by substituting electrical power from buildings and in-ground electrical hook-ups
- Slow down flights to the most fuel efficient speed possible as long as the impact on arrival time does not delay the guaranteed service commitment

The fuel savings realized from the fourth UPS fuel initiative listed above is marginal on routes under three hours in flight time. This strategy is more effective as a cost savings metric when used consistently on longer range routes. As a proxy, fuel savings realized from a DC8 routed from Miami to Lima, Peru is illustrated in **Exhibit 7.15**.

Exhibit 7.15
Impact of Reduced Flight Speed on Fuel Consumption and Flight Time

Mach Speed	Flight Time	Fuel Burned (Pounds)	Fuel Burned (Gallons)	Incremental Fuel Burned (Gallons)
0.78	5:09	46,385	6,923	
0.80	5:01	46,852	6,993	70
0.84	4:50	48,916	7,301	308

Source: Jeppesen Flight Plan Data: Summer Winds and 10 Knot Tail Wind

As a result, at Long Range Cruise speed of Mach 0.78, the flight time from Miami to Lima is five hours and nine minutes. Flying at Mach 0.80 burns 70 more gallons of fuel and reduces flight time by 8 minutes. Flying a DC8 from Miami to Lima at Mach 0.84 reduces flight time by 19 minutes versus the Long Range Cruise flight time. However, this flight speed burns 308 more gallons of fuel on the segment. Hence, if a 19 minutes later arrival time into a market will not affect service commitment, a carrier can save over 300 gallons of fuel on a five hour flight when using Long Range Cruise. According to Platts, the July 2006 jet fuel price per gallon averaged \$2.14.⁵⁵ If operated five times per week, a \$3,300 cost savings is realized on this sector when using Long Range Cruise versus Mach 0.84.

Yet another fuel conservation tactic involves cruising longer at higher altitude and using shorter, steeper approaches. Retiring older less fuel efficient aircraft and replacing them with newer more fuel efficient models is another way to reduce fuel expense.⁵⁶ Air carriers can also enact system wide optimization schemes to match the most fuel efficient aircraft to the longest routes. When two markets have similar traffic patterns, routing the more fuel efficient airframe on the longer route and the less fuel efficient airframe on the shorter route produces a fuel cost savings.

⁵⁴ United Parcel Service of America, Inc., "UPS Corporate Sustainability Report," July 2006.

⁵⁵ IATA, Jet Fuel Price Monitor

⁵⁶ Global Aviation Fuel, "Fuel Challenges Facing US Airlines," June 2006.

AIR CARGO SECURITY ISSUES

The Transportation Security Administration (TSA) regulates air cargo activity with the ultimate goal of providing safe air travel. The September 11, 2001 terror attack on the World Trade Center served as a catalyst in forming more stringent security restrictions. In order to avoid potentially catastrophic air network disasters, the TSA has increased security regulations applied to air cargo shippers. Air cargo is vulnerable to terrorist explosive devices and biomedical warfare products. Passenger aircraft often accommodate air cargo in lower deck compartments. Hence, these aircraft are also at risk for terrorist activity. Cargo aircraft, typically having only a flight crew onboard, are also considered terrorist targets.

TSA Security Standards for Air Cargo

The TSA uses several layers of security measures to ensure the highest possible levels of air network safety across United States airspace. These layers of security include: canine teams, baggage screeners, and airline inspectors. When Congress passed the Aviation and Transportation Security Act in the weeks following the 9/11 attacks, it directed the Federal Aviation Administration (FAA) and the newly established Transportation Security Administration (TSA) to develop ways to strengthen security for cargo shipped on both passenger and cargo aircraft. In May 2006, the Transportation Security Administration (TSA) published revised rules for air cargo transported on passenger aircraft and on all cargo carriers. These updates, the *Air Cargo Final Rule*, represent the first revision to security standards since 1999. Implementation and transition for the *Air Cargo Final Rule* began in July 2006 and full implementation is anticipated for December 2006.

