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Florida Statewide Freight and Goods Mobility Plan

final

report

Prepared as a resource document to support the Florida Transportation Plan and the Strategic Intermodal System Plan

prepared for

Florida Department of Transportation, Seaport Office

prepared by

Cambridge Systematics, Inc.

in association with

Reynolds, Smith and Hill, Inc.

June 2007

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2007

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Overview

The last several decades have witnessed significant growth in the demand for freight transportation in the United States. This has been driven by economic expansion and the globalization of the world economy. Over the same period, investments in the transportation system have not kept pace, particularly in the freight transportation system. This has resulted in a capacity crisis throughout the system. The effects of growing demand and limited capacity are felt as congestion, upward pressure on freight transportation prices, and less reliable trip times as freight carriers struggle to meet delivery windows. Higher transportation prices and lower reliability translate into increased supply costs for manufacturers, higher import prices, and a need for businesses to maintain more expensive inventory to prevent stock outs. These increased costs add up to a higher cost of doing business for firms, a higher cost of living for consumers, and a less productive and competitive economy.

There are several major limitations in addressing freight mobility challenges. The first relates to the limited visibility that freight projects receive in the process for planning and prioritizing how transportation dollars are spent due in part to the public's resistance to freight projects at the local level. The second relates to the limitations of Federal funding programs, which tend to dedicate funds to a single mode of transportation or a non-freight purpose. Finally, since freight projects do not respect jurisdictional boundaries, in a State as complex as Florida with 67 counties, of which 28 are rural, 11 Regional Planning Councils and 26 Metropolitan Planning Organizations (MPOs), achieving multi-jurisdictional consensus on statewide and regional freight priorities is very difficult.

In response to these challenges, the Federal government and the State of Florida both have continued to expand their transportation programs to better address freight transportation needs. At the highest level, freight has been integrated into federal and state legislation. Since 1991, the US Department of Transportation has specifically called out freight and intermodal transportation as a critical element in state and local transportation programs. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the latest federal transportation bill, continues to support and encourage investments in freight transportation. Several years ago, Florida further emphasized a comprehensive transportation program that met the needs of passenger and freight movements through creation of the Strategic Intermodal System (SIS). The recently adopted 2005 Growth Management Bill (Florida Senate Bill 360) provided further funding for state priorities, while the Transportation Regional Incentive Program (TRIP) has begun to formalize the importance of investments in regionally significant facilities.

The Florida Statewide Freight and Goods Mobility Plan (Freight Plan) provides the primary freight element for Florida's transportation program by supporting and enhancing existing transportation program activities and creating a comprehensive summary of the state's freight system. The development of this plan has been an evolutionary process. The development and implementation of the Strategic Intermodal System (SIS) has dramatically influenced Florida's transportation policy, planning, and programming processes. In addition, Districts and local planning partners are becoming more and more engaged in the process of designating regionally significant transportation networks. The combination of the SIS and the regionally significant networks will be the focus of FDOT's investment strategy in the coming years. The primary objective of the Freight Plan is to ensure that freight is a robust, well represented component of the SIS and regional networks. This requires integration of freight into many of the state's processes. The Freight Plan works within the confines of the established programs to make this a reality.

The Freight Plan is designed to enhance these existing initiatives and programs, and build upon and integrate with existing transportation planning efforts at the local, regional, state, and national levels. Specific accomplishments of this coordinated effort include the identification of a statewide freight system supporting the local and regional initiatives, the development of a clearinghouse for freight planning activities and resources, and the development of an advocacy role for the freight industry in the transportation planning process. The Freight Plan is designed to achieve the following: ensure consistency with the policy and technical framework developed by the SIS; integrate existing local, regional, state, and national freight mobility planning activities; link freight policy and planning activities to economic competitiveness strategies; consider innovative solutions to improve freight safety, security, and productivity; and accommodate changes to state and Federal transportation policies and finance strategies.

While this comprehensive approach should culminate in the development of an overall freight planning process and system, the success of this effort faces significant challenges. One of these challenges is the ability to integrate and coordinate the many freight initiatives and programs that are already underway into a comprehensive process that addresses freight movement needs at every level. Another challenge is the dynamic planning and programming environment that currently exists within the Department. The continuing implementation of the SIS is underway, with the first major update scheduled to be initiated in 2008. The large number of freight stakeholders, each with varying needs, as well as the lack of detailed and available freight data needed to support the processes also presents challenges to the freight planning staff.

Key Findings

The Strategic Intermodal System (SIS) is the backbone of Florida's freight transportation system. The SIS is a transportation system that is made up of statewide and regionally significant facilities and services. It contains all forms of transportation for moving both people and goods, including linkages that provide for smooth and efficient transfers

between modes and major facilities. The SIS was established in 2003 to enhance Florida's economic competitiveness by focusing limited state resources on those transportation facilities that are critical to Florida's economy and quality of life. The SIS is a statewide network of high-priority transportation facilities, including the state's largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways. These facilities are the workhorses of Florida's transportation system, carrying more than 99 percent of all commercial air passengers, the majority of waterborne freight tonnage, almost all rail freight, and more than 68 percent of all truck traffic and 54 percent of total traffic on the State Highway System.

In addition to the SIS, there are local and regional freight transportation systems. While the SIS also plays a key role in these systems, additional facilities also become important. Many regions have designated regionally significant facilities to help prioritize local investments as well as become eligible for funding from the recently established Transportation Regional Incentive Program (TRIP). This program calls out the importance of second tier of transportation infrastructure that serves regional needs. Most of the major urbanized areas in Florida have been working since the creation of the TRIP program to identify and designate highways of regional significance, and some have even begun to look at transit networks and the potential for including other modal networks in support of freight mobility. There also are network considerations below the regional level. At the local level, additional considerations come into play, such as intra-county mobility and community impacts of freight traffic. Many MPOs have been charged with looking at these issues to address local concerns.

Freight System

- A major component of the SHS is the Florida Intrastate Highway System (FIHS). It constitutes approximately 3 percent of the entire Florida roadway network by length, yet carries about 30 percent of all traffic. It handles approximately 68 percent of the truck traffic on the State Highway System. As of 2005, the system consisted of 3,943 miles of roadway. The FIHS links seaports, airports, rail, and other intermodal or freight facilities. It serves major international airports that handle more than 90 percent of Florida's airfreight and passengers and serves major deep-water ports that handle more than 90 percent of Florida's waterborne trade and passengers. Approximately 80 percent of Florida's industrial and warehousing facilities are within five miles of the FIHS.

- There are 15 freight railroads operating in the State of Florida. These railroads carried about 1.2 million carloads and 805,260 intermodal units (trailers and containers) and 119 million tons of freight, effectively removing almost six million heavy trucks from the roadways. Two Class I railroads operate in Florida: CSX Transportation (CSXT) and the Norfolk Southern Railroad (NS). These two railroads serve the eastern United States and connect Florida to the national rail network. CSXT is the single largest operating railroad in Florida, with an extensive network covering the Florida Panhandle, Northern and Central Florida, and the Greater Miami area in South Florida. NS lacks an extensive Florida network and primarily serves as a conduit to

the national rail system via lines in northern Florida and the Greater Jacksonville area. Of the 3,152 miles of rail operated in Florida, a total of 1,826 miles, or 58 percent, of rail corridors are currently designated as part of the SIS. These include: CSX Railroad, Florida East Coast Railroad, Florida Central Railroad, South Florida Rail Corridor, Florida Northern Railroad, Norfolk Southern Railroad, Seminole Gulf Railway, and South Central Florida Express.

- Florida is home to 14 deepwater seaports along both the Atlantic and Gulf coasts. Florida's 14 deepwater seaports play an essential role in creating and sustaining a vibrant economy and play a central role in international trade. Ten of the fourteen seaports currently designated as part of the SIS. Florida's ports move different types of commodities as well as different types of passenger services. Each of Florida's ports has a characteristic profile, in terms of the amount of cargo and number of passengers they handle. Florida's ports show significant diversity in terms of their traffic volumes and mixes. Florida's leading tonnage port is Tampa, followed by Everglades and Jacksonville; its leading container port is Everglades, followed by Miami, Jacksonville, and Palm Beach; and its leading cruise ports are Canaveral, Miami, and Everglades. Collectively, these ports provide Florida with the ability to handle over 121 million tons, nearly 3 million TEUs, and 14 million passengers per year. Florida is one of the leading states in the country on all measures.

- Florida's aviation system consists of 106 public airports, which include 19 commercial service airports and 87 public-use general aviation facilities; 24 military airports; and 730 private airports, of which 23 are available for public use. Seventeen of the 19 commercial service airports in the state are designated as part of the SIS. Commercial service airports handle approximately 2.5 million tons of air freight and mail annually, either on dedicated aircraft or in the belly compartments of passenger aircraft. Miami International Airport handles 72 percent of the state's annual total and accounts for 40 percent of the air cargo transported between the United States and South America each year. Orlando International and Fort Lauderdale-Hollywood International follow, with market shares of 10 and 8 percent, respectively. The top five commercial airports handle 97 percent of all air cargo in the state (Miami, Orlando, Ft. Lauderdale, Tampa, and Jacksonville.

- Pipelines in Florida include large-diameter lines carrying energy products to population centers, as well as small-diameter lines that deliver natural gas to businesses and households. The energy products carried in pipelines heat and cool homes and schools, power the industrial base, and enable daily commutes. Pipelines are by far the safest method for transporting energy products. However, when pipeline incidents occur they can present significant risks to the public and the environment. There are almost 32,000 miles of pipeline in Florida with over 26,000 representing gas distribution.

Freight Flows

- 848 million tons of freight, worth over $939 billion were transported to, from, within, and through the State of Florida via truck, rail, air, and water modes in 2003.

Outbound movements accounted for 19 percent; inbound movements accounted for 35 percent; intrastate movements accounted for 45 percent; and through movements accounted for 1 percent. Intrastate shipments accounted for the largest portion of overall freight shipments in the state (45 percent by weight). This is partially attributed to non-metallic minerals, construction materials, as well as other commodities moving from/to warehouses and other secondary distribution facilities. Inbound shipments by weight made up a significantly larger percent of the tonnage transported than outbound movements (35 percent vs. 19 percent), a trend that also holds true for the value for shipments (40 percent v. 21 percent). This reflects the consuming nature of the state.

- Approximately 597 million tons, moved by truck. When shipment value is considered, truck movements represent an even greater portion of the overall movements in Florida, accounting for 80 percent of all flows, or approximately $745 billion. The presence of Florida's 14 deepwater seaports makes waterborne movements an important mode for freight shipments in the state. In fact, freight movements by water accounted for 16 percent, or approximately 133 million tons, of all freight shipments, by weight, in Florida. Rail movements accounted for approximately 14 percent of all the freight moving into, out of, within, and through the state, or 117 million tons. When shipment value is considered, the relative share of water (11 percent) and rail (9 percent) shipments decline significantly due to the low value per ton of the products they move. Air movements accounted for 0.1 percent, or 645 thousand tons, of all the freight moving in Florida by weight, yet over 0.4 percent, or $3.7 billion, by value.

- The top five commodity groups in Florida accounted for 68 percent of the total flows, or 575 million tons, by weight. These commodity groups consisted of non-metallic minerals (25 percent); clay, concrete, glass, or stone (12 percent); petroleum and coal products (12 percent); secondary moves (10 percent); and food (8 percent). Each of these commodities accounted for over 65 million tons. When shipment value is considered, the top commodity groups changed significantly. The top five commodity groups, when analyzed by shipment value, accounted for 50 percent of the total flows by value, or $470 billion. These commodity groups consisted of lumber and wood (15 percent); clay, concrete, glass, and stone (15 percent); chemicals and allied products (9 percent); food (6 percent); and pulp and paper products (6 percent).

- There are significant differences at the district level due to size, population, industry, and geographic location. Districts 2 and 5, due to geographic location, carry a significant amount of through traffic on their infrastructure; District 6 ships out more freight than it received due its port and airport gateways; and Districts 4 and 7 receive significant volumes of freight due to their roles as major petroleum gateways.

Bottleneck Analysis

- Bottlenecks, by definition, are physical chokepoints on a given roadway segment that restrict the flow of incoming traffic from connecting roadway segments. Development of bottlenecks can be characterized by certain demand factors, and physical and operational attributes. Thirty-three potential bottleneck sites were identified in the

analysis. The 10 sites with the worse bottleneck conditions in Florida were further analyzed, including FEC Railway Fort Lauderdale (F); Miami International Airport (F); FEC Railway Miami-Hialeah (F); Port of Miami (F); Fort Lauderdale-Hollywood International Airport (F); Tampa International Airport (F); Port Everglades (C); Palm Beach International Airport (C); CSXI Tampa (C); and Port of Palm Beach (B).

Demographic Profile

- Florida's population increased by 2.1 million residents between 2000 and 2006, reaching a total of 18 million. Florida is now the nation's fourth largest state, and is projected to surpass New York over the next several years. The State's population increased 2.1 percent per year, more than twice the national average.

- Florida created just under one million new jobs between 2000 and 2006, the largest net increase in employment among all 50 states. After a modest pause during the national recession of 2000-2001, Florida has become one of the nation's greatest job engines. The State's employment increased 2.2 percent per year, more than four times the national average. Florida's unemployment rate decreased from 3.8 percent in 2000 to 3.3 percent in 2006, more than a full percentage point below the national average. This is the lowest unemployment rate recorded in Florida in over 30 years, and a rate virtually unheard of in most other advanced economies worldwide.

- Florida's gross state product – the value of all goods and services produced in the state – increased from $472 billion in 2000 to $714 billion in 2006. Florida's share of the national gross domestic product increased from 4.8 percent to 5.4 percent. An analysis by Enterprise Florida concluded that if Florida were a separate nation it would have the 19th largest economy in the world (with all U.S. states counted individually), similar in size to Brazil, Mexico, or Australia.

- Florida is transitioning from being a low-cost state to a higher-cost state. Wages are increasing due to higher productivity and perhaps the tight labor market. Home prices surged 60 percent between 2003 and 2006, with Florida's median sales prices rising above the national average. Property tax bills are climbing in response to the higher home prices. Insurance costs are escalating following six hurricanes over a two-year period. The costs of transportation, energy, and commodities all are rising.

Recommendations

Florida's transportation system must adapt to keep pace with the changing communities and economy. The transportation system must support increasing demand for mobility of both people and freight resulting from a growing population and economy. This section focuses on providing a key set of recommendations to help FDOT continue to effectively include freight and goods movement in the overall transportation program. Each recommendation includes several key action items to support implementation.

- **Facilitate the freight component of the e-SIS.** Ongoing development of the SIS will be driven by an effective data collection and analysis program. The Department currently is working to develop the e-SIS, which will provide an automated electronic data driven process to ensure that all necessary data are collected to support SIS designation updates as well as ongoing system performance evaluations. The Seaport Office will be responsible for the seaport specific data. This will be implemented through the SeaCIP update underway. SeaCIP is a program historically used to receive and process applications for seaport projects funded through the FSTED program. The updated version will be used to collect data on all seaport project requests, regardless of funding source. E-SIS data requirements will be included in this enhanced data collection activity. The Seaport Office should also support the collection of other modal data, as appropriate, through coordination with Systems Planning, the Aviation Office, and the Rail Office.
- **Continue to maintain and update freight data clearinghouse.** As part of the Freight Plan development, a comprehensive freight data clearinghouse was developed. This is a web-based product that provides a comprehensive listing of local, regional, state, and national freight data and resources. It is important that these resources be maintained and updated regularly to ensure that the Department and its partners have access to the full range of data. In addition, this clearinghouse can be enhanced to serve as a freight data repository for Florida's freight transportation system. This will include all data collected and maintained as part of the e-SIS as well as all regularly maintained and updated system plans.
- **Use freight bottleneck identification process to identify and prioritize freight system improvements.** A process was developed as part of the Freight Plan development to identify freight system bottlenecks. This process should be reviewed and enhanced as appropriate and used annually to identify and prioritize freight transportation system improvements. This will require coordination across offices and districts, as well as with other stakeholders including MPOs and freight system operators.
- **Develop freight forecasts.** 2003 TRANSEARCH commodity flow data were purchased and analyzed as part of the development of the Freight Plan. Future year forecasts were not included with the data. Forecasts are available at a more aggregate level through the Federal Highway Administration's Freight Analysis Framework. In fact, the Department currently is working to disaggregate this data. In addition, 1998 TRANSEARCH data were used to develop the statewide truck freight model. Forecasts of truck trips were then developed using the state's sociodemographic forecasts. Each modal system plan also addresses forecasts at some level. As the usefulness of the available data becomes better understood, the Department should consider additional forecasting options, as necessary, to support medium- and long-term freight transportation system planning activities.
- **Develop seaport system plan.** As part of the Freight Plan development, a variety of seaport specific initiatives were completed, including an evaluation of global trends, a seaport conditions report, and an investment framework designed to support project specific evaluation activities. However, aside from the Seaport Mission Plan developed annually by the Florida Ports Council, there is not a comprehensive seaport

system plan, similar to the rail and aviation system plans. The Seaport Office should develop and maintain such a system plan for seaports. This plan currently is scheduled to be completed in 2008.

- **Conduct regional outreach meetings.** A process for reaching out to District staff and their partners on a regular basis should be defined as part of the overall Freight Plan. This will provide an ongoing process to update partners about freight program enhancements, including updates to the Freight Data Clearinghouse. It also will provide an opportunity for partners to provide input the state's freight program. It will be critical that this is seen as a regular (quarterly, annual) outreach program; and equally important, it must ensure that each meeting provide an action oriented agenda that maximizes the time of participants.
- **Coordinate with and monitor modal system plans.** It is not the intention of the Freight Plan to replace or duplicate the work completed by the other modal offices. Each office is responsible for modal plan updates – these fed the development of the Freight Plan, which aspires to serve as a repository of Florida's freight system. As such, ongoing coordination with these internal partners is critical. The Freight Plan must be seen and accepted by others as a value-added product.
- **Monitor and participate in major transportation initiatives and regional visioning exercises, as appropriate.** Florida continues to grow and expand. This results in major projects and initiatives that have the potential to impact freight mobility. For example, many regions are beginning to consider visioning exercises to help "figure out what they want to be when they grow up". Land use, development patterns, growth management, and transportation are major factors in these efforts. The Department should identify and participate in these initiatives, as appropriate, to promote freight access and mobility needs. Other examples include major transportation projects, like the development of a 1250 acre integrated logistics center in Lakeland, or the consideration of passenger rail service along the FEC Corridor in South Florida.
- **Coordinate with sister agencies to promote freight transportation.** The state of Florida has several agencies that impact the transportation system. FDOT should work with DEP, OTTED, and DCA to promote a coordinated approach to freight transportation planning and programming that maximizes mobility, promotes economic prosperity, unites community plans and visions, and minimizes the impacts on Florida's environment.

1.0 Introduction

The last several decades have witnessed significant growth in the demand for freight transportation in the United States. This has been driven by economic expansion and the globalization of the world economy. Over the same period, investments in the transportation system have not kept pace, particularly in the freight transportation system. This has resulted in a capacity crisis throughout the system. The effects of growing demand and limited capacity are felt as congestion, upward pressure on freight transportation prices, and less reliable trip times as freight carriers struggle to meet delivery windows. Higher transportation prices and lower reliability translate into increased supply costs for manufacturers, higher import prices, and a need for businesses to maintain more expensive inventory to prevent stock outs. These increased costs add up to a higher cost of doing business for firms, a higher cost of living for consumers, and a less productive and competitive economy.

There are several major limitations in addressing freight mobility challenges. The first relates to the limited visibility that freight projects receive in the process for planning and prioritizing how transportation dollars are spent due in part to the public's resistance to freight projects at the local level. The second relates to the limitations of Federal funding programs, which tend to dedicate funds to a single mode of transportation or a non-freight purpose. Finally, since freight projects do not respect jurisdictional boundaries, in a State as complex as Florida with 67 counties, of which 28 are rural, 11 Regional Planning Councils and 26 Metropolitan Planning Organizations (MPOs), achieving multi-jurisdictional consensus on statewide and regional freight priorities is very difficult.

In response to these challenges, the Federal government and the State of Florida both have continued to expand their transportation programs to better address freight transportation needs. At the highest level, freight has been integrated into federal and state legislation. Since 1991, the US Department of Transportation has specifically called out freight and intermodal transportation as a critical element in state and local transportation programs. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the latest federal transportation bill, continues to support and encourage investments in freight transportation. Several years ago, Florida further emphasized a comprehensive transportation program that met the needs of passenger and freight movements through creation of the Strategic Intermodal System (SIS). The recently adopted 2005 Growth Management Bill (Florida Senate Bill 360) provided further funding for state priorities, while the Transportation Regional Incentive Program (TRIP) has begun to formalize the importance of investments in regionally significant facilities.

1.1 Overview of Federal Transportation Bill

The Intermodal Surface Transportation Efficiency Act (ISTEA) and the Transportation Equity Act for the 21st Century (TEA 21) called upon the Federal government to develop a "National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the Nation to compete in the global economy, and will move people and goods in an energy efficient manner…."[1] The recently enacted Safe, Accountable, Flexible, Efficient Transportation Equity Act: Legacy for Users (SAFETEA LU) reaffirms the need for Federal government leadership in freight transportation. Therefore, the U.S. Department of Transportation (USDOT) will have an increasing responsibility to develop and shape freight transportation policy options and programs.

Over the last several years the Federal Highway Administration (FHWA), through its Office of Freight, has continued to develop and expand its freight program. It has developed the Freight Analysis Framework (FAF), which provides an indpeth analysis of freight data. Currently, the Florida Department of Transportation is working to disagregate the second version of the FAF to the county level, which would provide new opportunities for local and regional freight analyses. FHWA also has developed an impressive Freight Professional Development Program, which includes key programs, such as the Talking Freight Seminar. This program brings freight stakeholders from around the country together to learn from their experiences. In addition, the federal government has begun the development of a national freight framework. This is still a work in progress, but suggests federal commitment to freight transportation.

1.2 Overview of Florida's Transportation Program

The Florida Department of Transportation (FDOT) is an executive agency whose primary duties are to assume the responsibility for coordinating the planning of a safe, viable, and balanced state transportation system serving all regions of the state, and to assure the compatibility of all components, including multimodal facilities.[2] FDOT is responsible for 41,000 lane-miles of highway and 6,381 bridges, and is partnered with 22 commercial service airports, 14 seaports, 2,707 railway miles, and 18 transit systems. Overall, FDOT has a workforce exceeding more than 7,500 employees. The Department has developed and maintained modal system plans for the highways, airports, railroads, and waterways. In addition, the Florida Ports Council (FPC) develops a seaport mission plan.

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[1] Section 2, Declaration of Policy, "Intermodal Surface Transportation Efficiency Act of 1991", H.R. 2950 (Enrolled Bill), Public Law 102 240, 105 Stat. 1914.

[2] Senate Bill 334.044(1), Florida Statutes.

FDOT is led by the Florida Transportation Commission (FTC). In addition to serving as nominating committee in the selection of the state's Secretary of Transportation, the FTC serves as an oversight body for FDOT. FDOT is decentralized in accordance with legislative mandates and comprises seven districts and the Florida Turnpike. All districts report to the FDOT Central Office located in Tallahassee and are each managed by a District Secretary. The districts vary in organizational structure, but each generally includes major divisions for regional administration, planning, production, and operations. New legislation and the restructuring of transportation programs within FDOT are influencing the Department's investment policies and are likely to affect the amount of money that will be dedicated to fund freight-related projects throughout the state in future years. The following describes several major elements of the State's program.

2025 Florida Transportation Plan

The Florida Transportation Plan provides the overall guidance to the state's transportation program. The 2025 Florida Transportation Plan (FTP) strengthened the policy framework for looking at transportation in the context of broader economic, community, and environmental goals, and enhanced the emphasis on regional planning. The FTP also addresses how to ensure that our transportation system is safe and secure in a time of unprecedented public concerns. Finally, the FTP provides guidance on how transportation investments should be focused during a time of constrained funding, as well as how public and private transportation partners can most effectively work together to make these decisions. More specifically the State's Transportation Plan calls for the need to support the efficient flow of freight from origin to destination and relieve bottlenecks that impede the free movement of goods across all modes, with particular emphasis on urban traffic congestion.

Strategic Intermodal System (SIS)

In 2003, Florida's Governor signed legislation that proposed the implementation of a Strategic Intermodal System (SIS). The development of the SIS was initially proposed in the 2020 Florida Transportation Plan, which "envisions a transportation system that will enhance Florida's economic competitiveness."[3] The SIS is a statewide network of high-priority transportation facilities - including the state's largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways – that promotes statewide and interregional mobility and enhances Florida's economy. Most importantly it increased the level of funding of investments in non-highway modes. The initial SIS Strategic Plan was adopted in January 2005. The plan is accompanied by several components that were officially adopted with the plan: an implementation guidance

[3] Florida Department of Transportation. *Florida's Strategic Intermodal Plan*. January 2005.

document, an atlas of maps, lists of designated SIS and Emerging SIS facilities (hubs, corridors, and connectors), and a list of resources used to develop and guide implementation of the SIS Strategic Plan.

Pursuant to 2004 Legislation, at least 50 percent of new flexible highway capacity funds must be allocated to the SIS/Emerging SIS facilities. This legislation also authorized FDOT to fund projects on SIS/Emerging SIS facilities, regardless of ownership (including roadways off the State Highway System and privately owned facilities such as railroads). Substantial funding for SIS/Emerging SIS facilities will also be available from traditional state transportation capacity programs for highways, aviation, rail, and seaports. In addition, the Department is moving towards implementing an investment policy that eventually allocates 75 percent of all flexible capacity funds to the SIS/Emerging SIS, excluding transit funds and Federal urban attributable funds to areas over 200,000 residents. Capacity and operational improvements to SIS/Emerging SIS corridors and connectors will be eligible for funding, with emphasis directed toward reducing bottlenecks and improving access to hubs. At SIS and Emerging SIS hubs, the emphasis will be on improving the functionality, not the size, of the hub. State funding will be available for projects that streamline movement of interregional, interstate, and international passengers and goods and provide substantial public benefit, such as ground transportation and terminal connections between the hubs and the SIS connectors just outside the fence (off-terminal/hub property).

Florida Senate Bill 360 – Growth Management

In July 2005, the Florida Legislature passed SB 360, an Act of Relating to Infrastructure Planning and Funding. The bill appropriates $1.5 billion in new money for transportation, water, and school infrastructure programs when certain planning standards are adopted; it also "promises" $750 million per year in recurring annual appropriations. The bill requires that by December 1, 2007, all Capital Improvement Elements must demonstrate through a "financial feasibility test" that adopted levels of service for required concurrency facilities can be met and maintained; thereafter an annual update by comprehensive plan amendment must be performed. In Fiscal Year (FY) 2007/2008 Transportation-related projects are anticipated to receive $740 million in statewide recurring money. Programs in the new bill that could help advance freight-related projects in Florida include the Strategic Intermodal System (SIS) and the Transportation Regional Incentive Program (TRIP). The new growth management bill resulted in approximately $3.9 billion programmed in the Fiscal Year 2007/2008 – Fiscal Year 2011/2012 Tentative Work Program.

Transportation Regional Incentive Program (TRIP)

Whereas the SIS was created to serve travel demand between regions, and between Florida and other states and nations, 2005 legislation (s. 339.2819, Florida Statutes) created the Transportation Regional Incentive Program (TRIP) to better meet the increasing demand for regional travel and commerce. State funds are available throughout Florida

to provide incentives for local governments and the private sector to help pay for critically needed projects that benefit regional travel and commerce. FDOT will pay for 50 percent of project costs, or up to 50 percent of the non-Federal share of project costs for public transportation facility projects. To be eligible for funding through the TRIP program local governments should demonstrate that selected projects are included in their capital improvement programs, are consistent with the SIS, support facilities that serve national, statewide, or regional functions and function as an integrated transportation system, have commitments of local, regional, or private matching funds, and are part of regional transportation networks.

Metropolitan Planning Organizations Long Range Transportation Plans

Metropolitan Planning Organizations (MPOs) are responsible for the development and implementation of a balanced, integrated, and multimodal transportation program that efficiently moves passenger and freight traffic. With freight transportation becoming an increasingly important component of both Federal and state programs, MPOs have become increasingly aware of the need to maintain and improve the safety, security, reliability, and accessibility of the freight transportation system. This has stimulated local transportation planning agencies to focus attention and resources on developing and refining freight planning programs and on more effectively incorporating freight into existing transportation planning activities. In fact, all of the major urbanized areas in Florida, and many of the smaller communities, have undertaken freight policy, planning and programming activities, such as Miami-Dade's Freight Transportation Advisory Committee (FTAC), First Coast MPO's Freight Mobility program, and Collier County MPO's freight study.

1.3 Development of the FDOT Freight Plan

The Florida Statewide Freight and Goods Mobility Plan (Freight Plan) provides the primary freight element for Florida's transportation program by supporting and enhancing existing transportation program activities and creating a comprehensive summary of the state's freight system. The development of this plan has been an evolutionary process. The development and implementation of the Strategic Intermodal System (SIS) has dramatically influenced Florida's transportation policy, planning, and programming processes. In addition, Districts and local planning partners are becoming more and more engaged in the process of designating regionally significant transportation networks. The combination of the SIS and the regionally significant networks will be the focus of FDOT's investment strategy in the coming years. The primary objective of the Freight Plan is to ensure that freight is a robust, well represented component of the SIS and regional networks. This requires integration of freight into many of the state's processes. The Freight Plan works within the confines of the established programs to make this a reality.

The initial activities of the Freight Plan focused on four major areas. These activities lay the groundwork for a statewide freight program. The four areas include the following:

- **Establish a freight transportation policy statement.** A critical first step to this process was the development of a mission statement, goals, strategies, and key steps. This set of policy-related materials communicates the purpose of the Freight Plan to the stakeholders and partners. In addition, it provides ongoing guidance to the Seaport Office as the Freight Plan is developed and implemented.
- **Develop guidelines to support the identification of the statewide freight transportation system.** The definition of the freight system also is critical. The statewide freight system builds on the SIS by adding critical corridors, hubs, and connectors of regional significance. Work to date has focused on a review of existing freight system designations, and development of guidelines to support identification of local, regional, and state freight corridors, hubs, and connectors.
- **Identify available freight data resources.** The Freight Plan provides a comprehensive inventory of freight specific data and resources available at local, state, and national levels. These resources can be used to support freight program development. These data and resources are summarized in Florida's Freight Data Clearinghouse available at: http://webservices.camsys.com/fdot/index.htm. Next steps include necessary refinements to support development of enterprise SIS (e – SIS) efforts.
- **Conduct outreach and consensus building activities.** As described above, the most critical element of the Freight Plan is the concept that it will support and enhance existing transportation program activities. As such, it is important that the development of the Freight Plan allows for regular and frequent coordination and outreach to key partners. To date, significant effort has been expended to ensure key partners have been involved at the state level. Subsequent efforts will expand this outreach to include local and regional partners.

