CAMBRIDGE SYSTEMATICS

Needs and Deficiencies Statement

Broward County ITS Intermodal Plan

technical memorandum

prepared for

Broward County Metropolitan Planning Organization

prepared by

Cambridge Systematics, Inc.

February 2003

technical memorandum

Needs and Deficiencies Statement

Broward County ITS Intermodal Plan

prepared for

Broward County Metropolitan Planning Organization

prepared by

Cambridge Systematics, Inc.
150 CambridgePark Drive, Suite 4000
Cambridge, Massachusetts 02140

February 2003

Table of Contents

List of Tables

List of Figures

Acronyms

AADT	Average Annual Daily Traffic
AIIS	Advanced Incident Information System
AIMS	Advanced Incident Management System
ATIS	Advanced Traveler Information System
ATMS	Advanced Traffic Management System
AVI	Automatic Vehicle Identification
AVL	Automatic Vehicle Locator
BCMPO	Broward County Metropolitan Planning Organization
CAD	Computer-aided Dispatching
CARS	Crash Analysis Reporting System
CCTV	Closed Circuit Television
CMS	Congestion Management System
CVIEW	Commercial Vehicle Information Exchange Window
CVISN	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
D4	Florida Department of Transportation, District 4
D6	Florida Department of Transportation, District 6
DBOM	Design, Build, Operate, and Maintain
DMS	Dynamic Message Sign
EMS	Emergency Medical Services
FDOT	Florida Department of Transportation
FEC	Florida East Coast (Railway)
FGMS	Freight and Goods Movement Study
FHP	Florida Highway Patrol
FIHS	Florida Interstate Highway System
FLL	Fort Lauderdale – Hollywood International Airport
FRA	Federal Railroad Administration
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HEFT	Homestead Extension of Florida's Turnpike
HOV	High Occupancy Vehicle
ICC	Interstate Commerce Commission
ICS	Intelligent Corridor System
ICTF	Intermodal Container Transfer Facility
ITS	Intelligent Transportation Systems
LOS	Level of Service
LPG	Liquid Propane Gas
MARS	Manpower, Assets, and Resources System
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization

Acronyms
(continued)

OCTV	Open Circuit Television
PD&E	Project Development and Environment
PMT	Person-Miles Traveled
RCI	Roadway Characteristics Inventory
SFRC	South Florida Rail Corridor
SMS	Safety Management System
SPC	Sustainable Practical Capacity
SRS	SmartRoute Systems, Inc.
TAC	Technical Advisory Committee
TEU	Twenty-foot Equivalent Unit
TIP	Transportation Improvement Plan
TMC	Traffic Management Center
TMT	Truck-Miles Traveled
TT	Travel Time
VMT	Vehicle-Miles Traveled
WIM	Weigh-in-Motion

1.0 Introduction

The Broward County Metropolitan Planning Organization (BCMPO) recently completed the Freight and Goods Movement Study (FGMS), a project that defines the framework of a regional freight plan and program for Broward County. As an additional component, the BCMPO, with support from the Florida Department of Transportation (FDOT) District 4, initiated development of the Intelligent Transportation Systems (ITS) Intermodal Plan. This is driven in part by the need for an integrated ITS intermodal program for the County, and in part by the homeland security issues that impact key freight generators, such as ports, airports and railroad terminals.

To date, Broward County has undertaken several significant freight and ITS initiatives, but these have been individual efforts to address specific topics or areas. The FGMS is the first integrated freight planning activity for the County. Building on the results of the FGMS to include a stand-alone ITS freight program will provide a more comprehensive and complete freight program; a foundation for an overall coordinated ITS intermodal program for Broward County; and an opportunity for coordination with ongoing security plans at Port Everglades.

The first task in the ITS Intermodal Plan project was the organization of a project kickoff meeting that provided an overview of the project to key stakeholders. The kickoff meeting was held in April 2002 in conjunction with a presentation to the Technical Advisory Committee (TAC) on the results of the FGMS. Activities were also coordinated with parties involved in the security upgrade project taking place at Port Everglades. In fact, a separate meeting was held to discuss the new port security program under development by Port Everglades. The purpose of this meeting was to provide input from the county and FDOT District 4 on the ITS infrastructure being deployed by Port Everglades to ensure compatibility with future ITS traffic management applications. Specific recommendations were provided to Port Everglades from the BCMPO, which is provided in Appendix A.

In parallel with the coordination efforts under Task 1, the second task focused on obtaining available data in order to assess freight issues, deficiencies and needs. Task 2 required a direct outreach approach, via personal interviews with freight and ITS stakeholders in the region as well as a comprehensive literature search.

The objectives of the Data Collection and Needs Assessment task are to gather all available data related to freight flows and ITS, and identify the key transportation mobility, safety, and security issues for freight movements. The approach consisted of three major activities. The first involved the identification and collection of all available data via a comprehensive literature review and interviews with regional ITS and freight stakeholders. The second major activity consisted of an analysis of all the collected data to construct a list of regional freight transportation issues. The third activity involved the

identification of future data needs, and the development of a comprehensive needs and deficiencies statement.

Although this project is focused on freight and ITS in Broward County, the BCMPO stressed the importance of including its neighboring two counties, Palm Beach and Miami-Dade. The inclusion of the entire tri-county region (Broward, Palm Beach, and Miami-Dade counties) enables a more comprehensive approach for resolving intermodal issues, particularly since freight problems characteristically involve long-distance trips across county borders. In addition, integrated and coordinated ITS deployments often impact an entire region. Given the large number of ITS projects currently in development, coordination and integration will be key attributes of southeastern Florida's transportation system.

This Technical Memorandum is a working document that summarizes all the data collected and the issues identified through the data collection process under Task 2 and presents a needs and deficiencies statement for consideration by the BCMPO. The Memorandum will serve as the basis for Task 3, which will work to address the issues through the development of possible ITS solutions. The literature review and stakeholder input provided essential knowledge about freight-related issues in the region along with a "wish list" of the stakeholders' recommendations for improvements. The ITS Intermodal Plan will balance conflicting needs and consider the important stakeholder insights and ideas summarized in this document.

2.0 Key Findings

The data collection and analysis conducted as part of the first two tasks in the Broward County ITS Intermodal Plan was used to develop in a list of critical needs, challenges and deficiencies in the Broward County region. Detailed summaries of these findings are provided in subsequent sections of this Technical Memorandum. Throughout the stakeholder outreach and literature search activities, the following recurring overall themes emerged. The findings outlined in this document will be used to develop conceptual ITS improvement alternatives for future tasks.

In comparison to other parts of the country, Florida has a relatively young transportation infrastructure. However, the tri-county region is experiencing rapid growth, causing congestion on key roadways. The region's roadway network includes significant capacity of north-south facilities, with I-95 and Florida's Turnpike. However, there is very little opportunity for expansion as future growth can essentially only occur in Palm Beach County and further northward. An expansion of this type would likely increase northbound truck traffic in the tri-county region. East-west traffic poses a different problem as freeway capacity is very limited, forcing truck traffic to use arterials. In addition there are major load centers located throughout the tri-county region that generate truck traffic on the roadway network. They include three major sea ports, three major international airports, and several rail yards.

2.1 Significant Congestion in Key Freight Corridors

ITS strategies such as providing more reliable truck-oriented travel time information, implementing dedicated truck only lanes and times on key freight highway segments, and optimizing traffic signal timings on key freight arterials will be investigated to mitigate the region's congestion problems.

On June 19, 2002, the Palm Beach Post reported that the southeast Florida region (Miami-Dade, Broward, and Palm Beach counties) has the second fastest congestion growth rate in the United States, second to Raleigh-Durham, North Carolina. Stakeholders agreed that all major highways in the region are congested. The region also lacks east-west freeways, causing an over-reliance on east-west arterials. Peak hours are spreading beyond the traditional AM and PM periods. This problem is compounded by the fact that these major freeways attract a wide array of users including tourists that are typically unfamiliar with the area, regular commuter traffic and heavy trucks. Expected population growth and increased freight volumes will further strain the transportation system. The following list provides examples of specific roadways with mobility and safety concerns identified by the data collection activities:

- I-95;
- U.S. 441;
- I-595;
- I-75;
- U.S. 27;
- Florida's Turnpike;
- Hallandale Beach Boulevard;
- Hollywood Boulevard;
- Davie Boulevard;
- Broward Boulevard;
- Oakland Park Boulevard;
- Commercial Boulevard;
- Cypress Creek Road;
- Atlantic Boulevard; and
- Sample Road.

In addition, the considerable under use of mass transit by area residents exacerbates congestion on the region's roadways. The development and enhancement of transit operations would provide an opportunity to improve regional mobility. The tri-county region, and Broward in particular, is working diligently to expand and improve the transit system, which will contribute significantly to the region's future level of freight mobility.

2.2 Limited Access for Freight Movements

ITS strategies will be considered as part of Task 3 to help reduce access problems. For example, queue detection equipment and flashing warning signs would be helpful to mitigate recent queuing problems and other truck safety issues at the terminus of I-595 at Eller Drive into Port Everglades. In addition to dynamic message signs (DMS) and other common ITS devices, ITS could be considered to improve the limited enforcement capabilities for the region's frequently violated HOV-lane requirements as well as truck loading/ unloading zones.

The region boasts three sea ports, two major rail corridors (South Florida Rail Corridor [SFRC] and FEC), three major airports and four general service airports providing a fine network for moving freight. Although access in general is a regional advantage in southeast Florida, the following inadequacies were perceived by many stakeholders.

For example, primary access to and from Port Everglades is provided by Eller Drive, which begins at the terminus of I-595 near the Port. The geometrics as I-595 ends and Eller Drive begins are not amenable to truck operations, as there are several tight turns, low overpasses, and stop lights that hinder freight and other traffic entering the Port. The location also poses a major safety concern, particularly for trucks that do not normally operate in the area. FDOT's Eller Drive improvement project is underway to correct this problem, however it will be at least six years before the infrastructure work is complete. Temporary security gates along Eller Drive and Spangler Boulevard installed after September 11, 2001 exacerbate the conditions. While necessary to ensure the safety and security of Port facilities, the checkpoints often cause long queues for trucks and other vehicles, at times resulting in backups onto I-595.

Another issue with access at Port Everglades involves airport access. The highway infrastructure provides fairly direct access from FLL to Port Everglades. However, the reverse is not true. Westbound access from Port Everglades to FLL Airport is indirect, requiring vehicles to traverse local and industrial roads. Similarly, stakeholders repeatedly cited poor access from air cargo terminals to I-595, I-95, and U.S. 1.

Deficient signage was also frequently mentioned as a concern for access. There are few directional signs directing truck and other traffic in and out of Port Everglades, which often impedes the smooth flow of traffic in the Port area. This is a particular problem for truckers who are visiting port facilities for the first time and for visitors/cruise passengers who are departing from the Port's cruise facilities. Stakeholders cited a similar problem at FLL Airport.

District 4 estimates that a significant percentage of all truck traffic originating in Broward County stays within the region, exacerbating congestion on local highways and other roads. Most truck traffic is comprised of local deliveries, not long-distance freight trips. Access for trucks making downtown deliveries is complicated by inadequate loading/ unloading zones and other restrictions such as low-hanging trees.

2.3 Balancing Freight Operations and Security

Technologies for improved security will be a major component of Port Everglades new security program. A new Security Operations Center will be the nerve center of this initiative, and fiber optic communications will connect camera monitoring and other security devices to the Center. Port Everglades is collaborating with the BCMPO and FDOT District 4 in order to coordinate ITS deployments that will benefit both the Port and surrounding roadways. Operational technologies, including DMS, detectors and other traffic management devices will be investigated as alternatives to help balance required security constraints with the smooth flow of freight traffic into, out of, and within the port.

The events of September 11, 2001 had a profound impact on freight operations nationwide. The challenge faced by freight stakeholders in the region is balancing the security needs with the need for fast, efficient freight movements.

The new security requirements at Port Everglades have necessitated the closing of one entrance to eliminate non-port through traffic and the installation of security gates and checkpoints at the remaining two entrances, closing the port to unauthorized traffic. The new gates, while increasing safety and security within the port complex, reduce the overall efficiency of Port movements and cause bottlenecks along the main entrance at Eller Drive.

In addition, new security regulations at the Port only allow one truck dockside to any cruise ship at any one time. Large cruise ships require deliveries of all sorts of stores, such as food, drink, laundry, and other necessities, prior to departing on multi-day cruises. This causes large queues of delivery trucks waiting to unload, coinciding with passengers arriving for cruises. Many cruise passengers arrive by car and share the same entrance to the port complex with freight traffic. There is a further need to prevent cruise ship passengers from entering secure parts of the port, such as fuel storage tank areas.

2.4 Freight-Specific Incident Management Issues

Though most of the incident management issues are institutional in nature, they were repeatedly mentioned by stakeholders as concerns that could possibly be mitigated via ITS-based communication strategies. For example, the new Traffic Operations Center for Broward County can facilitate coordination among regional incident management stakeholders.

The state of Florida ranks third in the United States for the number of fatal truck crashes. Truck crashes have a significant impact on the transportation system and on freight operations in the region.

There are two issues surrounding incident management on Florida's Turnpike. First, the salvage equipment operated by the Turnpike is not sufficient to move heavy trucks and trailers. As a result, truck crashes are more difficult to clear than automobile crashes and cause longer delays. A high number of secondary incidents likely result from the extended clearance times. The other issue involves the liability of the incident on-scene leader when attempting to move heavy trucks and equipment. On-scene commanders are often hesitant to clear truck accidents for fear that they would be liable for any cargo damage or loss during that operation. Currently, on-scene commanders in Florida are not absolved of responsibility for such moves, as they are in states such as Minnesota and Washington.

Incident response is also an issue on the rail corridors in the region. There are formal emergency response protocols for train incidents on the South Florida Rail Corridor (SFRC). However, incidents on SFRC right-of-way, particularly fatalities, can take as long as two to three hours to clear. To address incident management issues, Tri-Rail is working with various County Sheriff's departments.

Emergency or HAZMAT incidents are typically responded to by a variety of agencies, including county and local police, fire, rescue, and others. A major issue facing the

Emergency Management Department is coordinating incident command responsibilities among these agencies. In most cases, there are jurisdictional overlaps, but in some cases, there are gaps in the system that cause confusion as to what agency is responsible for response. In fact, there are several segments of I-95 and Turnpike rights-of-way that are not incorporated into the jurisdictions they traverse. Incidents occurring on these segments can fall between the cracks of jurisdictional responsibility. Coordination issues among the EMS units can also be a problem.