Impact of TSA Standards

These new standards have increased the security measures for air cargo shipments. To ensure compliance, the amount of time required to clear cargo and the amount of paperwork associated with shipment activities have both increased. The seven primary modifications to cargo security rules enacted in recent years include⁵⁷:

- **Enhanced Known Shipper Program** - Requires all shippers to be researched prior to their moving material. Hence, all packages are indirectly screened prior to shipment. The *Air Cargo Final Rule* authorizes the TSA to consolidate some 4,000 private industry "Known Shipper" lists into a centralized government database of known shippers, essentially shippers whose security programs meet TSA requirements. This program gives TSA greater visibility into the activities of companies shipping goods on passenger aircraft. Current TSA regulations stipulate that unknown shippers cannot send packages weighing more than 16 ounces as cargo boarded on passenger airlines. However, Known Shippers with a contract on file can route packages weighing more than one pound on commercial airlines.
- **Random Inspections** - The TSA randomly inspects cargo at airports. The frequency of these inspections has tripled since the terror attacks of September 11th, 2001.
- **Canine Inspections** - In addition to random inspections, the TSA has significantly increased the number of canine inspections conducted at air cargo facilities. These

⁵⁷ BusinessWire.com, "Airforwarders Association Statement on Air Cargo Security Reports; Air Cargo is Secure, and Growing More Secure Every Year," September 2006.

canine teams are approved by the TSA and are extremely effective in detecting explosive devices.

- **Improved Facility Security** - Facility security requirements have become increasingly strict as well under the new *TSA Air Cargo Final Rule*. These measures include perimeter security, cameras, and secure entrances. Also under the new regulations, ramp space and warehouses associated with cargo traffic are now classified as secure airport areas.
- **Extensive Background Checks** - Enhanced TSA regulations now require all personnel coming in contact with cargo to undergo extensive background checks. This background check information is queried against the current terrorist watch list and other databases, providing yet another layer of security in the air cargo transport supply chain. This affects 51,000 employees based at off-airport facilities.
- **Security Training and Certification** - The *TSA Air Cargo Final Rule* also includes more stringent training requirements for all individuals handling air cargo in a forwarding facility. Examples of these training programs include hazardous package identification, suspicious packaging, and identification of inventory.
- **Freight Forwarder Certification** - Forwarders, also known as Indirect Air Carriers (IACs), have strict compliance requirements in order to maintain active certification. In order to remain in business, forwarders must complete this certification process every year. In addition, the TSA conducts regular audits during the year to ensure forwarders are following Known Shipper guidelines, perimeter security guidelines, and the security training requirements.

In order to implement and enforce these new regulations, the TSA will hire 300 new air cargo inspectors.⁵⁸ These inspectors will be assigned to approximately 100 airports around the nation. Along with these 300 inspectors, additional bomb sniffing dogs will be added to screen cargo for explosive devices. Airport to airport small package express products, high yielding shipments in the air cargo industry, are affected by these new TSA regulations. Sections of the airport used for loading and unloading cargo will also be further restricted under the new guidelines.⁵⁹

The *Air Cargo Final Rule* formalizes security procedures that carriers with strong security programs are already following. For example, Alaska Airlines requires a Known Shipper Contract⁶⁰ from firms seeking to ship packages on a regular basis. Unlike many of its industry peers, Alaska Airlines scans each piece of air cargo prior to boarding. The contract terms and conditions of the Alaska Airlines/Horizon Air Known Shipper Program apply the following regulations:

- Shippers agree not to tender items restricted by the FAA, USDA, or other government agency. These restricted items include explosives (bombs) and hazardous materials (biomedical terror agents).
- The shipper agrees to retain the cargo in possession until tendered to the airline. This ensures that the cargo cannot be tampered with prior to boarding the aircraft.
- Compliance with the Known Shipper Program also requires the shipper to authorize release of its credit report. This provides verification that the shipper is legitimate and not a false business with intent to commit an act of terrorism.

⁵⁸ Pacific Business News, "TSA Issues New Cargo Security Rules," May 2006.

⁵⁹ Air Cargo World, "TSA Introduces New Rules", August 2006.

⁶⁰ Alaska Airlines/Horizon Air Cargo Support and Claims

Critics of the *Air Cargo Final Rule* contend that there is still some ambiguity that needs clarification in the weeks before final implementation, particularly in regard to which employees need to undergo further Transportation Worker Identity Credential program background checks. How that ambiguity is resolved could have an impact on the number of employees included, which in turn, will affect the cost of background checks. Estimates of what those background checks cost vary. Various airlines indicate costs could run to well over \$100 per employee and up to \$145 per employee.

While the rule does not directly address shippers, it could affect them in a number of ways; particularly shipping costs. Carriers and freight forwarders facing the added expense of security screenings are likely to pass those costs on to shippers. An additional impact may possibly be slower transport service. To minimize the risk of delays, infrequent air shippers should consider using cargo carriers, such as UPS, FedEx and DHL, rather than forwarders that make use of passenger airlines who can work only with known shippers. In addition, shippers need to consider ways to make their packaging easier for TSA inspectors to open and check.