In order for this program to successfully promote freight transportation initiatives, several guiding principles must be called out and acknowledged, as follows:

- Coordinate with existing plans and programs;
- Commit to statewide and regional coordination with key players including freight stakeholders, public officials, MPOs, counties, and cities, the Department of Community Affair, The Department of Environmental Protection, as well as citizens;
- Ensure that transportation planning cuts across modes and individual jurisdictions;
- Provide reliable data and modeling tools and sound analytical approaches to compare the benefits of freight projects;
- Promote public awareness and involvement;
- Collaborate with the private sector; and

- Provide a multifaceted funding approach that includes improved access of freight projects to existing funding sources and support for programs that emphasize better use of existing infrastructure.

This remainder of this plan is organized into the following sections:

- **Section 2.0, Florida's Freight Program Goals.** The goals and objectives have been developed with the philosophy that they support existing transportation program elements and promote the overall inclusion of freight interests in Florida's transportation program. This section discusses the philosophy and presents specific goals and strategies.
- **Section 3.0, Freight Profile.** The freight profile presents and discusses the physical system and operational characteristics of each mode, system components, volume of cargo using the system, and an overview of key socioeconomic trends and conditions.
- **Section 4.0, Key Freight Issues and Bottlenecks.** Criteria to identify specific bottlenecks have been developed based on elements such as lack of infrastructure, connectivity, congestion, and level of service. These criteria are applied to identify a list of key freight bottlenecks.
- **Section 5.0, Recommendations and Strategies.** This section provides recommendations for further freight program development and implementation.

2.0 Florida Freight Program Goals

The Freight Plan is a dynamic and process oriented effort. The initial activities focused on the development of goals and strategies; documenting and understanding the existing freight planning initiatives and designation methodologies; identifying existing freight data sources and the development of recommendations for the development of a freight data clearinghouse; and the development of guidelines for the identification of the freight system. The specific activities required to develop the Freight Plan have continued to evolve and change based on the SIS implementation activities and the FTP update. The Freight Plan aspires to provide the comprehensive freight component of Florida's transportation program. This was accomplished by supporting a variety of freight initiatives that feed into the overall transportation program. It was critical to focus on value added activities and avoid duplicative efforts.

2.1 Philosophy

The mission of the 2025 Florida Transportation Plan states "Florida will provide and manage a safe transportation system that ensures the mobility of people and goods, while enhancing economic competitiveness and the quality of our environment and communities." The development of the freight plan relates directly to this overall mission of providing for the safe and efficient movement of goods. Current freight planning activities in the state are comprised of a series of independent initiatives undertaken by various modal groups, government agencies and interested partners. A critical component in the development of the Freight Plan is the close coordination and integration with the multitude of other freight related initiatives currently underway.

The Freight Plan is designed to enhance these existing initiatives and programs, and build upon and integrate with existing transportation planning efforts at the local, regional, state, and national levels. Specific accomplishments of this coordinated effort include the identification of a statewide freight system supporting the local and regional initiatives, the development of a clearinghouse for freight planning activities and resources, and the development of an advocacy role for the freight industry in the transportation planning process.

The Freight Plan is designed to achieve the following:

- Ensure consistency with the policy and technical framework developed by the SIS;
- Integrate existing local, regional, state, and national freight mobility planning activities;
- Link freight policy and planning activities to economic competitiveness strategies;

- Consider innovative solutions to improve freight safety, security, and productivity; and
- Accommodate changes to state and Federal transportation policies and finance strategies.

While this comprehensive approach should culminate in the development of an overall freight planning process and system, the success of this effort faces significant challenges. One of these challenges is the ability to integrate and coordinate the many freight initiatives and programs that are already underway into a comprehensive process that addresses freight movement needs at every level. Another challenge is the dynamic planning and programming environment that currently exists within the Department. The continuing implementation of the SIS is underway, with the first major update scheduled to be initiated in 2008. The large number of freight stakeholders, each with varying needs, as well as the lack of detailed and available freight data needed to support the processes also presents challenges to the freight planning staff.

2.2 Specific Goals and Strategies

Given the conditions described above, a critical first step of the Freight Plan was the development of a mission statement and supporting goals. A freight transportation policy or mission statement, along with four major goals, has been developed to provide guidance for the freight planning process. These goals were developed based on significant input from a wide range of Department stakeholders, including Office of Policy Planning, Systems Planning, Transportation Statistics, and modal representatives from the Public Transportation Office. These stakeholders functioned as advisors to the policy development and had multiple opportunities to provide input. The resulting mission statement, goals and strategies developed in this effort are presented in Table 2-1.

Table 2.1 Florida Freight Mission, Goals, Objectives and Strategies

FREIGHT MISSION:

The Florida Statewide Freight and Goods Mobility Plan, through the establishment of a technical framework and process, will coordinate freight planning initiatives across modes to support and enhance the Strategic Intermodal System and other ongoing state, regional and local transportation programs.

	GOALS	OBJECTIVES	STRATEGIES
1.	Improve effectiveness and coordination of Florida's freight planning activities	• Establish a framework for Florida's freight planning process	• Integrate with and expand upon existing statewide, regional, and local freight planning • Provide the freight element for SIS, Emerging SIS, and non-SIS planning activities
2.	Improve efficiency of freight movement in key corridors statewide	• Identify freight significant corridors and facilities and opportunities to improve freight movement	• Identify freight corridors and facilities of statewide and regional significance • Identify and analyze bottlenecks and make recommendations for increasing the efficiency of freight movement • Develop a process/framework for updating corridors, facilities, and bottlenecks
3.	Improve the quality of, and access to, freight data	• Establish a freight data clearinghouse to support the SIS and other state and regional transportation programs	• Identify the modal data needs for planning and analysis of freight movement • Develop the conceptual architecture of the clearinghouse and document how the data will be accessed and maintained • Support the development and maintenance of the data clearinghouse
4.	Increase visibility of freight needs and issues	• Provide cross-modal coordination and advocacy for efficient freight and goods mobility	• Provide coordination among the various modal plans, statewide programs, and local and regional freight initiatives • Coordinate and facilitate multimodal public/private partnerships • Advocate for freight within regional and state transportation programs

There are many freight related initiatives that have been produced by a variety of transportation stakeholders at different levels, such as Metropolitan Planning Organizations (MPOs), modal agencies and partners, FDOT District offices and other transportation and economic partners. The coordination and integration with these efforts is critical for the statewide freight planning process. As such, a review of representative efforts and activities was conducted. The effort was not to be a comprehensive review of all existing initiatives; rather, the intent was to examine how freight issues were addressed in the planning process throughout Florida and whether these initiatives were consistent with the goals and objectives of the FTP and the SIS. Documents reviewed included statewide freight-specific efforts and MPOs local long-range transportation plans (LRTPs). Freight concerns were generally addressed from a policy perspective. Table 2.2 provides examples of freight initiatives undertaken by a variety of freight stakeholders.

Table 2.2 Examples of Freight Initiatives

State Initiatives
STRATEGIC INTERMODAL SYSTEM Florida's SIS was established in 2003 to enhance Florida's economic competitiveness by focusing limited state resources on those transportation facilities that are critical to Florida's economy and quality of life. Florida's SIS is a transportation system that is made up of statewide and regionally significant facilities and services (strategic); contains all forms of transportation for moving both people and goods, including linkages that provide for smooth and efficient transfers between modes and major facilities (intermodal); and integrates individual facilities, services, forms of transportation (modes) and linkages into a single, integrated transportation network (system)
FLORIDA RAIL SYSTEM PLAN The Florida Rail Plan, updated every two years by the FDOT Rail Office staff, provides the necessary information in a policy framework through which strategic actions can be taken to achieve the best rail system for Florida's future. More specifically, the Plan provides a historical snapshot of the current freight and passenger rail system; examines the critical drivers of future rail demand; places information about freight rail issues, needs, choices, costs, and benefits within a larger public policy context; communicates these messages to a wide range of potential audiences; and develops policy options and recommendations for creating a strong rail system in Florida.
FLORIDA AIR CARGO SYSTEM PLAN The Florida Air Cargo System Plan, recently released by FDOT's Aviation Office, summarizes air cargo trends in Florida. Goods that are time-sensitive, higher value, and lower volume tend to be shipped via air. Sixteen of the eighteen airports in Florida that have scheduled air cargo service are SIS-designated (7 SIS, 9 emerging SIS). Miami International Airport (MIA) handles 74 percent of the state's air cargo, followed by Orlando International (MCO), Fort Lauderdale-Hollywood International (FLL), Tampa International (TPA), and Palm Beach International (PBI); which each handle modest amounts of air cargo (tonnage and value).
FLORIDA SEAPORT MISSION PLAN The Florida Ports Council prepares a five-year mission plan annually that identifies strategies for freight mobility improvements, serves as a port data repository, and provides a profile for each of the 14 deep water ports in Florida. In addition, it documents the anticipated capital needs. Data are provided to the Ports Council from each of the seaports. In the summer of 2006, the Florida Ports Council also engaged in a visioning exercise that identified eight key elements for Florida's seaport system, including: strategic port planning – locally, regionally, and statewide; deepwater access; efficient landside access; capacity for port growth – locally and regionally; balance between user needs and the cost of maritime operations; ability to build and sustain key partnerships; value of investing in Florida seaports and serving Florida's population; and enhanced public understanding and support for Florida's seaports.

FLORIDA SEAPORT SYSTEM PLAN [under development]

FDOT's Seaport Office has taken the initiative over the course of the past year to establish a framework for a more comprehensive seaport program. Work-to-date has focused on documenting current seaport conditions, measuring state benefits in seaport investments, developing initial framework model, and exploring the implications of changing trends in global trade. Following up on this work, FDOT's Seaport Office is initiating its first seaport system plan in 2008.

Regional Initiatives

SOUTH FLORIDA REGIONAL FREIGHT PROGRAM

The Florida DOT District 4 Office of Modal Development has worked continuously over the last several years to develop a district-wide freight program. To date, activities have included a variety of initiatives designed to provide the necessary policies, plans, procedures, and tools to support the freight transportation program. In addition, significant effort has been expended to engage the region's freight transportation partners. Currently, the Department is initiating a regional freight and goods movement study in partnership with Broward, Miami-Dade, and Palm Beach MPOs.

SOUTHWEST FLORIDA FREIGHT AND GOODS MOBILITY STUDY

The SWF Freight Study provided a detailed and comprehensive set of data and analyses documenting system operational conditions, such as highway level-of-service (LOS); economic development opportunities, such as development of reliever cargo airports and foreign trade zones; and system infrastructure expansion, such as new rail spurs or highway connectors. Since the completion of this study, Collier and Lee County MPOs have undertaken their own freight studies to provide a more detailed analysis for their counties and the bi-county region.

INTERMODAL CONNECTIVITY IN THE ATLANTIC COMMERCE CORRIDOR

The Atlantic Commerce Corridor (ACC) Study was undertaken by FDOT and its partner agencies to address freight access and mobility issues in Southeast Florida, with specific emphasis on the I-95 corridor and the major hubs located in close proximity. Specific facilities identified within this Commerce Corridor included I-95, Florida's Turnpike, other regional highways, three seaports, three airports, two railroads, and the intermodal connectors that linked them all together. The study provided a detailed profile of the regional economy and transportation system, including corridors, hubs, and connectors for all modes. In addition, it focused on needs identification through the creation of a projects database derived primarily from the region's long range plans and improvement programs. Since this study was completed, I-95 was designated as High Priority Corridor (HPC) 49, in large part as a result of South Florida leaders.

Local Initiatives

FIRST COAST FREIGHT MOBILITY STUDY

The Freight Mobility Study inventoried and surveyed major freight facilities and developed a freight facility database. The freight database helped to develop recommendations for freight improvements, relative to the highway system, in the First Coast MPO area. Results from this study will feed into the 2030 update of the First Coast MPO's Long Range Transportation Plan.

METROPLAN FREIGHT, GOODS AND SERVICES MOBILITY STRATEGY PLAN

The Freight, Goods and Services Mobility Strategy Plan focused on developing a freight program for the Orlando urban area. Key issues were identified, as well as projects and actions that affected facilities and freight carriers within the region. Specific projects, with timeframes and costs, were developed to address specific transportation system components for all modes.

COLLIER COUNTY MPO FREIGHT AND GOODS MOBILITY ANALYSIS

The Collier County MPO is undertaking a freight study to help enhance the level of attention given to the safe and efficient movement of freight in the region. Completion of the Freight and Goods Movement Analysis will allow the Collier County MPO to more effectively integrate freight issues into its transportation program by providing a better understanding of the type and volume of goods moving into, out of, through, and within the county.

BROWARD COUNTY MPO FREIGHT AND GOODS MOBILITY ANALYSIS

The Broward MPO initiated the Freight and Goods Movement Study to develop a framework for an integrated freight program for Broward County. The Broward MPO has become increasingly focused on freight transportation planning over the last several years, undertaking several freight specific studies and research efforts. The Freight and Goods Movement Study was undertaken to more formally incorporate freight transportation issues into the traditional MPO planning process. Its freight program has fed the 2025 and 2030 LRTP updates and recent work will support the 2035 LRTP update scheduled to begin 2008.

PALM BEACH COUNTY MPO FREIGHT AND GOODS MOBILITY ANALYSIS

The Palm Beach MPO is responsible for the development and implementation of a balanced, integrated, and multimodal transportation program that efficiently moves passenger and freight traffic. To ensure they are positioned to do this to the greatest effect, the MPO initiated a freight and goods movement study. The objectives of the Study were to: 1) establish an ongoing freight program for Palm Beach County; 2) enhance the integration of freight into the existing transportation program; and 3) promote the development of key partnerships.

MIAMI-DADE TRENDS IN HEAVY TRUCK TRAFFIC MANAGEMENT STUDY

The Trends in Heavy Truck Traffic Management Study was undertaken to identify opportunities for improved truck operations in Miami-Dade County. The impetus for the study was borne out of a political will to better manage safety issues associated with passenger vehicle-truck conflicts. The primary objective of the project was to develop recommendations for a heavy truck management program for Miami-Dade County that facilitates efficient and reliable movement of freight while maximizing passenger safety and security.

3.0 Freight Profile

Florida has a well developed intermodal freight transportation system. It includes highways, railroads, waterways, seaports, airports, pipelines, and a spaceport. These modal elements work together to move the significant volume of raw materials and finished products to their points of production and consumption, driving the economic prosperity. The majority of these system elements are described in detail in specific modal system plans. For more detailed descriptions, readers are referred to these modal plans. Excerpts of the plans have been used to develop the overviews presented in this section. The purpose of this section is to:

- Provide overviews of the key freight system elements;
- Describe existing freight flows moving to, from, through and within Florida; and
- Explain the demographic and economic drivers that are contributing to the demand for freight transportation services.

3.1 Overview of the Freight Transportation System

The Strategic Intermodal System (SIS) is the backbone of Florida's freight transportation system. The SIS is a transportation system that is made up of statewide and regionally significant facilities and services. It contains all forms of transportation for moving both people and goods, including linkages that provide for smooth and efficient transfers between modes and major facilities. The SIS was established in 2003 to enhance Florida's economic competitiveness by focusing limited state resources on those transportation facilities that are critical to Florida's economy and quality of life. The SIS is a statewide network of high-priority transportation facilities, including the state's largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways and highways (see Figure 3.1). These facilities are the workhorses of Florida's transportation system, carrying more than 99 percent of all commercial air passengers, the majority of waterborne freight tonnage, almost all rail freight, and more than 68 percent of all truck traffic and 54 percent of total traffic on the State Highway System.

In addition to the SIS, there are local and regional freight transportation systems. While the SIS also plays a key role in these systems, additional facilities also become important. Many regions have designated regionally significant facilities to help prioritize local investments as well as become eligible for funding from the recently established Transportation Regional Incentive Program (TRIP). This program calls out the importance of second tier of transportation infrastructure that serves regional needs.

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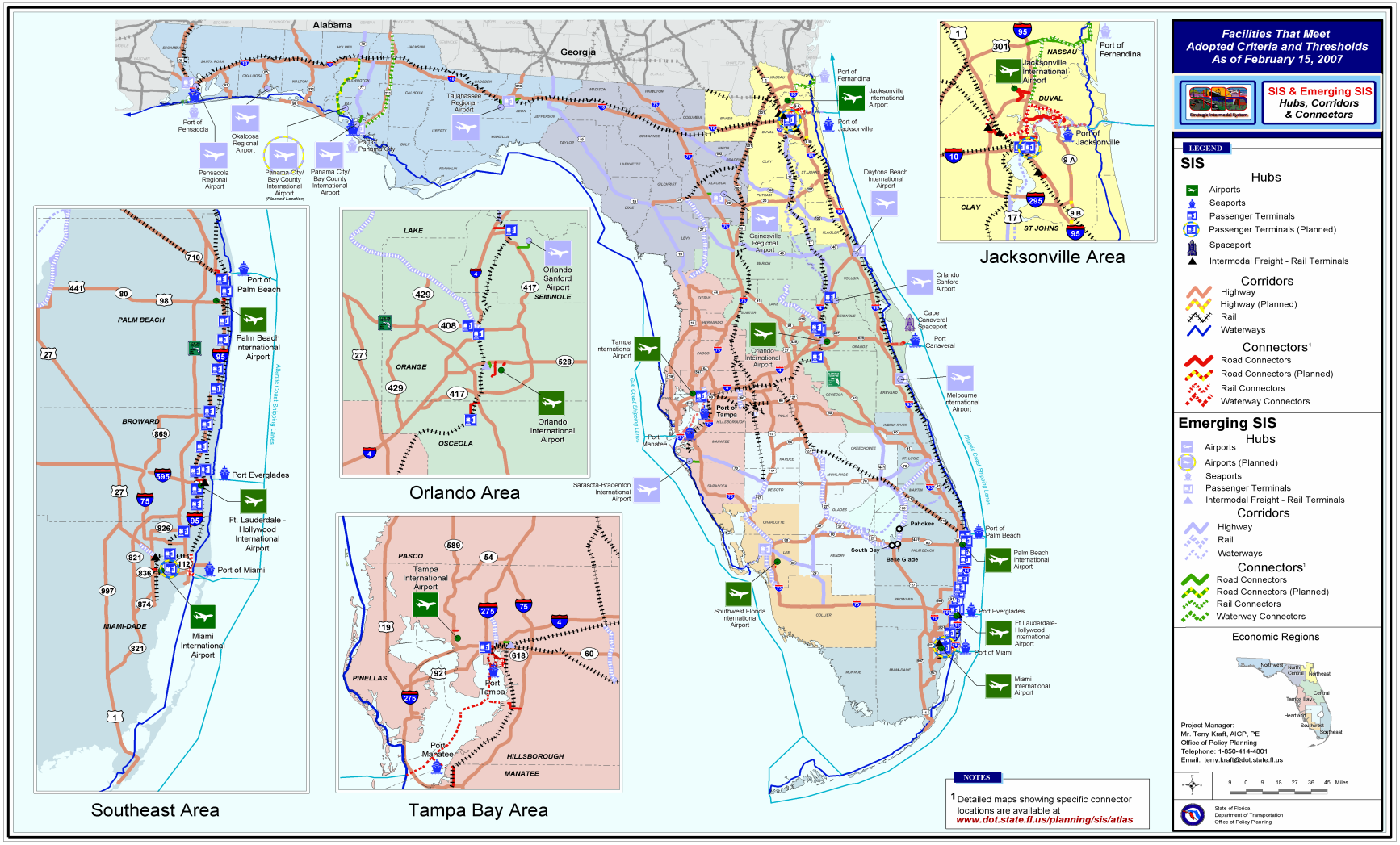
Figure 3.1. Florida Strategic Intermodal System

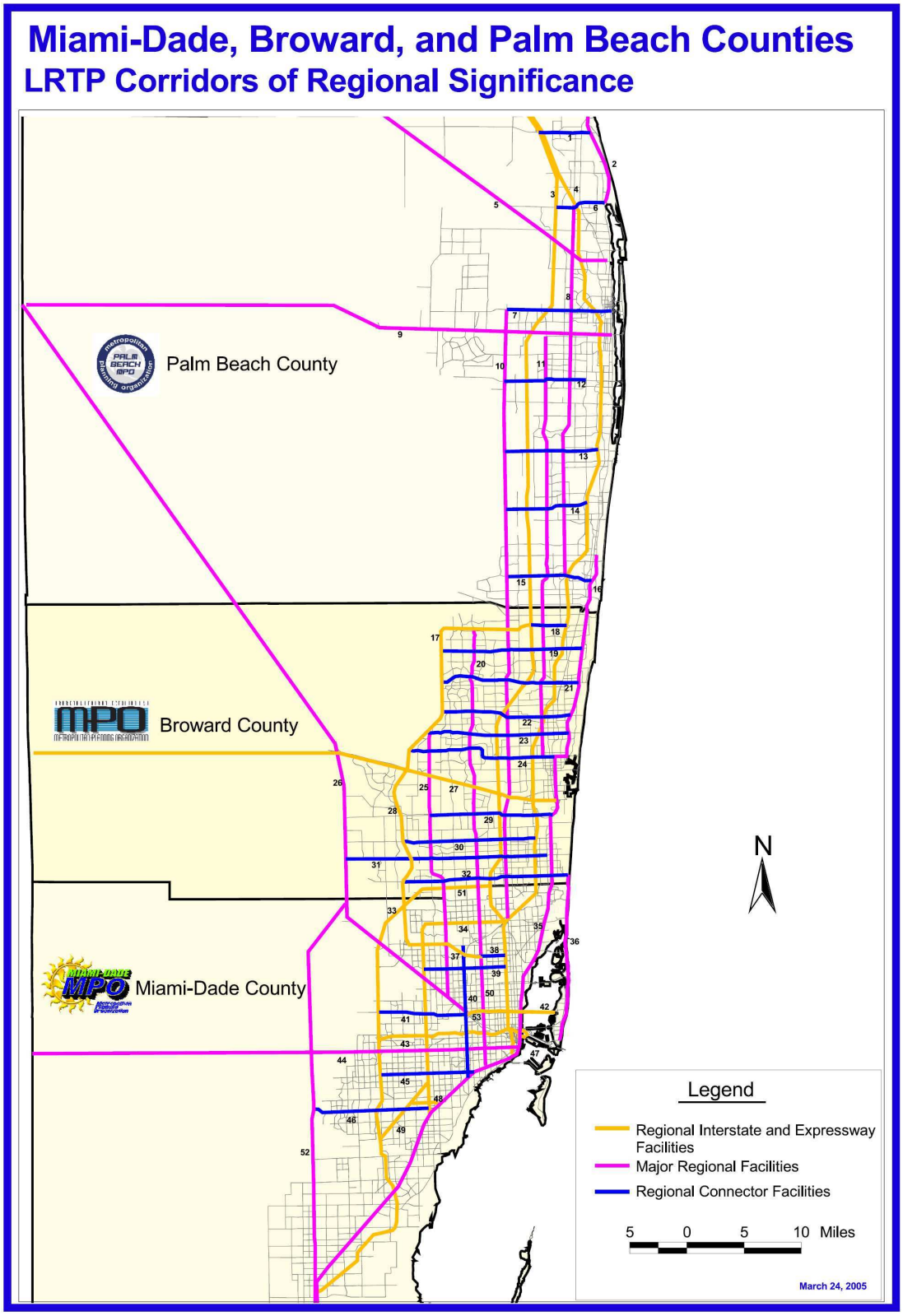


Most of the major urbanized areas in Florida have been working since the creation of the TRIP program to identify and designate highways of regional significance, and some have even begun to look at transit networks and the potential for including other modal networks in support of freight mobility. However, at this time, a comprehensive library of these regional networks is not available. As an example, Figures 3.2 illustrates a regionally designated highway system in South Florida. This system consists of the SIS and other key highways that connect Broward, Miami-Dade, and Palm Beach counties. The three counties worked together to identify the network components and use the network to identify projects for TRIP funding. While the network currently focuses on highways, it is anticipated the other modal elements will be added as part of regional planning efforts.

There also are network considerations below the regional level. At the local level, additional considerations come into play, such as intra-county mobility and community impacts of freight traffic. Many MPOs have been charged with looking at these issues to address local concerns. The Miami-Dade MPO has undertaken several studies to look at truck routes. The First Coast MPO has evaluated its industrial lands and works closely with the Port of Jacksonville to mitigate the impacts of significant terminal developments. Figure 3.3 illustrates a truck route network designated in Hillsborough County (Tampa Bay). This network was developed to ensure regional truck mobility was preserved, as well as to deal with community concerns about truck traffic. This network is updated regularly to ensure all stakeholder needs are met.

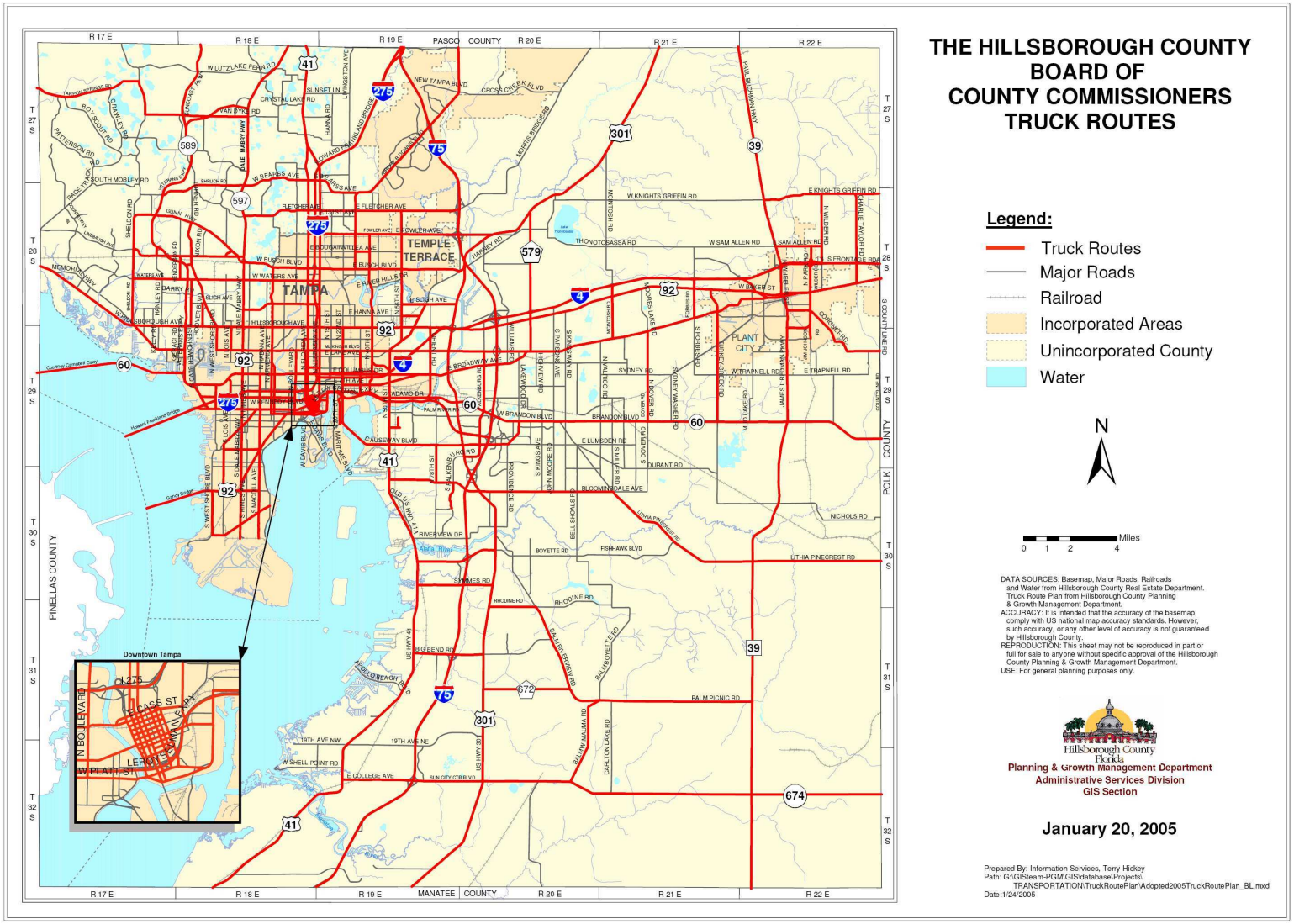
The remainder of this section provides detailed summaries of each mode – highways, seaports, airports, rail, and pipelines.

Figure 3.2 Illustration of Regionally Significant Highway Designations



Source: Broward, Miami-Dade, and Palm Beach MPOs.

Figure 3.3 Illustration of County Truck Route System



Source: http://www.hillsboroughcounty.org/pgm/transportation/resources/publications/truckroute/truckrouteplan.pdf.

Highway/Truck

Florida's extensive transportation system consists of facilities and services for numerous modes of transport distributed throughout the state. The most significant transportation infrastructure element is the roadway system, which includes the State Highway System (SHS). The SHS includes roads signed as Interstate highways, Turnpike and other toll roads, U.S. routes, and State Roads (SR). While it only includes 10 percent of all public road length, the SHS is, nonetheless, the most traveled system in Florida. In 2005, the SHS had 12,043 centerline miles and 41,295 lane miles. Daily Vehicle Miles Traveled (DVMT) on the SHS exceeded 292 million miles. Since 1994, centerline miles on the SHS increased at an annual rate of 0.12 percent, the annual rate for lane miles was 0.86 percent, and the DVMT had an annual increase rate of 3.6 percent.