2.5 Need for Improved Regional Communications and Coordination

Specific ITS strategies will be considered as part of Task 3 to address communications and coordination needs. For example, the collection and distribution of reliable and accurate travel time data would add value to both commercial vehicle operators as well as other motorists. Such data would provide the opportunity to make route choices based on real-time information. Given that this useful information would be disseminated as part of an existing ITS program, such as the SunGuide Advanced Traveler Information System (ATIS), the benefits of ITS would become more apparent and quantifiable. Awareness programs and outreach activities would also be effective.

The southeast Florida region is divided among several large MPOs (Miami-Dade, Broward, and Palm Beach) and three FDOT districts (4, 6, and the Turnpike). As neither freight nor passengers acknowledge jurisdictional boundaries during their trips, transportation planning in the region, including ITS deployments, should occur at a regional level. However, ITS and freight priorities vary considerably among the six agencies, making regional planning difficult. Stakeholders also perceived there is little interaction between FDOT Central Office's statewide ITS-Commercial Vehicle Operators (CVO) program and district ITS representatives. Florida is a participant in the Commercial Vehicle Information Systems and Networks (CVISN) program, which was designed to facilitate the operation of trucks, both roadside and deskside, while improving enforcement efficiencies. This is critical because there should be compatibility between what southeast Florida undertakes as freight ITS projects and the State's ITS-CVO program. In addition, both public and private sector stakeholders expressed concern that the roles and responsibilities of the local agencies are unclear with regard to ITS and freight planning.

Correspondingly, the private sector has a vastly different perception of long-range planning in comparison to the public sector. Carriers typically see five years as a long-range planning period, whereas the government is required to generate the "short-term" five-year Transportation Improvement Plan (TIP) as well as a 20-year outlook. Although private sector freight stakeholders are directly impacted by the government's long-range planning activities and decisions, the public sector has trouble persuading the private sector to participate. By reaching out to the private sector freight community, planners will be better

able to understand the needs and concerns of freight carriers in the region as well as determine the ways in which freight movements would benefit from ITS deployments.

Many executive level decision-makers in the region do not completely understand the benefits of investment in ITS, as ITS knowledge and specific deployments vary within southeast Florida. This lack of awareness and support hinders ITS deployments in the region. Similarly, decision-makers and the general public lack understanding of the importance of freight in their daily lives. Rather, many motorists perceive trucks as dangerous inconveniences that interfere with everyday travel.

2.6 Infrastructure Limitations

ITS strategies are an effective means to improve traffic flow and increase capacity without costly and timely infrastructure projects. As mentioned previously, such ITS alternatives could include the provision of reliable truck-oriented travel time information, dedicated truck only lanes and times on key freight highway segments, and optimized traffic signal timings on key freight arterials.

Roadway and railroad transportation infrastructure characteristics impede the efficient flow of freight and goods in the region. For example, there is a general lack of east-west freight shipment infrastructure. There low number of limited access highways in Broward County force trucks to maneuver along signalized roadways for much of their trips. High volumes of trucks on east-west roadways cause conflicts with passenger cars and strain the roadway infrastructure.

In addition, there are a limited number of truck service facilities within Broward County for trucks to consolidate or transfer loads. This is a particular problem for trucks pulling tandem trailers on Florida's Turnpike. These tandem trailers are forced to use rest areas, truck stops, or other facilities as de facto staging areas. Many trucks leave the Turnpike altogether and park in local neighborhoods, angering local residents.

Rail also experiences infrastructure-related limitations. The SFRC is used by Tri-Rail, Amtrak and CSX, constraining schedules for both passenger and freight services. Current initiatives are underway to double-track the entire corridor, which will help mitigate the problem. However, the numerous at-grade rail crossings in the region are another item of much concern for stakeholders. As these crossings are conflict points between motorists and trains, they therefore pose a serious safety concern. With the expansion of Tri-Rail to a 20-minnute service frequency by 2005, and future growth in FEC and CSX's freight traffic, the need to reduce or mitigate grade crossing impacts will increase.

3.0 Stakeholder Interview Results

Stakeholder participation is a critical data collection source, providing first-hand perceptions of strengths and weaknesses in the regional transportation system. The interviews were conducted with the region's ITS and freight stakeholders to collect information on stakeholder roles and responsibilities; learn about the region's current and planned ITS initiatives; and gain insight into the system's needs and deficiencies. The interviews also provided an opportunity for the public and private stakeholders to identify key transportation mobility, safety and security issues for freight movements that can potentially be mitigated through the use of ITS technologies.

Cambridge Systematics worked with the BCMPO and the TAC from the FGMS project to identify a list of appropriate interviewees for this initiative. This list of potential interviewees included public transportation planning agencies as well as private industry representatives. A total of 17 agency interviews were conducted with input from 33 individuals. Stakeholders from the following organizations were interviewed:

- FDOT, District 6 Traffic Operations;
- FDOT, District 6 SunGuide Control Center;
- FDOT, Turnpike District;
- FDOT, District 4 Office of Planning and Environmental Management;
- FDOT, District 4 Office of Modal Development;
- FDOT, District 4 Traffic Operations;
- Tri-County Commuter Rail Authority (Tri-Rail);
- Broward County MPO;
- Broward County Commission, Traffic Engineering Division;
- Broward County Commission, Port Everglades Department, Construction Management and Planning Division;
- Miami-Dade MPO;
- Florida East Coast Railway;
- Broward County Commission, Port Everglades Department, Operations Division;

- Broward County Aviation Department, Fort Lauderdale – Hollywood International Airport;
- Palm Beach MPO;
- Broward County Department of Safety and Emergency Services; and
- FDOT, Office of the South Florida Rail Corridor Manager.

The Interview Guide in Appendix B was developed to keep discussions on track and to ensure fundamental topics were covered. Detailed summaries of each interview are provided in Appendix C.

The following sections outline the region's needs and deficiencies from the stakeholders' perspectives. Key responses from the stakeholder interviews have been categorized into two principal sections: Regional Transportation System Deficiencies and Recommendations for Improvements.

Stakeholders also provided a list of the current and planned ITS and freight-related projects in the region. This list is provided in Appendix D.

3.1 Regional Transportation System Deficiencies

This section outlines the valuable insights provided by stakeholders into the issues, problems and deficiencies faced in the tri-county region. Discussions during the interviews provided a unique opportunity for participants to voice their concerns. They contributed facts as well as perceptions of the issues and problems affecting freight movements. Some of these issues only affect local freight movements, and other issues have broader, regional implications and can often hinder regional transportation efficiency. These issues have been grouped into five general categories:

1. Infrastructure needs address the physical condition of the region's transportation system;
2. Operational needs address the existing capacity and level of service provided by the region's transportation network;
3. Regulatory/policy issues address governmental regulations, incentives, or disincentives that affect freight movements on the region's existing transportation network;

4. Institutional issues address the mandate and resource constraints that prevent transportation planning agencies from conducting effective freight planning on a regional level; and

5. Socioeconomic/Environmental issues address impacts on land uses that border freight facilities, such as noise pollution.

General Trends

Some basic trends were revealed throughout the data collection process that are not specific to any of the above categories. These trends are general in nature and are of great concern to the region's stakeholders:

- **Increasing Freight Volume**. International trade is expected to double over next 20 years, which will have a major impact on Port Everglades and the surrounding transportation system. Currently, the Port is operating under capacity, handling approximately 1,500 petroleum trucks per day in addition to significant container (truck intermodal) traffic. The port has 150 acres available for expansion and will need the extra space to accommodate the anticipated increase in container traffic.

- **Aging Population.** Approximately 25 to 30 percent of Palm Beach County residents exceed 65 years of age. Statistics are likely similar in other parts of the region. An aging population presents unique challenges to transportation planning agencies, such as long street crossing times and wheelchair accessibility.

- **High Number of Incidents.** The state of Florida has a high occurrence of truck crashes and other incidents on its highway system. These incidents exacerbate existing congestion on area roadways. In addition, the Palm Beach MPO reported they have the highest number of bicycle-related fatalities in the United States, a statistic they are working to improve.

Infrastructure Needs

- **Lack of Capacity.** There is little land available for capacity improvements to the region's highway system. The major highway facilities in the district operate at or above their design capacity, particularly during the morning and afternoon peak periods, hindering truck movements in the area. East-west traffic facilities are a particular problem, as most of the major transportation infrastructure in the region caters to north-south movements.

- **Drawbridges along the Intercoastal Waterway.** Drawbridges along the Intercoastal Waterway cause delays and queues for both passenger and freight traffic, particularly during peak season.

- **At-grade Railroad Crossings.** Similarly, delays are caused by the many at-grade railroad crossings in the region (100 of such crossings in Palm Beach County alone). Motorists waiting for lengthy freight trains often spill back to other intersections. At-grade crossings are a problem for the railroads as well as the traveling public. The crossings are inefficient for the railroad, as trains must slow down in order to pass over these crossings. In an attempt to minimize the disruption caused by at-grade crossings, the FEC adjusts train lengths and runs smaller trains more frequently. Some communities have regulations that limit wait times at crossings to five minutes, causing the FEC to run even shorter trains. As these crossings are conflict points between motorists and trains, they therefore pose a serious safety concern.

- **East-west Connectivity.** Southeast Florida's roadway and rail infrastructure is primarily north-south-oriented, serving the need for passengers and goods to move along the natural geography of the State. East-west connectivity was repetitively mentioned as a significant deficiency regionwide.

- **Intermodal Access.** The region houses three sea ports, two major rail corridors (SFRC and FEC), three major airports and four general service airports. Although access in general is an advantage for southeast Florida, the following inadequacies were perceived by the stakeholders.

  - **Port Everglades Access.** Access to and from Port Everglades is provided by Eller Drive and Spangler Boulevard. Eller Drive is the main entrance and begins at the terminus of I-595 near the Port. The geometrics as I-595 ends and Eller Drive begins are not amenable to truck operations, as there are several tight turns, low overpasses, and stop lights that not only hinder freight and other traffic entering the port, but also cause a major safety risk, particularly for trucks who do not normally operate in the area. The temporary security gates along Eller Drive and Spangler Boulevard installed after September 11, 2001, exacerbate the problem. These security checkpoints, while necessary to ensure the safety and security of port facilities, often cause long queues for trucks and other vehicles entering the port. FDOT's Eller Drive improvement project is underway to correct this problem. However, since the project involves major infrastructure work, it will be years before the problem is resolved.

  - **Poor Port-side Freight Access to Cruise Ships.** There is also a considerable access problem for freight trucks delivering stores, goods, and other items to the cruise ships at Port Everglades, as new security policies only allow pier-side parking for one truck at a time. As a result, delivery trucks must await their turn for delivery.

  - **Lack of Connectivity between FLL Airport and the Sea Port.** Port Everglades has good access for travelers arriving at the port from the airport, but not vice versa, as trucks, tour buses and other vehicles are forced to traverse local and industrial roads to gain access from the Port to the airport.

  - **Poor Access from FLL Airport to U.S. 1.** Similar to Port Everglades, there is poor access from the airport's air cargo area to U.S. 1.

  - **Port of Palm Beach Access.** The main access road to the Port is not directly connected to the Interstate, thereby forcing heavy trucks to access the Port via local streets. The Port and the Palm Beach MPO would like to see a direct interchange with Florida's Turnpike, but area residents are resistant.
  - **Port of Miami Access.** The Port of Miami, one of the State's 14 deepwater seaports and a major handler of containerized freight traffic, must be accessed via a bridge from downtown Miami. As a result, trucks must traverse already crowded downtown streets, worsening congestion in this area.
  - **Barrier Islands Access.** There is a burgeoning retiree population along the Barrier Islands in the region. Evacuations (by EMS) from these areas are challenging as there is limited access. The islands do not have a hospital or Fire Rescue. If there are drawbridge problems, it's difficult to respond to emergencies.

- **Roadways with Freight and Goods Movement Access Deficiencies.** Stakeholders provided the following list of deficient roadways in terms of access for freight and goods movement:
  - I-95;
  - U.S. 27;
  - U.S. 41 (for tractors, trucks and farms);
  - 17th Street in Broward County;
  - U.S. 1 (poor access for air cargo to U.S. 1 and from Port Everglades to U.S. 1);
  - I-395;
  - NW 36/41 Street;
  - SR 836;
  - NW 87 Avenue; and
  - Florida's Turnpike (due to its lack of adequate rest stops for truckers).

- **Highway Section Designs are Marginal.** Weaving sections at ramps on highways are marginal. Long queue lengths are causing most weaving sections to fail from an operational perspective. Traffic entering and exiting congested freeways (particularly I-95) is a major concern. District 6 is implementing 22 ramp metering locations along I-95 to help mitigate this problem.

- **Lack of Staging Areas for Trucks.** There are few areas within the Broward County for trucks to consolidate or transfer loads. This is a particular problem for trucks pulling tandem trailers along Florida's Turnpike, which often must use rest areas, truck stops, or other facilities as de facto staging areas. As a result, many trucks leave the Turnpike altogether and park in local neighborhoods, angering residents.

- **Emergency Response on Route A1A.** A1A is a narrow, two-lane road in many places that floods easily, presenting a significant challenge to emergency vehicles responding to an incident.

- **Inadequate Drainage**. Some of Broward County's roadways are inadequately drained, resulting in flooding and decreasing the number of alternate routes available to travelers.

- **Aging Rail Signal System.** Tri-Rail's existing signal system is aging and can be affected by severe weather, particularly thunderstorms. There is funding allocated to upgrade the signal system as part of the double-tracking project.

Operational Needs

- **Key Corridors Experience Significant Highway Congestion.** On June 19, 2002, the Palm Beach Post reported that the southeast Florida region (Miami-Dade, Broward, and Palm Beach counties) has the second fastest congestion growth rate in the United States (second to Raleigh-Durham, North Carolina). This problem is compounded by the fact the all major highways in the region are congested, particularly in the east-west directions. Stakeholders agreed that peak hours are spreading beyond the traditional a.m. and p.m. periods. Exacerbating the problem is that these major freeways attract a wide array of users including tourists that are typically unfamiliar with the area, regular commuter traffic and heavy trucks. Stakeholders shared the same perceptions of the problem areas related to freight movement and congestion. The following specific roadways were cited as having very high congestion:

  - I-95 (regionwide);
  - I-595 (which serves both FLL and Port Everglades);
  - I-75 (north-south portion in West Broward);
  - Major east-west roadways including Commercial Boulevard, Oakland Park Boulevard, Sunrise Boulevard, Broward Boulevard and Pines Boulevard (U.S. 27 east to University Drive);
  - Major arterials on the west side of Broward County (such as University Drive);
  - Palmetto Expressway (SR 826);
  - Dolphin Expressway (SR 836);
  - HEFT in Dade; and
  - Local streets in Downtown Miami.