A recent threat to U.S. airspace has led to even more stringent TSA restrictions on the items permitted within aircraft cabins. On August 11, 2006, several members of an alleged terror cell based in London were arrested. These individuals were linked to a plot to blow up ten passenger planes departing from Europe and destined for the U.S.⁶¹ As a result, the TSA no longer permits aircraft passengers to have liquids, gels, or aerosols of any size at the screening checkpoint or in the cabin of the aircraft.⁶² These items must now be transported as checked baggage loaded into the aircraft belly. As a result, the amount of space available for transporting air cargo on passenger aircraft will decline.

RECOMMENDATIONS

Analysis provided in the Florida Air Cargo System Plan identifies several key issues related to airport air cargo development and roadway improvements which if implemented will improve the transport of air cargo through out the State. A list of recommendations is provided as follows:

Include St. Petersburg-Clearwater International Airport (PIE) as an Emerging SIS Airport

Emerging SIS Airports are those which accommodate 0.05 percent of total U.S. passenger enplanements which is the equivalent of 360,000 passengers per year. They also accommodate 0.05 percent of total U.S. air cargo tonnage which is the equivalent of 40,000 tons per year. Emerging SIS hubs and corridors are designated using the same measures of transportation and economic activity as the SIS, but with lower thresholds – typically 20 percent of the SIS threshold for hubs, and between one-half and two-thirds of the SIS threshold for corridors. Emerging SIS facilities also are designated based on their ability to serve clusters of transportation-intensive industries in fast-growing economic regions. For example, some Emerging SIS airports are identified based not on their activity levels, but rather on their proximity to industries that require access to air transportation, such as tourist attractions, universities and high-technology centers.

The FDOT document *An Analysis of Commercial Air Service in Florida 2005* indicates that in 2004 PIE had over 600,000 passenger enplanements which exceed the Emerging SIS criteria of

⁶¹ Air Cargo World, "New Updates," September 2006.

⁶² Miami International Airport

360,000. Although air cargo tonnages of 23,200 tons in 2005 falls short of the 40,000 ton Emerging SIS criteria, the critical nature of UPS express packages accommodated at the airport in addition to the fact PIE is the airport selected by UPS to accommodate their lift requirements for the entire Tampa Bay market area should propel the airport into the Emerging SIS category.

As indicated in the FDOT document *Process for Designation Changes to Florida's Strategic Intermodal System (SIS)* exceptions are made for airports to be included in the Emerging SIS category based on flights to hubs not served by nearby SIS airports. Specifically the document indicates:

Airports [may be included if]: A majority of passenger enplanements or freight tonnage is destined for direct service to other medium/large U.S. hubs or international destinations that are not directly served by the SIS airport; or a majority of passenger enplanements or freight tonnage are for particular market niches (e.g., international or charter passengers) that are not significantly served by the SIS airport.

UPS utilizes PIE as a regional hub with four daily flights to the airport. In addition, at least one flight per day is to UPS' national hub in Louisville, Kentucky. UPS does not utilize nearby Tampa International Airport.

Set Aside 100 Acres at Fort Lauderdale-Hollywood International Airport for Air Cargo Development

The Fort Lauderdale-Hollywood International Airport Master Plan calls for about 130 acres, on the West Side of the field, to be developed for air cargo, aircraft maintenance and general aviation activity. This area will replace air cargo facilities on the north side of the airport to make room for a new parallel runway. It is recommended that airport management develop the West Side of the airport with the intention of accommodating future air cargo demand anticipated in Southeast Florida.

Complete Planned Roadway Improvements at Miami International Airport (MIA)

Several roadways and intersections surrounding MIA on off airport right of ways need immediate improvements to enhance air cargo trucking operations at the airport. These improvements include:

SR 953 (LeJeune Road) to NW 21st Street to passenger entrance. This improvement will lessen congestion on the east side of the airport.

N.W. 25th Street is the primary connector to the Florida Intrastate and Federal Highway System for ground transportation of air cargo. Miami Dade Aviation Department has partnered with FDOT and has allocated funding for a project to widen the existing roadway to six lanes and construct an elevated viaduct/roadway between MIA, over SR 826, and out to N.W. 82nd Avenue. This project is facing financial issues as estimated construction costs have doubled as a result of construction materials prices escalating in Florida. The project will be re-let as two projects with SR 826 as the split point. There will be an east project from SR 826 to NW 68th Avenue (West Cargo Area) and there will be a west project from SR 826 to NW 89 Court. The east project was to be let in July 2006 with a cost estimate of approximately \$ 95 million. The west project will be let in August 2006 and the estimate is approximately \$ 65 million.