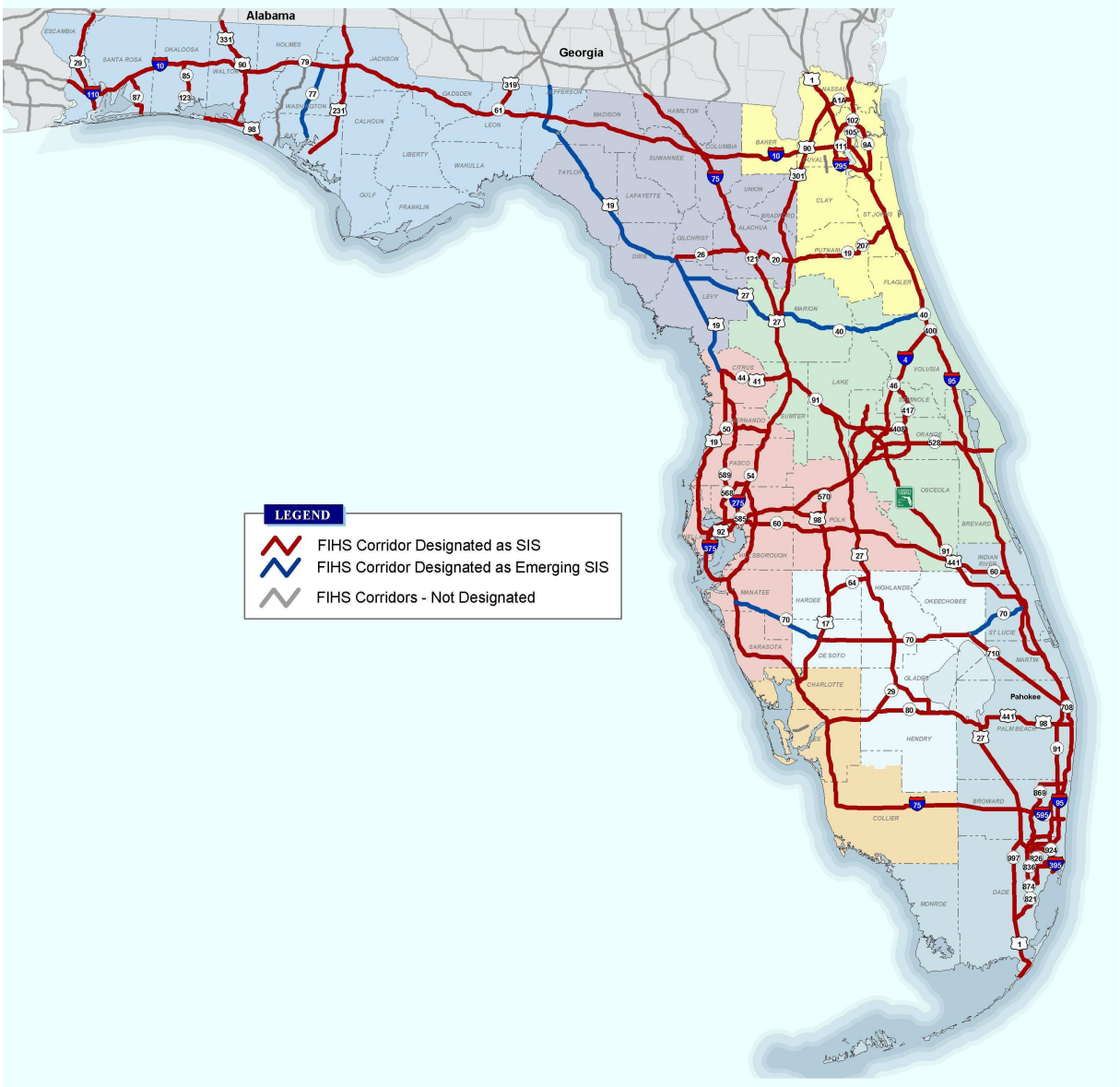
A major component of the SHS is the Florida Intrastate Highway System (FIHS). Created in 1990 by the Florida Legislature, the FIHS is composed of interconnected limited access and controlled access facilities including Interstate highways, Florida's Turnpike, urban expressways, and selected major arterial highways. The FIHS is a statewide transportation network that provides for high-speed and high-volume traffic movements within the state. The FIHS constitutes approximately 3 percent of the entire Florida roadway network by length, yet carries about 30 percent of all traffic. It handles approximately 68 percent of the truck traffic on the State Highway System. As of 2005, the system consisted of 3,943 miles of roadway.

As the backbone of Florida's Strategic Freight Network, the FIHS links seaports, airports, rail, and other intermodal or freight facilities. It serves major international airports that handle more than 90 percent of Florida's airfreight and passengers and serves major deep-water ports that handle more than 90 percent of Florida's waterborne trade and passengers. Approximately 80 percent of Florida's industrial and warehousing facilities are within five miles of the FIHS.

In 2003, the FIHS became the backbone of the highway component of the SIS. The SIS Highway Component is comprised of Interstate highways, Florida's Turnpike, selected urban expressways, major arterial highways, and intermodal connectors between SIS and Emerging SIS hubs – including seaports, airports, and rail and intermodal terminals – and SIS corridors (highways, waterways, and rail). It consists of 3,498 miles of SIS Highways and 735 miles of Emerging SIS Highways, which is only 3.5 percent of Florida's roads, but carries 29 percent of all traffic, and almost 68 percent of all truck traffic using the State Highway System. According to the Intermodal Systems Development section of the Systems Planning Office, about 66 percent of Florida's people and jobs, and 80 percent of Florida's industrial and warehousing facilities, are within 5 miles of the SIS Highways. Figure 3.4 illustrates the highway system.

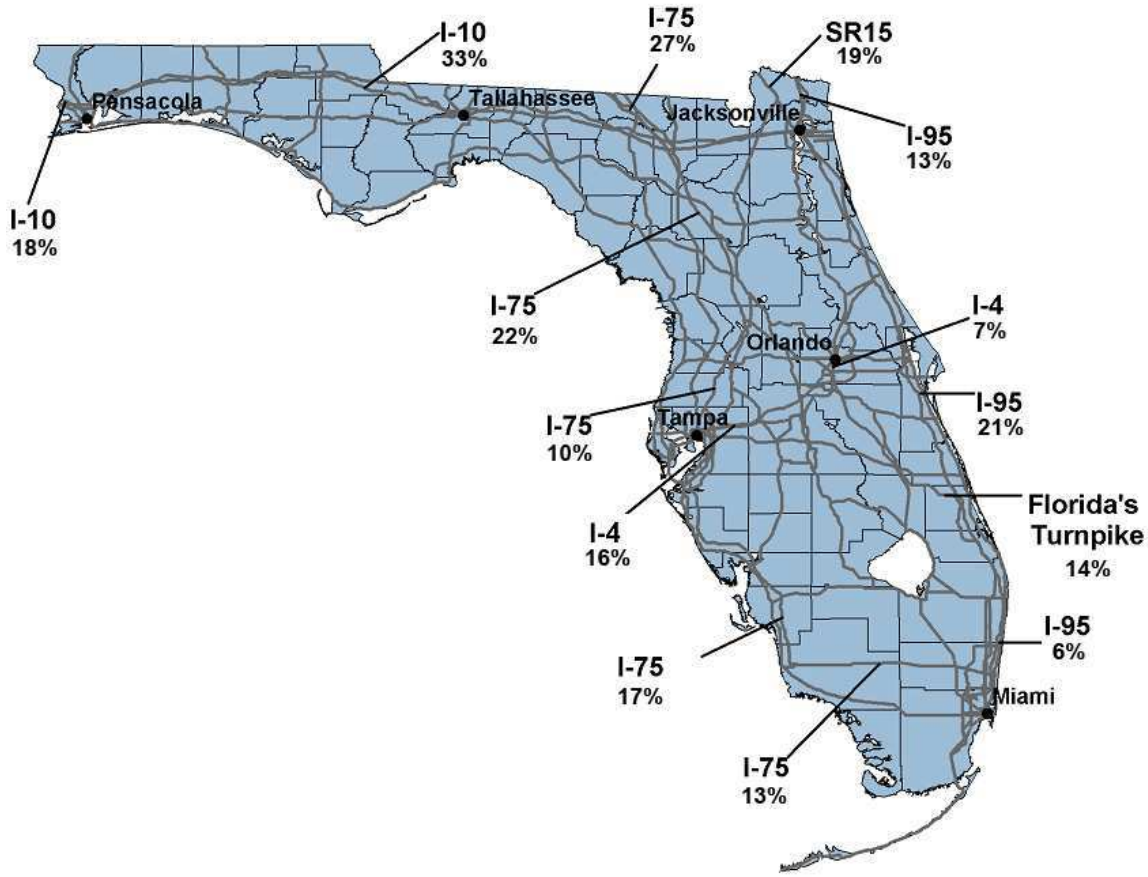
The high percentage of freight transported by trucks speaks to the significance of the roadway network for handling freight traffic. Figure 3.5 shows the share of average daily traffic attributed to trucks at various locations around the State. The share of daily truck traffic ranges from 6 percent to as much as 33 percent in the northern part of the state, typical for the area due to route proximities and adjacent trade states.

Figure 3.4 Florida Intrastate Highway System
Corridors Designated as SIS or Emerging SIS



Source: Cambridge Systematics, Inc.

Figure 3.5 Share of Average Daily Travel Attributed to Truck Traffic
2006



Source: FDOT Florida Traffic Information, 2006

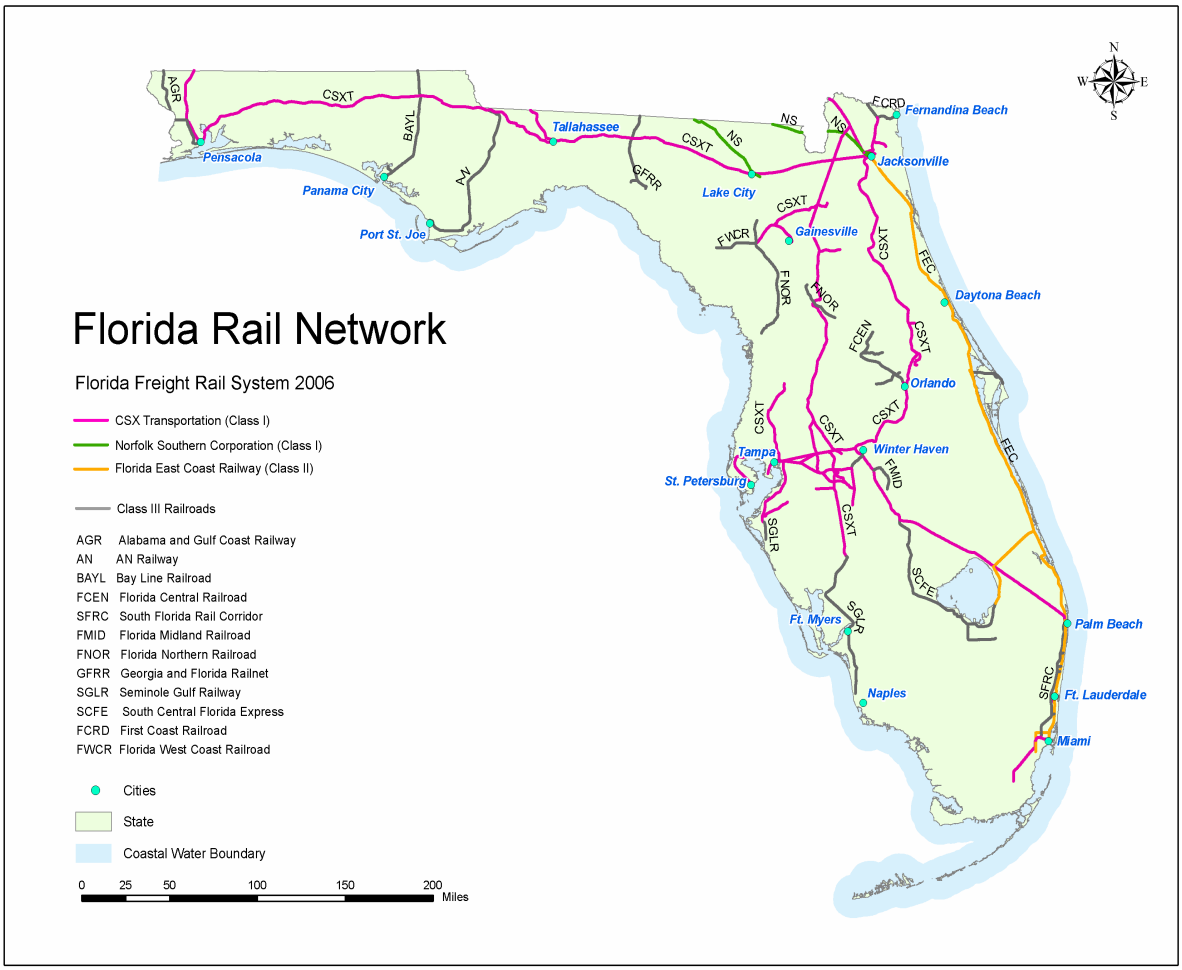
Rail/Intermodal

There are 15 freight railroads operating in the State of Florida (see Figure 3.6). These railroads carried about 1.2 million carloads and 805,260 intermodal units (trailers and containers) and 119 million tons of freight, effectively removing almost six million heavy trucks from the roadways.[4] By offering lower rates than trucks, the railroads support thousands of additional jobs by allowing Florida's industries to be competitive with international and domestic markets such as fertilizer, construction rock, consumer goods, paper products, sugar, processed food, and orange juice. Florida's railroads paid $515.3

[4] All 2004 freight rail values are based on the 2004 Surface Transportation Board Carload Waybill Sample. Truck estimates assume an average net truck weight of approximately 20 tons and do not consider empty truck movements.

million in wages to more than 8,182 workers in the year 2005. Considering only freight railroads, the figures are $366.0 million and 5,904 workers for the same year.[5]

Figure 3.6 2006 Florida Freight Rail System



Source: FDOT 2006 Florida Rail Plan.

Two Class I railroads operate in Florida: CSX Transportation (CSXT) and the Norfolk Southern Railroad (NS). These two railroads serve the eastern United States and connect Florida to the national rail network. CSXT is the single largest operating railroad in Florida, with an extensive network covering the Florida Panhandle, Northern and Central Florida, and the Greater Miami area in South Florida. NS lacks an extensive Florida network and primarily serves as a conduit to the national rail system via lines in northern

[5] Wage and job statistics are from "Railroad Service in Florida," Association of American Railroads, 2005.

Florida and the Greater Jacksonville area. Both the Class I carriers, CSXT and NS, interchange with the Florida East Coast Railway (FEC), a Class II regional railroad that provides service to the heavily populated Atlantic Coast Corridor from Jacksonville to Miami. Class III short-line railroads serve much of the rest of the State and provide local service to several important ports and manufacturing clusters. Finally, the Talleyrand Terminal Railroad (TTR) is a switching railroad providing service at the Jacksonville Port Authority (JaxPort).

Table 3.1 shows the total miles operated and owned in Florida by railroad. Of the 3,152 miles of rail operated in Florida, a total of 1,826 miles, or 58 percent, of rail corridors are currently designated as part of the SIS (Figure 3.7). These include: CSX Railroad, Florida East Coast Railroad, Florida Central Railroad, South Florida Rail Corridor, Florida Northern Railroad, Norfolk Southern Railroad, Seminole Gulf Railway, and South Central Florida Express.

Table 3.1 Summary of Railroad Miles in Florida in 2006

Railroad Name	Miles Operated in Florida	Percent of Total Miles Operated	Miles Owned in Florida
Alabama and Gulf Coast	45	15	45
AN Railway	96	100	96
Bay Line	63	57	63
CSX Transportation	1,750	8	1,508
First Coast Railroad	32	100	32
Florida Central	76	100	66
Florida East Coast	371	100	371
Florida Midland	33	100	27
Florida Northern	103	100	103
Florida West Coast	13	100	13
Georgia and Florida Railway	50	20	50
Norfolk Southern	149	<1	96
Seminole Gulf	115	100	115
South Central Florida Express	171	100	120
South Florida Rail Corridor	81	100	81
Talleyrand Terminal Railroad	10	100	10
Total	**3,158**		**2,796**

Note: Miles are calculated as route miles and do not necessarily reflect total track mileage.

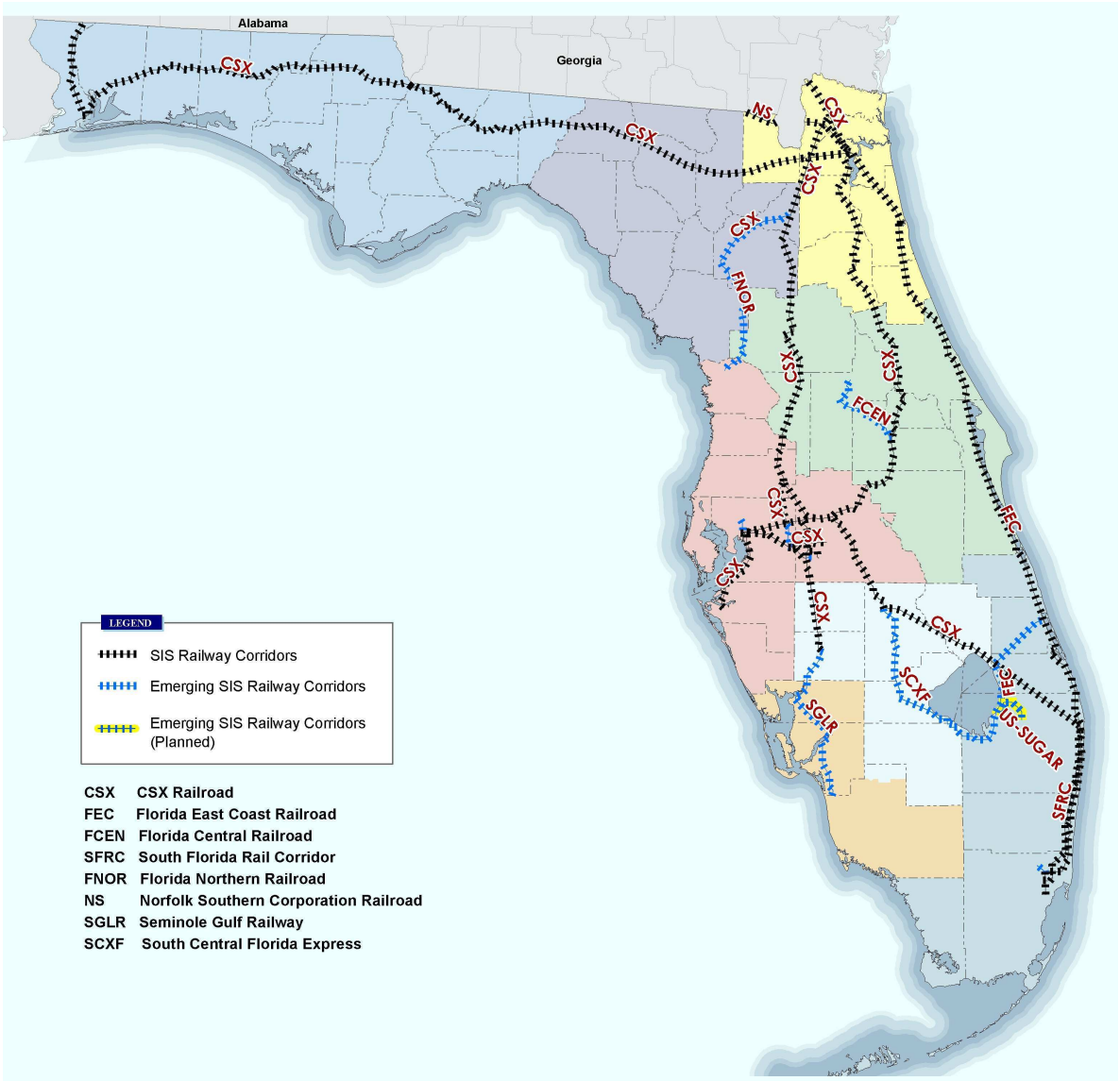
Source: American Rail Road Association, Railroad Service in Florida Fact Sheet, 2005.

In 2004, Florida's freight railroads moved more than 119 million tons of freight, an almost two percent increase from 117 million tons reported in 2003.[6] The 2004 freight rail tonnage by direction includes more than 46 million inbound tons, 14 million outbound tons, 57 million local tons, and nearly two million through tons.[7]

[6] Summaries by weight, unit type, and direction are based upon the 2004 Surface Transportation Board Carload Waybill Sample.

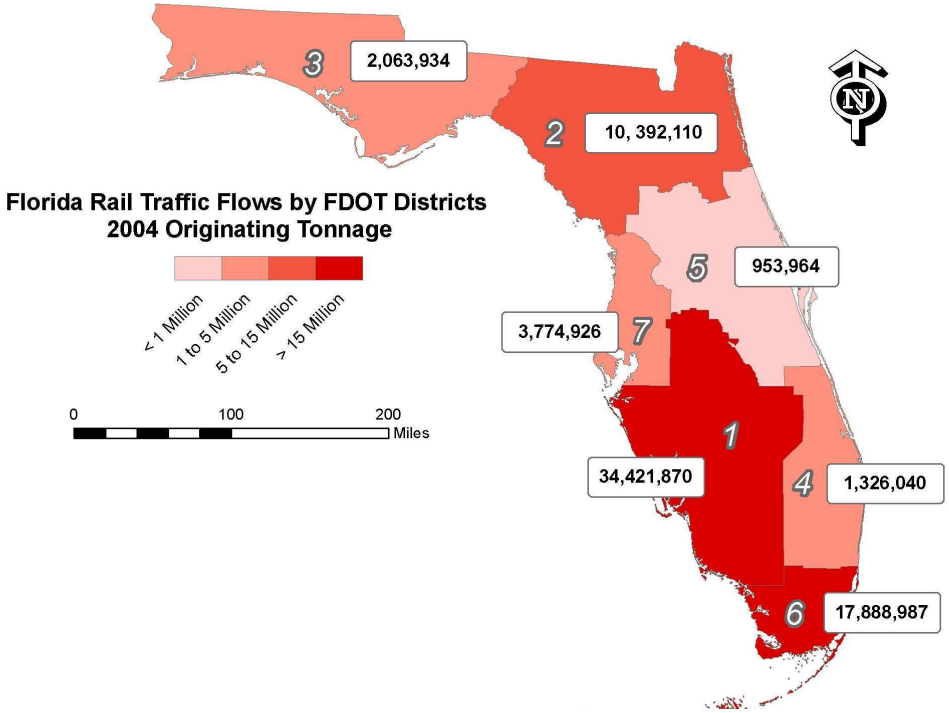
[7] The terminology for rail flows is defined as follows: "inbound" as interstate traffic terminating in Florida; "outbound" as interstate traffic originating in Florida; "local" as Florida intrastate traffic; and "through" as traffic neither originating nor terminating in Florida, but passing through the State. Note that "Origins" include both outbound and local flows, while "terminations" include both inbound and local flows.

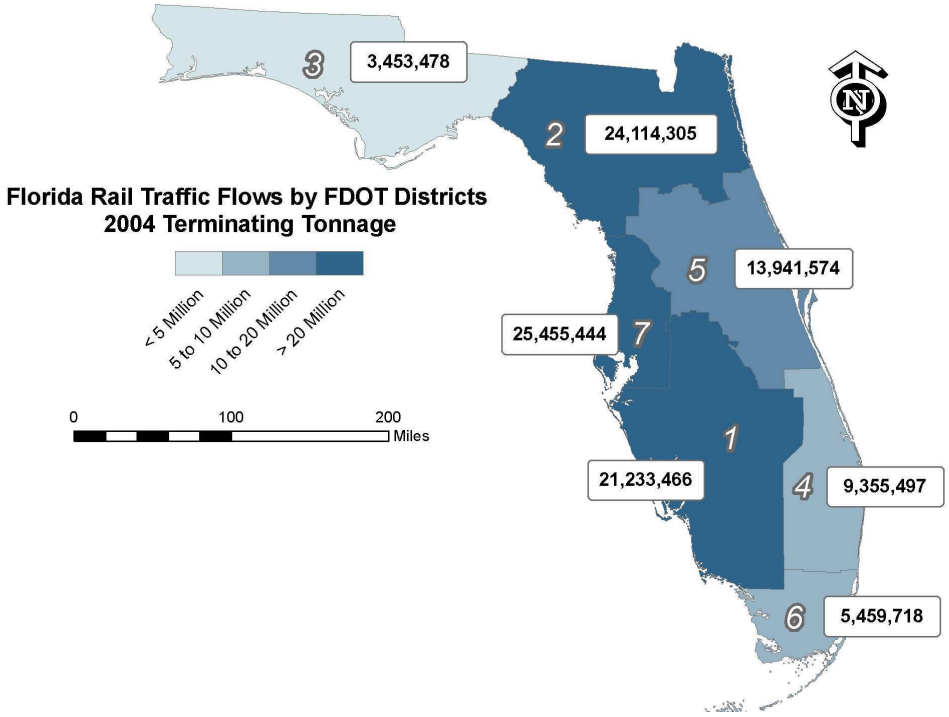
Figure 3.7 SIS and Emerging SIS Freight Rail Corridors



In percentage terms, inbound traffic accounted for a 38.9 percent share (up from 36.8 percent in 2003) of the total rail tonnage, outbound traffic comprised 11.8 percent (down from 12.9 percent in 2003), local traffic contributed 47.7 percent (down from 48.6 percent in 2003), and through traffic accounted for 1.7 percent (consistent with 2003). Figure 3.8 shows the origin and destination traffic (in tons) by FDOT district.

Figure 3.8 Florida Rail Traffic per FDOT District





Source: FDOT, Rail Office, "Florida Rail Plan 2006."

Seaports/Waterways

Florida's marine transportation system includes the Atlantic and Gulf Intracoastal Waterways as well as several inland waterway systems. These waterway systems are the link between Florida's seaports, inland destinations, and domestic and international shipping lanes. Florida is home to 14 deepwater seaports along both the Atlantic and Gulf coasts. Florida's 14 deepwater seaports play an essential role in creating and sustaining a vibrant economy and play a central role in international trade (Figure 3.9). Table 3.2 describes the ports by region. Ten of the fourteen seaports currently designated as part of the SIS (Figure 3.10).

Figure 3.9 Florida's Deepwater Ports

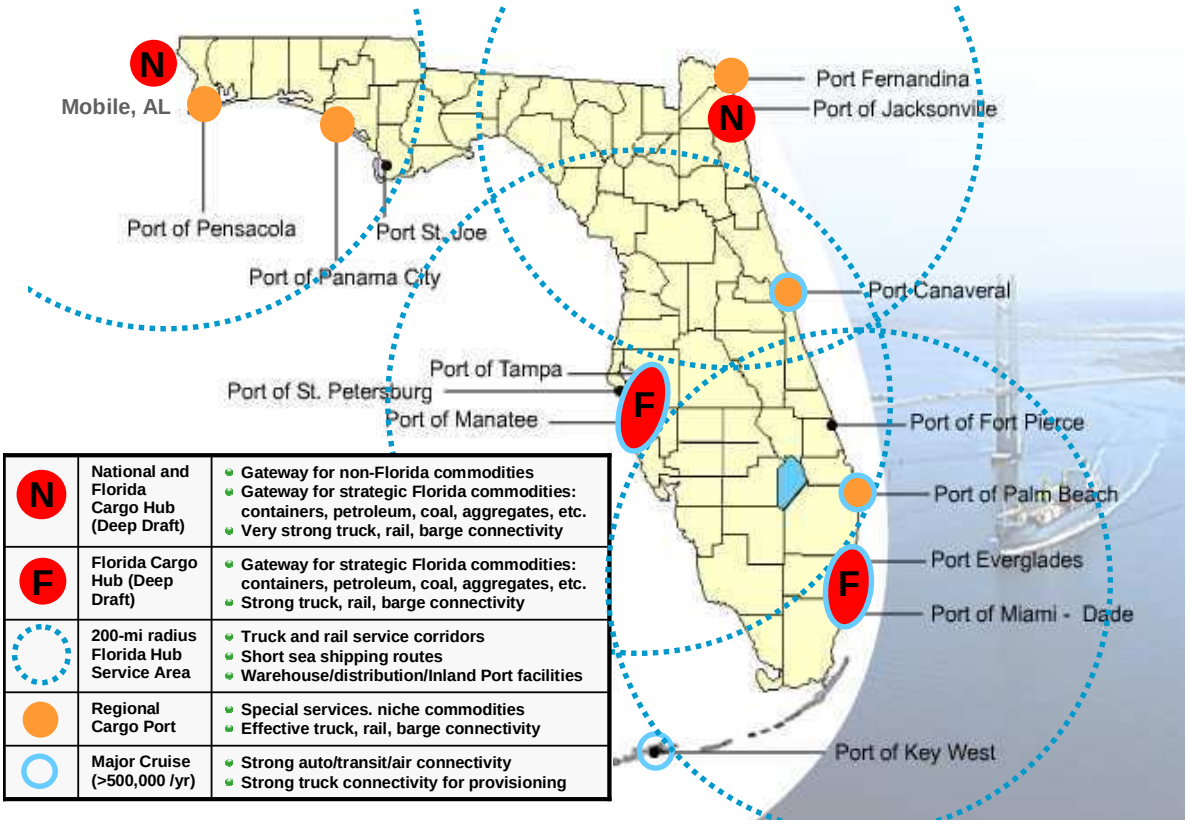
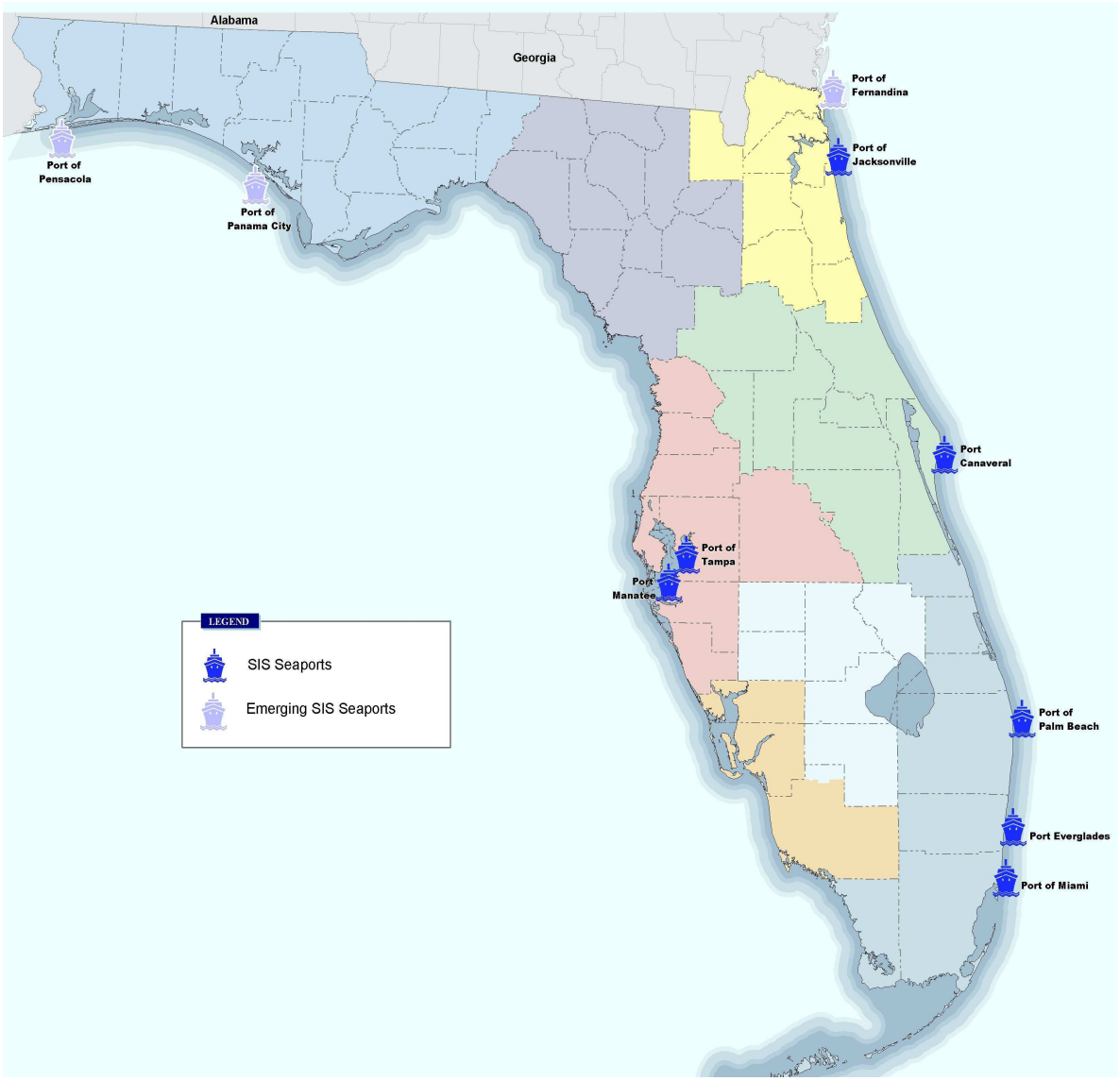


Table 3.2 Description of Seaports by Region

Category	Description
East Central – Ports of Canaveral and Fort Pierce	• The East Central region is home to two ports. Port Canaveral is one of the largest cruise ports in the world. In addition, it continues to develop and expand its cargo operation, which currently consists of bulk and break bulk products. A major petroleum tank farm is planned and future expansion into the container market is not unlikely. Port Canaveral is unique in its mixed use development strategy. It is home to cargo, cruise, and recreational facilities. Port of Fort Pierce currently is working to redevelop and grow its cargo operation, focusing on bulk products, as well as a mega yacht repair facility.
Northeast – Ports of Jacksonville and Fernandina	• The Northeast region is home to two ports. With the signing of two new steamship lines, the Port of Jacksonville is positioned to become the largest container port in Florida over the next several years. It also handles a variety of bulk, break bulk, and RO-RO products, including automobiles, and has limited cruise operations. A significant warehouse and distribution center infrastructure has been developed in the region to support regional and hinterland markets. Port of Fernandina is a small niche port handling a variety of forest products, steel, and containerized cargo serving markets in the Caribbean and Central and South America.
Panhandle – Ports of Panama, Pensacola, and St. Joe	• The Panhandle region is home to three small ports, one of which currently is inactive. These ports handle a variety of bulk and break bulk products; recent expansion into containerized cargo at Port of Panama City has been successful and primarily the result of shifts in trade following Hurricane Katrina. These ports are based in small communities and serve local markets as well as specialized niche markets (such as copper at Port of Panama City). The Panhandle coast is undergoing significant growth and development, which will increase the demand for goods and services moving through these ports.
Southeast – Ports of Miami, Everglades, Palm Beach, and Key West	• The Southeast region is home to four ports and currently represents the largest population in Florida. The Port of Miami is the largest container port in Florida and handles the largest number of multi-day cruise passengers. Port Everglades handles containers, cruise passengers, and provides petroleum to the southern half of Florida, including jet fuel to the region's three international airports. Port of Palm Beach has an established niche export market to the Caribbean Basin, serves Palm Beach County's sugar industry, and handles limited day cruises. The Port of Key West is the largest port of call for cruise ships in the U.S. Major projects, such as the Port of Miami Tunnel and the potential development of an inland port could impact future seaport growth in the region.
West Central – Ports of Tampa, Manatee, and St. Petersburg	• The West Central region is home to three seaports, including the largest of Florida's ports (by tons). The Port of Tampa is one of most diverse ports in the State, moving huge volumes of bulk and break bulk products, as well as limited but growing container traffic and cruise passengers. This includes exports of a huge volume of phosphate from Bone Valley. Port Manatee moves a significant amount of cargo and is positioned for significant expansion and growth. Port of St. Petersburg is developing research facilities and is not a mover of cargo or passengers. The Tampa Bay region is growing significantly and is home to significant industry, which will continue to drive and demand growth in seaport capacity. Development of CSX's integrated logistics center in Winter Haven will impact the region's intermodal network access.