- **Cruise Passenger Traffic at Port Everglades**. Port Everglades is one of the largest cruise terminals in Florida and in the United States, handling approximately 2.7 million cruise passengers (single and multi-day) in 1999. Since September 11, 2001, more and more cruise passengers are arriving by car, not by air. These cruise passengers share the same entrance to the port complex with freight traffic and can often cause bottlenecks as they circulate through the port to the cruise ship terminals.

- **Cruise Passenger Buses at FLL Airport**. Many of the cruise passengers arrive through FLL where large buses take them to the cruise terminal at Port Everglades. These buses, which are chartered by the individual cruise lines, often clog the roadways leading in and out of FLL and make it difficult for other travelers to access the airport. Since there is little room to increase the capacity of the roadways leading into FLL without affecting parking garages or terminals, FLL is working with the cruise lines to develop operational strategies to help smooth the flow of bus traffic in and out of the airport complex. One option being considered is to consolidate bus operations at an off-site location.

- **South Florida Rail Corridor (SFRC)**. The SFRC was purchased by FDOT, and Tri-Rail, Amtrak and CSX all operate on the line. An Agreement was signed granting priority to freight trains during off-peak travel times, and to Tri-Rail during the peak periods. However, schedule conflicts are caused by delayed freight trains that coincide with the passenger peak hour on the corridor, and hours of work regulations, which sometimes force CSX to stop trains on the SFRC when crews approach daily hours of service limits. Additionally, there are six Amtrak trains per day on the SFRC, three northbound trains that are generally on time, and three southbound trains that are typically running two hours late. To address some of these issues, Tri-Rail is currently double-tracking the entire corridor (50 percent complete – scheduled to be complete in 2005) and may take over dispatching responsibilities from CSX in 2004.

- **Lack of Use of On-dock Rail.** The use of on-dock rail would relieve some heavy truck traffic in and around the port. However, many seaports in the region have on-dock rail facilities that are significantly underutilized. This problem is not unique to the southeast Florida region, as most other seaports in the United States share the same obstacle. This may be the result of commodity mix or other constraints which may not lend itself to such on-dock operations. In addition, there currently are no on-dock facilities for intermodal containerized cargo. Port Everglades' 2020 Vision calls for the development of a near-dock intermodal ramp to address this concern.

- **Local Deliveries Clog Downtown Streets.** Stakeholders in Broward and Miami-Dade Counties shared this concern. District 4 estimates that a significant percentage of all truck traffic originating within Broward County stays within the region, exacerbating congestion on local highways and other roads. Most of the truck traffic is comprised of local deliveries, not long-distance freight trips. Downtown Miami has similar problems, where there are many small trucks making deliveries or pick-ups on the one-way streets and narrow corridors in the area. These trucks are often forced to double-park or take wide turns, resulting in the obstruction of narrow roadways during peak periods. Moreover, very few of the downtown buildings included a dedicated truck loading and unloading apron.

- **Poor Signage.** There are few warning or directional signs directing truck and other traffic in and out of Port Everglades, which often impedes the smooth flow of traffic in the Port area. This is a particular problem for truckers who are visiting port facilities for the first time and for visitors/cruise passengers who are departing from the port's cruise facilities. Stakeholders cited a similar problem at FLL Airport.

- **Cruise Passengers and Commercial Vehicle Conflicts at Port Everglades.** Concern was expressed regarding the conflict between cars containing cruise ship passengers and commercial vehicle operators at entrances to and within the circulating roadways at Port Everglades.

- **Balancing Freight Efficiency and Security**. The events of September 11, 2001 had a profound impact on freight operations nationwide. The challenge faced by freight stakeholders in the region is balancing the security needs with the need for fast, efficient freight movements.

  - **Port Everglades Security Gates.** Prior to September 11, the Port was an open facility, with no security checkpoints. Since September 11, the Port has constructed temporary security checkpoints at all access points, and has begun planning for permanent checkpoints at these locations. The new gates, while increasing safety and security within the port complex, will likely reduce the overall efficiency of port movements and cause bottlenecks along the main port entrances on Eller Drive and Spangler Boulevard.
  - **Difficulty Securing Rail Property.** Securing rail property is close to impossible due to at-grade crossings that must be opened and closed regularly. FDOT is looking into tighter security equipment for its rail yards, however more funding is needed.
  - **Cruise Passenger Traffic**. Many cruise passengers arrive by car to Port Everglades. These motorists share the same entrance to the port complex with freight traffic. There is a need to prevent cruise ship passengers from entering secure parts of the port, such as fuel storage tank areas.
  - **New Security Requirements Relating to Cruise Ship Stores Loading**. Large cruise ships require deliveries of all sorts of stores, such as food, drink, laundry, and other necessities, prior to departing on multi-day cruises. New security regulations instituted after September 11, 2001 only allow one truck dockside at any time. This causes large queues of delivery trucks waiting to unload. Currently these trucks queue along an infrequently used road and vacant terminal, but as Port Everglades expands, new loading/unloading strategies may need to be developed. In addition, these deliveries often coincide with passengers arriving for cruises by bus or automobile resulting in severe traffic congestion until the ship gets underway.
  - **Fuel Tank Farms at Port Everglades.** The security of Port Everglades' tank farms is a major issue, as these tanks are relatively unprotected, yet carry enough petroleum to supply a 13-county area.

Regulatory/Policy Issues

- **Low Utilization of Public Transit.** Many interviewees emphasized the need to provide incentives to encourage public transit use. The low-population density in areas surrounding the rail corridor worsens the problem. However, recently there has been a strong push by FDOT to address this issue.

- **Decentralized Development and Zoning.** Some stakeholders in District 4 expressed concern that there is too much access caused by decentralized development and zoning. Vehicles coming in and out of the multitude of access points for strip malls, retail stores, and other auto-dependent developments often impede traffic flow on local streets and arterials.

Institutional Issues

- **Incident Response and Management for Heavy Trucks**. There are two issues surrounding incident management on Florida's Turnpike as it relates to truck movements. First, the salvage equipment operated by the Turnpike is not sufficient to move heavy trucks and trailers. As a result, truck crashes are more difficult to clear than automobile crashes and cause longer delays. A high number of secondary incidents likely result from the extended clearance times. The second issue involves the liability of the incident on-scene leader when attempting to move heavy trucks and equipment. On-scene commanders are often hesitant to clear truck accidents for fear that they would be liable for any cargo damage or loss during that operation. Currently, on-scene commanders in Florida are not absolved of responsibility for such moves, as they are in states such as Minnesota and Washington.

- **Florida Highway Patrol (FHP) is Understaffed.** FHP is one of the key players in incident management on the region's roadways and is significantly understaffed.

- **Tri-Rail Incident Response Time**. There are formal emergency response protocols for train incidents. However, there is usually some confusion when a fatality occurs. Incidents on Tri-Rail right-of-way, particularly fatalities, can take as long as two to three hours to clear. This can have serious implications for on-time performance and, hence, ridership. To address incident management issues, Tri-Rail is working with the various County Sheriff's departments.

- **Multi-jurisdictional Response**. Emergency or HAZMAT incidents are typically responded to by a variety of agencies, including county and local police, fire, rescue, and others. A major issue facing the Emergency Management Department is coordinating incident command responsibilities among these agencies. In most cases, there are jurisdictional overlaps, but in some cases, there are gaps in the system that cause confusion as to which agency is responsible for response. In fact, there are several segments of I-95 and Turnpike right-of-way that are not incorporated into the jurisdictions they traverse. Incidents occurring on these segments can fall between the cracks of jurisdictional responsibility.

- **Response to Incidents Involving Hazardous Materials.** Broward Emergency Management Department coordinates planned hazardous material movements through its HAZMAT response unit. During planned HAZMAT movements, such as shipments of spent nuclear fuel, all actions are coordinated by this unit. During unplanned incidents or movements involving hazardous materials, the responding EMS coordinates

actions. EMS units in the region can be territorial and sometimes only grudgingly cooperate with the Broward Emergency Management Department.

- **Lack of a Defined Long-term Strategy.** The state of Florida lacks a long-term goal or strategy to improve the mobility of passengers and goods.

- **Lack of Freight Planning Data.** Freight planning is hindered by a lack of disaggregate, accurate data describing truck movements at the local level. Freight data is particularly hard to come by at the local level, as much of the data are proprietary and it is often difficult to collect sufficient data to ensure statistical validity.

- **Lack of an Integrated Crash Database**. Cities, counties, and the State all collect and maintain separate crash data, though there is little coordination among the three systems. As a result, it is difficult to obtain and analyze crash data in order to determine dangerous intersections and corridors. This is a particular problem on new roads built by developers, which often do not appear in any of the three crash databases.

- **Downsizing Agency Staff.** FDOT has downsized by about 25 percent in the last five years. Conversely, the volume of work has risen in the same period, resulting in an increasing workload for a decreasing workforce. The downsizing has limited the number of in-house experts residing at FDOT, particularly in ITS, resulting in a stronger dependence on outside consultants.

- **Funding.** Scarce transportation funding is a common barrier to all types of transportation improvement projects. The lack of dedicated funding for transit can also pose a problem, as other transportation modes compete for the same funding resources.

- **Need for a Freight and Goods Movement "Champion" in the Region.** A "champion" would help emphasize the importance of freight and goods movement and encourage tolerance of and support for the industry. Currently, freight and goods movement is not considered a priority in the transportation planning process. Executive level decision-makers and the traveling public perceive freight as an obstruction to personal mobility, or as a source of danger, noise, air, or visual pollution.

- **Land Use Planning.** FDOT has no control over the local governments' land use plans nor the approval of development, which is the driving force behind transportation facility demands and congestion.

- **State Tax Structure**. Florida does not have a state income tax, so the State is dependent on property tax for its income. This, combined with the rather loose zoning structure in many counties in the State, results in decentralized development, such as strip malls. As this development pattern cannot be easily served by transit, Floridians are dependent on the automobile for most day-to-day activities.

- **Dissimilar Priorities for Public and Private Freight Stakeholders.** Public stakeholders perceive that freight and goods is a private industry that does not want government intervention.

- **DOT Emphasis on Urban Redevelopment.** In the last several years, FDOT has expanded its mission to include urban redevelopment projects, leaving less money for transportation system capacity improvements.

- **No Use of Design, Build, Operate, and Maintain (DBOM) Contracts for ITS Projects.** FDOT Central Office ITS staff does not administer DBOM contracts, an increasingly popular method used to deploy ITS systems at the regional level.

- **Lack of Private Sector Involvement.** Incentives to encourage private stakeholder participation are needed. The private sector has a vastly different perception of long-range planning times in comparison to the public sector. Carriers typically see five years as a long-range planning period, whereas the government is required to follow the "short-term" five-year Transportation Improvement Plan (TIP). Although private sector freight stakeholders are directly impacted by the government's long-range planning activities and decisions, the public sector has trouble persuading the private sector to participate. By reaching out to the private sector freight community, planners will be better able to understand the needs and concerns of freight carriers in the region as well as determine the ways in which freight movements would benefit from ITS deployments.

- **Need for Increased Interagency Coordination.** The South Florida Advanced Traveler Information System (ATIS) Steering Committee meetings have become a forum for all ITS projects in the tri-county region and boast a fair amount of stakeholder input from around the region. However, the coordination level has dropped off in the operational stages, after securing support for the Memorandum of Agreement. In terms of rail, there are also many stakeholders involved in using the rail corridor. The Federal Railroad Administration (FRA) holds quarterly meetings with the corridor, but some stakeholders expressed the need for increased coordination.

- **Fragmented Planning and Project Development Process.** The southeast Florida region is divided among several large MPOs (Miami-Dade, Broward, and Palm Beach) and three FDOT districts (4, 6, and the Turnpike). As neither freight nor passengers acknowledge jurisdictional boundaries during their trips, transportation planning in the region – including ITS deployments – should occur at a regional level. Currently, stakeholders expressed concern that the roles and responsibilities for each of these agencies are unclear with regard to ITS and freight planning. These entities do not coordinate their transportation planning activities very well due, in part, to jurisdictional and other issues. As southeast Florida is essentially one large urbanized area, transportation planning needs to happen on a more regional scale.

- **Lack of Regional ITS Priorities.** ITS priorities among the MPOs and FDOT districts vary considerably, making regional planning difficult.

- **Lack of Regional Freight Priorities.** Similarly, stakeholders have varying priorities with regard to freight and goods movement. For example, Florida's Turnpike proposed the construction of a tandem trailer drop facility on the west side of the

Sawgrass Expressway within the City of Sunshine. The City government is resisting, as it fears the facility would increase truck traffic in the area.

- **Lack of ITS Awareness.** Many decision-makers in the region do not completely understand the benefits of investment in ITS. Additionally, the knowledge and use of ITS technologies varies within the southeast Florida region. Until all three counties are "up to speed" on ITS, it will be difficult to advance regional initiatives. The public also lacks ITS awareness. Without a deliverable that they can see and utilize, the public has difficulty supporting ITS projects. This is particularly true for fiber-optic cable installations.

- **No Recognition for the Importance of Freight.** Though transportation planning organizations have recently increased the amount of attention and resources dedicated to freight and freight issues, there is still a lack of understanding by decision-makers of the importance of considering freight in the context of a local or regional transportation plan. The general public is often not entirely aware of the importance of freight in their daily lives and exerts little if any pressure on local elected officials to address freight issues.

- **Lack of Coordination between FDOT's Central Office Commercial Vehicle Operations (CVO) and District Representatives.** There is little interaction between FDOT Central Office's statewide ITS-CVO program and district ITS representatives. This is the department that is responsible for the Commercial Vehicle Information Systems and Networks (CVISN) program.

Socioeconomic/Environmental Issues

- **Noise Pollution.** The Palmetto Expressway is a major cause of noise pollution in Miami-Dade County. Trucks often have to quickly apply their brakes, causing screeching sounds, where the expressway moves from a north-south orientation to east-west.

- **Pollution Caused by Port Everglades.** Port Everglades generates air pollution from diesel fumes. The majority of the ships that call at the Port are diesel and the amount of trucks operating within the Port complex adds to the pollution. These fumes are a particular problem when easterly winds are dominant, as the eastern winds blow them into town.