N.W. 36th Street and N.W. 67th Ave. intersection is located off airport and has issues related to right of way, private property and congestion. The intersection lacks a signal, adequate number of lanes which impedes truck utilization.

Currently, trucking activity related to maritime freight access, as opposed to aviation, is the local “hot topic” among residents, decision makers and transport interests in the Miami area. The increasing number of trucks entering and leaving the Port of Miami via a rapidly growing and changing Downtown has promoted concerns of residents, developers, shipper, port interests, and local community leaders. City of Miami and Miami-Dade County political leadership is making effort to try and better manage the truck traffic related to the port⁶³.

Jacksonville International (JAX) - Extend International Blvd North to Pecan Park Road

Airport officials at JAX have expressed interest in extending International Boulevard north to connect with Pecan Park Road. This roadway extension would provide access to Interstate 95 at the Pecan Park Road interchange which will enable trucks to bypass the Airport Road/Interstate 95 interchange.

Encourage Development of Satellite Airports in Southeast Florida to Accommodate Long- term Air Cargo Growth

Miami International Airport will reach warehouse capacity in 2014 and air cargo ramp space by 2017 if air cargo growth rates at the airport continue at current rates. In addition, without air cargo capacity improvements at Fort Lauderdale-Hollywood International Airport will reach capacity in 2014. This airport however has room to expand and plans to implement facility improvements. Base on air cargo carrier trends of utilizing “satellite” airports in the Los Angeles and New York City markets to meet cargo demand it is recommended that airports in Southeast Florida be utilized as alternative locations for air cargo carriers. For example, long-term plans may include Miami International, Fort Lauderdale be utilized for international flights and Opa Locka and Palm Beach International airports be utilized for domestic air cargo flights. A regional air cargo system plan study would be the first step in developing a plan for the region’s long-term air cargo activity.

MCO World Tradeport Development

The Orlando Metro area is unique given the fact that it is one of only a few areas in the world offering quadramodal transportation options: transit via land, air, sea, and space.⁶⁴ The region enjoys multi-modal transportation with Interstate 4, Florida’s Turnpike, and several toll roads, along with commercial and cargo rail and motor freight carriers.⁶⁵ This connectivity makes the Orlando region a prime location for general manufacturing and also for warehouse and distribution businesses.

The Orlando International Airport is home to Orlando World Tradeport, a 1,400 acre fully integrated cargo center offering direct airside access.⁶⁶ This airport has extensive infrastructure in place supporting air cargo activity and is already capable of accommodating new generation

⁶³ A study by the Miami-Dade MPO related to airport truck traffic can be found at:

http://www.miamidade.gov/mpo/docs/MPO_sr_truck_es_2002.pdf

⁶⁴ www.orlandoedc.com

⁶⁵ www.sb-d.com

⁶⁶ www.azworldairports.com

Class 6 freighters such as the Airbus 380. In total, there are 140 acres of air cargo ramp at the Orlando World Tradeport. Regarding surface transport, Orlando International Airport is within overnight trucking distance of many major U.S. cities. In addition to the integrated express operations for DHL, FedEx, and UPS that are located on-airport at Orlando International, the World Tradeport area supports operations from several logistics companies including:

- Averitt Express (Cross Dock Trucking Facility)
- Forward Logistics/Total Logistics (Freight Forwarding & Data Storage)
- Southeastern Freight Lines (Trucking Facility)
- Watkins Motor Lines (Truck Terminal)

There is significant expansion underway at the Orlando World Tradeport. By 2017, it is expected that construction projects at the Orlando World Tradeport worth a total of \$1.6 billion will be completed. It is expected that these projects will create 22,000 new jobs for the area. The Orlando International Airport currently has nearly 2,000 acres of land available for development offering direct ramp or airside access. The Greater Orlando Airport Authority (GOAA) has been aggressively marketing this land and the airport's capabilities. These marketing efforts are targeted to air cargo carriers, intermodal distribution center operators, third party logistics providers (3PLs) and freight forwarders.⁶⁷

As businesses continually explore ways to reduce transportation shipping costs, Orlando's location is increasingly recognized as a valuable asset. Industry leaders have cited the Orlando International Airport as being integral to worldwide sales efforts because of its convenient flight routes. It is recommended that economic development efforts for the Orlando Tradeport focus on firms in the following industry clusters:

Advanced Manufacturing - Key businesses in the advanced manufacturing industry, including Lockheed Martin Missiles and Fire Control and Mitsubishi Power Systems, Inc. maintain operations in Metro Orlando. The headquarters for two major manufacturing firms — Mitsubishi Power Systems, Inc. (MPS) and Siemens Westinghouse Power Corporation — are based in the region.