Figure 3.10 SIS and Emerging SIS Seaports



Source: Cambridge Systematics, Inc.

Florida's ports move different types of commodities. Broadly speaking, cargo can be classified as either "general cargo" or "bulk cargo," and is handled as follows:

- **Containers.** Containerized general cargo is any commodity moved in an intermodal shipping container. Containers come in different lengths, between 20' and 45' (for international trades) and up to 53' for U.S. domestic trades.

- **Roll On-Roll Off (Ro-ro)**. Ro-ro general cargo is driven onto and off of vessels, and can include automobiles, construction equipment, boats on trailers, etc.

- **Break-bulk and Neo-bulk.** Break-bulk general cargo is typically packaged in relatively small units (pallets, bags, etc.) that can be handled by conventional stevedoring equipment. Neobulk cargo consists of larger or heavier units – such as coiled steel, or large machinery – that requires special handling equipment.

- **Liquid Bulk.** Liquid bulk is any liquid product that is shipped without packaging into smaller units, such as petroleum in the hold of a tanker.

- **Dry Bulk.** Dry bulk is any dry product that is shipped without packaging into smaller units, such as coal on an open barge.

Florida's ports also provide different types of passenger services – multi-day cruises, one-day cruises, and ferry services. Each of Florida's ports has a characteristic profile, in terms of the amount of cargo and number of passengers they handle. As shown in Table 3.3 and Figures 3.10 and 3.11, Florida's ports show significant diversity in terms of their traffic volumes and mixes. Three measures are shown – total tonnage, container volumes (measured in twenty-foot equivalent units, or TEUs), and passengers, all moving "across the wharf" (so that loading and unloading each count separately).

Florida's leading tonnage port is Tampa, followed by Everglades and Jacksonville; its leading container port is Everglades, followed by Miami, Jacksonville, and Palm Beach; and its leading cruise ports are Canaveral, Miami, and Everglades.

Collectively, these ports provide Florida with the ability to handle over 121 million tons, almost 3 million TEUs, and over 14 million passengers per year.[8] Florida is one of the leading states in the country on all measures.

[8] A Five-Year Plan to Achieve the Mission of Florida's Seaports: 2007/2008-2011/2012.

Table 3.3 Cargo and Passenger Volumes for Florida's Ports* (FY06/07)

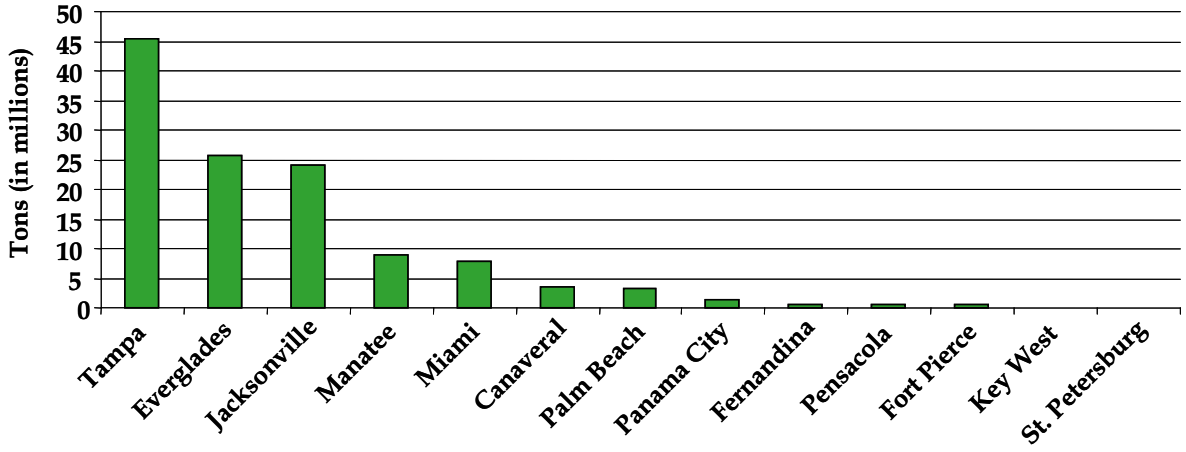
Port	Total Tonnage	TEUs	One-Day Cruise	Multi-Day Cruise	Total Cruise
Canaveral	3,572,206	760	1,612,526	2,663,396	4,275,922
Everglades	25,602,150	948,680	719,888	2,690,058	3,409,946
Fernandina	547,708	32,116	0	0	0
Fort Pierce	456,000	15,760	0	0	0
Jacksonville	24,008,000	710,073	0	259,816	259,816
Key West**	0	0	0	1,000,000	1,000,000
Manatee	8,817,068	4,902	0	0	0
Miami	7,835,132	884,945	0	3,787,410	3,787,410
Palm Beach**	3,283,800	257,507	566,408	0	566,408
Panama City	1,302,347	54,480	0	0	0
Pensacola	525,243	670	0	0	0
St. Petersburg	0	0	0	0	0
Tampa	45,293,505	39,653	0	781,861	781,861
Total	**121,243,159**	**2,949,546**	**2,898,222**	**11,182,363**	**14,081,363**

Source: A Five-Year Plan to Achieve the Mission of Florida's Seaports: 2007/2008-2011/2012.

*Cruise passengers are counted twice, once when embarking and once when disembarking.

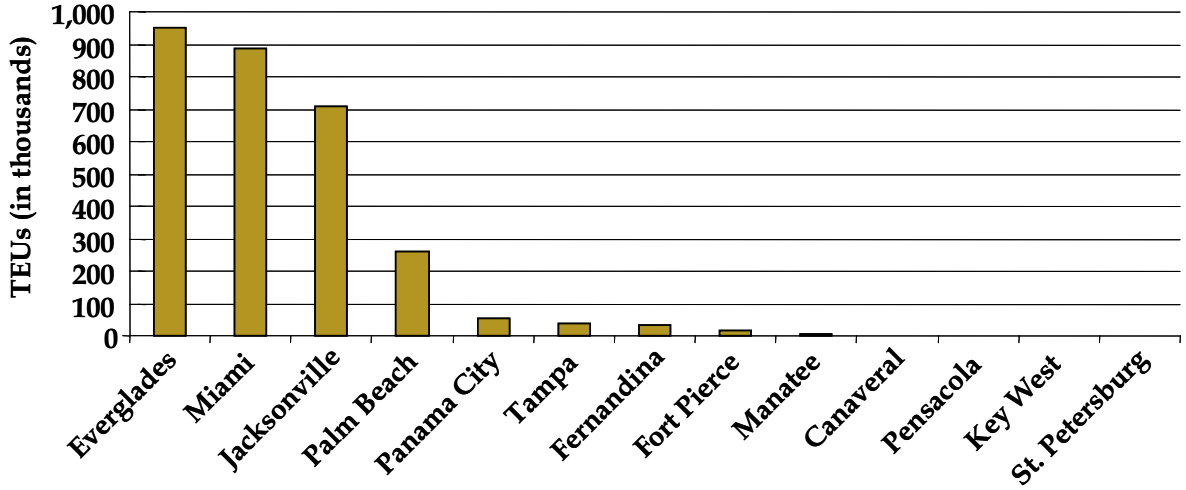
**Port-of-call for passengers on multi-day cruises. The Key West figure includes 163,418 ferry passengers.

Figure 3.11 Florida's Ports Ranked by Total Tonnage (FY 2006/2007)



Source: A Five-Year Plan to Achieve the Mission of Florida's Seaports: 2007/2008-2011/2012

Figure 3.12 Florida's Ports Ranked by TEUs (FY 2006/2007)



Source: A Five-Year Plan to Achieve the Mission of Florida's Seaports: 2007/2008-2011/2012.

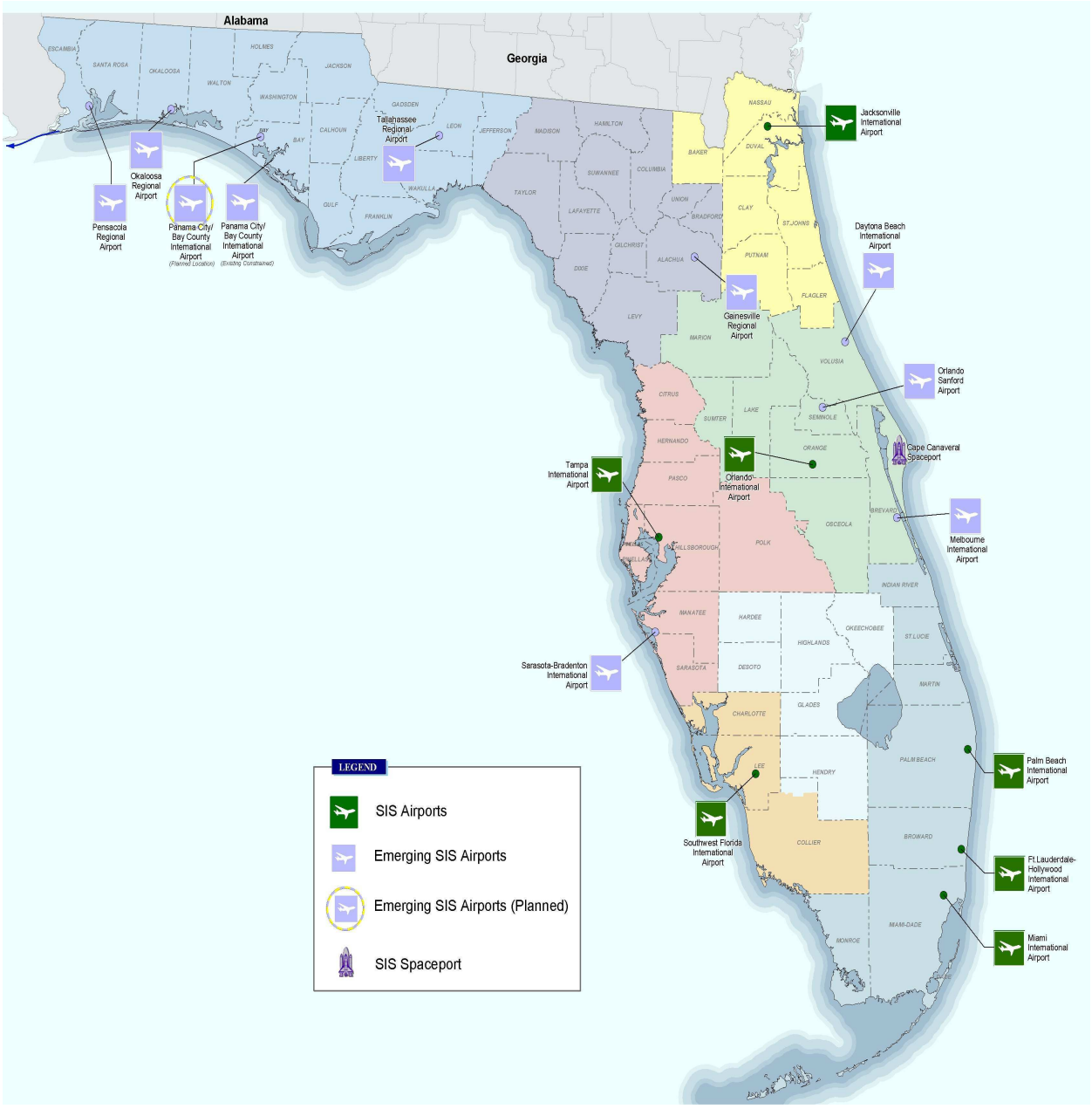
Aviation/Air

Florida's aviation system consists of 106 public airports, which include 19 commercial service airports (Figure 3.13) and 87 public-use general aviation facilities; 24 military airports; and 730 private airports, of which 23 are available for public use. Florida's expanding population and employment levels will generate additional demand for travel via all modes of passenger and freight transportation. Commercial service airports handle approximately 2.5 million tons of air freight and mail annually, either on dedicated aircraft or in the belly compartments of passenger aircraft. Seventeen of the 19 commercial service airports in the state are designated as part of the SIS and are therefore considered among the State's highest priority transportation infrastructure (Figure 3.14)

Figure 3.13 Air Cargo Tonnage Handled at Florida
Commercial Service Airports

Source: 2025 Florida Aviation System Plan.

Figure 3.14 SIS and Emerging SIS Airports



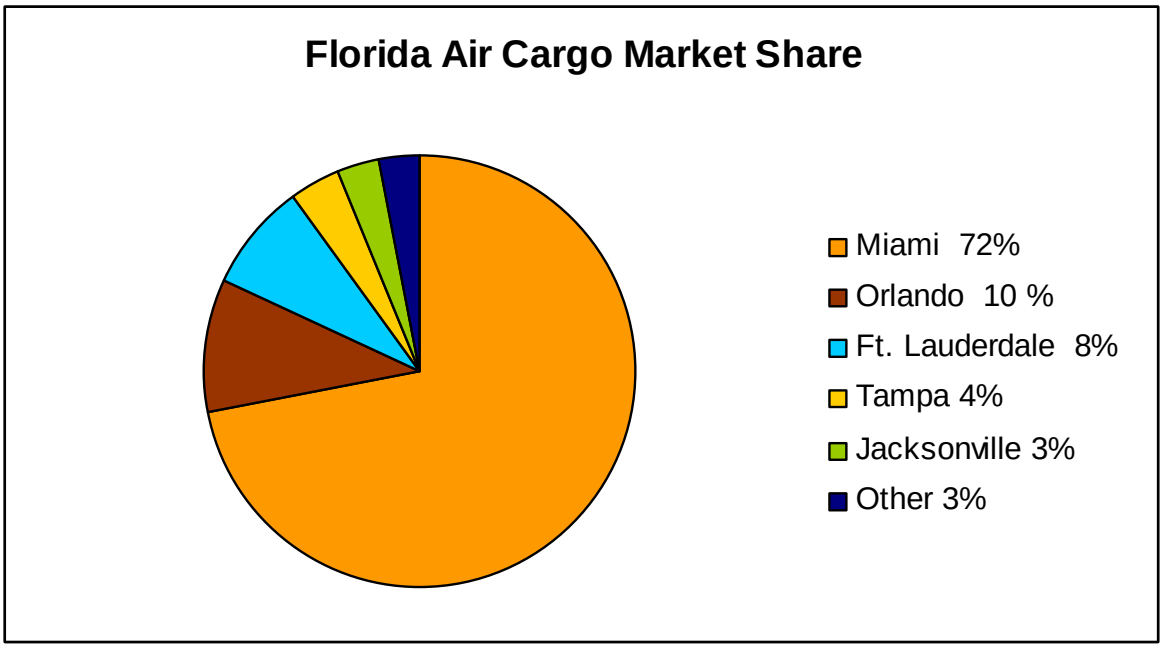
Source: Cambridge Systematics, Inc.

Miami International Airport handles 72 percent of the state's annual total and accounts for 40 percent of the air cargo transported between the United States and South America each year. Orlando International and Fort Lauderdale-Hollywood International follow, with market shares of 10 and 8 percent, respectively. The top five commercial airports handle 97 percent of all air cargo in the state (Miami, Orlando, Ft. Lauderdale, Tampa, and Jacksonville [Figure 3.15]).

Market share is highly concentrated at the largest airports because local air cargo is routinely trucked and consolidated to airports with the most "lift" options, routes, and capacity. Approximately 70 percent of cargo handled at Florida airports is gateway cargo, passing through the state either destined for or leaving from another city in the U.S. The remaining 30 percent is local freight that originates from or is destined for Florida cities.

Florida's top five air cargo airports serve multiple functions in meeting air cargo demand. They are international gateways, domestic hubs, consolidation centers, and spokes in major carrier networks (Table 3.4). The degree of air cargo complexity at a given airport correlates with the number of air cargo functions and ultimately the amount of air cargo handled.

Figure 3.15 Florida Air Cargo Airports Market Share



Source: Florida Aviation System Plan, 2025.

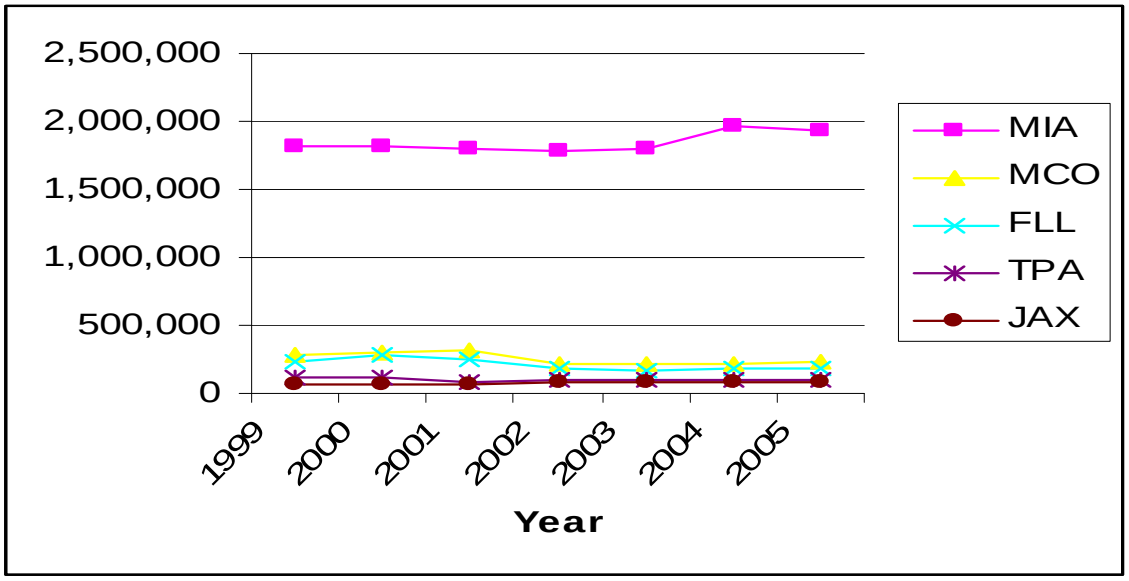
Table 3.4 Function of the Top Five Air Cargo Airports in Florida

Airport	International Gateway	Passenger or Cargo Hub	USPS Sort Center	Integrated Express Spoke	Major Carrier Spoke
Miami	✈	✈		✈	✈
Orlando	✈	✈	✈	✈	✈
Fort Lauderdale	✈			✈	✈
Tampa	✈			✈	✈
Jacksonville				✈	✈

Source: Florida Aviation System Plan, 2025.

Figure 3.16 identifies historic air cargo activity for the five leading airports. Peak performance occurred in 2000 when over 2.6 million tons of air cargo was accommodated at these airports. This peak was followed by two years of decline followed by a tremendous resurgence in 2004, which nearly reached the 2000 benchmark. The overall trend for air cargo activity indicates a 0.5 percent decrease in cargo activity at the five leading air cargo airports in Florida from 1999 to 2005. These trends follow domestic and world growth trends experienced by the air cargo industry for the same period. Worldwide increase have largely been supported by increases of over 4 percent and 5 percent between North America and Asia, and Europe and Asia, respectively.

Figure 3.16 Historic Cargo Activity at Major Air Cargo Airports in Florida



Source: Florida Aviation System Plan, 2025.

Pipelines

Pipelines in Florida include large-diameter lines carrying energy products to population centers, as well as small-diameter lines that deliver natural gas to businesses and households. The energy products carried in pipelines heat and cool homes and schools, power the industrial base, and enable daily commutes. Pipelines are by far the safest method for transporting energy products. However, when pipeline incidents occur they can present significant risks to the public and the environment. Total pipeline mileage by system in Florida is presented in Table 3.5. More detailed information is unavailable. Since September 11, 2001, the majority of pipeline related data have been removed from public access for security reasons.

Table 3.5 Pipeline Mileage Overview in Florida

Pipeline System	Mileage
Hazardous Liquid Line Mileage	505
Gas Transmission Line Mileage	4,782
Gas Gathering Line Mileage	0
Gas Distributing Mileage	26,651
Total	**31,938**

Source: Office of Pipeline Safety, U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

3.2 Commodity Flow Analysis

The commodity flow data utilized in this project were provided by the Florida Department of Transportation. It is a 2003 TRANSEARCH database developed for Florida by Global Insight. This database contains commodity flow information for every county in Florida and is based upon existing proprietary, commercial, and public available data sources, and has been supplemented by economic forecasting techniques. This statewide database has been analyzed to describe commodity flows moving into, out of, within, and through Florida. Commodity flow data are valuable tools for freight transportation planning activities, as they provide detailed information on mode split, origin/destination pairs and characteristics of freight moving in Florida.

The TRANSEARCH commodity flow database used for this study did not include a value component. However, one of the products of the 1997 Commodity Flow Survey (CFS),

developed by the Bureau of Transportation Statistics (BTS), provides estimates of value per ton for each of 38 commodities. The values per ton were adjusted to year 2003 dollars using the producer price index. Commodity flow values were obtained specifically for Florida to more accurately reflect that State's total trade in dollars.

Acknowledgment of Data Characteristics

While TRANSEARCH is generally accepted as one of the best sources of commodity flow data, it should be noted that there are some limitations in how this database should be used and interpreted. Many practitioners ask questions relating to volume, intermodal trip reporting, specific corridors, and point-to-point shipments. In responding to these questions, commodity flow analysts are left to explain the idiosyncrasies of the data. Unfortunately, often times the only answers available to many of these questions are statements such as "the data are only as good as the source," "it depends on how industry representatives responded to surveys," or "some information was withheld for reasons of confidentiality."

In some cases, data are not available for certain types of flows. The Rail Waybill data used by Global Insight, for example, are based on data collected from Class I railroads. The waybill data contain some data for regional and short-line railroads, but only in regards to interline service associated with a Class I railroad. The rail tonnage movements provided by the TRANSEARCH database, therefore, are a conservative estimate.

The following provides examples of some of the limitations.

- **Use of Multiple Data Sources –** The commodity flow data developed by Global Insight consist of a national database built from company-specific data and other available databases. To customize the data for a given region and project, local and regional data sources often need to be incorporated. This requires the development of assumptions that sometimes compromise individual databases. Different data sources use different classification systems. While most economic forecasts are based on Standard Industrial Classification (SIC) codes, commodity data are typically organized by Standard Transportation Commodity Codes (STCC). For example, the U.S. Census Bureau's Vehicle Inventory and Use Surveys (VIUS) has its own product codes that have to be assigned to STCCs to convert truck commodity flows to truck trips.

- **Data Collection and Reporting –** In most available databases that are based on industry surveys, as the geographic regions become smaller, the data accuracy decreases. For example, the Commodity Flow Survey (CFS) conducted by the Bureau of Transportation Statistics (BTS) aggregates its data for a specific region in such a way to protect the confidentiality of the industry participants. This is also a common practice for socioeconomic data on employment. In addition, the validity of some data is limited by the reporting variances. For example, the level of detail provided from specific companies limits the commodity flow data generated by Global Insight (GI). If a shipper moves cargo intermodally, one mode must be identified as the primary method of movement. If a shipper ships from the Midwest to Europe and uses rail to

New York and water to Europe, the resulting data record reflects the flows in the way in which a company records the data. Therefore, the data is only as good as the source.

- **Limitations of International Movements –** TRANSEARCH does not report international air shipments through regional gateways. Specific origin and destination information is not available for overseas waterborne traffic through maritime ports. Overseas ports are not reported and GI estimates the domestic distribution of maritime imports and exports. The GI dataset also does not completely report international petroleum and oil imports through maritime ports. This issue is of particular concern for facilities like Port Everglades, which is a major petroleum-importing facility. GI assigns commodity data only to truck, rail, air, and water movements, however a significant share of all foreign imports by weight are oil and petroleum, which frequently travel by pipeline to storage and distribution points.

It is important to note that although the data are at times limited, a detailed commodity flow analysis would not be possible without this type of information to better understand freight and goods movement in Florida.

Statewide Commodity Flow Analysis

Overview of Freight Flows

As shown in Figures 3.17, 3.18, and 3.19, 848 million tons of freight, worth over $939 billion were transported to, from, within, and through the State of Florida via truck, rail, air, and water modes in 2003. By calculating the value of freight movements, a comparison between the number of vehicles, weight, and values of commodities transported into, out of, within, and through the State of Florida was developed.

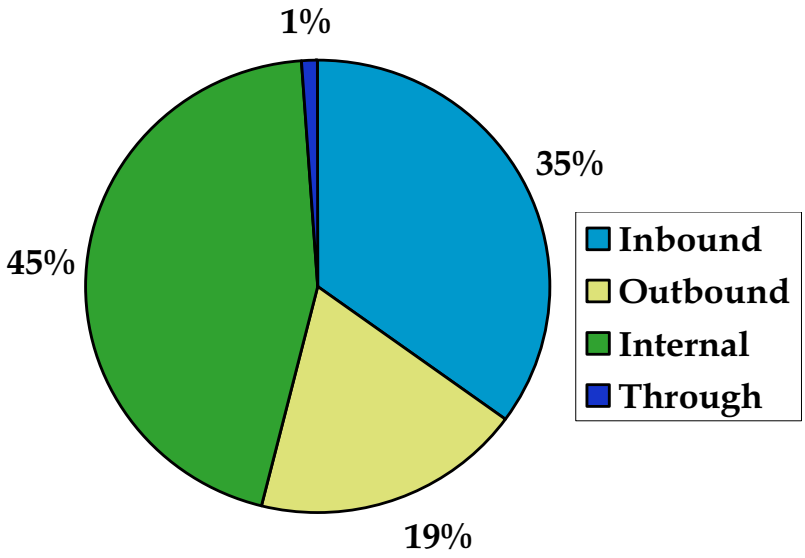
- *Outbound* movements accounted for 19 percent, or 157.5 million tons, by weight; 21 percent, or $195.6 billion, by value; and 16 percent of the truck movements, or approximately 5.3 million trucks.

- *Inbound* movements accounted for 35 percent, or 300.5 million tons, by weight; 40 percent, or $374.5 billion, by value; and nearly 7.5 million trucks, amounting to 22 percent of total truck movements.

- *Intrastate* movements accounted for 45 percent, or 378.9 million tons, by weight; 37 percent, or $347.7 billion, by value; and 61 percent of the truck movements, or approximately 20.9 million trucks.

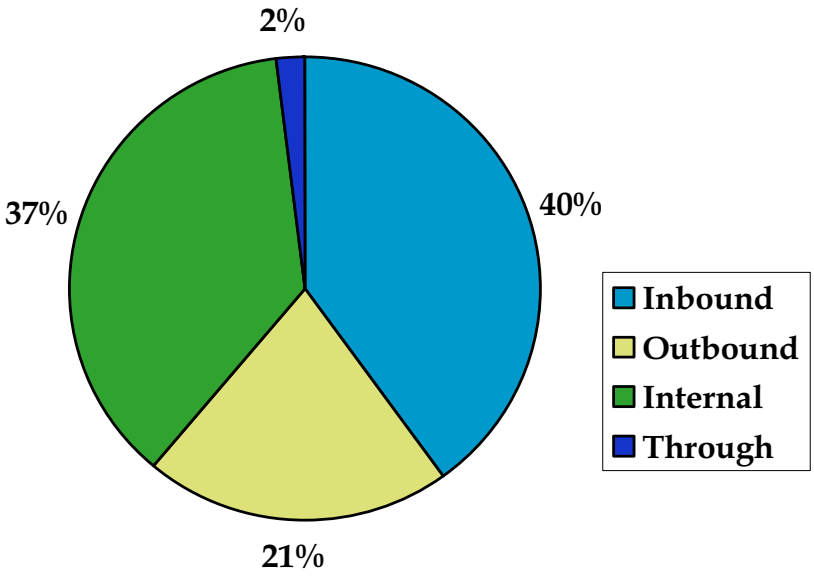
- *Through* movements accounted for 1 percent, or 11.3 million tons, by weight; 2 percent, or $20.7 billion, by value; and over 463 thousand trucks, amounting to 1 percent of total truck movements.