- **Double-tracking will Increase Train Noise.** The SFRC is adjacent to the I-95 corridor where construction activity is taking place, thereby creating even more noise. People in surrounding neighborhoods have complained. There are different standards for highway noise and rail noise.

- **Train Whistles.** The noise from train whistles is also an issue for southeast Florida residents. To mitigate this problem, FDOT is working on a policy to establish blocks of time in which trains can and cannot blow their whistles (i.e., not after 10:00 p.m.).

3.2 Recommendations for Improvements

This section features ideas and suggestions for improvements provided by the stakeholder interviewees in response to the issues, problems and deficiencies listed above. Stakeholders were asked to provide specific suggestions for potential improvements, whether organizational or technological, that would help mitigate freight problems in the region. Their suggestions are included in this Technical Memorandum as they will be used to help develop potential ITS mitigation strategies under the next task in this project. The stakeholders' ideas for improvements have been sorted into the following five categories:

1. Outreach and Education;
2. Stakeholder Coordination;
3. Policy;
4. Infrastructure; and
5. ITS and Other Operational Strategies.

Outreach and Education

- **Conduct Freight Education and Outreach with the Public**. The traveling public is largely unaware of the special handling characteristics of trucks, such as their large turning radii, their acceleration and deceleration characteristics, and other handling characteristics. Providing freight education and outreach efforts through driver's education programs may make the traveling public more aware of the capabilities of trucks, possibly reducing the number of passenger vehicle/freight vehicle crashes.

- **Conduct ITS Awareness, Education and Outreach with Local Decision-makers.** Many groups would benefit from learning more about ITS. Local decision-makers should be educated to strengthen their understanding of and support for ITS investments. A comparable program might be valuable for the public to increase their awareness of ITS benefits. An outreach/education effort to inform end users (truckers, railroads, the public, etc.) about ITS would also be helpful.

- **Conduct Outreach for the Port Everglades Security Program.** An important aspect of deploying any new system, ITS or otherwise, is user education. Training commercial vehicle operators is especially important to build support for new services/projects at the Port.

- **Provide ITS Training for FDOT Staff.** FDOT has developed 10 training modules designed to train government agencies in ITS-related issues. Other, similar courses are available through the Federal Highway Administration's National Highway Institute

and other organizations. FDOT should consider offering such ITS training to all staff, both at the Central and District offices.

Stakeholder Coordination

- **Establish a Freight Stakeholders Committee.** District 6 has expressed an interest in creating a freight stakeholders committee or forum so that the district can better understand freight issues and identify projects, strategies and initiatives to address those issues. As some district stakeholders have articulated their dependency on Central Office regarding freight and goods movement issues, all districts in the region, including the Turnpike, and the three county MPOs should be involved in such a committee.

- **Co-locate Local Freeway Operations and Signal Management.** Currently, freeway operations and signal management are handled by two different agencies. FDOT handles freeway operations and local public works departments handle signal management. Co-location would enhance coordination between these agencies and may result in improved traffic and information flow.

- **Consider a Permanent Workplace at the Broward County TMC.** The new TMC will have lots of capacity and will house FDOT, Broward County Traffic, and Mass Transit personnel as well as a direct tie-in to the Emergency Operations Center (Broward County Emergency Management). Since communication and coordination are key to the success of ITS, study participants indicated that other agencies are welcome to have permanent working places in the new TMC.

- **Initiate an Information-sharing Agreement between the Broward County TMC and Port Everglades.** To maintain efficient flows of both passengers and goods into and out of the Port complex, it is critical that Broward County share its traffic information with the Port. There is interest on the Port side for this type of coordination, though the particulars of an information-sharing agreement would have to be worked out. To start, the Port will designate a person to act as liaison with the Broward County TMC.

Policy

- **Implement Dedicated Truck-only Times on Specific Highway Lanes.** It would be helpful to require trucks to travel in dedicated lanes at designated time periods on major corridors. A research project is currently underway to investigate the feasibility of dedicated truck lanes.

- **Promote "Flex Time" for Area Employees.** Encouraging employers to offer "flex time" could help discourage peak-period commuter travel, thereby relieving some congestion on regional roadways.

- **Treat Signal Systems as a Public Utility.** Counties should consider the operation and maintenance of their signal systems as a public utility, set performance measures, and evaluate their performance. Decision-makers, particularly at the County level, should be educated in the fact that the proper use of signal systems at the County level can have the same kinds of impacts as capacity improvements.

- **Decentralize Construction and Maintenance Responsibilities to the Local Level.** The deployment of ITS projects could potentially be streamlined if local agencies took over these responsibilities.

- **Investigate Innovative Funding Sources and Public-private Partnerships for Freight Improvements.** Generally, and in addition to the specific instances mentioned above, interviewees expressed the need for more funding to increase capacity and build grade separations to reduce the number of at-grade rail crossings. Perhaps a partnership with the trucking industry would be an effective mechanism, where system users help defray operating and maintenance costs by forming a public/private partnership with the trucking industry.

- **Improve HAZMAT Permitting Process.** Creating an interface between the HAZMAT and licensing databases would improve administrative efficiency and may have beneficial security impacts as well.

- **Institute a Statewide "Quick-clearance" Agreement.** Some form of "quick-clearance" agreement to absolve on-scene commanders in Florida from cargo liability may improve incident management operations statewide, thereby decreasing delays caused by truck incidents.

Infrastructure

- **Improve Connections to Rail Freight**. Interviewees felt that improving connections to rail freight facilities may cause some truck movements to divert to rail, which might have significant impacts on the regional transportation system. The BCMPO should work with railroads to address this issue.

- **Continue Efforts to Complete Cloverleaf On/off Ramps to U.S. 1**. Otherwise known as "the Loop," the completion of a cloverleaf on- and off-ramp connection to U.S. 1 would improve the mobility of passengers returning to FLL Airport from Port Everglades and improve access to the airport for air cargo shipments.

- **Continue Efforts to Build a People-mover between FLL and Port Everglades.** FLL has proposed a people-mover to run between the airport and the cruise terminals at Port Everglades.

ITS and Other Operational Strategies

- **Provide Reliable Truck-oriented Travel Time Information.** Provide commercial vehicle operators with more reliable travel time information with which they can make informed route choices. For example, better quality travel time information on I-95 versus Florida's Turnpike would be valuable for commercial vehicle operators and other motorists. It has already been suggested to SmartRoutes, their regional ATIS provider, to work on a scheme to provide truck-oriented traveler information. District 6 would like to share traveler information with all the other state districts, thereby potentially having a significant impact on traveler information provision for long-distance truck trips.

- **Use Freight Trucks as Traffic Information "Probes."** Freight trucks operating along the region's roadways might be able to provide first-hand, real-time information describing traffic conditions throughout the region using their existing internal communications systems. There may be potential to obtain that information and use it to help districts manage traffic operations and incident response, as well as for the provision of travel information to other motorists.

- **Install Weigh-in-Motion (WIM) for Commercial Vehicles.** WIM would expedite the necessary procedures at weigh stations along highways in the region. (The Turnpike does not have any weigh stations and has no plans to install them.)

- **Improve Signage at Port Everglades**. There are some signs directing both freight and cruise passenger traffic around the port complex, but the current signage was designed to be temporary and is beginning to show its age. Signage is not terribly crucial for truck traffic operating on the port, as most truck drivers are familiar with the port layout and where they need to pick up their loads. One potential concern for signage, though, is the fact that 90 percent of truck drivers speak Spanish only, so information on new signs may need to be displayed in both English and Spanish. Signage is most important for cruise passengers entering the port complex, as they are not typically familiar with the port layout.

- **Improve Signage To/from Ft. Lauderdale-Hollywood International Airport (FLL)**. Similarly, there is a lack of consistent signage directing tourists and cruise passengers both to and from the airport. There has been talk about upgrading the signage around the airport, but no action has yet been taken. This effort should be coordinated with the signage at Port Everglades to ensure the use of standards for consistency.

- **Investigate Strategies to Improve Safety at the Termination of I-595 at Port Everglades.** Until the Eller Drive Improvement project is complete (six years minimum), there will still be major safety issues at the intersection of Eller Drive and 7th Avenue. In the interim, it would be useful to install warning lights and/or Dynamic Message Signs (DMS) to warn trucks and other vehicles of this perilous intersection. Specifically, warning signs should be installed that encourage reduced speeds, such as "slow down," "highway ending," "signal ahead," etc.

- **Install DMS at FLL.** DMS signs were mentioned as an ITS technology that would improve airport operations, as they would enable the airport to provide messages to airport visitors. This would be especially helpful during security incidents, when one or more airport terminals could be shut down.

- **Investigate Strategies to Improve Efficiency and Safety of At-grade Railroad Crossings.** At times, congestion and queuing causes vehicles to get backed up onto the tracks, posing a serious safety hazard. Perhaps ITS devices such CCTV camera monitoring, flashing lights and signs could help prevent such problems. All 72 at-grade crossings along the SFRC will be upgraded with four-quad gates and a median curb as part of the double-tracking effort. Similar improvements would be helpful at the other crossings in the region.

- **Optimize Signal Timings Regionwide.** Adjust signal timings along east-west arterials to improve traffic flow, particularly during peak hours.

- **Provide Real-time Information to Train Operators.** Real-time operational information could be provided to train operators via in-vehicle (in-train) devices or on dynamic message signs (DMS) along the rail corridor. For example, the devices could provide timely speed restriction information.

- **Provide Critical Information to HAZMAT Responders.** Weather information, particularly data on prevailing winds is critical during HAZMAT response. Locations of drainage areas and sewers are also important.

- **Implement Wireless Technologies for Emergency Management and Incident Response.** Real-time information sharing is critical in emergency management and incident response. Wireless technologies will have important impacts on emergency management and dispatch in the future and may improve coordination among responding agencies.

4.0 Literature Review Results

All available documentation related to freight flows and ITS in the region was reviewed under this task in order to ascertain the region's intermodal issues, deficiencies, and associated ITS needs. In addition to researching published industry documents in hard copy and on the Internet, this comprehensive literature search also included examining documents provided by participants in the TAC and stakeholder interviews. Key findings from this exercise have been grouped into the following four categories:

1. Existing and Planned ITS Deployments in the Region;
2. Freight and Goods Movements in the Region;
3. Mobility Issues in Broward County; and
4. Safety Issues in Broward County.

4.1 Existing and Planned ITS Deployments in the Region

Inventory of Architecture in District 4 and District 6

In 2000, Jaffe Engineering and Development Industries, with support from the Prime Contractor Kimley-Horn and Associates, conducted a series of eight workshops under the Florida Statewide Intelligent Transportation System Architecture and Standards Study. Prior to each of the regional workshops, available documentation on regional ITS system architectures, as well as documentation and other information on existing ITS deployments, were collated. This information was used to initiate the process of developing a regional ITS architecture with the stakeholders of the region.

From this inventory, a summary of the existing Commercial Vehicle Operations (CVO) and other ITS components in Broward County is provided in Table 4.1 and Table 4.2 respectively. Planned Services for CVO has also been summarized in Table 4.3.

Table 4.1 Summary of Existing CVO Services in Broward County

Existing Services	Functionality	Description	Agency Interface
HAZMAT (CHEMTREC)	Fleet and Freight Management	This national hazardous material information service provides detailed information on hazardous materials and appropriate response to HAZMAT responders.	• Broward, Indian River, Martin, Miami Dade, Palm Beach and St. Lucie County Fire Rescue Dispatch • Local Fire Dispatch
Florida Vehicle Fleet Dispatch Systems (FL Vehicle Fleet Operators)	Fleet and Freight Management	This equipment package provides the communication necessary to track cargo from source to destination via links to intermodal freight shippers and depots. There are also communication links to cargo routing services. Vehicle types include Charter bus fleets, major truck fleet operators, taxi services, limo services	• Broward, Martin, Miami-Dade and Palm Beach County Fire Rescue Dispatch • Local Fire Dispatch • Port Everglades, Port of Miami, Port of Palm Beach
Over Dimension Permit System (FDOT Central Maintenance)	Commercial Vehicle Administration	State system that issues oversize and overweight permits for commercial vehicles. In the architecture, this system receives current road restrictions and provides information on permits that have been issued to improve highway safety and operating efficiency. Will be extended to provide this information to all patrol vehicles.	• Broward County ITS Operations Facility • City of Boca Raton, Fort Pierce and Port St. Lucie Traffic Signal System • District 6 SunGuide Control Center • FDOT Districts 4 and 6 Maintenance • FDOT Turnpike District Maintenance • Financial Institutions • Indian River and Martin County Traffic Signal System • Miami-Dade Traffic Control System • Palm Beach County ITS Operations Facility
License, Registration, and Fuel Tax System (Florida Department of Highway Safety and Motor Vehicles)	Commercial Vehicle Administration	This system issues commercial vehicle licenses, vehicle registrations, and administers fuel taxes for the state of Florida	• Financial Institutions

Table 4.2 Summary of Other ITS Services in Broward County

Existing Services	Functionality	Description	Agency Interface
Broward County Cooperative Dispatch Center (Broward County Sheriff)	Emergency Management	This dispatch center provides call taking, communications, and dispatch functions for the Broward County Sheriff.	• Broward County ITS Operations Facility • Broward County Sheriff Vehicles • Broward County Transit System • Control Burn Permitting Database • Draw Bridge Operational Status System • Florida Safety and Crash Data Collection System • Local Venue Event Scheduling System • Manpower, Assets, and Resources System (MARS) • Municipality Event Permit Systems • National Hurricane Center Info. System • National Weather Service • Newspapers, Radio, Television Stations • Other Public Safety Comm and Dispatch Centers • Other SE FL Public Safety Comm and Dispatch Centers • SunGuide Advanced Traveler Info. System
Broward County Fire Rescue Dispatch (Broward County Fire Rescue)	Emergency Management	Represents the county Fire Rescue dispatch operations operated in Broward County.	• Automated Collision Notification System • Broward County Fire Vehicles • Broward County ITS Operations Facility • CHEMTREC • Draw Bridge Operational Status System • Florida Vehicle Fleet Dispatch Systems • Manpower, Assets, and Resources System (MARS) • National Hurricane Center Info. System • National Weather Service • Newspapers, Radio, Television Stations • Other Public Safety Comm and Dispatch Centers

Table 4.2 Summary of Other ITS Services in Broward County (continued)