Agritechnology - Agriculture has long been a staple of Metro Orlando's diverse economy, with the region offering farmers exceptional environmental conditions to grow crops and raise livestock. Metro Orlando is the State's largest region for the agritechnology industry, a segment of biotechnology that focuses on genetic engineering, cloning and high technology horticulture and agriculture.

Biotechnology and Life Sciences - Metro Orlando's emerging biotechnology and life sciences sector has sprung from a renowned regional healthcare system, comprising some of the top hospitals in the country. The sector has also spun off from a prominent agricultural base and the collaborative efforts of the region's established photonics and modeling, simulation and training sectors.

Technology - The Orlando area provides a favorable business climate for technology companies given the area's proximity to the Florida Space Coast and quality labor pool. More than half of Florida's high technology companies are located in the High Tech Corridor, spanning across Interstate 4 and encompassing the quad-city area of Daytona Beach, Orlando, Melbourne and Tampa. This Corridor receives strong support from the University of Central Florida (UCF).

⁶⁷ www.orlandosentinel.com

According to the Metro Orlando Economic Development Commission, community and industry leaders are dedicated to advancing the region and enhancing its standing as a corporate and high tech hub.⁶⁸ Elected officials have demonstrated their commitment to economic development through the adoption of incentive packages based on the needs of the company. This assistance is provided on a case-by-case basis, with job creation, quality of wages and capital investment being the significant deciding factors. The state and local tax climate can also be considered an incentive to investing in the region.

Encourage Intermodal Activity at Airports – Trucking Facilities On-airport

Intermodal transportation involves using more than one mode in moving goods from origin to final destination. These transit options include air, sea, truck, and rail. In recent years, the U.S. has experienced a modal shift whereby less cargo is moving via aircraft and more material is moving via surface transport. In today's global economy, goods must often travel across water and commonly do so on aircraft. Once at an airport, however, goods moving door-to-door are commonly transported to final destination via surface transport.

A report issued by the I-95 Corridor Coalition⁶⁹ indicates that airport managers are slowly adopting a more comprehensive transportation system perspective; moving away from purely an airport-centric view. Multi-modal access for passengers and cargo has become part of planning for future survival, competitiveness, and growth. It is also becoming increasingly evident that existing infrastructure resources must be optimized. This is particularly the case with larger airports, such as Miami International. It is critical for this airport and others like it to function as a multi-modal center due to a finite supply of land for expansion.⁷⁰ Two U.S. airports with extensive intermodal facilities are Kansas City International Airport and Rickenbacker International Airport. These facilities provide an example for intermodal and industrial development at airports throughout the State of Florida.

Rickenbacker International Airport - Rickenbacker International Airport is located 20 miles southeast of downtown Columbus, Ohio and is centered between Atlanta, New York and Chicago. This airport is situated on 5,000 acres and has an on-site Foreign Trade Zone (FTZ) and industrial park. Air cargo has grown strongly in recent years with total tonnage increasing 15 percent between 2004 and 2005. During this time, air cargo landings increased nearly four-fold. Rickenbacker's Air Cargo Terminal Complex has three air cargo terminal buildings offering direct airside access to the airport's two parallel 12,000 foot runways. This Air Cargo Terminal Complex houses FedEx and Forward Air. FedEx and UPS each operate regional gateways at the airport.

Forward Air Corporation, a leading provider of time-definite surface transportation and related logistics services to the North American deferred air freight market, operates a U.S. national hub at Rickenbacker International Airport.⁷¹ The carrier began operating at Rickenbacker in 1994. By the fall of 2000, Forward Air's operations included a 50,000 square foot airside facility. Forward Air services many clients on the airfield by using its trucks to directly load and unload material for air cargo carriers. Ultimately, Forward Air provides scheduled transportation of

⁶⁸ www.orlandoedc.com

⁶⁹ The I-95 Corridor Coalition is an alliance of transportation agencies, toll authorities, and related organizations, including law enforcement, from the State of Maine to the State of Florida. The Coalition provides a forum for key decision and policy makers to address transportation management and operations issues of common interest.