Figure 3.17 Total Florida State Freight by Weight
in Percent



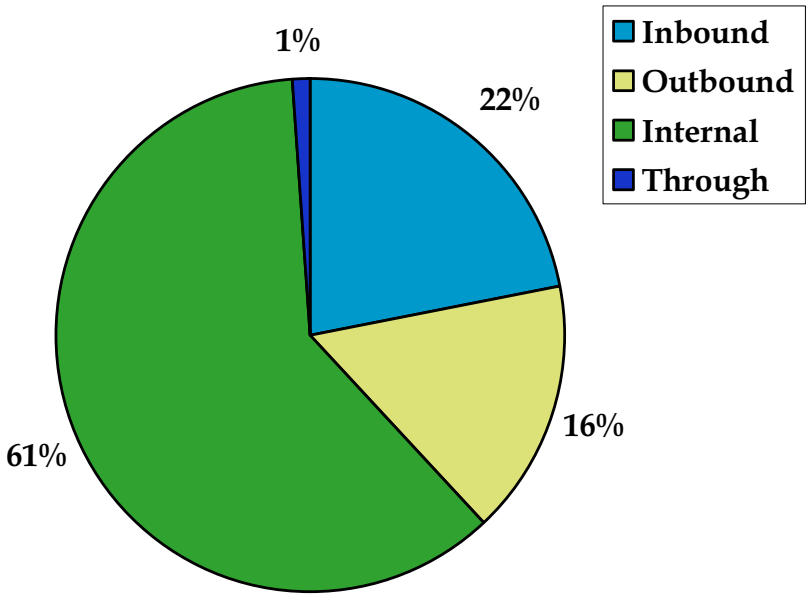
Source: TRANSEARCH Database.

Figure 3.18 Total Florida State Freight by Value
In Percent



Source: TRANSEARCH Database.

Figure 3.19 Total Florida State Freight by Number of Trucks
In Percent



Source: TRANSEARCH Database.

As expected, intrastate shipments accounted for the largest portion of overall freight shipments in the state (45 percent by weight). This is partially attributed to non-metallic minerals, construction materials, as well as other commodities moving from/to warehouses and other secondary distribution facilities; these moves accounted for nearly 77 percent of internal movements, or 291 million tons.

Inbound shipments by weight made up a significantly larger percent of the tonnage transported than outbound movements (35 percent vs. 19 percent), a trend that also holds true for the value for shipments (40 percent v. 21 percent). This reflects the consuming nature of the state. Through movements, as anticipated, accounted for the smallest share of the movement in all three categories; the vast majority of these shipments (83 percent by tons) were transported by truck, and are likely traveling between Georgia and the southern portion of Alabama along the I-10 corridor.

As shown in Figure 3.19, internal truck movements accounted for 61 percent of all truck movements in the state (nearly 21 million trucks in 2003), which reflects the state's considerable dependence on its highways.

Mode Split Analysis

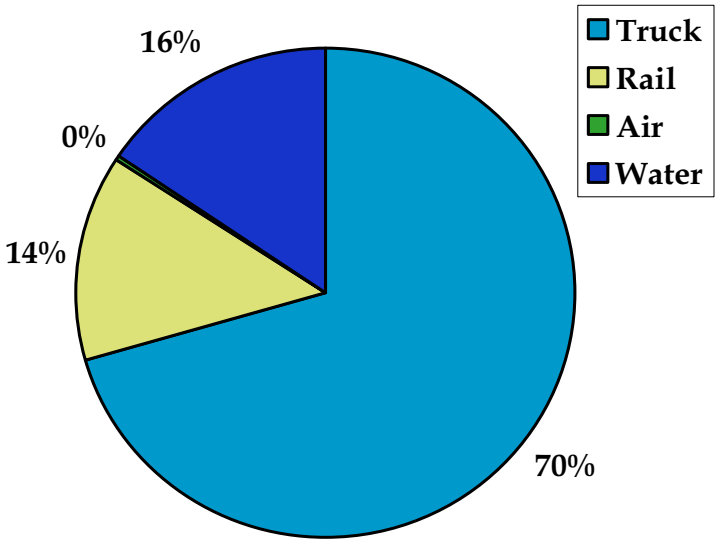
It is important to analyze how freight is moving in order to understand traffic patterns and modal dependence. As indicated in Figure 3.20, 70 percent, or approximately 597 million tons, moved by truck. When shipment value is considered, truck movements represent an even greater portion of the overall movements in Florida, accounting for 80 percent of all flows, or approximately $745 billion (Figure 3.21). As it is the case in most states, Florida is dependent upon trucks for the movement of the majority of its freight. Trucks handle high-value, low-weight commodities, such as electronics or other consumer goods, as well as goods that require time sensitive delivery. In addition, trucks typically provide the last link in the transportation chain, transporting all types of commodities from their intermediate destinations, such as seaports or rail terminals, to their final destinations. Therefore, the fact that truck is the dominant mode of transportation for freight moving within the State is not surprising.

The presence of Florida's 14 deepwater seaports makes waterborne movements an important mode for freight shipments in the state. In fact, freight movements by water accounted for 16 percent, or approximately 133 million tons, of all freight shipments, by weight, in Florida. The relatively high share of freight movements by water highlights the importance of these ports to Florida's freight transportation system. Rail movements accounted for approximately 14 percent of all the freight moving into, out of, within, and through the state, or 117 million tons.

When shipment value is considered, the relative share of water (11 percent) and rail (9 percent) shipments decline significantly. This is mostly due to the low value per ton attributed to coal, coal byproducts, and petroleum, which accounted for over one third of the shipments moving through Florida's ports and by rail, yet only made up 5 percent of the value transported by these modes. Again, the disparity between freight shipment weight and value emphasizes the need to consider both characteristics when conducting a comprehensive commodity flow analysis.[9]

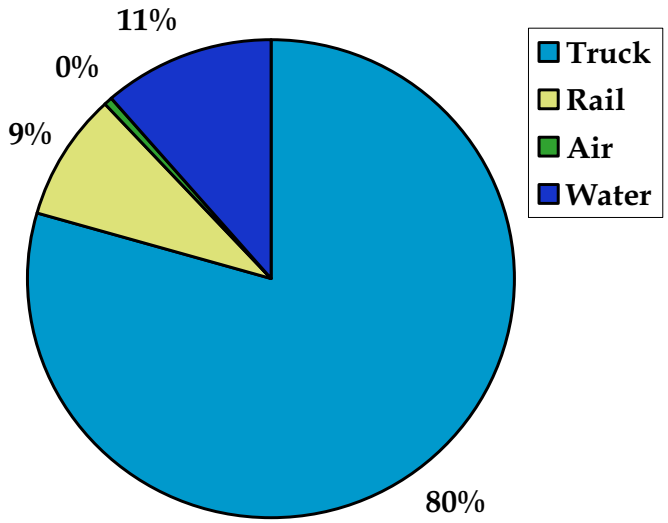
[9] This report utilizes waterborne trade data from the U.S. Army Corps of Engineers' Waterborne Commerce Statistics. This database includes domestic and international trade by commodity and US State. This information was added to the truck, rail, and air commodity flows in the TRANSEARCH database and is believed to better represent water flows than the waterborne data provided in TRANSEARCH. International origins and destinations are listed as "Foreign" under the trade partners sections (with the exception of Canada, which is listed by itself). Note that TRANSEARCH already accounts for the domestic impact of international waterborne trade by listing it as truck, rail, or water from the port location to it's final destination in the United States or vice-versa. By listing it twice, however, the reader can get a better perspective on the origin of these shipments, and the amount of waterborne-originated freight in Florida.

Figure 3.20 Florida Mode Split by Weight
In Percent



Source: TRANSEARCH Database.

Figure 3.21 Florida Mode Split by Value
In Percent



Source: TRANSEARCH Database.

Air movements accounted for 0.1 percent, or 645 thousand tons, of all the freight moving in Florida by weight, yet over 0.4 percent, or $3.7 billion, by value. This disparity between shipment weight and shipment value highlights the high-value, low-weight nature of air freight shipments within State, which consist primarily of mail and express traffic, motor vehicle parts and accessories, and electronics and data processing equipment; these commodities accounted for 40 percent of all air shipments by weight. As the service sector of the state's economy continues to evolve, the share of air shipments relative to other types of movements in Florida will likely expand. As noted under the data limitations, these air volumes and values do not include international shipments, resulting in conservative estimate.

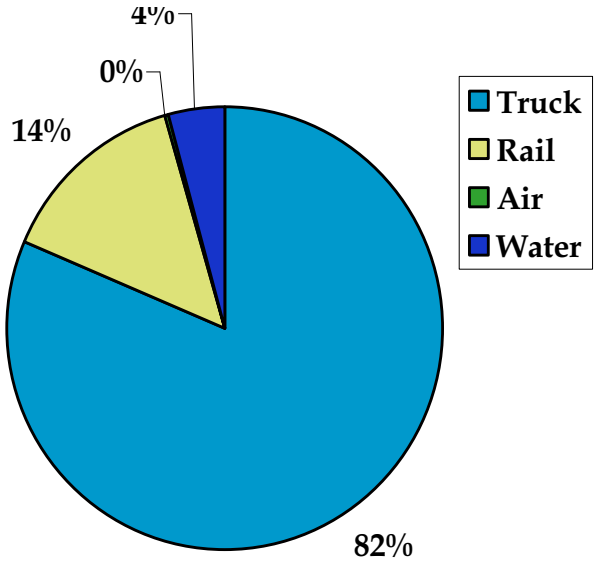
The mode split analysis reveals that Florida's freight moves in a similar fashion to the overall national freight patterns, however, it has achieved a somewhat better balance among modes. As indicated in Figures 3.21 and 3.22 below, the Freight Analysis Framework (FAF) estimates that the United States, overall, is highly dependent on trucks (82 percent) for most of its tonnage movements, especially for the transport of higher valued goods. The results also show that, although rail and water together accounted for 18 percent of the tonnage transported nationally, these modes only made up 14 percent of all freight shipments by value. Finally, while air movements accounted for only a small percentage of the freight shipments by weight (less than 1 percent), it carried 2 percent by value, due to high-value, low-weight products, such as electronics or other consumer goods.

Identification of Top Commodities

Tables 3.6 and 3.7 show the top commodities, at the two-digit STCC, moving into, out of, within, and through the State of Florida in 2003 by both weight and value. The top five commodity groups accounted for 68 percent of the total flows, or 575 million tons, by weight. These commodity groups consisted of non-metallic minerals (25 percent); clay, concrete, glass, or stone (12 percent); petroleum and coal products (12 percent); secondary moves (10 percent); and food (8 percent). Each of these commodities accounted for over 65 million tons.

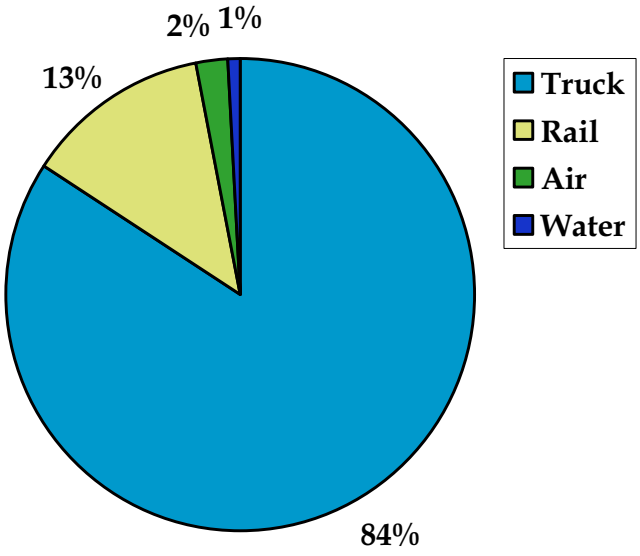
When shipment value is considered, the top commodity groups changed significantly. While the top five commodities by weight accounted for 68 percent of the volume transported, they only accounted for 35 percent of the value. The top five commodity groups, when analyzed by shipment value, accounted for 50 percent of the total flows by value, or $470 billion. These commodity groups consisted of lumber and wood (15 percent); clay, concrete, glass, and stone (15 percent); chemicals and allied products (9 percent); food (6 percent); and pulp and paper products (6 percent).

Figure 3.22 National Mode Split by Weight
In Percent



Source: Federal Highway Administration 2002 Freight Analysis Framework 2.

Figure 3.23 National Mode Split by Value
In Percent



Source: Federal Highway Administration 2002 Freight Analysis Framework 2.

Table 3.6 Florida Top Commodities by Weight
Millions of Tons

STCC2	Commodity	Tons	Percent Share
14	Nonmetallic Minerals	212	25%
32	Clay, Concrete, Glass, or Stone Products	105	12%
29	Petroleum or Coal Products	101	12%
50	Secondary Moves	88	10%
20	Food and Kindred Products	68	8%
28	Chemicals or Allied Products	64	8%
1	Farm Products	40	5%
24	Lumber or Wood Products	28	3%
26	Pulp, Paper, or Allied Products	22	3%
	All Others	119	14%
	Total	**848**	**100%**

Source: TRANSEARCH Database.

Table 3.7 Florida Top Commodities by Value
Billions of Dollars

STCC2	Commodity	Dollars	Percent Share
24	Lumber or Wood Products	$ 137.53	15%
32	Clay, Concrete, Glass, or Stone Products	$ 136.38	15%
28	Chemicals or Allied Products	$ 85.52	9%
20	Food and Kindred Products	$ 56.61	6%
26	Pulp, Paper, or Allied Products	$ 56.40	6%
14	Non-Metallic Minerals	$ 54.19	6%
29	Petroleum or Coal Products	$ 53.82	6%
37	Transportation Equipment	$ 51.47	5%
39	Miscellaneous Manufacturing Products	$ 44.77	5%
	All Others	$ 261.91	28%
	Total	**$ 938.60**	**100%**

Source: TRANSEARCH Database.

While the top five commodities made up the majority of the freight transported (by weight or value), Florida transports a wide array of goods. In fact, each of the top 10 commodities (by weight) accounted for over 20 million tons, and each of the top 10 by value accounted for $40 billion or more. That said, particular attention must be paid to non-metallic minerals and clay, concrete, glass and stone products, which combine to made up over 37 percent of all commodities transported (by weight), and can have a significant impact on the state's infrastructure.

Top Trading Partners

A better understanding of where the State's shipments are originating and terminating is a critical step to understanding length of haul, market penetration, and modal preference. In 2003, the State of Florida exported 158 million tons, valued at $196 billion.[10] As indicated in Table 3.8, the State's outbound shipments (by weight) are largely destined to neighboring states and regions. In fact, if shipments destined for the South Atlantic (District of Columbia, Delaware, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia) and East South Central (Alabama, Kentucky, Mississippi, and Tennessee) regions are combined, they made up 45 percent of all outbound shipments, a figure equivalent to 70 million tons. These shipments accounted for 40 percent, or nearly $80 billion, of the total value of outbound shipments in 2003. Other major trading partners include the West South Central Region (Arkansas, Louisiana, Oklahoma, and Texas), the East North Central Region (Illinois, Indiana, Michigan, Ohio, and Wisconsin), as well as foreign trade.[11]

[10] North American trade for truck, and air; domestic and international for waterborne.

[11] Mexico and Canada for all modes; waterborne only for all other foreign flows.

Table 3.8 Florida Top Trading Partners – Outbound by Weight
Millions of Tons

Commodity	Tons	Percent Share
South Atlantic	48	31%
East South Central	22	14%
West South Central	20	13%
Foreign	18	12%
East North Central	14	9%
Mid Atlantic	11	7%
West North Central	7	5%
Pacific	5	3%
Mountain	5	3%
All Others	7	5%
Total	**158**	**100%**

Source: TRANSEARCH Database.

In 2003, Florida imported over 300 million tons valued at $375 billion.[12] These numbers reflect the consuming nature of the state; inbound shipments accounted for 66 percent of Florida's total external trade by weight and value. The origins of Florida's inbound shipments are more diverse, as can be seen in Table 3.9. While shipments from the neighboring regions still accounted for 36 percent of the shipments (108 million tons), other more distant regions played a more significant role. For example, the West South Central region accounted for 27 percent, a figure that surpasses 80 million tons, of the inbound shipments. The East North Central region and foreign trade also play an important role, with each accounting for over 10 percent of the shipments by weight.

[12]North American trade for truck, and air; domestic and international for waterborne.

Table 3.9 Florida Top Trading Partners – Inbound by Weight
Millions of Tons

Commodity	Tons	Percent Share
West South Central	81	27%
East South Central	56	19%
South Atlantic	52	17%
Foreign	40	13%
East North Central	31	10%
West North Central	10	3%
Mid Atlantic	10	3%
Pacific	7	2%
Canada	6	2%
All Others	9	3%
Total	**301**	**100%**

Source: TRANSEARCH Database.

The analysis of Florida's trading partners further emphasizes Florida's consuming nature with imports (66 percent) considerably exceeding exports (34 percent). This trend is perhaps a reflection of the state's demographic growth. With a population over 16 million people, Florida is currently the fourth most populated state, and the eight densest in the nation.[13] The analysis also concludes that Florida's trading partners are not limited to the Southwest and Atlantic regions but expand to include various regions within the United States.

Impact of Freight Weight and Value on Commodity Flows

A commodity flow analysis based on shipments volume is the fundamental approach to a freight study. The weight of commodities is a valuable component to better understand the dependence and impact of freight on the transportation system. Understanding how freight vehicles travel along Florida's transportation infrastructure is critical when addressing factors such as congestion, capacity, preservation and maintenance, infrastructure investment, economic development, and quality of life.

[13] United States Census Bureau, 2000.

To gain an in-depth understanding of the characteristics of freight movements within Florida, however, it is equally important to consider the value of shipments in the analysis, especially with Florida's increasingly service-driven economy.

As shown in Table 3.10, there are various types of products that have an inverse relationship between their value and their overall tonnage. Equipment and machinery and manufacturing products, for instance, weigh less but cost more per ton. Conversely, construction products, one of Florida's most important commodities, weigh more but cost less per ton. Comparing the weight and value of different commodities is important when determining the economic significance of certain flows to a region.

Table 3.10 Shipments Weight-Value Comparison

Category	Total Tons (In Millions)	Total Dollars (In Billions)	Value/Ton
Agriculture/Farm/Food	108.6	$67.28	$619.23
Construction Products	317.6	$190.57	$599.99
Dist. Center/Warehouse Movts.	87.7	$26.49	$301.93
Energy/Chemical Products	186.3	$139.68	$749.87
Equipment/Machinery/Vehicles	16.7	$90.99	$5,444.76
Lumber/Wood/Paper	49.9	$194.00	$3,887.57
Mail/Parcel	0.5	$0.67	$1,482.48
Manufacturing	27.1	$117.06	$4,324.46
Metal Products	23.6	$76.87	$3,258.48
Misc./Unknown	27.2	$34.54	$1,271.91
Waste	1.9	$0.45	$238.17
All	**848.2**	**$938.60**	**$1,106.53**

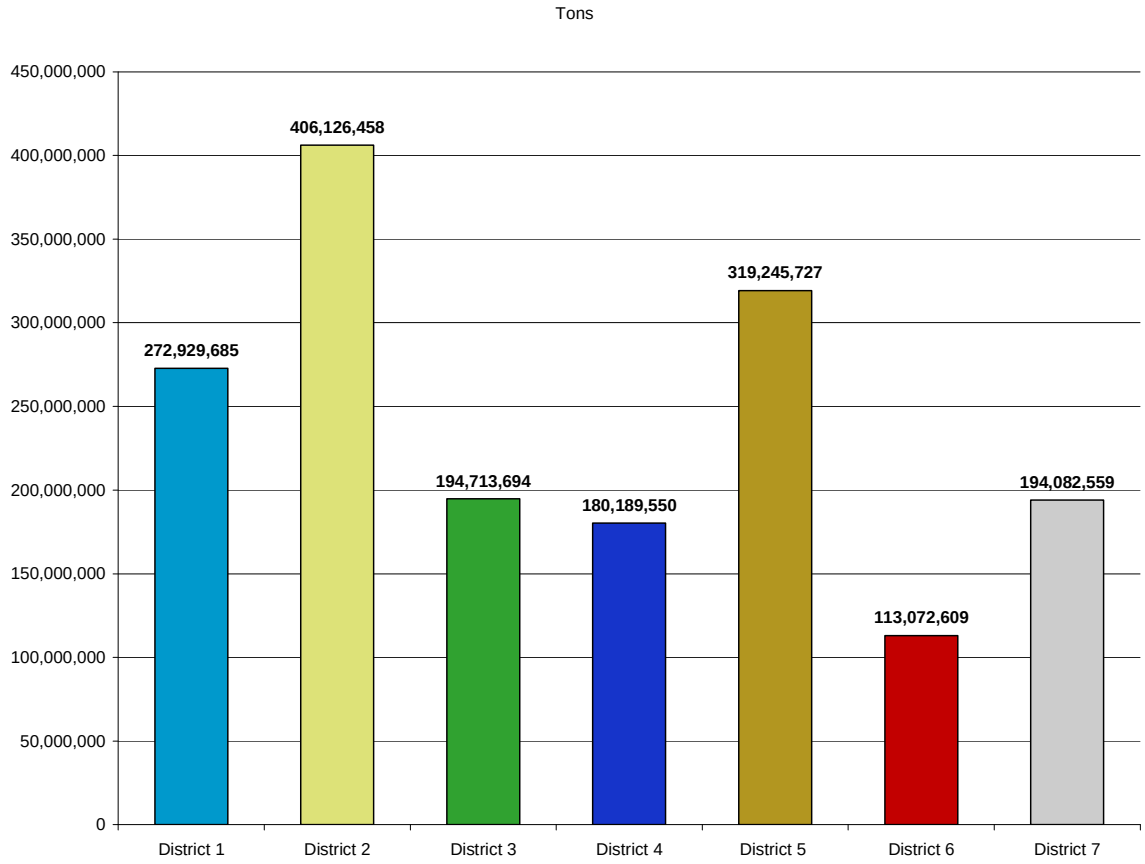
Source: TRANSEARCH Database.

District – Level Commodity Flow Analysis

District 2 handles the largest share (24.2 percent) of freight shipments by weight in the State of Florida, as indicated in Figure 3.24. District 5 is next in line (19.0 percent), followed by District 1 (16.2 percent). District 6 handles the smallest volume of freight shipments of all seven districts with 113.1 million tons handled or 6.7 percent of the state's total freight activities by weight. This is largely attributed to the geographic location of Districts 2, 3, and 5 where much of the freight traffic passes through to serve primarily

Districts 4, 6, and 7 regions. As indicated in Table 3.11, approximately 54 percent, 46 percent, and 60 percent of commodity flows are through movements in Districts 2, 3, and 5; this is compared to only 36 percent in District 4, 31 percent in District 1, 7 percent in District 7, and zero percent in District 6.

Figure 3.24 Total Freight Shipments by Florida District
In Tons



Source: TRANSEARCH Database.

Table 3.11 also indicates that District 6 is primarily a freight producing region with 65 percent of total shipments by weight distributed to neighboring districts, across the United states, and internationally. District 7 on the other hand, is dominated by inbound movements of approximately 52 percent of all shipments by weight destined to this region. Internal movements accounted for less than 20 percent of commodity flows in all districts.

Table 3.12 indicates that non-metallic minerals are the top commodity by weight in all districts except District 6. In District 6, non-metallic minerals accounted for almost 29 percent of total freight shipments, trailing behind secondary moves (dray moves to/from

warehouses), the top commodity in this district, at 33 percent. Secondary moves are a key commodity in all districts. Other top five commodities in the districts include clay, concrete, glass, and stone materials, chemical allied products, and petroleum and coal. The top five commodities accounted for the majority of freight shipments in each district ranging from 58 percent of total freight handled by weight in District 2 to almost 82 percent in District 6.

Table 3.11 Florida Freight Shipments by District and Flow Type

In Millions of Tons

	District 1		District 2		District 3		District 4		District 5		District 6		District 7	
	Million Tons	Share	Million Tons	Share	Million Tons	Share	Million Tons	Share	Million Tons	Share	Million Tons	Share	Million Tons	Share
Inbound	66.8	24.5%	105.3	25.9%	64.5	33.1%	52.0	28.8%	62.8	19.7%	23.9	21.2%	100.2	51.6%
Outbound	70.9	26.0%	52.6	12.9%	26.4	13.6%	43.8	24.3%	43.5	13.6%	73.2	64.7%	50.7	26.1%
Internal	50.2	18.4%	30.2	7.4%	15.2	7.8%	20.4	11.3%	23.0	7.2%	16	14.1%	14.1	7.3%
Through	85.0	31.1%	218.1	53.7%	88.5	45.5%	64.0	35.5%	190.0	59.5%	0	0.0%	29.1	15.0%
Total	**272.9**	**100 %**	**406.1**	**100 %**	**194.7**	**100 %**	**180.2**	**100 %**	**319.2**	**100 %**	**113.1**	**100 %**	**194.1**	**100 %**

Source: TRANSEARCH Database.

Table 3.12 Florida Top Commodities by District

In Percent Share by Weight

District 1 (272.9m tons)		District 2 (406.1m tons)		District 3 (194.7m tons)	
Commodity	Share	Commodity	Share	Commodity	Share
Non-Metallic Minerals	35.1%	Non-Metallic Minerals	14.3%	Non-Metallic Minerals	20.6%
Secondary Moves	12.6%	Food/Kindred	12.6%	Petroleum/Coal	12.8%
Clay/Concrete/ Glass/Stone	10.8%	Secondary Moves	11.6%	Chemicals/Allied	11.9%
Chemicals/ Allied	8.8%	Clay/Concrete/Glass/ Stone	10.0%	Secondary Moves	10.9%
Food/Kindred	8.1%	Chemicals/Allied	9.6%	Food/Kindred	10.4%
All Others	24.6%	All Others	42.0%	All Others	33.4%
District 4 (180.2m tons)		**District 5 (319.2m tons)**		**District 6 (113.1m tons)**	
Commodity	Share	Commodity	Share	Commodity	Share
Non-Metallic Minerals	18.8%	Non-Metallic Minerals	20.9%	Secondary Moves	33.2%
Secondary Moves	18.8%	Secondary Moves	12.9%	Non-Metallic Minerals	28.9%
Petroleum/Coal	12.9%	Clay/Concrete/Glass/ Stone	12.1%	Clay/Concrete/Glass/ Stone	11.7%
Clay/Concrete/ Glass/Stone	10.9%	Food/Kindred	11.2%	Food/Kindred	5.2%
Farm	10.4%	Chemicals/Allied	8.8%	Freight All Kind	2.7%
All Others	28.4%	All Others	34.1%	All Others	18.4%
		District 7 (194.1m tons)			
		Commodity	Share		
		Non-Metallic Minerals	22.2%		
		Chemicals/Allied	15.6%		
		Petroleum/Coal	13.9%		
		Clay/Concrete/Glass/ Stone	13.5%		
		Secondary Moves	9.5%		
		All Others	25.3%		

Note: ( ) indicate total tonnage for all freight handled in the region

Source: TRANSEARCH Database.

As noted in Table 3.13 and consistent with findings from the statewide commodity flow analysis, freight mobility is largely dependent on trucks and therefore highways. The reliance on truck is very significant in Districts 3 and 5 where the share of freight handled by truck exceeded 88 percent and 85 percent respectively. With 61 percent of goods depending on trucks, District 7 is the least highway-dependant region in the state. A small but significant portion of freight and goods were handled by rail in all districts especially in Districts 1 and 6 (approximately 24 and 22 percent respectively). Freight movement by sea is significant in District 7 (25 percent) and District 4 (16 percent). Freight handling by air is virtually nonexistent in all seven districts.

Table 3.13 Florida Freight Shipments Mode Split by District

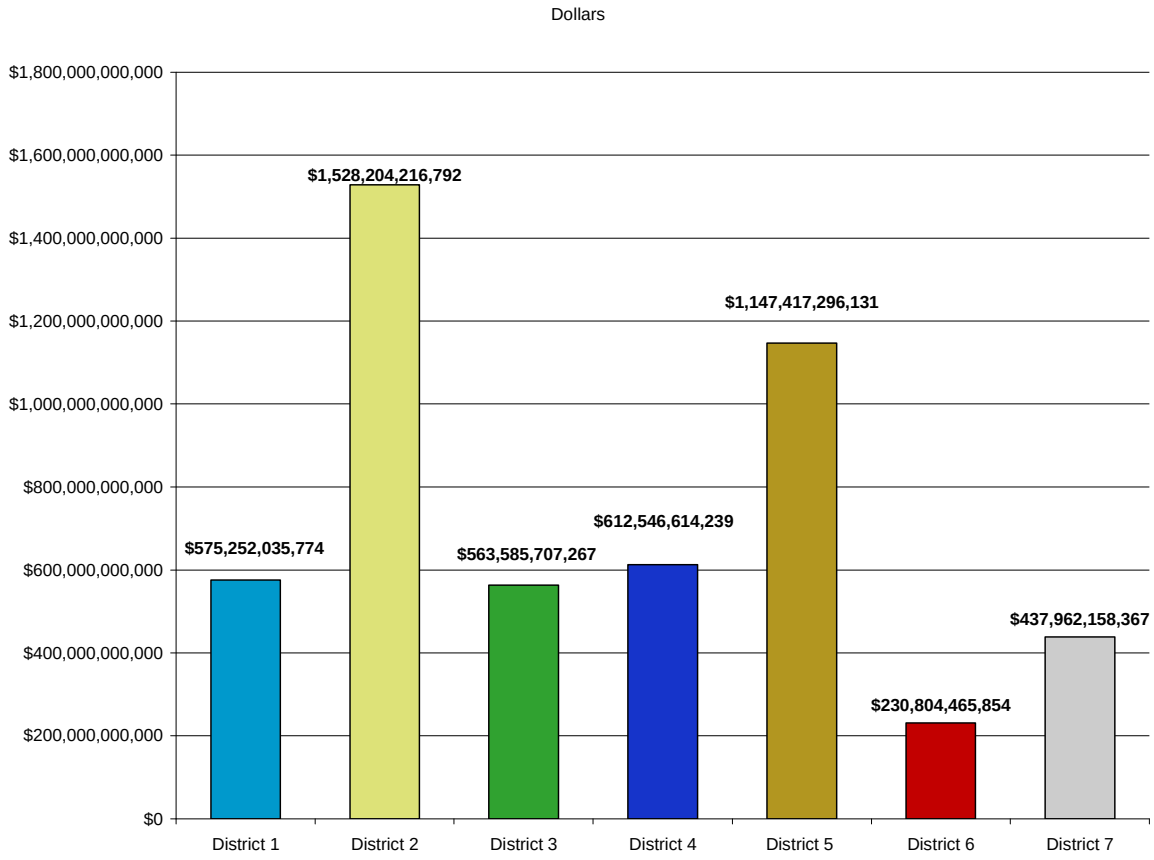
In Million Tons

	District 1		District 2		District 3		District 4		District 5		District 6		District 7	
	Tons	**Share**	**Tons**	**Share**	**Tons**	**Share**	**Tons**	**Share**	**Tons**	**Share**	**Tons**	**Share**	**Tons**	**Share**
Truck	203.6	74.6%	323.8	79.7%	172.1	88.4%	124.9	69.3%	272.4	85.3%	79.4	70.2%	118.5	61.0%
Rail	64.9	23.8%	60.2	14.8%	18.2	9.3%	26.4	14.6%	41.8	13.1%	24.7	21.8%	26.3	13.6%
Water	4.5	1.6%	22.0	5.4%	4.4	2.3%	28.7	15.9%	4.9	1.5%	9.0	8.0%	49.2	25.3%
Air	0.02	0.0%	0.07	0.0%	0.01	0.0%	0.02	0.1%	0.2	0.1%	0.03	0.0%	0.1	0.1%
Total	**272.9**	**100 %**	**406.1**	**100 %**	**194.7**	**100 %**	**180.2**	**100 %**	**319.2**	**100 %**	**113.1**	**100 %**	**194.1**	**100.0%**

Source: TRANSEARCH Database.