Existing Services	Functionality	Description	Agency Interface
Broward County Fire Rescue Dispatch (Broward County Fire Rescue) **(continued)**	Emergency Management	Represents the county Fire Rescue dispatch operations operated in Broward County.	• Other SE FL Public Safety Comm and Dispatch Centers • SunGuide Advanced Traveler Info. System
Broward/Palm Beach SunGuide Service Patrol Dispatch (FDOT D4)	Emergency Management	This center dispatches vehicles to provide roadside assistance to individuals traveling on I-95 in Broward and Palm Beach counties. This includes towing, fire-rescue, ambulance, etc.	• Florida DOT Traffic Information Web Page • Manpower, Assets, and Resources System (MARS) • Other Public Safety Comm and Dispatch Centers
FDOT District Emergency Operations Centers	Emergency Management	Each FDOT District, including Turnpike, includes an Emergency Operations Center that is activated for major incidents/emergencies.	• Broward County Disadvantaged Transp. Provider Dispatch • Broward County Transit System • City of West Palm Beach TMA Dispatch • ELECTROWAVE Shuttle Bus Operations Center • Fort Lauderdale Downtown TMA Dispatch • Indian River County Transit Dispatch • Metrobus System • MetroMover System • Metrorail System • National Hurricane Center Info. System • National Weather Service • Newspapers, Radio, Television Stations • PalmTran • St. Lucie County Transit Dispatch • Tri-Rail Commuter Rail System

Table 4.2 Summary of Other ITS Services in Broward County (continued)

Existing Services	Functionality	Description	Agency Interface
Florida Highway Patrol Dispatch (FL Highway Patrol)	Emergency Management		• Control Burn Permitting Database • Department of Agriculture Inspection Vehicle • Draw Bridge Operational Status System • FDLE Vehicles • FDOT Statewide Public Information System • Florida Safety and Crash Data Collection System • Manpower, Assets, and Resources System (MARS) • Motor Carrier Compliance Enforcement Vehicles • Motorist Aid Call Boxes • Other Public Safety Comm and Dispatch Centers • Other SE FL Public Safety Comm and Dispatch Centers • SunGuide Advanced Traveler Info. System • Traveler Info. Radio Network Stations
Commuter Services Info. Systems Ride Matching (South FL Commuter Services)	Information Service Provider	Commuter Services provides traveler information services including a 24-hour call center, corporate carpool and vanpool programs, tri-county transit information, on-site rideshare promotions and displays, computerized rideshare matching, and an Emergency Ride Home program. Commuter Services works jointly with employers to set up transportation and parking programs, provide confidential employee commute analysis, and training.	• ELECTROWAVE Shuttle Bus Operations Center • Miami Intermodal Center • Regional Consumer Info. Network • SunGuide Advanced Traveler Info. System • Traveler PC/Info. Appliance
District 4 Static and Planned Traveler Info. System (FDOT D4 Public Info Office)	Information Service Provider	The Florida DOT District Public Information Office Systems that provide road construction advisories and other longer term traffic information to the media and directly to the traveling public.	• Broward County ITS Operations Facility • Palm Beach County ITS Operations Facility • SunGuide Advanced Traveler Info. System • Traveler Info. Radio Network Stations

Table 4.2 Summary of Other ITS Services in Broward County (continued)

Existing Services	Functionality	Description	Agency Interface
Turnpike District Static and Planned Information System	Information Service Provider	The public information office function that is managed by the Turnpike. This element represents the systems that collect, manage, and disseminate long-range construction, maintenance, and traffic information to the media and the traveling public.	• Archived Data User Systems • FDOT Traffic Characteristics Inventory • Newspapers, Radio, Television Stations • State Highway System Crash Analysis Reporting System • Traveler Info. Radio Network Stations • Turnpike Operations Center (Pompano)
Florida DOT Traffic Information Web Page	Information Service Provider	A central source for traffic information from DOT. CCTV images will be added that cover FDOT-managed roads in the state of Florida. This site collects traffic information and will collect traffic images from each FDOT district and then make this information available to the traveling public and to operating agencies. This site also includes current road construction information and a variety of other transportation-relevant information.	• Broward County Disadvantaged Transp. Provider Dispatch • Broward County ITS Operations Facility • Broward County Transit System • Broward/Palm Beach SunGuide Service Patrol Dispatch • City of West Palm Beach TMA Dispatch • District 6 SunGuide Control Center • ELECTROWAVE Shuttle Bus Operations Center • Fort Lauderdale Downtown TMA Dispatch • Indian River County Transit Dispatch • Metrobus System • MetroMover System • Metrorail System • Miami-Dade SunGuide Service Patrol Dispatch • Palm Beach County ITS Operations Facility • PalmTran • St. Lucie County Transit Dispatch • Treasure Coast ITS Operations Facility • Tri-Rail Commuter Rail System • Turnpike Operations Center (Pompano)

Table 4.2 Summary of Other ITS Services in Broward County (continued)

Existing Services	Functionality	Description	Agency Interface
Turnpike Traffic Management Centers	Traffic Management	Regional TMCs that manage Florida Turnpike operations. These centers are staffed by both FDOT Turnpike and Florida Highway Patrol personnel. Includes control system for efficient freeway management including integration of surveillance information with freeway road geometry, vehicle control such as ramp metering, DMS, HAR; provides the capability to traffic managers to detect and verify incident; provides capability for an incident response formulation function minimizing the incident potential, incident impacts, and/or resources required for incident	• National Hurricane Center Info. System • National Weather Service • Private Sector Traveler Info. Services • SunGuide Advanced Traveler Info. System
Port Everglades	Intermodal Freight Depot	No description Provided. From the perspective of the National ITS Architecture, this element is on the boundary of ITS. This is also the case for the Ports of Miami and Palm Beach.	• Broward County Transit System • Broward County Transp. Data Collection System • FDOT Seaport Database • Florida Vehicle Fleet Dispatch Systems • SunGuide Advanced Traveler Info. System
Tri-Rail Commuter Rail System (Tri-Co Commuter Rail Authority)	Multimodal Transportation Service Provider	Provides the transit management subsystem the capability to determine the need for transit priority on routes and at certain intersections and request transit vehicle priority at these locations. It also supports schedule coordination between transit properties and coordinates with other surface and air transportation modes.	• AA Arena Event Scheduling System • Broward County Transit System • FDOT District Emergency Operations Centers • FDOT Transit Database • Florida DOT Traffic Information Web Page • Florida State Emergency Operations Center • Local Venue Event Scheduling System • Metrobus System • MetroMover System

Table 4.2 Summary of Other ITS Services in Broward County (continued)

Existing Services	Functionality	Description	Agency Interface
Tri-Rail Commuter Rail System (Tri-Co Commuter Rail Authority) **(continued)**	Multimodal Transportation Service Provider	Provides the transit management subsystem the capability to determine the need for transit priority on routes and at certain intersections and request transit vehicle priority at these locations. It also supports schedule coordination between transit properties and coordinates with other surface and air transportation modes.	• Metrorail System • Miami Arena Event Scheduling System • Miami Intermodal Center • Miami-Dade Transp. Data Collection System • Municipality Event Permit Systems • National Car Rental Center Event Scheduling System • Palm Beach County ITS Operations Facility • Palm Beach County Transp. Data Collection System • PalmTran • Private Sector Traveler Info. Services • Pro Player Event Schedule System • Regional Consumer Info. Network • SunGuide Advanced Traveler Info. System
CSXNS and FEC Rail Operations Centers (Rail Operator)	Rail Operations	No description Provided. From the perspective of the National ITS Architecture, this element is on the boundary of ITS.	• Palm Beach County ITS Operations Facility • Rail Operations Database • Treasure Coast ITS Operations Facility

Table 4.3 Summary of Planned CVO Services in Broward County

Planned Services	Functionality	Description	Agency Interface
CVO Parking Facility (FDOT)	Parking Management	These systems manage parking facilities at rest areas, weigh stations, and truck stops and provide real-time parking availability data for commercial vehicles. Provides: electronic payment of parking fee, the capability to detect and classify properly equipped vehicles entering and exiting the parking facility.	• Broward County ITS Operations Facility • District 6 SunGuide Control Center • Palm Beach County ITS Operations Facility • Private Sector Traveler Info. Services • SunGuide Advanced Traveler Info. System • Treasure Coast ITS Operations Facility • Turnpike Operations Center (Pompano)
Automated Collision Notification System (Commercial Vehicle Fleet Operators)	Fleet and Freight Management	This element is not associated with any equipment packages in the National ITS Architecture, so no description is available.	• Broward County Fire Rescue Dispatch • E911 Emergency Call Centers • Indian River County Fire Rescue Dispatch • Local Fire Dispatch • Martin County Fire Rescue Dispatch • Miami-Dade Fire and Rescue Dispatch • Palm Beach County Fire Rescue Dispatch • St. Lucie County Fire Rescue Dispatch

Florida Department of Transportation District 4 ITS Plan

Table 4.4 provides a summary of the current ITS Projects in Broward County as presented in the District 4 ITS Program (2002) prepared by FDOT. The projects address the implementation of a basic ITS structure including dynamic message signs driven by a video monitoring system along the major freeways, driver information such as detour routes, incident service patrol, and improved signal systems. Broward County will be responsible for maintenance.

Table 4.4 Summary of ITS Projects in Broward County

Project	Description	Implementation Year
ITS Operations Facility	Build a Traffic management center that will serve as the nerve center for ITS projects deployed in Broward County. • I-95/I-595 Dynamic Message Sign System (see below); • Freeway Video Monitoring System (see below); • Advanced Traveler Information (see below); • Broward County Signal System (see below); • Advanced Incident Information System (see below); and • Any new ITS devices.	2002
ATIS Operations	Provide employment of technical staff to operate ITS.	2003-2004
I-595/I-95 Dynamic Message Sign System	Install a PC-based remote control, and a telephone drop single mode fiber optic communications system: • I-95 12 dynamic message signs; and • I-595 22 dynamic message signs.	
Freeway Video Monitoring System	Provide camera deployment along the freeway system in Broward County to verify traffic incidents.	2002
SunGuide Advanced Traveler Information System (ATIS)	Provide Real time information to motorists in Miami-Dade, Broward, and Palm Beach County via phone, fax, web page, radio, and television.	2002
Advanced Traffic Management System (ATMS)	Replace the County's current system with a new central control system. Replace existing traffic controllers with new 2070 controllers and install new fiber optics system.	2002
Advanced Incident Information System (AIIS)	Deploy flashing beacon signs along Broward County Arterials with I-95 interchanges to indicate incidents. Incorporate Highway Advisory Radio to provide alternatives.	2004
Arterial Incident Detour Route Signing System	Install static detour signs overhead on traffic signal supports along arterials to guide drivers that have been detoured from the interstate.	
17th Street Causeway Congestion Management System (CMS)	Deployment of CMS at 17th Causeway to warn drivers of bridge closings and beach traffic conditions.	2002

Table 4.4 Summary of ITS Projects in Broward County (continued)

Project	Description	Implementation Year
Freeway Incident Management Team	These teams consist of approximately 60 members representing State, County, and local engineering and emergency management, law enforcement, Fire Department agencies, towing, HAZMAT and traffic information services.	2002-2006
SunGuide Road Rangers Service Patrol	Tow Trucks that continuously travel the expressway looking for stranded motorists, debris and accidents. The road rangers currently patrol I-95, I-595, and I-75.	
I-75 ITS Master Plan	Master Plan for deployment of ITS devices along I-75 in Broward County.	2002
Oakland Park Congestion Management System (CMS)	New Traffic Signal Controllers and pre-emption capabilities.	2002
Sunrise Boulevard CMS	New Traffic Signal Controllers and pre-emption capabilities.	2002
Atlantic Boulevard CMS	New Traffic Signal Controllers and pre-emption capabilities.	2002
S.R. 7/U.S. 441 CMS	New Traffic Signal Controllers and pre-emption capabilities.	2002

The cornerstone of the County ITS program is a new Advanced Traffic Management System (ATMS). The ATMS will be an important step to successfully deploy CVO ITS as the new fiber optics system will allow the transfer of traffic information to the commercial vehicles as well as providing the opportunity to link CVO ITS to the fiber optic communication system.

Summary of Corridor Plans

The Southeast Florida Intelligent Corridor System (ICS) was developed by JHK & Associates (1993). The system extends from Miami to northern Palm Beach County. As part of this document it was noted that almost all components of the ICS in its full implementation would benefit commercial vehicles. The ICS recommendations that directly apply to CVO included:

- **Install DMS at ports and truck terminals.** Several recommended locations for DMS include the exit to the Port of Miami, Port Everglades and Port of Palm Beach. Other locations include airport cargo exits and the exits to large truck terminals in the region such as the Publix and the Tropical Shipping dispatch centers.

- **Link Commercial Vehicle operators to the ICS information centers.** Once the ICS is implemented, real-time traffic data will be available. This data can be fed to CVO dispatch centers using a computer and modem, or via fax.

- **Use Trucks as Probe Vehicles.** If commercial vehicle operators installed AVL equipment their trucks could act as traffic probes.

- **Implement Automatic Vehicle Identification (AVI) for commercial vehicles.** AVI will save time by allowing vehicles to proceed at regular speeds through toll booths. In the mid-term smart tags can be replaced by smart cards, which could have all vehicle trip, load, weight, and HAZMAT information recorded on it, as well as toll payment data.

- **Provide Computer-Aided Dispatching (CAD).** Real-time CAD systems operated by commercial vehicle operators could interface traffic information with existing CAD systems to plot the shortest paths between origin and destination points.

In 2001, U.S. DOT prepared a summary of ITS deployment in Florida. Florida is currently working with other states and various private and public sector interests along the I-75 corridor up to Canada to facilitate motor carrier operations. Properly documented trucks equipped with transponders can travel any segment of I-75 at mainline speeds, with minimal stopping at weight and inspection stations. Electronic clearance uses weigh-in-motion, electronic tag communications and computerized credential checking technologies. The test phase has been completed. One key result is that the system saves a truck having to pull over and stop in order to be weighed. This benefit alone has proven to save fuel.

ITS needs along I-95, I-595, I-75 and Florida's Turnpike were identified in the ITS Corridor Master Plan and ITS Program Plan prepared for FDOT by Justice & Chang (2002). Between the programmed and planned ITS, no functional gaps were found in Broward County. A summary of the 10-Year ITS Cost Feasible Plan (Draft) as shown in the ITS Corridor Master Plan is provided below.