⁷⁰ www.i95coalition.org

⁷¹ www.forwardair.com

cargo between airports for its customers, which include domestic and international airlines, freight forwarders and integrated freight carriers. Eagle Global Logistics also operates a national truck hub at Rickenbacker Airport.

Looking ahead, the Rickenbacker International Airport plans to open an intermodal rail terminal in 2007. This facility will handle over 300,000 container transfers a year at full build-out. This intermodal terminal will provide direct access from existing industrial parks to multiple transportation options. The facility is being built on a 300 acre tract of land situated southwest of Rickenbacker International Airport. The Airport Authority and its partners are also developing an additional 1,200 acres of land in conjunction with the project. By 2017, this expansion effort is expected to net a total transportation cost savings to shippers of \$660 million.⁷²

Kansas City International Airport - Currently home to a Forward Air regional hub, the Kansas City International Airport is also looking to expand its presence in the cargo arena. Kansas City International Airport is a principal hub for the states of Kansas, Missouri, Iowa, and Nebraska. Unlike Columbus, Kansas City's geographic location is not as centralized; placing it farther from the U.S. population concentration and associated commerce. However, as a logistics hub, the Kansas City market is in a stronger position than at any time in the past 30 years. Within the past 24 months, there have been close to a dozen deals for distribution facilities of 200,000 square feet or more, and at least six facilities of 500,000 square feet or more are under construction. One major rail carrier, BNSF Railway, is planning to build a logistics park and intermodal hub near Kansas City. This intermodal facility is slated to cover 250 acres within the proposed logistics park. An additional 1,300 acres of warehouses and distribution centers would surround the development upon completion. Another project under consideration in Kansas City is directly related to international cargo activity. Kansas City is looking to open a Mexican Customs office, providing clearance capabilities for U.S. exports trucked to Mexico.⁷³

Zoning Incentives

Momentum continues to build behind the cargo industry modal shift whereby less domestic cargo is transported via aircraft and more material is moving on truck transport. This further enhances the value of industrial parks located adjacent to or near major airports. The modal shift is expected to continue in into the future. Florida airports should work with economic development agencies in recruiting companies from targeted industry clusters to locate their operations within industrial parks. Given that land is a finite resource, developing a forward-looking plan for airport activity is essential in providing the infrastructure resources required to support long-term economic growth.

With more than 1,000 people moving to the State of Florida each day, demand for residential housing is consistently strong. Airports are important economic assets to the cities and communities that surround them. They perform an important role in the support and development of a given region's growing population and economic base. Conversely, just as airport activity benefits from a growing community, an airport can play a key role in the in the surrounding region's economic development by providing support and services to the area's business, industry and economic activity as a whole. As Florida's communities continue to grow and their economic, industrial and population base expands, Florida's airports will certainly experience increasing demand from additional tenants and operations.

⁷² www.rickenbacker.org

⁷³ www.kcsmartport.com

As part of an airport's long-term planning process, consideration must be given to land use issues that can either deter or encourage aviation related development on or immediately surrounding the airport. Land use planning for aviation intensive industries such as logistics and distribution operations surrounding an airport must involve local planning agencies to insure that zoning regulations and planned land use are compatible with the airport's demand and desired development. According to the Aircraft Owners and Pilots Association, land use and development plans are among the most potent ways to protect an airport while still allowing development nearby. These planning efforts can eliminate or reduce the required residential land purchases required to support airport expansion.

Zoning is the most popular method of regulating land development, and it is a legal technique that dictates various aspects of land development. The objectives of zoning land on and around the airport assure that future uses of the land are compatible with airport operations, to protect and preserve the airport, the public investment in the airport, and prevent noise impacts to adjacent communities. Proper zoning of land on and around the airport can prevent the need to acquire land in fee or easement to protect the airport. Failure to properly zone property creates the potential for conflicts with adjacent land uses that not only can cause expensive legal fees, but also endanger the public and users of the airport.⁷⁴

In order to fully take advantage of new development opportunities, an airport must understand its capabilities, user needs and prospective utilization in relation to the surrounding community and plan accordingly. Specific businesses and industries are heavier users of aviation services (such as air cargo and corporate aviation) than others. Other industry categories (aviation-related) require direct airside access. Such industries are valuable assets in the promotion and development of airport business activity, revenue generation and land development. Many such industries act as an "anchor" or primary growth drivers for airports at which they operate.

⁷⁴ www.aopa.org