District 2 handled the largest share (33.6 percent) of freight shipments by value in the State of Florida as indicated in Figure 3.25. District 5 is next in line with 25.2 percent, followed by District 4 at 13.5 percent, District 1 at 12.7 percent, and District 3 at 12.4 percent. At 9.6 percent and 5.1 percent of total freight activities by value, Districts 7 and 6 respectively handle the least freight shipments of all seven districts. As noted earlier, this is primarily due to the transitory location of Districts 2 and 5 where much of the freight traffic passes through to serve primarily Districts 4, 6, and 7 regions. As indicated in Table 3.14, approximately 69 percent and 74 percent of commodity flows by value are through movements in Districts 2 and 5; this is compared to only 34 percent in District 7 and close to zero percent in District 6. Through movements also accounted for a significant share of total freight shipments by value in District 1.

Figure 3.25 Total Freight Shipments by Florida District
In Dollars



Source: TRANSEARCH Database.

Table 3.14 also indicates that Districts 4 and 6 are primarily freight producing regions with more than 55 percent and 67 percent of total shipments by value distributed to neighboring districts, across the United states, and internationally. Internal movements accounted for less than 10 percent of commodity flows in all districts, totaling more than 7 percent of total freight movements in District 2 and 0.4 percent of total movements in District 3.

Table 3.14 Florida Freight Shipments by District and Flow Type

In Billion Dollars

	District 1		District 2		District 3		District 4		District 5		District 6		District 7	
	Value	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**
Inbound	124.9	22%	269.4	17.6%	153.1	27.2%	127.9	20.9%	150.5	13.1%	62.1	26.9%	124.9	28.5%
Outbound	133.8	23%	196.6	12.9%	38.2	6.8%	334.7	54.6%	138.3	12.0%	155.2	67.2%	161.6	36.9%
Internal	15.6	3%	11.4	7.0%	2.4	0.4%	17.4	2.8%	5.8	0.5%	13.5	5.8%	3.2	0.7%
Through	301	52%	1,050.8	68.8%	369.9	65.6%	132.5	21.6%	852.8	74.3%	0	0.0%	148.2	33.8%
Total	**575.3**	**100%**	**1,528.2**	**100 %**	**563.6**	**100 %**	**612.5**	**100 %**	**1,147.4**	**100 %**	**230.8**	**100 %**	**438.0**	**100 %**

Source: TRANSEARCH Database.

The list of top commodities changes when shipment value is accounted for. Table 3.15 indicates that transportation equipment is the top commodity group by value in all districts. Included in the top commodities list in the districts are apparel, electrical machines and equipment and chemical and allied products. Farm products are a top commodity in District 4. In all districts, but District 6, top commodities represented the majority, more than 50 percent, of all freight products handled. Top commodities accounted for approximately 68 percent of all freight in District 7 and more than 72 percent of all commodities in District 4. The top five commodities accounted for 44 percent of total goods in District 6.

Table 3.15 Florida Top Commodities by District

In Percent Share by Value

District 1 ($575.3b)		**District 2 ($1,528.2b)**		**District 3 ($563.6b)**	
Commodity	Share	Commodity	Share	Commodity	Share
Transportation Equipment	38.0%	Transportation Equipment	36.0%	Transportation Equipment	21.1%
Apparel	12.1%	Apparel	9.1%	Electrical Mach/Equip	11.7%
Electrical Mach/Equip	6.7%	Electrical Mach/Equip	8.7%	Machinery Excluding Electrical	11.4%
Chemicals/Allied	6.5%	Machinery Excluding Electrical	7.5%	Chemicals/Allied	9.8%
Machinery Excluding Electrical	6.1%	Chemicals/Allied	6.3%	Apparel	9.1%
All Others	30.5%	All Others	32.4%	All Others	36.8%
District 4 ($612.5b)		**District 5 ($1,147.4b)**		**District 6 ($230.8b)**	
Commodity	Share	Commodity	Share	Commodity	Share
Transportation Equipment	43.8%	Transportation Equipment	36.7%	Transportation Equipment	21.0%
Apparel	12.7%	Apparel	10.8%	Apparel	20.0%
Electrical Mach/Equip	6.7%	Electrical Mach/Equip	9.4%	Electrical Mach/Equip/Supp	11.1%
Machinery Excluding Electrical	5.2%	Machinery Excluding Electrical	6.8%	Machinery Excluding Electrical	8.0%
Farm	4.0%	Chemicals/Allied	6.7%	Miscellaneous Manufacturing	4.8%
All Others	27.6%	All Others	29.6%	All Others	56.0 %
		District 7 ($438.0b)			
		Commodity	Share		
		Transportation Equipment	27.5%		
		Chemicals/Allied	14.1%		
		Electrical Mach/Equip	10.5%		
		Apparel	8.0%		
		Machinery Excluding Electrical	7.5%		
		All Others	32.3%		
Note: ( ) indicate total value of all freight handled in the region					

Source: TRANSEARCH Database.

When the value of freight is considered, the dependence on trucks for mobility is even more significant in all districts as indicated in Table 3.16. The dependence on air transportation, while remaining low, also increased, an indication that high value low weight goods are likely to be transported by air. Approximately 96 percent of all freight by value is moved by trucks in Districts 3 and 1. District 6 is the only district with a significant reliance on water transportation for freight movement (30.5 percent), followed by District 4 (12.4 percent) and District 7 (12.2 percent). The dependence on rail also drops significantly, when freight value is considered, an indication that rail transportation serves primarily high weight, lower value goods.

Table 3.16 Florida Freight Shipments Mode Split by District

In Billion Dollars

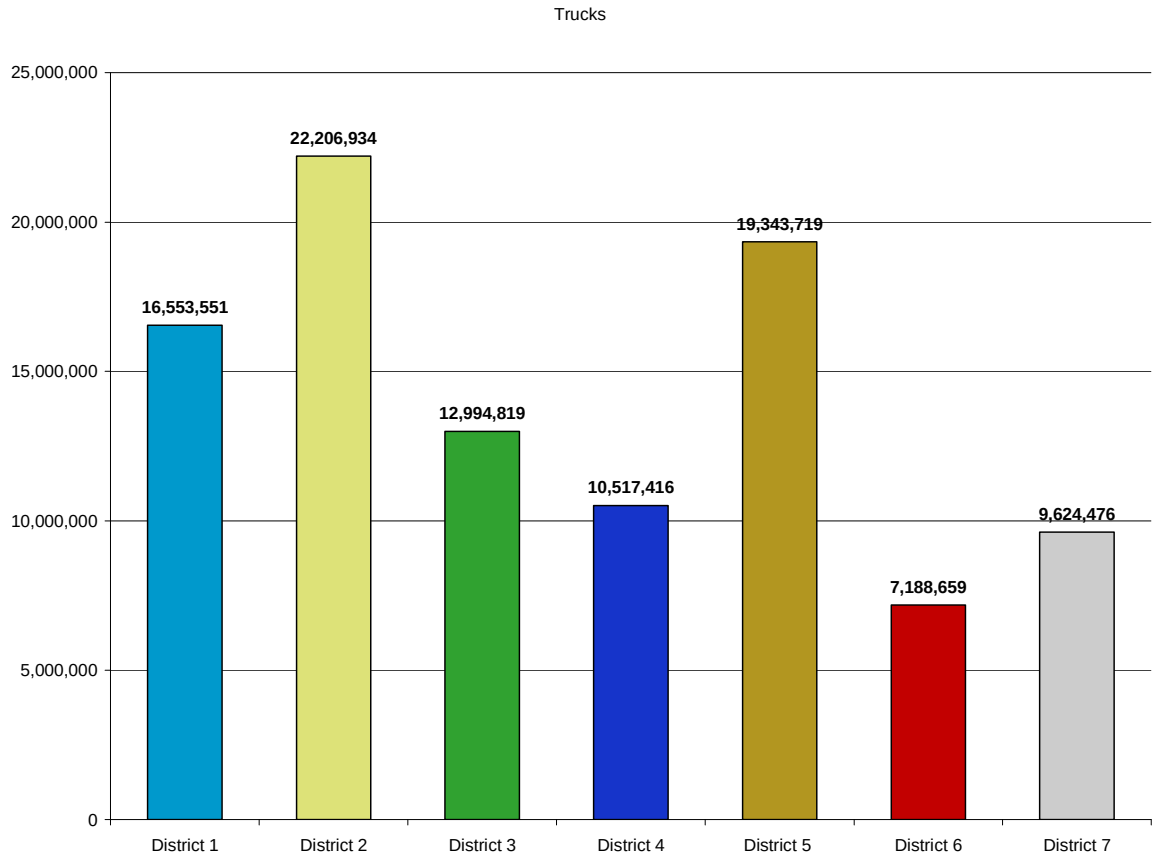
	District 1		District 2		District 3		District 4		District 5		District 6		District 7	
	Value	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**	**Value**	**Share**
Truck	551.2	95.8%	1,339.2	87.6%	541.2	96.0%	502.8	82.1%	1,094.1	95.4%	141.9	61.5%	372.5	85.1%
Rail	18.9	3.3%	67.8	4.4%	16.4	2.9%	27.6	4.5%	45.8	4.0%	18.2	7.9%	10	2.3%
Water	4.9	0.9%	119.8	7.8%	5.8	1.0%	76.2	12.4%	4.5	0.4%	70.4	30.5%	53.3	12.2%
Air	0.4	0.1%	1.3	0.1%	0.2	0.0%	6.0	1.0%	3.1	0.3%	0.3	0.1%	2.2	0.5%
Total	**575.3**	**100 %**	**1,528.2**	**100 %**	**563.6**	**100 %**	**612.5**	**100 %**	**1,147.4**	**100 %**	**230.8**	**100.0%**	**438.0**	**100 %**

Source: TRANSEARCH Database.

Consistent with findings on total freight movement by weight, District 2 handles the largest share (22.6 percent) of freight shipments by truck in the State of Florida as indicated in Figure 3.26. District 5 is next in line with 19.7 percent, followed by District 1 at 16.8 percent, District 3 at 13.2 percent, and District 4 at 10.7 percent. At 9.8 percent and 7.3 percent of total freight activities by weight, Districts 7 and 6 respectively handle the least truck freight shipments of all seven districts. A significant portion of commodity flows handled by trucks is through movements in District 2 (45.2 percent) and District 5 (45.2 percent). There are no truck through movements in District 6 (see Table 3.17). The share of internal commodity flows increased dramatically in all districts, when only trucks are considered due to the role trucks play in moving goods from warehouses, seaports, airports, and freight terminals to end customers within each district.

Figure 3.26 Total Truck Freight Shipments by Florida District

In Trucks



Source: TRANSEARCH Database.

Table 3.17 Florida Truck Freight Shipments by Flow Type and District

In Millions of Trucks

	District 1		District 2		District 3		District 4		District 5		District 6		District 7	
	Trucks	**Share**	**Trucks**	**Share**	**Trucks**	**Share**	**Trucks**	**Share**	**Trucks**	**Share**	**Trucks**	**Share**	**Trucks**	**Share**
Inbound	4.2	25.5%	4.2	19.1%	3.3	25.5%	2.4	22.9%	3.8	19.9%	2.6	35.5%	3.0	31.5%
Outbound	4.4	26.3%	4.3	19.1%	3.3	25.2%	2.5	23.5%	3.8	19.6%	2.7	37.9%	3.0	31.4%
Internal	4.2	25.4%	3.7	16.5%	1.9	14.3%	2.5	23.7%	3.0	15.3%	1.9	26.6%	1.9	19.6%
Through	3.8	22.7%	10.0	45.2%	4.5	35.0%	3.1	29.9%	8.7	45.2%	0	0.0%	1.7	17.4%
Total	**16.6**	**100 %**	**22.2**	**100 %**	**13.0**	**100 %**	**10.5**	**100 %**	**19.3**	**100 %**	**7.2**	**100 %**	**9.6**	**100 %**

Source: TRANSEARCH Database.

3.3 Key Socioeconomic Trends and Conditions

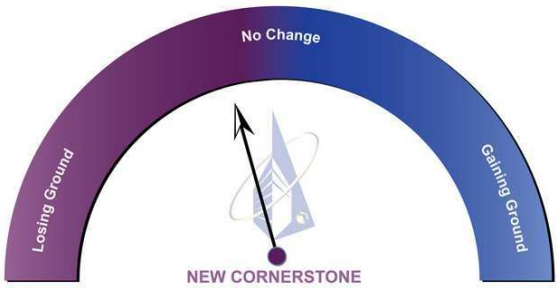
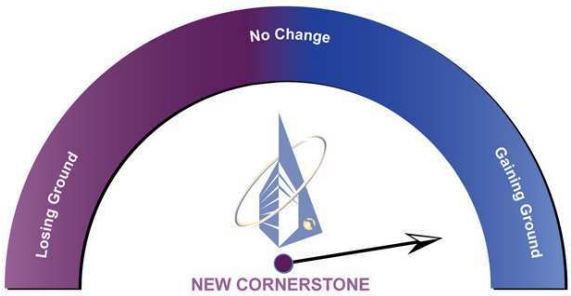
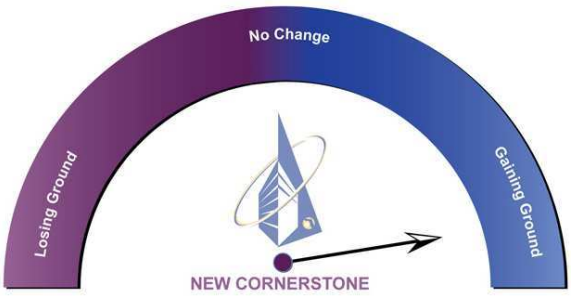
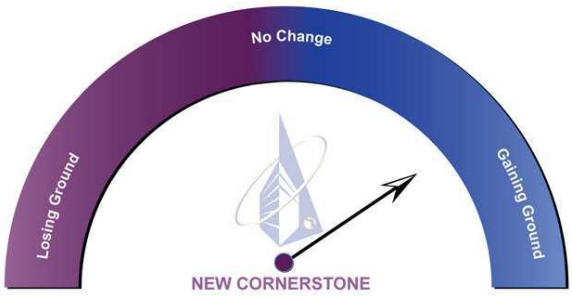
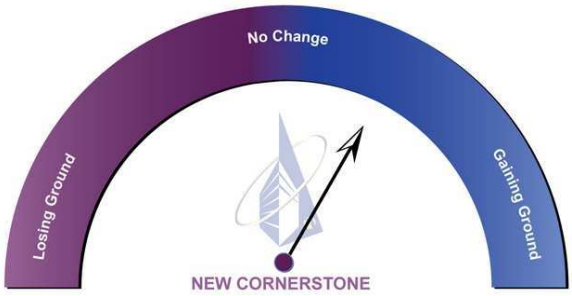
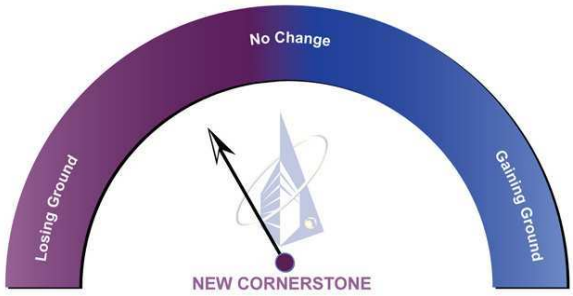
A globally competitive economy is critical to Florida's future. Economic competitiveness is more than the simple question of whether Florida is attracting new residents or creating new jobs. Fundamentally, Florida's economy can be described as competitive if it has the following characteristics:

- Florida enjoys a comparative advantage over other states and nations in one or more growth industries. Florida businesses in these sectors are viewed as global leaders, and are able to sell their goods and services worldwide, bringing income into Florida;
- Floridians enjoy a rising standard of living, as a result of higher wages or strong corporate profits; and
- Florida's communities are perceived as great places to work and to run a business. High-skilled workers and high-value businesses choose to locate and expand in Florida.

Figure 3.27 describes several key economic indicators measured as part of the New Cornerstone initiative.

Figure 3.27 Dashboard

Florida's Key Economic Indicators

In-Migration	Employment
	
Modest slowdown in 2005; net loss of residents to other southern states.	One million new jobs created since 2000, led by gains in construction, business services, finance (2000-2006).
Unemployment	**Per Capita Income**
	
At 30 year-low of 3.3%; concerns about availability of skilled workers (2006).	Now at 98% of U.S. average; wage gains reducing gap (2005).
Productivity	**Cost Competitiveness**
	
Now at 94% of U.S. average; strength in hospitality, construction, health care, retail (2005).	Home prices, insurance, property taxes, health care costs all on the rise – is Florida no longer a "lower-cost" state?

Source: New Cornerstone Revisited, Florida Chamber of Commerce, 2007.

Strong Growth Continues…

Florida's economy continued its track record of strong growth during the past few years. Across the board, virtually every indicator of sheer growth was strongly positive:

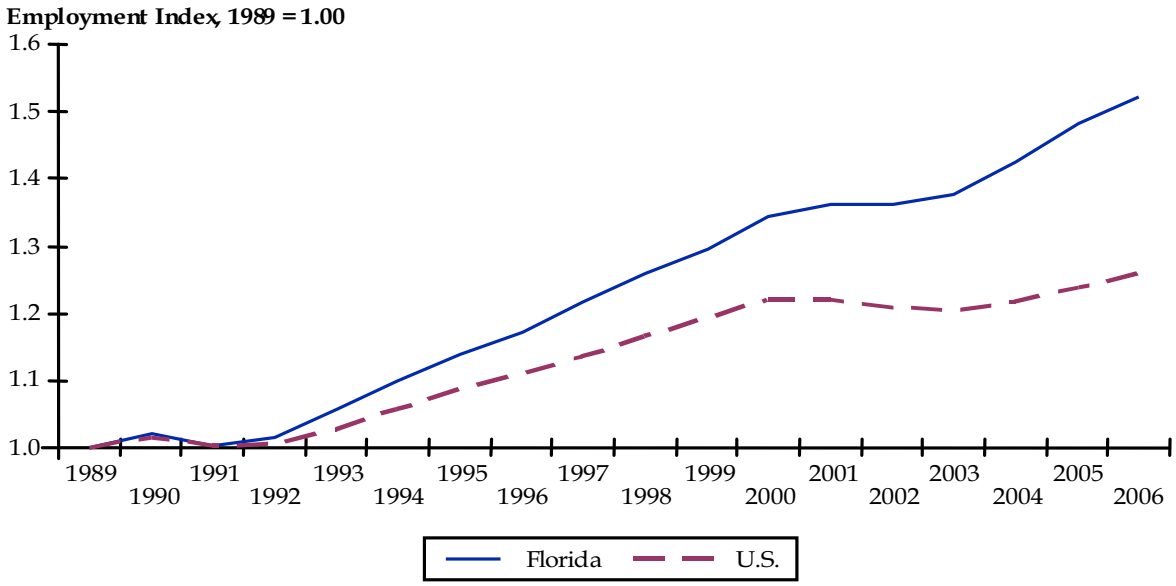
- **Population –** Florida's population increased by 2.1 million residents between 2000 and 2006, reaching a total of 18 million. Florida is now the nation's fourth largest state, and is projected to surpass New York over the next several years. The State's population increased 2.1 percent per year, more than twice the national average.

- **Employment –** Florida created just under one million new jobs between 2000 and 2006, the largest net increase in employment among all 50 states. After a modest pause during the national recession of 2000-2001, Florida has become one of the nation's greatest job engines (see Figure 3.28). The State's employment increased 2.2 percent per year, more than four times the national average.

- **Unemployment Rate –** Florida's unemployment rate decreased from 3.8 percent in 2000 to 3.3 percent in 2006, more than a full percentage point below the national average. This is the lowest unemployment rate recorded in Florida in over 30 years, and a rate virtually unheard of in most other advanced economies worldwide.

- **Gross State Product –** Florida's gross state product – the value of all goods and services produced in the state – increased from $472 billion in 2000 to $714 billion in 2006. Florida's share of the national gross domestic product increased from 4.8 percent to 5.4 percent. An analysis by Enterprise Florida concluded that if Florida were a separate nation it would have the 19th largest economy in the world (with all U.S. states counted individually), similar in size to Brazil, Mexico, or Australia.

Figure 3.28 Job Growth Remains Strong
One Million New Jobs Since 2000



Source: Bureau of Labor Statistics.

Florida's Economy Diversifies…

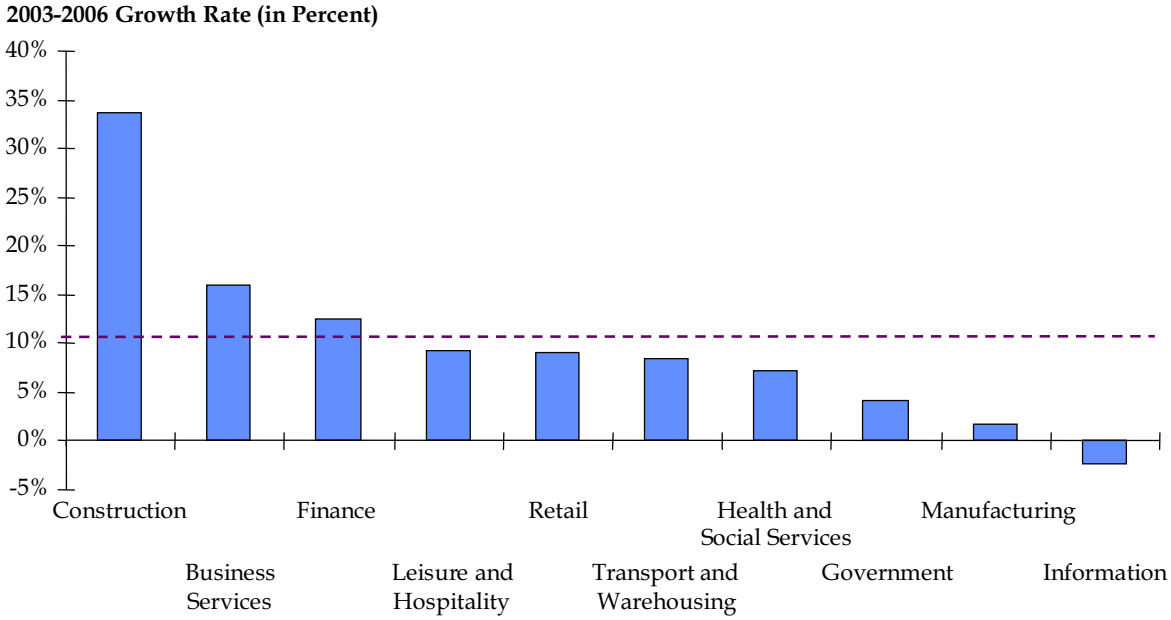
Virtually every sector of the economy contributed to Florida's strong growth over the past few years (see Figure 3.29).

The fastest-growing sector was construction, which accounted for 21 percent of all new jobs between 2000 and 2006. The construction sector benefited from strong population growth and a boom in residential and commercial building through most of the past few years, including rebuilding following the six hurricanes that struck the State in 2004 and 2005.

The business services and finance industries also grew at above-average rates, reflecting strong demand from Florida residents and businesses and the State's growing role as a hub for Latin American commerce and related business services. The large hospitality and retail industries also continued to expand due to the strong population growth and visitor activity.

Florida businesses continued to look toward global markets, with a surge in exports of both goods and services offsetting declines in foreign direct investment and international travel to Florida.

Figure 3.29 Job Growth by Industry



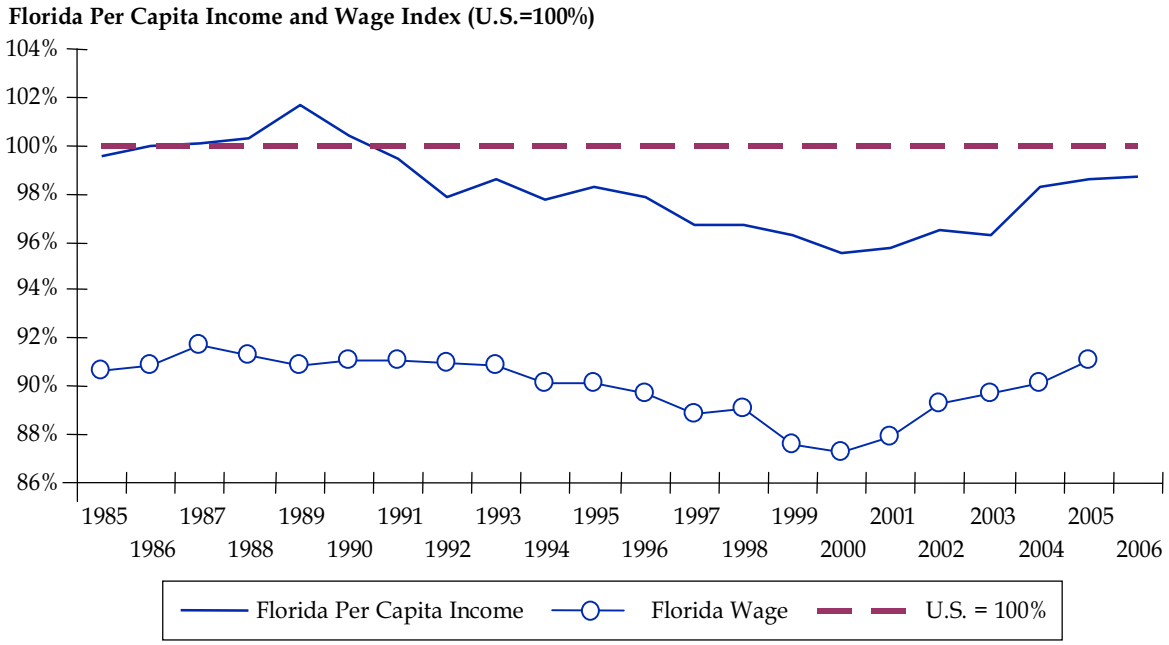
Source: Bureau of Labor Statistics.

Meanwhile, longstanding efforts to expand Florida's technology sectors started to have an impact, as seen in a series of major investments announced in the life science and aerospace industries. Florida now has more high-tech jobs than all but three states. Manufacturing employment increased slightly in Florida, bucking the national trend.

Income Levels Rise…

Most encouraging of all, Florida appears to be making progress in creating greater prosperity for its residents. Floridians' per capita income closed the gap with the nation's, rising from 96 percent of the national average in 2000 to just under 99 percent in 2006 (see Figure 3.30).

Figure 3.30 Per Capita Income Converges Toward U.S. Average



Source: U.S. Bureau of Economic Analysis.

The major source of these income gains was higher wages. Florida's average annual wage per worker increased from 87 percent to 91 percent of the national average. While Florida remains a competitive location for businesses in most industries, wages are converging toward the national average because of higher productivity for Florida businesses and a shift in the State's job mix toward higher-wage industries such as technology and professional services. While the tight labor market may be a factor as well, the driving forces behind Florida's wage gains appears to be the shift to higher-value, more productive economic activities.

Another key source of income growth was an increase in investment income related to interest, dividends, and rent. The average investment income for Florida residents increased nine percent between 2000 and 2006, compared to a slight decline nationally. This growth may be difficult to sustain as housing prices retrench.

Can the Good Times Continue?

Will the growth and prosperity of the past few years continue? Beneath the positive trends are a few clouds on Florida's horizon:

- The migration of residents from other states to Florida – traditionally the top driver of the State's growth – slowed in 2006 (see Figure 3.31). Florida's population increased

by about 320,000 residents in 2006 – down from the torrid pace of 2004 and 2005. Most of the decrease was in domestic migration. Florida continued to attract residents from the Northeast and the Midwest, but Florida became a net exporter of residents to other Southern states. This trend was confirmed by major moving lines such as Atlas, Allied, and United Van Lines, who reported more vans leaving Florida than entering the state in 2006. This outflow may be for a variety of reasons – including the hurricanes and the increase in home prices and property taxes. It may be just temporary, and indeed every major long-term forecast shows Florida's population doubling over the next 50 years. Net migration remains among the strongest in the nation, and on a par with 2001-2003 levels, so the modest slowdown in 2006 may just be a pause. A further reduction in population growth in 2007 would suggest that Florida is beginning to lose its allure.

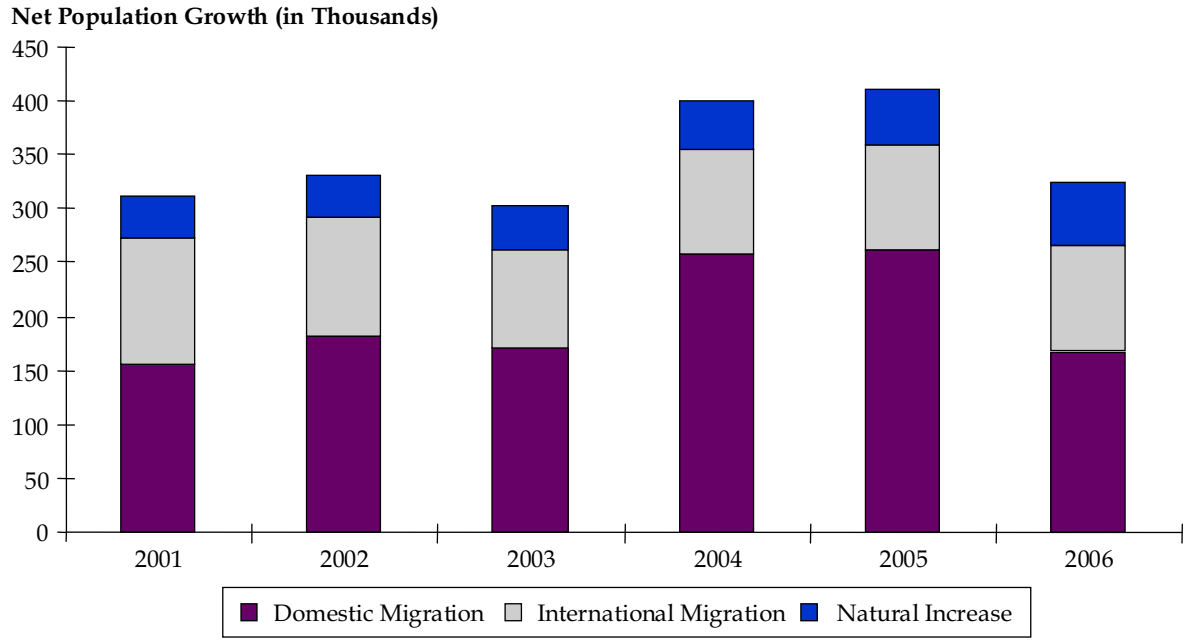
- Florida's unemployment rate has reached record levels, raising concerns about the availability of sufficient labor for companies planning major expansion. The need for employers to compete for an increasingly tight pool of skilled workers also may place upward pressure on wages.