2002

- I-75 – ITS Corridor Plan (PD&E)

- Broward County – Operations Facility

- I-95 – Dynamic Message Signs (DMS)

- I-95 – Advanced Incident Management System (AIMS)

- Turnpike – Advanced Traveler Information System (ATIS), Highway Advisory Radio (HAR), Congestion Management Systems (CMS), Traffic Management Center (TMC)

- Turnpike – SunNav Software Design and Phase 1 Implementation

2007

- I-75 and I-75 Southern Terminus – DMS, ATIS, ARTS, OCTV at Interchanges and OVCS

- I-75 – Fiber Optic Network

2010

- I-75 (Southern Terminus to the Sawgrass Expressway) Fiber Optics
- I-595 (I-75 to U.S. 1) – Variable Speed Zone

These are more generally addressed in the FDOT District 4 ITS Master Plan that was shown in Table 4.4.

Along I-95 and I-75 there are currently a number of CVO concerns including queuing at weigh stations or intermodal gates, and the need for innovative technology for inspections. Additionally, safer environments at rest and weigh stations are needed to accommodate overnight parking and to satisfy the Interstate Commerce Commission's (ICC) rest requirements. Currently the Turnpike does not have CVO services due to the low truck volumes. The Turnpike, however, is the only facility that allows dual trailer trucks and there are plans to incorporate an electronic passing system at the toll booths.

Commercial Vehicle Information Systems and Network (CVISN) Business Plan

The CVISN business plan, prepared by Cambridge Systematics (2001), presents recommendations of the planning efforts by the Florida state agencies involved in CVO and the motor carrier industry in Florida. The document identified strategic direction for the State and recommends a program of ITS/CVO deployment. The essence of the business plan is to identify projects that will form the core of the state ITS/CVO program. A description of current state capabilities is provided below.

- Safety Information Exchange:
  - ASPEN at All Major Inspection Sites – ASPEN software is currently used to conduct inspections.
  - Connection to SAFER for exchange of Interstate snapshots – field officers have direct connection via laptop computers.
  - Implementation of Commercial Vehicle Information Exchange Window (CVIEW) systems for exchange of intrastate snapshots within the State Credentials Administration.
  - Automated processing of at least some credentials but the process does not include e-payment.
  - Project is in the process to connect to credentials clearinghouse.
  - At least 10 percent of transaction processes are handled electronically.
- Electronic Screening:
  - PrePass is currently performing electronic screening in Florida at a number of sites.
  - Electronic screening is to be replicated at other sites.

A number of the related projects in the CVISN business plan are described below.

- Feasibility Study of Electronic Credentialing Needs, and the Software Design and Development – A high-level assessment of requirements for supporting the on-line application for and receipt of CVO credentials.
- Automated Routing and Permitting Software Design and Development – Software to support the automated processing and issuance of oversize and overweight permits.
- Networked Information Systems Design and Development – A system for the electronic interchange of information among state agencies and between desk side and roadside systems.
- Electronic Payment Option – Electronic payment will be examined and evaluated.
- Electronic Screening and Weight Stations – The current system for preclearing vehicles to bypass weight stations will incorporate real-time or near real-time snapshots for safety and credential checks.
- Information Systems Inventory – A detailed inventory of existing and planned CVO-related hardware and software.

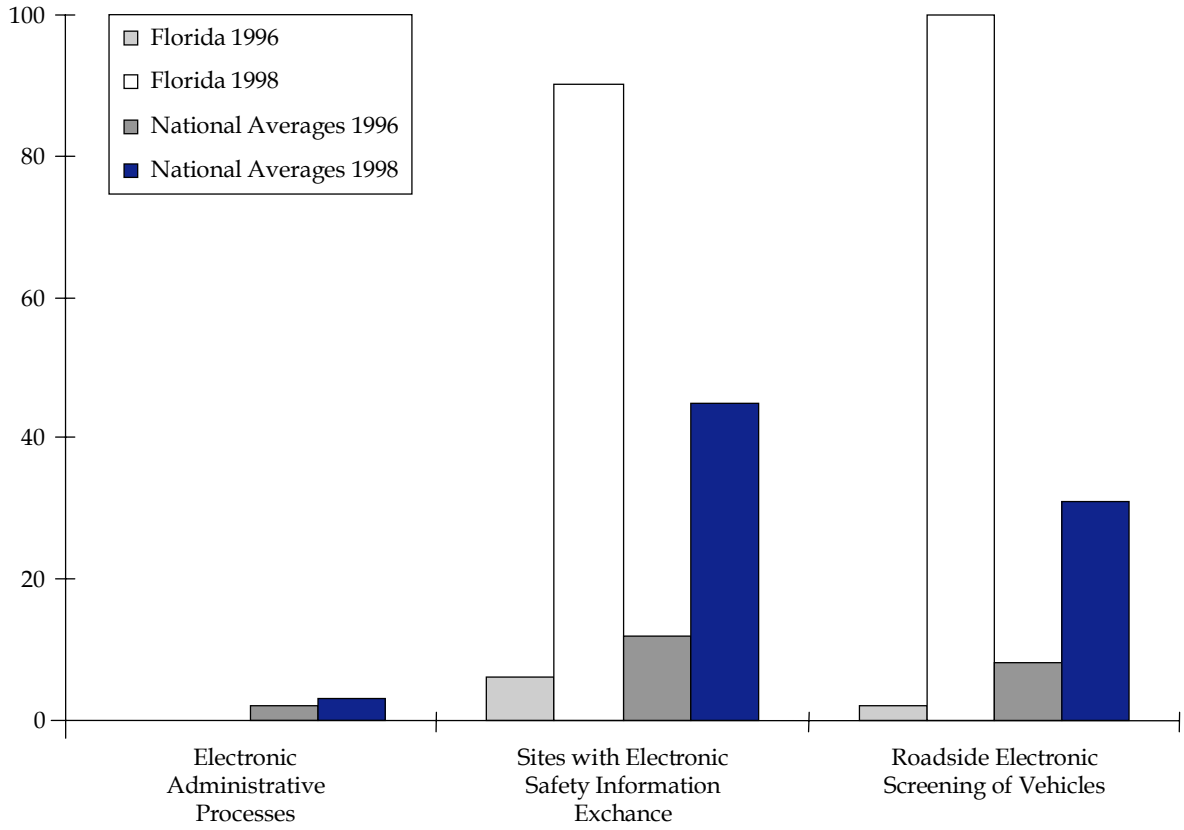
Based on a report prepared by Radin (2000), the overall CVISN deployment levels measured in the state of Florida are provided in Figure 4.1. The measures are: a) the percent of all administrative processes that were conducted electronically in the given year; b) the percent of all inspection sites with the capability of electronically uploading and downloading safety information in the given year; and c) the percent of all vehicles that were screened electronically for credential, safety, or weight status in the given year.

Annual Evaluation of the SmartRoute Systems Advanced Traveler Information Services Contract For Miami-Dade, Broward and Palm Beach Counties

The Traveler Information Center, SmartRoute Systems (SRS), has been operating since May 2001. The program consists of eight service requirements:

1. Data and information collection;
2. Data fusion and developing advisories;
3. Information dissemination;
4. Marketing and outreach activities;
5. Management and coordination;
6. System deployment, operation and maintenance;
7. Record keeping and documentation; and
8. Evaluation support.

Figure 4.1 CVISN Deployment Levels
Florida and National for 1996 and 1998



Source: Tracking State Deployments of Commercial Vehicle Information Systems, 2000.

Lawther and Berman (2002) recently prepared an annual evaluation of the ATIS. The annual evaluation of the system is described below:

- Of great concern is the relatively small number of calls to this telephone service. In addition, the number of calls has recently been declining. From a peak of over 15,000 during the month of November 2001, the number has dropped to just over 9,900 during April 2002.

- The implementation of the 511-telephone number in June 2002, with accompanying marketing and additional outreach efforts, is hoped to help increase the number of calls.

- The current SRS management staff has been in place since November 2001. During this time they have made progress in some areas such as increasing ties to transportation-related public partners that can furnish invaluable data. In other areas, such as using subcontractors wisely and maximizing their efforts in a timely fashion, deploying additional cameras to collect data, and initiating a viable road reporter program, efforts have not been as successful. Given the change in the business model

upon which the ATIS public-private partnership was originally built, expected planning efforts that could have accompanied this change also still need to be completed.

- The building of a successful public-private partnership, one that is truly regional in scope, has begun with the establishment of a Steering Committee. After a year in which meetings have helped to build stakeholder support, and the public partners represented by the Steering Committee – as well as other public partners – need to work more closely together, increasing frequency of contact and recommitting in a spirit of cooperation to achieving the goal of a successful ATIS Program in South Florida.

4.2 Freight and Goods Movement in the Region

2020 Vision Plan – Broward County Aviation Department

There is no effort as part of the 2020 Vision – Fort Lauderdale/Hollywood Airport (2002) to establish freight growth or to implement strategies that directly improve the accessibility of freight. In summary, there are five key aspects of the 2020 Vision:

1. People Mover system linking the Airport and Seaport;
2. Intermodal Center for Passengers;
3. Hotel;
4. International Terminal; and
5. Exit Roadway for passenger vehicles.

Port Everglades 2020 Plan

The following summarized the expected growth and capacity constraints documented in the Port Everglades Master Plan prepared by TranSystems (2001):

- Containerized cargo is expected to grow throughout the 20-year planning horizon. The constraining component is storage capacity.
- General cargo includes palletized cargo, neo-bulk (lumber, steel, and etc.), as well as high-wide-heavy cargo such as yachts. The projected throughput for general cargo is below the existing capacity of the Port.
- Dry bulk cargo includes cement, clinkers, and aggregate. The primary cargo is cement, which has represented approximately 86 percent of the historical volume. The projected throughput will exceed Sustainable Practical Capacity (SPC) by the year 2019. The limiting component representing this capacity is storage, however is roughly equivalent to vessel and berth activities.

- Liquid bulk includes petroleum products and liquid propane gas (LPG). The projected throughput currently exceeds terminal element capacity. The constraining component is vessel and berth activities.
- Cruise line data indicates that upwards of 14 cruise berths will be required over the planning horizon with as many as 11 cruise berths required to meet the needs of a vessel exceeding 750 feet in length. Approximately nine of those berths will be required to meet the needs of a "Mega" Cruise vessel exceeding 900 feet in length.

Table 4.5 provides a summary of constraining port components at Port Everglades.

Table 4.5 Summary of Constraining Port Components

Cargo Type	Constraining Component
Container[1]	Berth
General Cargo[2]	Not Constrained
Cement[2]	Berth/Storage
Liquid Bulk[2]	Berth
Passenger[3]	Berth

[1] TEUs.
[2] Short Tons.
[3] Revenue Passengers.

Using projected employment and other economic projections, estimates of future truck traffic were developed. Two important factors are noted which affect the future traffic projections:

1. Growth in traffic volumes on the Port's internal roadways is expected to vary due to the different mix of vehicles expected to use each roadway; and
2. Should the multimodal rail yard be constructed, the volumes reported in this study may be overstated by the volumes presented in the following section.

Table 4.6 shows peak-hour, peak direction traffic volumes in the Port Everglades area.

Table 4.6 Existing Roadway and Future Peak-Hour, Peak Direction Volumes

Roadway	Number of Lanes	Existing Peak Direction Volume	2010 Peak Direction Volume
Eller Drive	4	1,209	2,056
S.E. 19th Avenue	4	227	386
S.E. 14th Avenue	2	488	739
McIntosh Road	4	333	566
Eisenhower Boulevard	4	658	1,102
Spangler Boulevard	4	957	1,569
S.E. 20th Street	2	208	354

In the analysis of existing roadways within the Port, all roadways and intersections are expected to operate at acceptable levels of service in 2010. The following concerns were noted:

- It is assumed that Eller Drive is six-lanes wide. If Eller Drive is not widened to provide three westbound through lanes at its intersection with S.E. 7th Avenue and the Eller Drive Overpass is not constructed, the intersection is expected to operate at level of service F by 2010. The eastbound lanes of I-595/Eller Drive approaching S.E. 7th Avenue must also be widened to include either a third through lane or an eastbound right-turn lane. Because a through lane would require more length and more cost, it is recommended that an eastbound right-turn lane be considered for construction.

- Due to the Port Everglades Security Program, S.E. 14th Avenue is being considered for use as a bypass route around the secured area of the Port. In order for the bypass route to be successful, the route should be signed and the existing pavement condition improved. While the Broward County Long-Range Transportation Plan calls for the widening of S.E. 14th Avenue to four lanes, the immediate need is for pavement repair and improved intersection curb returns and drainage facilities.

In summary, there are four key components of the Port Everglades Plan. (See Table 4.7 below.)

Table 4.7 Key Components in Port Everglades Plan

Project Name	Goals	Impacts
Northport Petroleum Piers	• Increase facility capacity by at least 50 to 75 percent. • Consolidate existing petroleum piers footprint.	• Elimination of existing Pier 1. • Potential environmental issues (contaminated soil).
Northport Cruise Expansion	• Increase berth capacity at berth 4 to accommodate mega-cruise vessels. • Provide 2 new mega-cruise berths at existing Pier 2 with proposed bi-level pier.	• Future people mover capability to cruise terminals and convention center complex. • Reconfiguration of existing Pier 2. • Lengthening and widening of Slip 2. • Realignment of Eisenhower Boulevard. • Relocation of planned security gate along realigned Eisenhower Boulevard.
Midport Cruise Expansion	• Provide mega-cruise berth capacity at berth 29. • Improve berth capacity at berths 24 and 25 to accommodate either one mega-cruise vessel or two smaller vessels simultaneously. • Provide additional berth capacity for five mega-cruise vessels and three large cruise vessels for a total of eight cruise berths. • Eliminate berth conflicts at berths 19/20 and 21. • Potential fast ferry capability at Tracor Area. • Improve passenger flow and traffic circulation at existing Pier 7. • Future people mover capability to cruise terminals.	• Relocation of existing restaurant facility at Pier 7. (Potentially relocated to Northport) • Reduction of South Turning Notch geometry and reconfiguration to accommodate berthing capacity. • Partial fill of existing Tracor basin. • Future relocation of Midport container traffic to Southport. • Demolition of existing Terminal 19.
Southport Intermodal Container Complex	• Provide additional storage capacity to handle 1.5 million TEUs of container traffic per year. • Provide berthing capacity along the Dania Cutoff Canal. • Provide on-dock intermodal container transfer capability. • Provide additional berthing capacity at the Turning Notch.	• Widening of the Dania Cutoff Canal to accommodate vessel berthing. • Partial dredging of existing Mangrove Area.

Eller Drive PD&E Study

Eller Drive serves as the immediate link between Interstate 595 and the main entrance to Port Everglades. Port Everglades' expansion of the Southport yards will include the addition of a 40-acre Intermodal Container Transfer Facility (ICTF). The operation of this ICTF depends on the provision of a spur of the FEC rail line, (which presently runs parallel to Eller Drive), southward to the Southport yards and ICTF. Due to the increasing demand on Eller Drive from both cargo and cruise traffic, an at-grade crossing of the rail line would cause serious traffic queues diminishing operation and capacity. The Eller Drive PD&E Study will focus on providing an efficient movement to and from the Port facility, while retaining and integrating the local access and traffic movements and improving the movement of vehicles between the Port and the Airport.

The project will encompass the evaluation of several Eller Drive overpass alternatives needed to span over the RR spur, which will serve the ICTF. The project will also consider the realignment of several Port roads such as Front Street, N.E. 7th Avenue and S.E. 14th Avenue as necessary to improve or maintain the local circulation of traffic.

South Florida Transportation Summit, Goods Movement Track Proceedings

The Aviation, Seaports, Freight and Goods Movement Track of the South Florida Transportation Summit focused on balancing regional security with economic development. Some of the key points that were identified at the summit have been summarized below.

- Balancing Security Needs, Trade, and Traffic:
  - Those who address security now will not be penalized in terms of available funds when the Transportation Security Bill is passed;
  - The Coast Guard currently has a very regional approach to security and a model that is promoted nationally; and
  - There is currently a need to provide seamless travel between the airport and the cruise line without the interruption of security checks. This has been addressed in both 2020 plans for the Airport and Seaport.
- Regional Intermodal Needs and Constraints:
  - Majority of all costs occur 'on-land';
  - Roadway capacity constraints near major freight facilities;
  - I-95 versus the Turnpike – Freight companies are not willing to absorb the expense of using the Turnpike; and
  - Regionalism difficult due to the competitive nature of the ports, airports and the freight industry.

Miami-Dade County Freight Movement

There are currently a number of ongoing initiatives to improve freight movement in Miami-Dade County. These are presented in the Miami-Dade County Metropolitan Planning Organization Quarterly Newsletter (2002) and are listed below:

- Advanced Traffic Management System (ATMS) – Replaces the Miami-Dade County traffic control system consisting of county-wide traffic signals, controllers and includes the construction of a new central control and monitoring facility.

- Port of Miami Tunnel – Connects I-395 directly to the Port of Miami with two two-lane tunnels, extending from Watson Island beneath the Miami Channel of the Miami Harbor to Dodge Island – a distance of approximately 4,650 feet. This investment would allow traffic to enter the Port without having to drive though Downtown Miami.

- The Downtown Miami Transportation Master Plan – Includes several freight movement components to be completed in the summer of 2002.

- Airport West Truck Traffic Study – Currently investigating traffic problems with a focus on the design and operational shortcomings that hinder truck travel.

These improvements will assist truck mobility in the region; however, will not directly affect efforts in Broward County.

4.3 Existing Mobility Issues in Broward County

Long-Range Transportation Plan

On behalf of the BCMPO, Kittelson and Associates prepared the Broward County Long-Range Transportation Plan, November 2001. A summary of the congested roadway corridors (LOS E/F) from this plan is summarized below:

- I-95;
- 441 – South County Line to Sunrise Boulevard;
- Hallandale Beach Boulevard – 441 to U.S. 1;
- Hollywood Boulevard – I-75 to I-95;
- I-595;
- Davie Boulevard – University to U.S. 1;
- Broward Boulevard – 441 to U.S. 1;
- Oakland Park Boulevard – Turnpike to U.S. 1;

- Commercial Boulevard – 441 to 18th Avenue;
- Cypress Road – Turnpike to Powerline;
- Atlantic Boulevard – I-95 to A1A; and
- Sample Road– Lyons Road to I-95.

Mobility Performance Measures

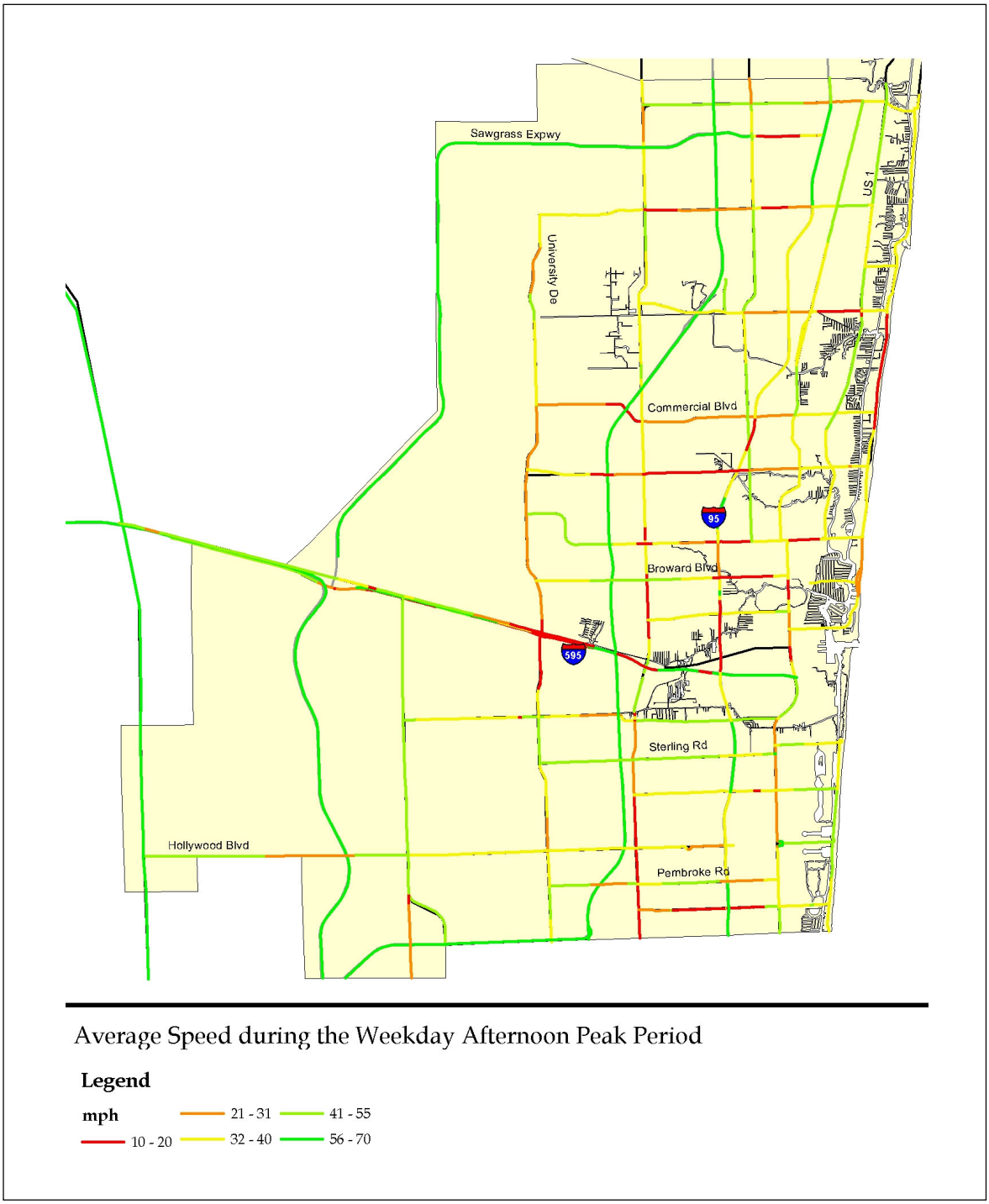
FDOT has developed and calculated mobility performance measures for the Florida Interstate Highway System (FIHS). These are documented in the Mobility Performance Measures – Database and Documents, produced by Kittelson and Associates, August 2001. These measures include:

- Vehicles Miles Traveled (VMT);
- Truck Miles Traveled (TMT);
- Person Miles Traveled (PMT);
- Average Speed;
- Percent Miles Congested; and
- Percent Travel Congested.

The measures are currently reported on a statewide basis and use general default values. For example, TMT is calculated with a fixed percent of trucks by facility type. For this reason caution is given regarding the accuracy of these measures on a corridor basis within Broward County. Figure 4.2 illustrates the calculated Average-Peak Speed using a surrogate speed method based on the Average Annual Daily Traffic (AADT) on different facility types. The hotspots include:

- Parts of I-95;
- U.S. 441 – South County Line to Sunrise Boulevard;
- Hallandale Beach Boulevard – 441 to U.S. 1;
- Hollywood Boulevard;
- I-595;
- Davie Boulevard – University to U.S. 1;
- Broward Boulevard;
- Oakland Park Boulevard;
- Commercial Boulevard;
- Cypress Road;
- Atlantic Boulevard; and
- Sample Road.

Figure 4.2 Average Speed during the Weekday Afternoon Peak Period within Broward County



In summary the corridors with speed concerns are the same as those reflected in the existing LOS results from the Broward County Long-Range Transportation Plan.

Reliability Measures on I-95

Reliability on I-95 was calculated as part of FDOT's Mobility Performance Measures prepared by Kittelson and Associates, November 2001. To understand the definition of reliability, the concept of Acceptable Travel Time should first be explained.

- **Acceptable Travel Time –** The expected travel time for a defined roadway segment plus a small amount of additional time that motorists are willing to tolerate, as shown in the following formula:

$$\textit{Acceptable Travel Time} = \textit{Expected Travel Time} + \textit{Acceptable Additional Time}$$

Where:

- **Expected Travel Time –** The median travel time across the corridor during the analysis period. The median is used rather than the mean so that the value of the expected travel time is not influenced by any unusual major incidents that may have occurred during the sampling period.

- **Acceptable Additional Time (Delta) –** A percentage of the expected travel time that motorists are willing to tolerate. Delta values of five, 10, and 20 percent above the expected travel time have been considered. Agencies typically select the threshold they consider most appropriate for the facility. FDOT has not yet selected a delta threshold for reporting reliability.

A roadway segment is considered reliable when congestion levels and travel times are consistent over a period of time, providing acceptable travel times for travelers. For example, if the same trip takes five minutes one day and 40 minutes the next day, then there is no consistency and the trip is considered unreliable.

- **Reliability –** The percentage of the total number of trips observed during the analysis period that fall within Acceptable Travel Time.

In FDOT's Mobility Performance Measures report, roadway speed and volume data were collected using the existing FDOT Portable Traffic Monitoring Sites along I-95 between I-595 and S.W. 10th Street. The reliability results for five percent Delta and 10 percent Delta are shown in Table 4.8 below:

Table 4.8 Reliability Results on I-95

	Northbound			Southbound		
Acceptable Additional Time (Delta)	Expected Travel Time (min)	Acceptable Travel Time (min)	Reliability	Expected Travel Time (min)	Acceptable Travel Time (min)	Reliability
5%	13.2	13.9	95%	14.8	15.5	75%
10%	13.2	14.5	100%	14.8	16.3	95%

The study has found that using a 10 percent delta value northbound travel is considered reliable (100 percent), and southbound is 95 percent reliable.

In addition, the travel characteristic profile methodology – developed by Washington State Department of Transportation – was performed. A roadway is considered congested if the average speeds drop below 45 mph per the Highway Capacity Manual speed-flow profile. Congestion was not shown for either direction since average trip speeds did not drop below 45 mph during either 2000 or 2001 conditions.

Figures 4.3 and 4.4 depict the estimated travel time reliability on northbound and southbound I-95.