- Florida's construction market is coming back to earth after a decade of stunning growth. The value of construction put in place doubled from about $35 billion in 2000 to $70 billion in 2005, before falling back to $60 billion in 2006. At its peak, the value of residential construction in Florida exceeded that of California, a state twice as large. Florida's construction market is expected to resume growth after a short-term correction; a deep or sustained downturn in construction could significantly slow the State's growth.

- Florida is transitioning from being a low-cost state to a higher-cost state. Several factors are contributing to increase the cost of living and doing business in Florida. Wages are increasing due to higher productivity and perhaps the tight labor market. Home prices surged 60 percent between 2003 and 2006, with Florida's median sales prices rising above the national average. Property tax bills are climbing in response to the higher home prices. Insurance costs are escalating following six hurricanes over a two-year period. The costs of transportation, energy, and commodities all are rising.

- The combined effect of these increases appears to be tipping Florida from being a low-cost state to a higher-cost state. The American Chambers of Commerce Researchers Association reports that the cost of living now exceeds the national average in Southeast Florida, Fort Myers, Orlando, and Sarasota, and approaches the national average in most other major cites in the State. At the same time, Florida's business and living costs remain low compared to other major economies worldwide. Mercer Consulting estimates that the cost of living in South Florida is below that of New York City, Sydney, Singapore, and Hong Kong, and on a par with Sao Paulo and Toronto.

Figure 3.31 Is Florida Losing its Allure?
Domestic Migration Drops in 2006; Blip or Start of a Trend?



Source: U.S. Census Bureau.

Taken together, these trends suggest that Florida must continue to develop and implement an effective economic development strategy. Rather than rely on in-migration and construction to drive short-term results, Florida must continue to develop a diversified economic base and strengthen those sectors in which it can be a global leader. Moreover, as a higher-cost state, Florida must compete based on quality and innovation, rather than on low costs. Table 3.18 describes Florida's overall economic performance across a variety of measures.

Table 3.18 Florida's Overall Economic Performance

Indicator	Level		National Ranking	
	Original (Year)	Current (Year)	Original (Year)	Current (Year)
Population				
Total Population	15,982,378 (2000)	18,089,888 (2006)	4	4
Net Population Increase, 2000 to 2006		2,107,510		3
Annual Percent Growth	2.1% (1990-2000)	2.1% (2000 to 2006)	7	6
Employment				
Total Employment	7,069,500 (2000)	8,007,100 (2006)	4	4
Net Employment Increase, 2000 to 2006		937,600		1
Annual Percent Growth	2.8% (1990-2000)	2.1% (2000-2006)	9	5
Employment Percent of U.S. Total	5.4% (2000)	5.9% (2006)		
Unemployment Rate	3.8% (2000)	3.3% (2006)	25	9
Gross State Product				
Gross State Product	$471.1B (2000)	$713.5B (2006)	4	4
Percent of U.S. Total	4.8% (2000)	5.4% (2006)		
Income and Wages				
Per Capita Income	$28,507 (2000)	$35,798 (2005)	20	20
Percent of U.S. Average	95.5%	98.7%		
Average Annual Wage	$30,296 (2000)	$36,583 (2005)	28	24
Percent of U.S. Average	87.3%	91.1%		
Productivity: Gross State Product (GSP) per Worker	$62,504 (2000)	$80,691 (2005)	28	25
Percent of U.S. Average	89.1% (2000)	91.9% (2005)		

Sources: U.S. Census Bureau, Bureau of Labor Statistics, Bureau of Economic Analysis, U.S. Small Business Administration.

4.0 Key Freight Issues and Bottlenecks

The delay experienced by users of Florida's highway system will reach levels that could significantly reduce Florida's economic competitiveness and quality of life. Figure 4.1 shows the highway corridors that are included on the SIS that did not meet peak-period level of service standards in 2005, as well as those that are projected to fall below the standards in 2025, even after improvements included in the Department's 20-year cost-feasible plan are constructed. In 2005, highways that fall below the standards include large portions of the I-4, I-75, and I-95; multiple highways in all of Florida's major urban regions; and key corridors in emerging regions and rural areas. Without additional investments beyond those currently scheduled, congestion is anticipated by 2025 to become a problem during peak periods along virtually all of Florida's major highway corridors, including segments in urban, emerging, and rural areas.

The most prevalent sources of congestion and perhaps the most avoidable are bottlenecks, which account for more than 50 percent of all cases in Florida. Congestion due to inclement weather, incidents, and work zone areas account for 10 percent, 25 percent, and 15 percent, but unlike bottlenecks, these are not freight related (Figure 4.2). The sources and patterns of freight bottlenecks along major statewide transportation corridors and at hubs are further investigated below.

4.1 Bottleneck Criteria and Analysis

Bottlenecks, by definition, are physical chokepoints on a given roadway segment that restrict the flow of incoming traffic from connecting roadway segments. Development of bottlenecks can be characterized by certain demand factors, and physical and operational attributes.

The goals of the bottleneck congestion analysis are to:

- Develop criteria for determining statewide freight bottlenecks;
- Assess the correlation between freight bottlenecks and contributing factors or attributes; and
- Assess the correlation between the activity levels of Freight Oriented Industries (FOI) and truck traffic.

Figure 4.1. Congestion on the SIS Highway Corridors – 2005 & 2025

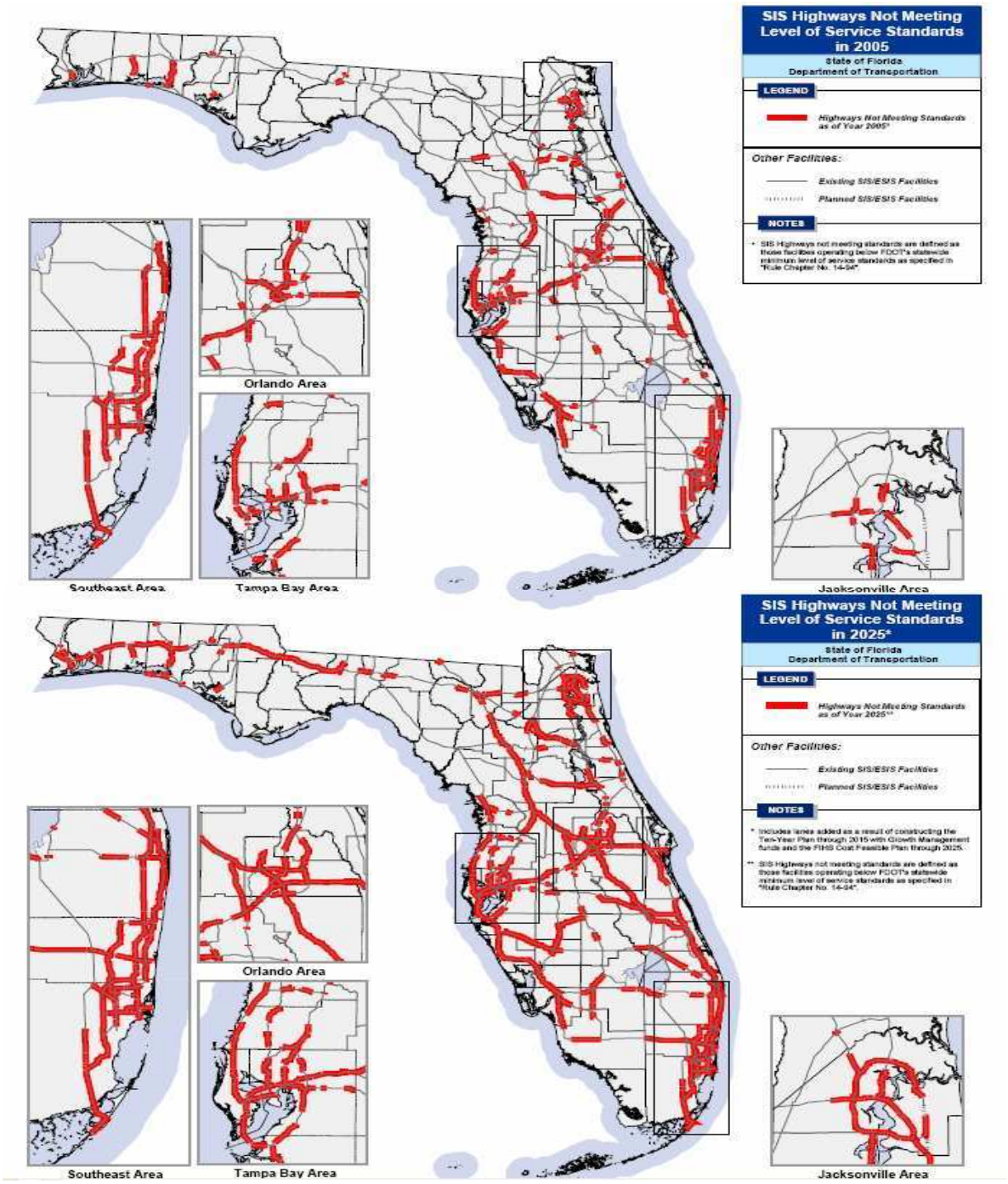
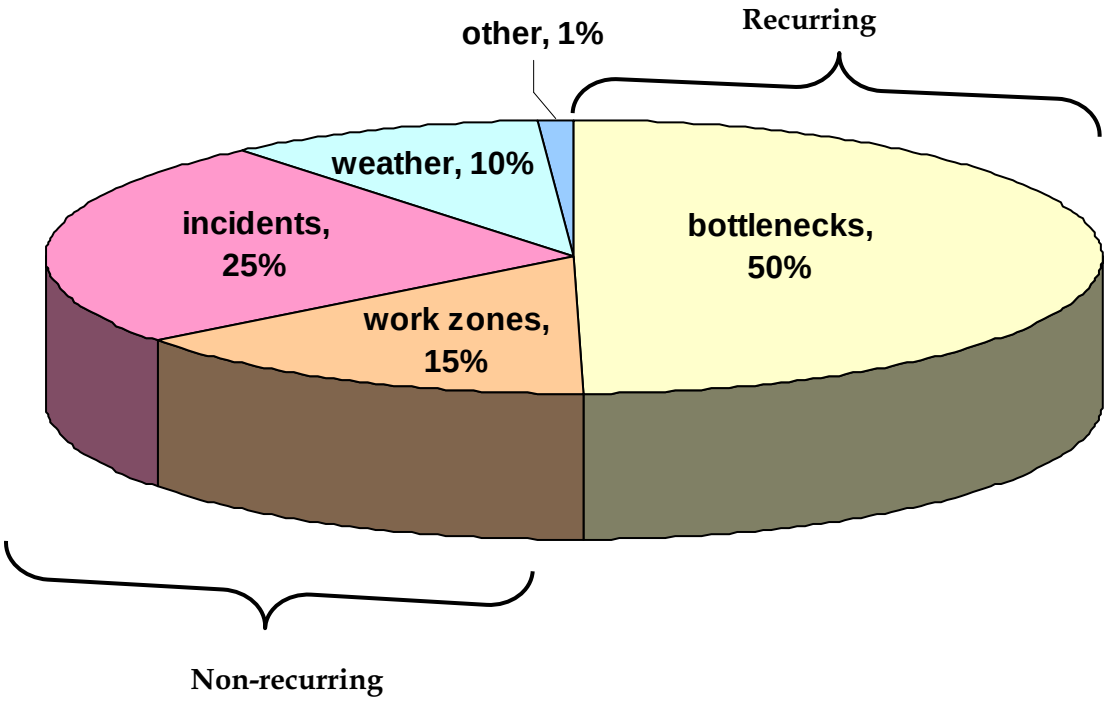


Figure 4.2. Sources of Congestion in Florida



Factors Influencing Bottlenecks

There are more than twenty factors[14] that influence the demand for freight, three of which have a direct impact on the development of bottlenecks:

- **Growth of Economy** – Increased demand for goods and services, both globally and locally, translate into greater dependency on freight transportation.
- **Industrial Location Patterns** – The location of major industries influences travel mode choices as well as the location of transportation facilities.
- **Congestion** – Both recurring and non–recurring congestion translate into significant delay for truck operators and freight movers leading to increased operating costs.

Attributes

Physical and operational attributes of highways can also play a key role in producing or avoiding bottlenecks. Physical attributes for highways include:

[14] Federal Highway Administration, Quick Response Manual, September 1996.

- Through Lane Width
- Corner Radii[15]
- Turn Lane

Operational attributes for highways include:

- Total Traffic (Average Annual Daily Truck)
- Percent Heavy Trucks
- Level of Service (LOS)

Methodology

Numerous studies conducted in the United States and in Florida in particular were researched on the topic of congestion, bottlenecks, and delay. The bottleneck analysis focused essentially on the Strategic Intermodal System (SIS). Study areas were centered around major SIS hubs and covered a five-mile radius which captured a significant number of connecting roadways (Interstate highways, Florida Turnpike, selected urban expressways, and major arterial highways), large concentrations of residents and jobs, and industrial facilities.

Demand factors and both physical and operational attributes were used to assess congestion levels or bottleneck conditions at various sites. The Gross State Product (GSP), Vehicle Inventory and Use Survey (VIUS), Facility Oriented Industries (FOI) location, and Level of Service (LOS) standards were used to measure the demand factors that influence freight. The GSP was used to analyze economic trends at the state and regional level. VIUS was used to correlate the GSP to transportation parameters. ESRI digital vector data were used to identify and analyze the location of FOIs. FOIs included various freight-dependent industries including agriculture; forestry, fishing, and hunting; mining; utilities; construction; manufacturing; wholesale; retail; transportation and warehousing; and accommodation and food services. LOS was used to measure congestion.

The FDOT Roadway Characteristic Inventory (RCI), FDOT Telemeter Traffic Monitoring Site (TTMS) database, FDOT Generalized Annual Average Daily Volumes Tables, and American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design were used to identify physical and operational attributes on major transportation facilities in Florida. The Roadway Characteristics Inventory (RCI) system is a database of physical and administrative data collected and maintained by the FDOT Transportation Statistics (TRANSTAT) office. The data are separated into features that list the type of roadway data and its defining characteristics. RCI was instrumental in identifying the following attributes:

[15] Also known as the "turning curb radius", is the turning path of the front outer tire of a vehicle. Trucks require a greater radius, and sometime greater pavement width to prevent encroachment into adjacent lanes or the inside curb.

- Turn lanes
- Through lanes
- Road type
- Corner radii

Annual Average Daily Traffic (AADT) and truck counts were obtained from the TTMS database. LOS was calculated for all identified roadways using AADT counts collected from the TTMS database and the FDOT Generalized Annual average Daily Volumes Tables.

A pass or fail grading system was first used to assess the impact of each attribute on the study areas. A numeric-based grading system was then developed to more accurately compare the overall performance of the various study areas. Passing conditions received a grade varying between 4 and 15 and failing conditions were assigned a value ranging between 0 and 3. Next, assigned values were grouped in packets and assigned a letter grade as follows (See Table 4.1):

- A= best condition - no bottlenecks exists;
- B= good condition - bottlenecks are not likely, but possible to exist at peak times;
- C= average condition – a minimum number of bottlenecks exists at peak times;
- D= poor condition – bottlenecks exist throughout peak times; and
- F= poorest condition – bottlenecks exist throughout peak and at times other than peak.

Table 4.1 Bottleneck Grading System

Aggregated Value	Grade
13 – 15	A
10 – 12	B
7 – 9	C
4 – 6	D
0 – 3	F

Source: Reynolds, Smith and Hill, Inc.

While both the physical and operational attributes affect the development of bottlenecks, they are not weighted equally when grading site performance. Physical attributes are linked primarily to congestion since these may be greatly influenced by delay. Operational attributes are linked to all demand factors. Changes in the economy, openings or closures of factories, congestion, the share of heavy trucks, and LOS all influence traffic volumes. As such, operational attributes had a significantly higher impact on bottlenecks. Physical attributes (through-lane width, corner radii, turn lane) were given and weight equal to 1 while operation attributes (total traffic, percent heavy truck, level of service) were given a weight equal to 4.

For example, assuming all attributes influence a study area, the overall bottleneck impact is as follows:

Through-lane (1) + corner radii (1) + turn lane (1) + total traffic (4) + percent truck (4) + LOS (4) = Overall Impact (15)

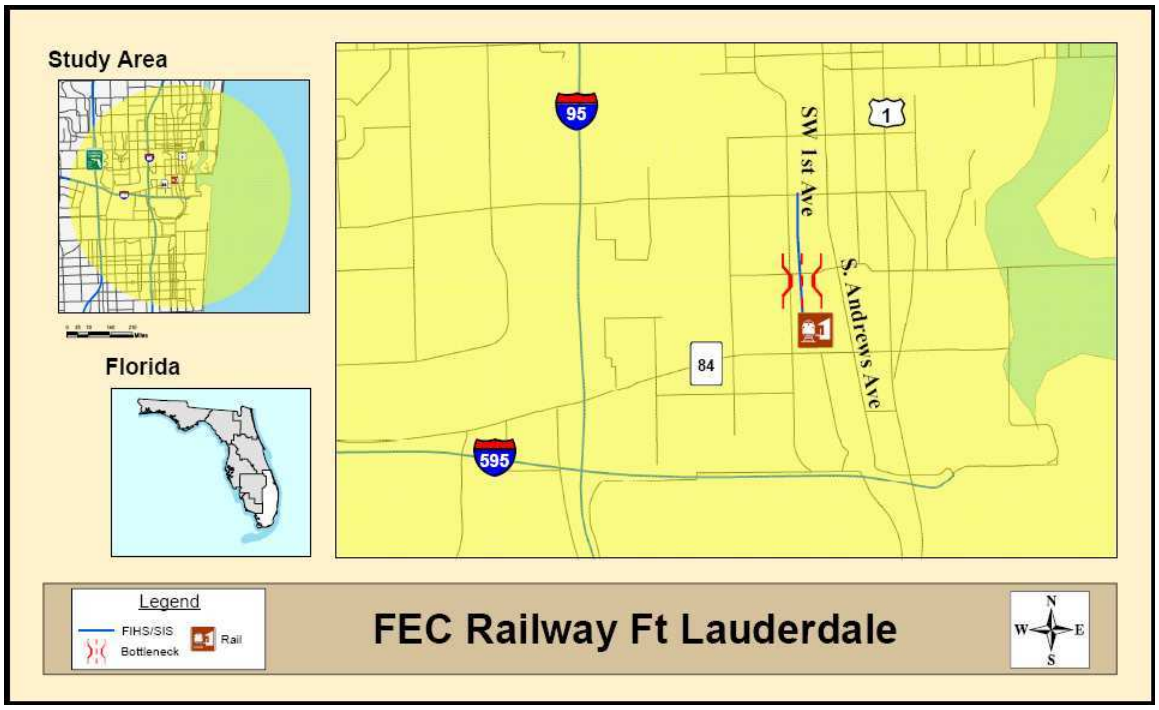
Attributes Numeric Value		Aggregated Value	Assigned Letter Grade
1+1+1+4+4+4	=	15	Grade A, best condition

Thirty-three potential bottleneck sites were identified in the analysis. The 10 sites with the worse bottleneck conditions in Florida were further analyzed and presented in this section. The top 10 bottlenecks include:

- FEC Railway Fort Lauderdale
- Miami International Airport
- FEC Railway Miami-Hialeah
- Port of Miami
- Fort Lauderdale-Hollywood International Airport
- Tampa International Airport
- Port Everglades
- Palm Beach International Airport
- CSXI Tampa
- Port of Palm Beach

4.2 Top Ten Bottleneck Sites

4.2.1 FEC Railway Fort Lauderdale



FEC Railway Fort Lauderdale is located north of Fort Lauderdale International Airport in the heart of Broward County. Primary accesses to the facility include South Andrews Avenue, Eller Drive, SR 84, US 1 and I-595. The route network surrounding the railway hub includes I-595, SR84, US 1, and Andrews Avenue.

While the FEC Railway Fort Lauderdale site includes an advanced roadway network with multiple lanes, ramps, and turn lanes, the insufficient physical characteristics of the most critical route (South Andrews Avenue) creates a negative impact for the entire network. In addition, the region's high dependence on trucks and large cluster of FOIs are anticipated to worsen LOS conditions around this railway hub. The FEC Railway Fort Lauderdale network was given the lowest failing grade of all 10 bottleneck sites (F, 1) as suggested in Table 4.2. There are more than 6,396 FOIs within a five-mile radius of this facility. The site generated more than 98.8 million truck vehicle miles traveled in 2000 and was expected to exceed 148.5 truck miles traveled in 2005.

Table 4.2 FEC Railway Fort Lauderdale Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 98,846,113 to 148,457,441
Industrial Location Patterns	There are 6396 FOIs within a 5 mile radius
Congestion	Network Fails Florida's LOS Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 2-8 lanes with minimum width of 10 ft. – most of the roadways contain multi-lanes	Pass	1
Corner Radii	The facility access roads are local streets with four 10 ft. lanes and a 90-degree intersection. This intersection requires a minimum of 23 ft. lane width to prevent encroachment.	Fail	0
Turn Lane	Network contains no turn lanes at the most critical area of the facility	Fail	0
Total Traffic	Total traffic increases 2000-2005 from 19,600 up to 111,500 AADT	Fail	0
Percent Heavy Truck	Truck traffic equals more than eight percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**1**

4.2.2 Miami International Airport

Miami International Airport (MIA) is located five miles west of the Port of Miami and comprises a network of local Expressways (Palmetto Expressway to the West, Dolphin Expressway to the South, and Airport Expressway to the East) and state and Interstate roads (I-395, I-195, I-95, U.S. 41, U.S. 27) that connect with Florida's major corridors. The facility can be accessed through Lejeune Rd, NW 21st St, NW 25th St, Okeechobee Rd, and the Airport Expressway/I-195. Handling more than almost 15 million passengers (enplanements) and 1.9 million tons of freight in 2005, MIA is ranked first for international flights and 4th for total cargo (freight and mail) among US airports, and 11th for total freight among worldwide airports. Viewed as a vital contributor to South Florida's economy, the airport has contributed more that $19.1 billion for the tourism, cruise, international banking, and trade and commerce industries and helped produce more than 242,387 jobs for the region in 2005.

The advanced roadway network features including multiple lanes, ramps, and turn lanes have helped to reduce the occurrence of bottlenecks in the MIA region, however, continued economic growth, the high cluster of FOIs, and the significant dependence on trucks to move goods have contributed to the site's high level of congestion especially along the Airport Expressway and Okeechobee Road. The MIA site received a failing grade (F, 3) and was ranked second worst bottleneck site in Florida (Table 4.3). The region is home to 17,114 FOIs and has generated more that 479.7 million truck vehicle miles traveled in 2005, up from 327 million in 2000.

Table 4.3 Miami International Airport Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 326,999,306 to 479,733,760
Industrial Location Patterns	There are 17,114 FOIs within a 5 mile radius
Congestion	Network Fails Florida's LOS Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple lanes and ramp lanes.	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Total traffic increases 2000-2005 from 80,000 up to 190,000 AADT	Fail	0
Percent Heavy Truck	Truck traffic equals more than seven percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**3**

4.2.3 FEC Railway Miami-Hialeah

Located approximately four miles north of Miami International Airport, the FEC Miami facility serves a large portion of South Florida' freight industry. The site is accessible through Okeechobee Rd, Hialeah Expressway, and Palmetto Expressway. FEC Miami handles more than 100,000 carloads per year. FEC Railroad is also a significant contributor to the South Florida construction industry providing most of its rock, sand, and building materials.

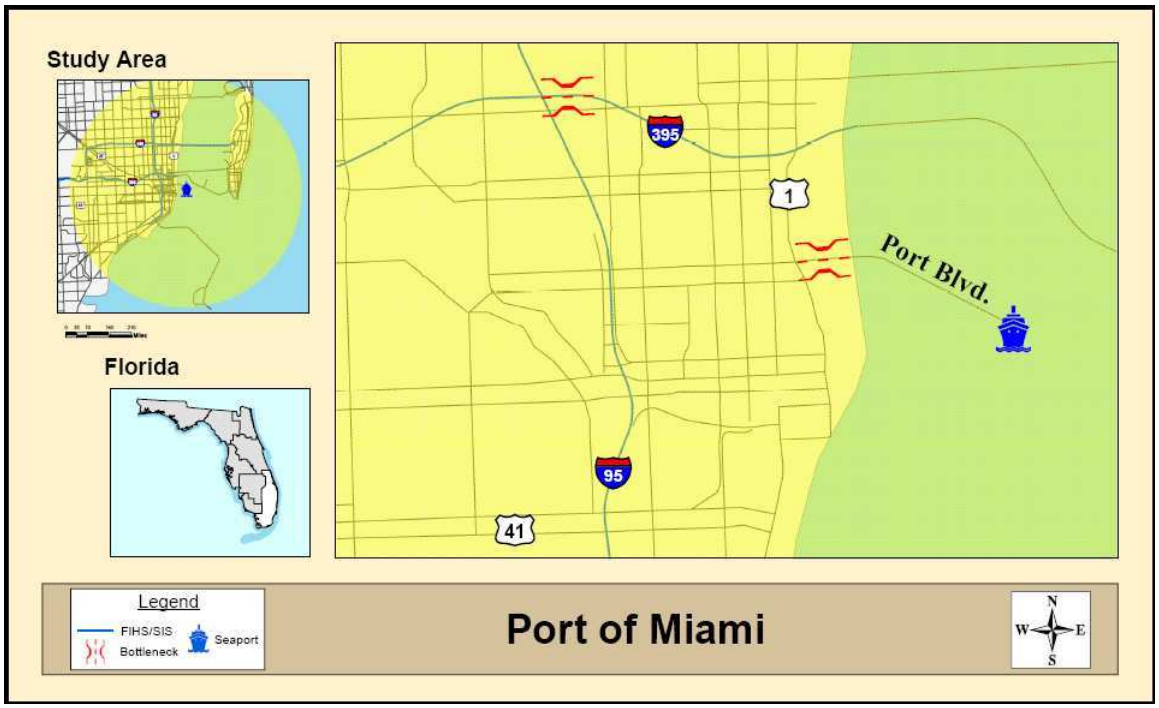
The FEC Railway Miami-Hialeah network is currently experiencing high demands due to economic growth and a large cluster of high congestion. This has resulted in recurring bottlenecks more especially along Okeechobee Rd and Palmetto Expressway. The FEC Railway Miami-Hialeah site received a failing grade (F, 3) and was ranked third worse bottleneck site in the state (Table 4.4). The site serves 15,357 FOIs located within five miles from the rail hub and will generate more than 479.7 million truck vehicle miles traveled in 2005, up from 322.2 million truck vehicle miles traveled in 2000.

Table 4.4 FEC Railway Miami-Hialeah Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 322,198,741 to 470,577,797
Industrial Location Patterns	There are 15,357 FOIs within a 5 mile radius
Congestion	Network Fails Florida's LOS Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple lanes and ramp lanes.	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Total traffic increases 2000-2005 from 45,000 up to 185,000	Fail	0
Percent Heavy Truck	Truck traffic equals more than seven percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**3**

4.2.4 Port of Miami



The Port of Miami is located in the harbor surrounded by an urban buildup of hotels and attractions, business centers, corporations, and residential developments. Primary access to the port is via Port Boulevard. The Port handles more than 9 million tons of freight (it is Florida's largest container port) and more than 3.6 million cruise passengers (referred to by many as the cruise capital of the world) in 2005. In conjunction with Miami International Airport, it is viewed as a vital contributor to South Florida's economy.

Due to the large presence of FOIs in the Port of Miami area and the continued economic growth in the Miami area, the Port of Miami site is anticipated to continue to experience recurring bottlenecks along I-395/Dolphin Expressway, U.S. 1/Biscayne Road, and Port Boulevard. In addition, trucks must use local roads (1st/2nd Avenues and 5th/6th Streets) to access the port. The Port of Miami received a failing grade (F, 3) and was ranked fourth worse bottleneck site in Florida with more than 7,898 FOIs within five miles, and more than 106.4 million truck vehicle miles traveled in 2000. Total truck vehicle miles traveled are expected to reach 158.3 million in 2005 (Table 4.5).

Table 4.5 Port of Miami Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 106,356,339 to 158,293,465
Industrial Location Patterns	There are 7898 FOIs within a 5 mile radius
Congestion	Network Fails Florida's LOS Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple lanes and ramp lanes.	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Total traffic increases 2000-2005 from 95500 up to 134,500 AADT	Fail	0
Percent Heavy Truck	Truck traffic equals more than thirteen percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**3**

4.2.5 Fort Lauderdale-Hollywood International Airport

Fort Lauderdale-Hollywood International Airport is located in the Southeast region of Florida two miles west of the beach in the heart of Broward County adjacent to Port Everglades. The facility is surrounded by a network of US highways and Interstates that are a part of Florida's major corridor system, and local streets that connect the airport to the major corridors. The airport can be accessed via Perimeter Rd., US 1, and I-595. The airport handled more than 175,533 tons of cargo (freight and mail), and served more than 10 million passengers (enplanements) in 2005.

The Fort Lauderdale-Hollywood International Airport network failed the bottleneck criteria test (F, 3) and is ranked fifth worse bottleneck site in Florida with more than 6,891 FOIs within a 5 miles range and more than 105.9 million truck vehicle miles traveled in 2000. By 2005, the region could generate more than 159.5 million truck vehicle miles traveled (Table 4.6). The network includes good physical attributes to help reduce delay, however the significant reliance on the highway network to move people and goods and the booming regional economy has contributed to the deterioration of traffic conditions and recurring bottlenecks especially along Perimeter Rd, I-595, and US 1.

Table 4.6 Ft. Lauderdale-Hollywood International Airport Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 106,356,339 to 158,293,465
Industrial Location Patterns	There are 7898 FOIs within a 5 mile radius
Congestion	Network Fails Florida's LOS Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Total traffic increases 2000-2005 from 95500 up to 134,500 AADT	Fail	0
Percent Heavy Truck	Truck traffic equals more than thirteen percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**3**

4.2.6 Tampa International Airport

Located in Central West Florida, Tampa International Airport sits in the heart of the Tampa Bay area less than a mile from harbor side and five miles west of downtown Tampa. In 2005, the airport served more than 9 million passengers and 98 thousand tons of freight. The airport is a major contributor to the economy of West Florida. The airport is connected to Florida's major corridors through SR 60/Memorial Hwy and Spruce St.

The Tampa International Airport network failed the bottleneck criteria test (F, 3) and was ranked the sixth worth bottleneck site in Florida with 4,811 FOIs within a five-mile radius, a total of 102.7 million truck vehicle miles traveled for 2005, up from 67.3 million in 2000 (Table 4.7). The network could support good freight mobility patterns, but it is heavily constrained by economic impacts, congestion, and negative physical and operational attributes. Bottlenecks and delays are expected to recur along SR 60/Memorial Hwy and Spruce St.

Table 4.7 Tampa International Airport Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 67,374,055 to 102,629,586
Industrial Location Patterns	There are 4,811 FOIs within a 5 mile radius
Congestion	Network LOS fails Florida's Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Network total traffic 2000-2005 increases from 34,500 up to 140,000	Fail	0
Percent Heavy Truck	Truck traffic equals more than nine percent of total traffic	Fail	0
Level of Service	"F" poorest	Fail	0
Grade		**F**	**3**

4.2.7 Port Everglades

Known to be one of the world's finest cruise ports and Foreign-Trade Zones, Port Everglades is located near the Atlantic Ocean shipping lanes, the Florida East Coast Railway, and Fort Lauderdale International Airport. The port is also a vital contributor to the South Florida economy handling more than 24 million tons of cargo and 3.8 million cruise passengers in 2005. Principle accesses to the port include I-595/Eller Dr. and SR 84.

The Port Everglades network has received a grade C and currently experiences some delay at peak hours resulting from bottlenecks primarily due to high truck traffic along Eller Drive in the vicinity of the I-595 and US 1 interchanges. The network was ranked the seventh worse bottleneck site in Florida. More than 5,232 FOIs are located in the port's network with more than 121.9 million truck vehicle miles traveled generated in 2005 (Table 4.9).

Table 4.8 Port Everglades Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 81,510,942 to 121,952,972
Industrial Location Patterns	There are 5,232 FOIs within a 5 mile radius
Congestion	Network LOS is borderline to Florida's Standards 2005 and is decreasing;

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Network total traffic 2000-2005 increases from 64,000 up to 111,500	Fail	0
Percent Heavy Truck	Truck traffic equals more than eight percent of total traffic	Fail	0
Level of Service	"D" poor, but meet FL standards	Pass	4
Grade		**C**	**7**

4.2.8 Palm Beach International Airport

Located in Southeast Florida four miles west of the beach, Palm Beach International Airport provides services to the southeastern to central eastern counties north of Broward and Miami-Dade. Handling more than 3.3 million passengers (enplanements) and 19 thousand tons of cargo in 2005, this airport is becoming a vital contributor to Southeast Florida's economy. The airport is strategically located near the Florida Turnpike and I-95. Principle access routes to Palm Beach International Airport include Australian Avenue, I-95, Belvedere Rd., Military Trail, and US 98.

The network offers good physical attributes including multiple lanes, ramps, and turn lanes throughout the network. It also provides alternative access routes with a direct connection from I-95 up to the entrance, and a facility road that surrounds the airport. The network does not experience major bottlenecks except at peak time and along sections of Military Trail, Belvedere Rd, and Australian Avenue. The site received a grade C and was ranked eighth worse bottleneck site in Florida. There are more than 5,110 FOIs located within a five-mile radius of the airport. In addition, the region generated more than 75.5 million truck vehicle miles traveled in 2005.

Table 4.9 Palm Beach International Airport Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 75,557,945 to 116,379,126
Industrial Location Patterns	There are 5,110 FOIs within a 5 mile radius
Congestion	Most roadways in the network LOS passes Florida's Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-8 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Network total traffic 2000-2005 increases from 35,600 up to 151,000	Fail	0
Percent Heavy Truck	Truck traffic equals more than eleven percent of total traffic	Fail	0
Level of Service	6 out of 7 roadways passes FL LOS standards	Pass	4
Grade		**C**	**7**

4.2.9 CSXI Tampa

Located in the heart of the Tampa Bay area, CSXI Tampa sits fifteen miles east of downtown. Operating as Central West Florida's lead intermodal center, this facility handles more than 150,000 carloads a year and provides service to more than 700 industries throughout Florida. CSXI Tampa is also known for its rail-to-truck operations that promote integrated intermodal operations and offer one-stop door-to-door delivery. The terminal, along with Tampa International Airport, is a vital contributor to the Central West Florida economy. Principle access routes to CSXI Tampa include 62nd St. and Broadway Avenue.

The CSXI Tampa network earned a grade of "C". The network has good LOS with only one out five roadways failing Florida Standards, and the distribution of total traffic and truck traffic supports free flow throughout the network. However, the inefficient physical characteristics on the main facility access roads, the high volume of truck traffic, and the impact of growing economic demand are and will continue to create a negative effect on the network. Bottlenecks will occur along Broadway Avenue and 62nd St. The network is ranked ninth worse bottleneck network in Florida with a total of 3,748 FOIs within a five-mile radius and more than 92.3 million truck vehicle miles traveled in 2005, up from 61.5 million truck vehicle miles traveled in 2000 (Figure 4.10).

Table 4.10 CSXI Tampa Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 61,501,268 to 92,256,018
Industrial Location Patterns	There are 3,748 FOIs within a 5 mile radius
Congestion	Most roadways in the network LOS passes Florida's Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 2-10 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Fail	0
Turn Lane	Network contains turn lanes	Fail	0
Total Traffic	Network total traffic 2000-2005 increases from 34,500 up to 140,000	Pass	4
Percent Heavy Truck	Truck traffic equals more than fourteen percent of total traffic	Fail	0
Level of Service	4 out of 5 roadways passes FL LOS standards	Pass	4
Grade		**C**	**9**

4.2.10 Port of Palm Beach

Located 80 miles north of Miami and 135 miles south of Port Canaveral, the Port of Palm Beach is the fourth ranking intermodal operations port in Florida. The port is also a major hub for bulk and break-bulk cargoes. The port handled almost 4 million tons of cargo and over 550,000 cruise passengers in 2005. The port has partnered with the Florida East Coast Railway to provide on-port rail operations and is the only port facility in South Florida with a pier-side intermodal car operation. Access to the Port of Palm Beach is via SR 710/8th St., Dixie Highway, US 1, and 11th St.

The Port of Palm Beach network does not experience major bottlenecks and congestion problems thanks to good physical attributes including multiple lanes, ramps, and turn lanes. However, due to high and growing economic demands and truck volumes in the area bottlenecks are expected to occur in specific locations within the network and along SR 710 and US 1 primarily. The port was ranked the 10th worse bottleneck site in Florida with more than 4,126 FOIs located within a five-mile radius and a total of 92.2 million truck vehicle miles traveled for 2005, up from 60.3 million truck vehicle miles traveled in 2000.

Table 4.11 Port of Palm Beach Site Bottleneck Criteria Profile

Demand Factor	Impact
Economic Growth	TVMT increases in 2000-2005 from 60,363,251 to 92,158,493
Industrial Location Patterns	There are 4,126 FOIs within a 5 mile radius
Congestion	Most roadways in the network LOS passes Florida's Standards

Freight Bottleneck Attribute	Impact	Condition	Score
Through-Lane Width	Network contains 4-10 lanes with minimum width of 10 ft.	Pass	1
Corner Radii	Network contains multiple ramp lanes	Pass	1
Turn Lane	Network contains turn lanes	Pass	1
Total Traffic	Network total traffic 2000-2005 ranges from 12,700 to 40,000 on most roadways	Pass	4
Percent Heavy Truck	Truck traffic equals more than twelve percent of total traffic	Fail	0
Level of Service	2 out of 5 roadways passes FL LOS standards	Pass	4
Grade		**B**	**11**

5.0 Findings and Recommendations

The final element of the Florida Statewide Freight and Goods Movement Plan summarizes the key findings of the Freight Plan development and presents recommendations for ongoing freight program development and implementation.

5.1 Summary of Findings

Freight System

The State of Florida is home to a full service multimodal and intermodal freight transportation system including key freight highways, freight rail operations, aviation, seaports and pipeline facilities.

- A major component of the SHS is the Florida Intrastate Highway System (FIHS). It constitutes approximately 3 percent of the entire Florida roadway network by length, yet carries about 30 percent of all traffic. It handles approximately 68 percent of the truck traffic on the State Highway System. As of 2005, the system consisted of 3,943 miles of roadway.

- The FIHS links seaports, airports, rail, and other intermodal or freight facilities. It serves major international airports that handle more than 90 percent of Florida's airfreight and passengers and serves major deep-water ports that handle more than 90 percent of Florida's waterborne trade and passengers. Approximately 80 percent of Florida's industrial and warehousing facilities are within five miles of the FIHS.

- In 2003, the FIHS became the backbone of the highway component of the SIS. The high percentage of freight transported by trucks speaks to the significance of the roadway network for handling freight traffic. The share of daily truck traffic ranges from 6 percent to as much as 32 percent in the northern part of the state, typical for the area due to route proximities and adjacent trade states.

- There are 15 freight railroads operating in the State of Florida. These railroads carried about 1.2 million carloads and 805,260 intermodal units (trailers and containers) and 119 million tons of freight, effectively removing almost six million heavy trucks from the roadways.

- Two Class I railroads operate in Florida: CSX Transportation (CSXT) and the Norfolk Southern Railroad (NS). These two railroads serve the eastern United States and connect Florida to the national rail network. CSXT is the single largest operating railroad in Florida, with an extensive network covering the Florida Panhandle, Northern and Central Florida, and the Greater Miami area in South Florida. NS lacks an extensive Florida network and primarily serves as a conduit to the national rail system via lines in northern Florida and the Greater Jacksonville area.

- Of the 3,152 miles of rail operated in Florida, a total of 1,826 miles, or 58 percent, of rail corridors are currently designated as part of the SIS. These include: CSX Railroad, Florida East Coast Railroad, Florida Central Railroad, South Florida Rail Corridor, Florida Northern Railroad, Norfolk Southern Railroad, Seminole Gulf Railway, and South Central Florida Express.

- In percentage terms, inbound traffic accounted for a 38.9 percent share (up from 36.8 percent in 2003) of the total rail tonnage, outbound traffic comprised 11.8 percent (down from 12.9 percent in 2003), local traffic contributed 47.7 percent (down from 48.6 percent in 2003), and through traffic accounted for 1.7 percent (consistent with 2003).

- Florida is home to 14 deepwater seaports along both the Atlantic and Gulf coasts. Florida's 14 deepwater seaports play an essential role in creating and sustaining a vibrant economy and play a central role in international trade. Ten of the fourteen seaports currently designated as part of the SIS.

- Florida's ports move different types of commodities as well as different types of passenger services. Each of Florida's ports has a characteristic profile, in terms of the amount of cargo and number of passengers they handle. Florida's ports show significant diversity in terms of their traffic volumes and mixes.

- Florida's leading tonnage port is Tampa, followed by Everglades and Jacksonville; its leading container port is Everglades, followed by Miami, Jacksonville, and Palm Beach; and its leading cruise ports are Canaveral, Miami, and Everglades. Collectively, these ports provide Florida with the ability to handle over 121 million tons, nearly 3 million TEUs, and 14 million passengers per year. Florida is one of the leading states in the country on all measures.

- Florida's aviation system consists of 106 public airports, which include 19 commercial service airports and 87 public-use general aviation facilities; 24 military airports; and 730 private airports, of which 23 are available for public use. Seventeen of the 19 commercial service airports in the state are designated as part of the SIS.

- Commercial service airports handle approximately 2.5 million tons of air freight and mail annually, either on dedicated aircraft or in the belly compartments of passenger aircraft. Miami International Airport handles 72 percent of the state's annual total and accounts for 40 percent of the air cargo transported between the United States and South America each year. Orlando International and Fort Lauderdale-Hollywood

International follow, with market shares of 10 and 8 percent, respectively. The top five commercial airports handle 97 percent of all air cargo in the state (Miami, Orlando, Ft. Lauderdale, Tampa, and Jacksonville.

- Market share is highly concentrated at the largest airports because local air cargo is routinely trucked and consolidated to airports with the most "lift" options, routes, and capacity. Approximately 70 percent of cargo handled at Florida airports is gateway cargo, passing through the state either destined for or leaving from another city in the U.S. The remaining 30 percent is local freight that originates from or is destined for Florida cities.

- Pipelines in Florida include large-diameter lines carrying energy products to population centers, as well as small-diameter lines that deliver natural gas to businesses and households. The energy products carried in pipelines heat and cool homes and schools, power the industrial base, and enable daily commutes.

- Pipelines are by far the safest method for transporting energy products. However, when pipeline incidents occur they can present significant risks to the public and the environment. There are almost 32,000 miles of pipeline in Florida with over 26,000 representing gas distribution.

Commodity Flow Characteristics

- 848 million tons of freight, worth over $939 billion were transported to, from, within, and through the State of Florida via truck, rail, air, and water modes in 2003. Outbound movements accounted for 19 percent; inbound movements accounted for 35 percent; intrastate movements accounted for 45 percent; and through movements accounted for 1 percent.

- Intrastate shipments accounted for the largest portion of overall freight shipments in the state (45 percent by weight). This is partially attributed to non-metallic minerals, construction materials, as well as other commodities moving from/to warehouses and other secondary distribution facilities.

- Inbound shipments by weight made up a significantly larger percent of the tonnage transported than outbound movements (35 percent vs. 19 percent), a trend that also holds true for the value for shipments (40 percent v. 21 percent). This reflects the consuming nature of the state.

- Approximately 597 million tons, moved by truck. When shipment value is considered, truck movements represent an even greater portion of the overall movements in Florida, accounting for 80 percent of all flows, or approximately $745 billion.

- The presence of Florida's 14 deepwater seaports makes waterborne movements an important mode for freight shipments in the state. In fact, freight movements by water accounted for 16 percent, or approximately 133 million tons, of all freight shipments,

by weight, in Florida. Rail movements accounted for approximately 14 percent of all the freight moving into, out of, within, and through the state, or 117 million tons. When shipment value is considered, the relative share of water (11 percent) and rail (9 percent) shipments decline significantly due to the low value per ton of the products they move. Air movements accounted for 0.1 percent, or 645 thousand tons, of all the freight moving in Florida by weight, yet over 0.4 percent, or $3.7 billion, by value.

- Florida's freight moves in a similar fashion to the overall national freight patterns, however, it has achieved a somewhat better balance among modes. The Freight Analysis Framework (FAF) estimates that the United States, overall, is highly dependent on trucks (82 percent) for most of its tonnage movements, especially for the transport of higher valued goods.

- The top five commodity groups in Florida accounted for 68 percent of the total flows, or 575 million tons, by weight. These commodity groups consisted of non-metallic minerals (25 percent); clay, concrete, glass, or stone (12 percent); petroleum and coal products (12 percent); secondary moves (10 percent); and food (8 percent). Each of these commodities accounted for over 65 million tons. When shipment value is considered, the top commodity groups changed significantly. The top five commodity groups, when analyzed by shipment value, accounted for 50 percent of the total flows by value, or $470 billion. These commodity groups consisted of lumber and wood (15 percent); clay, concrete, glass, and stone (15 percent); chemicals and allied products (9 percent); food (6 percent); and pulp and paper products (6 percent).

- The State's outbound shipments (by weight) are largely destined to neighboring states and regions. In fact, if shipments destined for the South Atlantic (District of Columbia, Delaware, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia) and East South Central (Alabama, Kentucky, Mississippi, and Tennessee) regions are combined, they made up 45 percent of all outbound shipments, a figure equivalent to 70 million tons.

- The origins of Florida's inbound shipments are more diverse. While shipments from the neighboring regions still accounted for 36 percent of the shipments (108 million tons), other more distant regions played a more significant role. For example, the West South Central region accounted for 27 percent, a figure that surpasses 80 million tons, of the inbound shipments. The East North Central region and foreign trade also play an important role, with each accounting for over 10 percent of the shipments by weight.

- There are significant differences at the district level due to size, population, industry, and geographic location. Districts 2 and 5, due to geographic location, carry a significant amount of through traffic on their infrastructure; District 6 ships out more freight than it received due its port and airport gateways; and Districts 4 and 7 receive significant volumes of freight due to their roles as major petroleum gateways.

Bottleneck Analysis

- Bottlenecks, by definition, are physical chokepoints on a given roadway segment that restrict the flow of incoming traffic from connecting roadway segments. Development of bottlenecks can be characterized by certain demand factors, and physical and operational attributes.

- The goals of the bottleneck congestion analysis were to develop criteria for determining statewide freight bottlenecks; assess the correlation between freight bottlenecks and contributing factors or attributes; and assess the correlation between the activity levels of Freight Oriented Industries (FOI) and truck traffic.

- There are more than twenty factors that influence the demand for freight, three of which have a direct impact on the development of bottlenecks, including growth of the economy; industrial location patterns; and congestion.

- A pass or fail grading system was used to assess each bottleneck area, as follows: A= best condition - no bottlenecks exists; B= good condition - bottlenecks are not likely, but possible to exist at peak times; C= average condition – a minimum number of bottlenecks exists at peak times; D= poor condition – bottlenecks exist throughout peak times; and F= poorest condition – bottlenecks exist throughout peak and at times other than peak.

- Thirty-three potential bottleneck sites were identified in the analysis. The 10 sites with the worse bottleneck conditions in Florida were further analyzed, including FEC Railway Fort Lauderdale (F); Miami International Airport (F); FEC Railway Miami-Hialeah (F); Port of Miami (F); Fort Lauderdale-Hollywood International Airport (F); Tampa International Airport (F); Port Everglades (C); Palm Beach International Airport (C); CSXI Tampa (C); and Port of Palm Beach (B).

Demographic Profile

- Florida's population increased by 2.1 million residents between 2000 and 2006, reaching a total of 18 million. Florida is now the nation's fourth largest state, and is projected to surpass New York over the next several years. The State's population increased 2.1 percent per year, more than twice the national average.

- Florida created just under one million new jobs between 2000 and 2006, the largest net increase in employment among all 50 states. After a modest pause during the national recession of 2000-2001, Florida has become one of the nation's greatest job engines (see Figure 3.28). The State's employment increased 2.2 percent per year, more than four times the national average.

- Florida's unemployment rate decreased from 3.8 percent in 2000 to 3.3 percent in 2006, more than a full percentage point below the national average. This is the lowest unemployment rate recorded in Florida in over 30 years, and a rate virtually unheard of in most other advanced economies worldwide.

- Florida's gross state product – the value of all goods and services produced in the state – increased from $472 billion in 2000 to $714 billion in 2006. Florida's share of the national gross domestic product increased from 4.8 percent to 5.4 percent. An analysis by Enterprise Florida concluded that if Florida were a separate nation it would have the 19th largest economy in the world (with all U.S. states counted individually), similar in size to Brazil, Mexico, or Australia.

- The fastest-growing sector was construction, which accounted for 21 percent of all new jobs between 2000 and 2006. The business services and finance industries also grew at above-average rates, reflecting strong demand from Florida residents and businesses and the State's growing role as a hub for Latin American commerce and related business services. The large hospitality and retail industries also continued to expand due to the strong population growth and visitor activity.

- Florida appears to be making progress in creating greater prosperity for its residents. Floridians' per capita income closed the gap with the nation's, rising from 96 percent of the national average in 2000 to just under 99 percent in 2006. The major source of these income gains was higher wages. Florida's average annual wage per worker increased from 87 percent to 91 percent of the national average.

- The migration of residents from other states to Florida – traditionally the top driver of the State's growth – slowed in 2006. Florida's population increased by about 320,000 residents in 2006 – down from the torrid pace of 2004 and 2005.

- Florida's unemployment rate has reached record levels, raising concerns about the availability of sufficient labor for companies planning major expansion. The need for employers to compete for an increasingly tight pool of skilled workers also may place upward pressure on wages.

- Florida's construction market is coming back to earth after a decade of stunning growth. The value of construction put in place doubled from about $35 billion in 2000 to $70 billion in 2005, before falling back to $60 billion in 2006. At its peak, the value of residential construction in Florida exceeded that of California, a state twice as large.

- Florida is transitioning from being a low-cost state to a higher-cost state. Wages are increasing due to higher productivity and perhaps the tight labor market. Home prices surged 60 percent between 2003 and 2006, with Florida's median sales prices rising above the national average. Property tax bills are climbing in response to the higher home prices. Insurance costs are escalating following six hurricanes over a two-year period. The costs of transportation, energy, and commodities all are rising.

- Taken together, these trends suggest that Florida must continue to develop and implement an effective economic development strategy. Rather than rely on in-migration and construction to drive short-term results, Florida must continue to develop a diversified economic base and strengthen those sectors in which it can be a global leader.

5.2 Recommendations

Florida's transportation system must adapt to keep pace with the changing communities and economy. The transportation system must support increasing demand for mobility of both people and freight resulting from a growing population and economy. This section focuses on providing a key set of recommendations to help FDOT continue to effectively include freight and goods movement in the overall transportation program. Each recommendation includes several key action items to support implementation.

Facilitate the freight component of the e-SIS

Ongoing development of the SIS will be driven by an effective data collection and analysis program. The Department currently is working to develop the e-SIS, which will provide an automated electronic data driven process to ensure that all necessary data are collected to support SIS designation updates as well as ongoing system performance evaluations. The Seaport Office will be responsible for the seaport specific data. This will be implemented through the SeaCIP update underway. SeaCIP is a program historically used to receive and process applications for seaport projects funded through the FSTED program. The updated version will be used to collect data on all seaport project requests, regardless of funding source. E-SIS data requirements will be included in this enhanced data collection activity. The Seaport Office should also support the collection of other modal data, as appropriate, through coordination with Systems Planning, the Aviation Office, and the Rail Office.

Action Items

- **Coordinate with the Office of Policy Planning, Systems Planning Office, Aviation Office, and Rail Office to identify the freight data needs to support the SIS program needs.** SIS data are collected to support future SIS designation updates, systemwide performance measurements, project needs and costs, as well as ranking projects. Data collection is crucial to support identification of freight needs to feed the SIS program and to secure additional funding through Federal and State resources.

- **Collaborate with the Office of Information Systems (OIS) to ensure freight data are included in the e-SIS.** E-SIS is a data repository used by the Department during the annual SIS designation updates.

- **Develop a user-friendly process to upload SIS-related seaports data into the SeaCIP program.** As part of the Framework, data requirements have been identified to support project evaluations. This process should be reviewed and expanded as necessary to ensure e-SIS requirements are also captured.

Continue to maintain and update freight data clearinghouse

As part of the Freight Plan development, a comprehensive freight data clearinghouse was developed. This is a web-based product that provides a comprehensive listing of local, regional, state, and national freight data and resources. It is important that these resources be maintained and updated regularly to ensure that the Department and its partners have access to the full range of data. In addition, this clearinghouse can be enhanced to serve as a freight data repository for Florida's freight transportation system. This will include all data collected and maintained as part of the e-SIS as well as all regularly maintained and updated system plans.

Action Items

- **Develop a schedule to insure inclusion of new freight data in formal updates to plans.** Florida's transportation program is driven by several key documents that are updated regularly, including the Florida Transportation Plan (FTP), SIS, Transportation Regional Incentive Program (TRIP), Trends and Conditions (T&C) Reports, modal plans, and other documents. Together with the statewide freight plan, these documents include a freight component. Seaport Office Staff should work with appropriate FDOT offices, partners, and hub operators to ensure that freight data are revised regularly and incorporated into the Department's plans, as appropriate.

- **Develop a user-friendly process to upload data to the Freight Data Clearinghouse.** The Seaport Office should define an appropriate upload process to ensure data are incorporated into the clearinghouse. A monitoring function should also be defined to track progress.

- **Develop outreach program to educate FDOT Staff and statewide, regional, and local partners about the Freight Data Clearinghouse.** Seaport Office Staff should ensure that staff and partners are fully aware of the purpose of the data clearinghouse. Staff and partners should also be educated on the process to upload new data to the Freight Data Clearing House online.

Use freight bottleneck identification process to identify and prioritize freight system improvements

A process was developed as part of the Freight Plan development to identify freight system bottlenecks. This process should be reviewed and enhanced as appropriate and used annually to identify and prioritize freight transportation system improvements. This will require coordination across offices and districts, as well as with other stakeholders including MPOs and freight system operators.

Action Items

- **Review the bottleneck identification process within the Department and revise as appropriate.** The process developed and used as part of the Freight Plan preparation should be vetted throughout the Department to build consensus for its use. Once this has been accomplished, it can be integrated and used as part of established processes to help better integrate freight into the needs identification process.

- **Incorporate the freight bottleneck identification process into modal system plans to guide the freight needs identification and project ranking processes.** The most prevalent and avoidable sources of congestion are bottlenecks accounting for 50 percent of all cases in Florida. Mainstream the bottleneck identification process across all modes to help guide freight investments in the State.

- **Review and update freight priorities and needs regularly.** Ensure that factors influencing bottlenecks including physical and operational attributes, economic growth, and industrial location patterns are updated annually where possible to accurately reflect freight congestion levels.

- **Investigate opportunities to expand the process to all modes.** The initial process was developed to look specifically at highway bottlenecks that impact major freight hubs. Consideration should be given to expanding this process to support non-highway bottlenecks.

Develop freight forecasts

2003 TRANSEARCH commodity flow data were purchased and analyzed as part of the development of the Freight Plan. Future year forecasts were not included with the data. Forecasts are available at a more aggregate level through the Federal Highway Administration's Freight Analysis Framework. In fact, the Department currently is working to disaggregate this data. In addition, 1998 TRANSEARCH data were used to develop the statewide truck freight model. Forecasts of truck trips were then developed using the state's sociodemographic forecasts. Each modal system plan also addresses forecasts at some level. As the usefulness of the available data becomes better understood, the Department should consider additional forecasting options, as necessary, to support medium- and long-term freight transportation system planning activities.

Action Items

- **Review the utility of available data sources.** The FAF database, the Statewide Freight Model, and available modal forecasts all should be reviewed to identify the best opportunity for developing a comprehensive set of freight forecasts. Adopted Florida economic and demographic forecasts should also be considered. In addition, the Department may want to consider purchasing forecasts from an outside vendor, although it is recommended that a reliable and cost effective ability to update the forecasts at a fixed time interval be a key factor in the evaluation.

- **Develop preferred forecasting technique.** Based upon the review and outreach to appropriate FDOT offices, select a preferred approach and develop the process. This will require the definition of data needs as well identification of the staff responsible for providing the data.

- **Implement the technique to develop freight forecasts.** Mode specific forecasts should be developed using the defined methodology.

Develop seaport system plan

As part of the Freight Plan development, a variety of seaport specific initiatives were completed, including an evaluation of global trends, a seaport conditions report, and an investment framework designed to support project specific evaluation activities. However, aside from the Seaport Mission Plan developed annually by the Florida Ports Council, there is not a comprehensive seaport system plan, similar to the rail and aviation system plans. The Seaport Office should develop and maintain such a system plan for seaports. This plan currently is scheduled to be completed in 2008.

Action Items

- **Develop a draft Seaport System Plan outline.** The Seaport System Plan will be driven by a specific set of goals, objectives, and strategies. The specific goals and objectives should be developed in response to consultation with the identified stakeholders and their identified freight needs. The draft outline will be reviewed by FDOT District staff, members of the executive board, the Florida Ports Council, and partners for input.

- **Designate one point of contact on the Seaport Office staff to work with Districts and partners to build support for and gather input on the development of a Seaport System Plan.** Developing and updating a Seaport System Plan requires ownership and leadership. In order to ensure that the members are receiving consistent support and commitment, one person should be designated to take ownership of this activity. This person will become the institutional knowledge bank of freight needs and initiatives.

- **Develop the seaport system plan.** A scope of work to develop the seaport system plan has been developed an initiated by the Department. It is scheduled for completion in late 2008.

Conduct regional outreach meetings

A process for reaching out to District staff and their partners on a regular basis should be defined as part of the overall Freight Plan. This will provide an ongoing process to update partners about freight program enhancements, including updates to the Freight Data

Clearinghouse. It also will provide an opportunity for partners to provide input the state's freight program. It will be critical that this is seen as a regular (quarterly, annual) outreach program; and equally important, it must ensure that each meeting provide an action oriented agenda that maximizes the time of participants.

Action Items

- **Identify an initial list of statewide freight stakeholders/partners.** The Department should identify a list of partners that covers Districts, MPOs, regional committees/groups, and private sector representatives. This list should be seen as a work in progress, designed to identify a mailing list for ongoing outreach activities. At a minimum, it should include a core group consisting of freight contacts from each modal office, each district, and each MPO.

- **Develop and implement regional freight meetings.** Develop an approach to the meetings. This should include format, frequency, and an invitee contact database. Agendas for the initial meeting/set of meetings should be prepared. This should include an overview of Florida's freight transportation program (work completed to date) and a set of action items for discussion. Action items could include validation of the freight system summary, identification of needs, and an open forum to discuss continued development of Florida's freight transportation investment strategy.

- **Integrate freight into major transportation program initiatives.** Updates to the FTP, SIS, and other key programs should be identified and an effort made to piggyback or enhance freight considerations into the activities. A freight discussion item should be presented to partners, community representatives, and the general public during public involvement activities.

- **Consider development of a formalized freight transportation advisory committee (FTAC).** Florida has effectively made use of a private sector freight advisory committee in the past to guide major transportation program initiatives. After several regional meetings the Department should discuss and consider the development of a statewide FTAC that would be used annually to validate freight system investment decisions.

Coordinate with and monitor modal system plans

It is not the intention of the Freight Plan to replace or duplicate the work completed by the other modal offices. Each office is responsible for modal plan updates – these fed the development of the Freight Plan, which aspires to serve as a repository of Florida's freight system. As such, ongoing coordination with these internal partners is critical. The Freight Plan must be seen and accepted by others as a value-added product.

Action Items

- **Coordinate with and support modal plan development and updates.** Work with modal offices to provide support as appropriate to their updates. This may include outreach support to stakeholders as well as providing freight forecasts.

- **Incorporate modal plan data into the established Freight Plan .** Ensure that the freight program/freight plan incorporates changes and/or updates to modal system plans.

Monitor and participate in major transportation initiatives and regional visioning exercises, as appropriate

Florida continues to grow and expand. This results in major projects and initiatives that have the potential to impact freight mobility. For example, many regions are beginning to consider visioning exercises to help "figure out what they want to be when they grow up". Land use, development patterns, growth management, and transportation are major factors in these efforts. The Department should identify and participate in these initiatives, as appropriate, to promote freight access and mobility needs. Other examples include major transportation projects, like the development of a 1250 acre integrated logistics center in Lakeland, or the consideration of passenger rail service along the FEC Corridor in South Florida.

Action Items

- **Identify key initiatives that could impact freight mobility.** Work with state and regional partners to identify and monitor key developments.

- **Work with district staff to promote local involvement.** Discuss initiatives and possible scenarios for state and/or regional participation and implement an agreed upon approach.

- **Ensure that statewide freight plan goals and objectives are consistent with the regional vision and action plan.** Review project parameters and provide input promoting established state freight goals and objectives.

- **Work with partners and citizens to ensure the proposed regional visions and action plans are consistent with freight mobility needs.** Encourage transportation decisions that are made in the context of an integrated transportation, economic development, and land use vision that reflects freight transportation needs.

Coordinate with sister agencies to promote freight transportation

The state of Florida has several agencies that impact the transportation system. FDOT should work with DEP, OTTED, and DCA to promote a coordinated approach to freight transportation planning and programming that maximizes mobility, promotes economic prosperity, unites community plans and visions, and minimizes the impacts on Florida's environment.

Action Items

- **Identify key staff from each agency.** While support from leadership is critical, it also is important to identify and work with agency staff responsible for developing and implementing strategies.

- **Develop and ongoing dialog to support a coordinated approach.** Establish an agreed upon process for communication and coordination designed to share information and support each other's initiatives.