Figure 4.3 2001
Northbound I-95

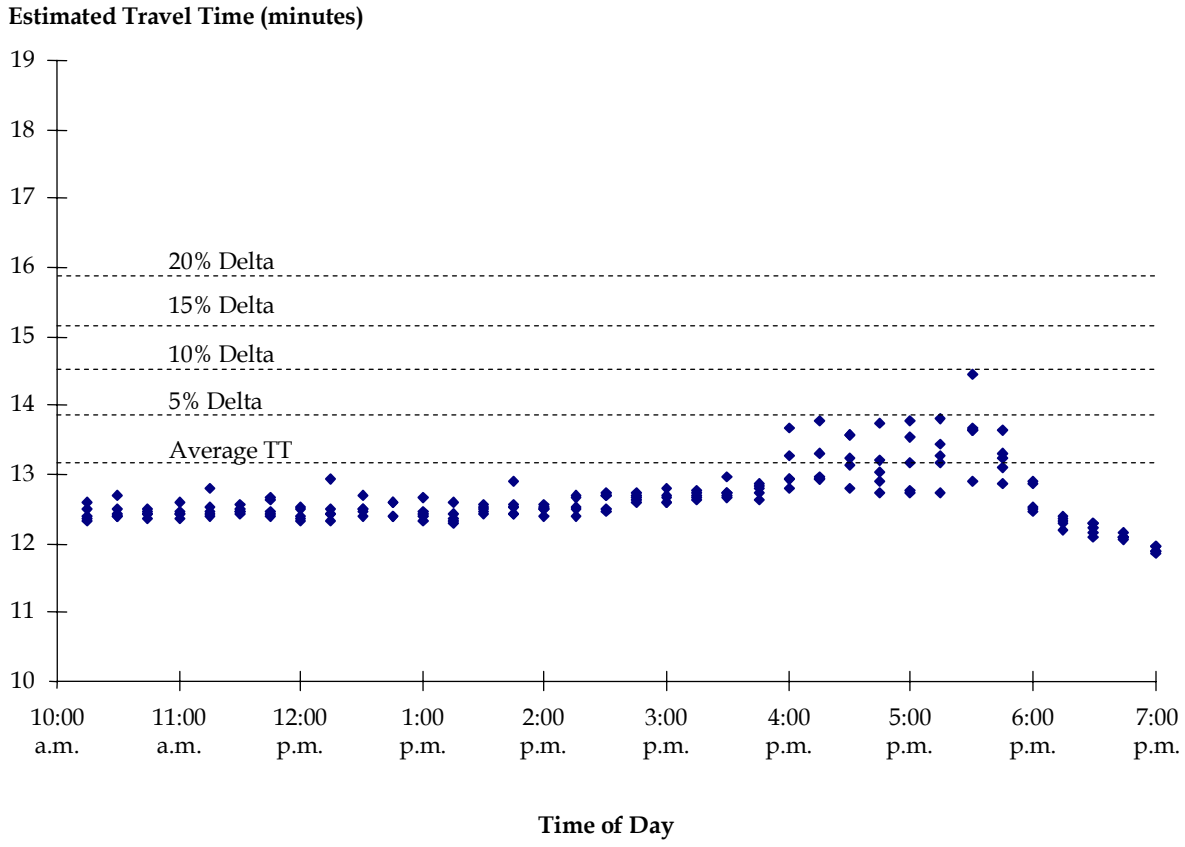
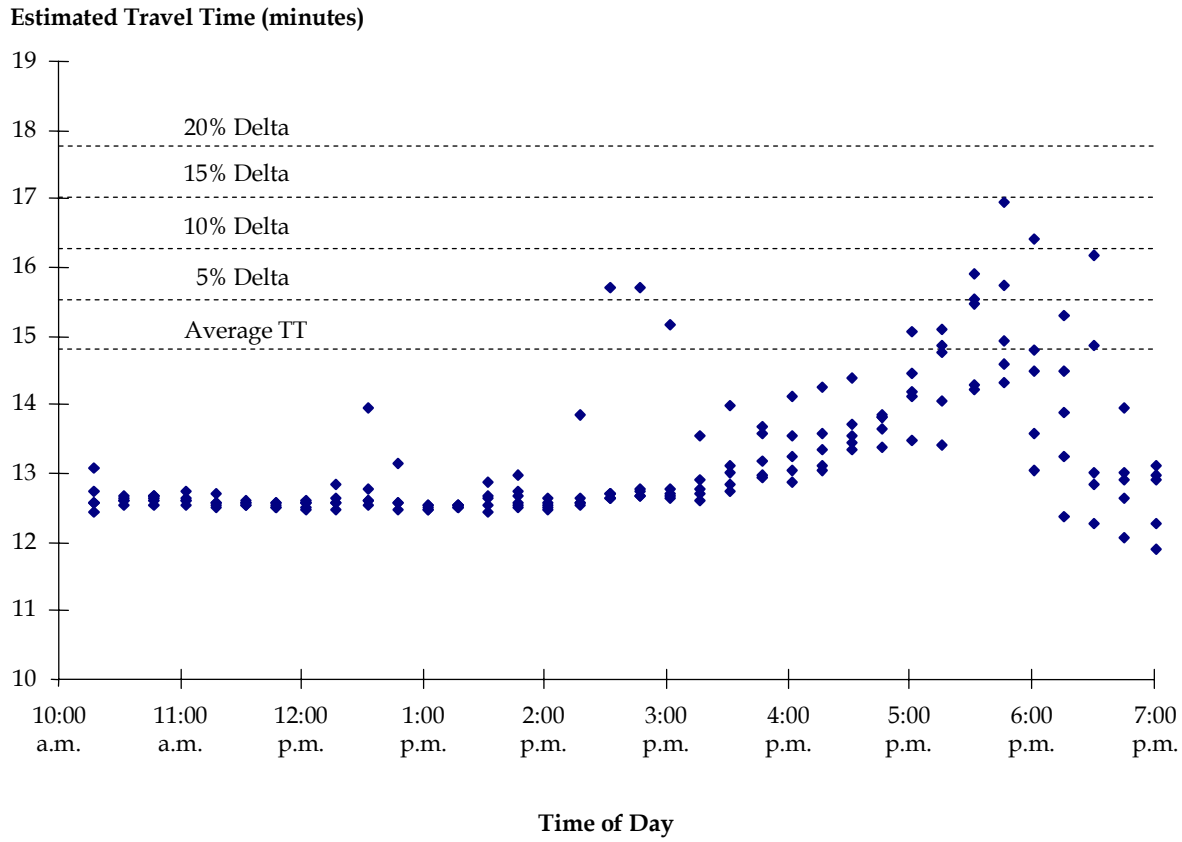


Figure 4.4 2001
Southbound I-95



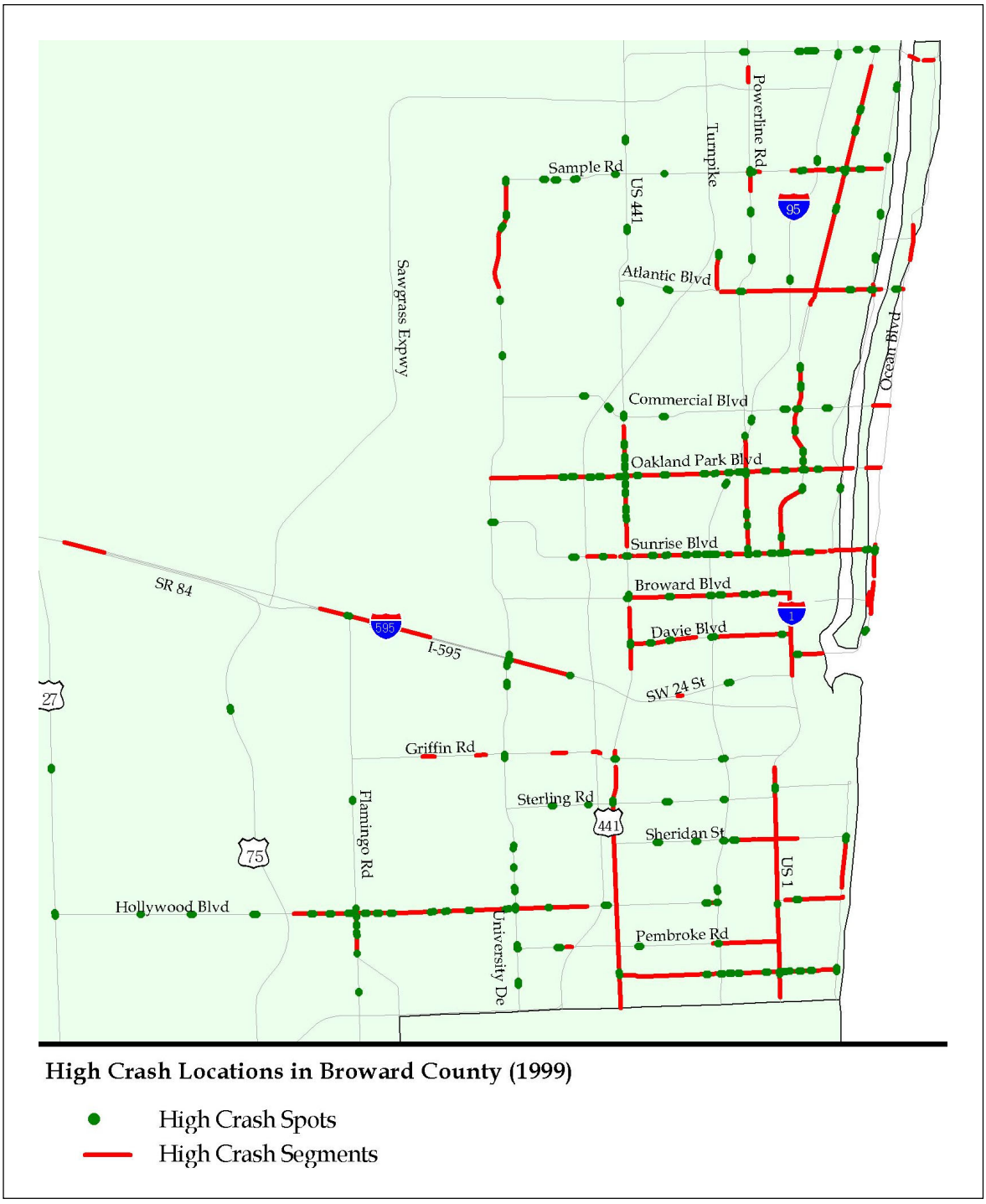
4.4 Safety Issues in Broward County

High-Crash Locations in Broward County (All Vehicles)

Figure 4.5 illustrates the high-crash locations (represented by a crash ratio that exceeds 1.0) provided by FDOT District 4 for state highways in Broward County. Data has been summarized for 1999. A number of spots (intersections) and segments (roadway segments between intersections) have been identified as high-crash locations. The key facilities of concern include the following:

- Oakland Park Boulevard – University Drive to A1A;
- Sunrise Boulevard – Turnpike to A1A;
- W. Hollywood Boulevard – I-75 to Turnpike;
- U.S. 441 particularly in the vicinity of Oakland Park Boulevard and South of Griffin Road;

Figure 4.5 High-Crash Locations in Broward County



- Old Dixie Highway in the vicinity of Oakland Park Boulevard and north of Atlantic Boulevard;
- Hallandale Beach Boulevard – 441 to A1A;

- Broward Boulevard between U.S. 441 and U.S. 1;
- Davie Boulevard between U.S. 441 and U.S. 1; and
- Atlantic Boulevard East of Powerline Road.

With the exception of I-95 and I-595, these segments are the same as those identified with a level of service E/F in the Broward County Long-Range Transportation Plan.

Truck Crash Data

In an effort to understand the truck crash conditions in Broward County, data has been summarized from the Florida Traffic Crash Database Directory provided by the Department of Highway Safety and Motor Vehicles, Office of Management and Planning Services.

Year 1998 to 2000 data was collated and summarized for commercial truck crashes that did not involve alcohol or drugs. In the state of Florida there is approximately half a million crashes per year, and of these approximately 30,000 occur in Broward County. Of all crashes three percent are related to commercial truck vehicle use, with approximately 0.3 percent related to vehicles carrying hazardous materials. Broward County is consistent with the State averages, and has not substantially increased between the subject years.

The roadway corridors that experience the most crashes have been summarized in Table 4.9 for all crashes and Table 4.10 for truck crashes. For all crashes, the corridors that experience the most crashes in the County include I-95, 441, University Drive, Oakland Park Boulevard and U.S. 1. Aside from I-95, the order of roadway corridors that experience high truck crashes is inconsistent from year to year. In general, the high truck crash corridors include U.S. 441, I-595, I-75, U.S. 27 and the Turnpike.

Table 4.9 Top 10 Roadways where Crashes Occur (All Vehicles)

Roadway	Percent of Total Crashes 98	Roadway	Percent of Total Crashes 99	Roadway	Percent of Total Crashes 00
I-95	11.96%	I-95	11.67%	I-95	12.38%
U.S. 441	7.44%	U.S. 441	7.21%	U.S. 441	7.72%
University Drive	7.08%	University Drive	6.69%	University Drive	5.48%
Oakland Park Boulevard	4.98%	Oakland Park Boulevard	4.68%	Oakland Park Boulevard	4.61%
U.S. 1	4.62%	U.S. 1	4.37%	U.S. 1	4.28%
Hollywood Boulevard	4.38%	Hollywood Boulevard	4.29%	Sunrise Boulevard	4.12%
Sunrise Boulevard	4.13%	Sunrise Boulevard	4.20%	Hollywood Boulevard	3.74%
Commercial Boulevard	3.91%	Commercial Boulevard	3.61%	Turnpike	3.21%
Sample Road	2.93%	Sample Road	3.25%	Sample Road	3.16%
Powerline Road	2.78%	Broward Boulevard	2.95%	Commercial Boulevard	3.07%

Table 4.10 Top 10 Roadways where Truck Crashes Occur

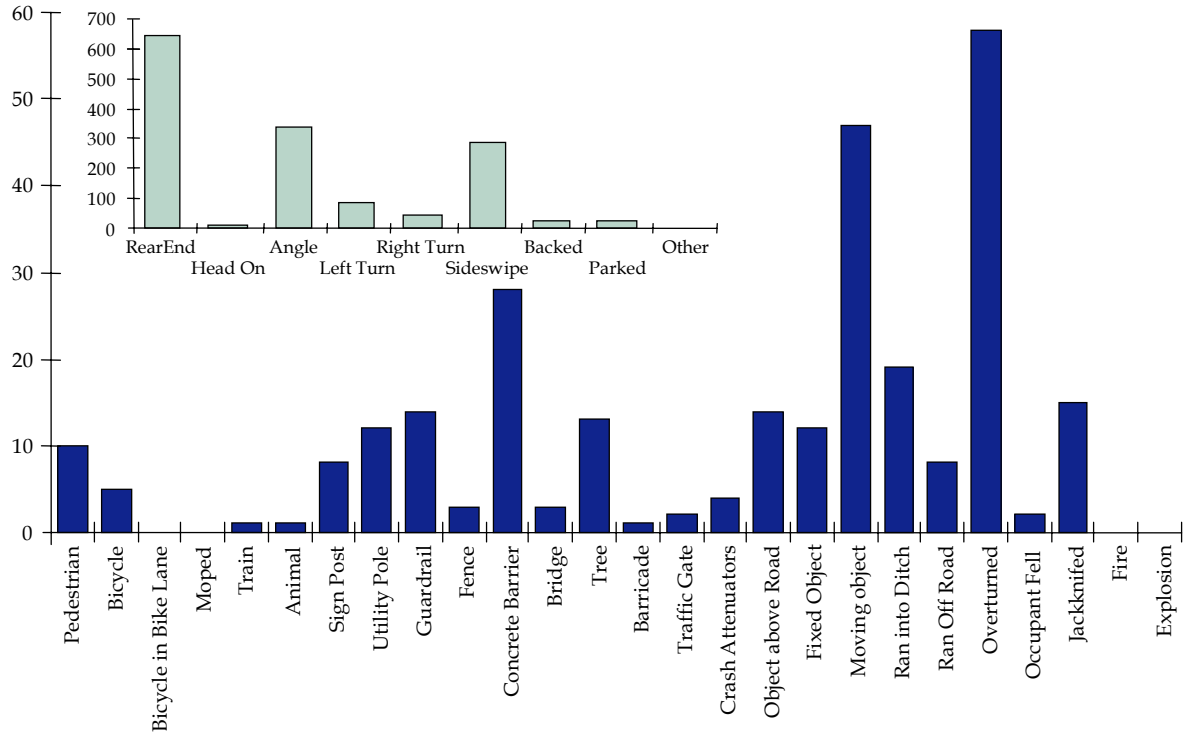
Roadway	Percent of Total Truck Crashes 98	Roadway	Percent of Total Truck Crashes 99	Roadway	Percent of Total Truck Crashes 00
I-95	25.07%	I-95	24.14%	I-95	25.35%
U.S. 441	6.05%	U.S. 441	5.96%	Turnpike	6.57%
I-595	5.46%	I-75	5.17%	Powerline Road	5.79%
U.S. 27	4.87%	U.S. 27	4.39%	I-595	5.79%
Turnpike	4.42%	I-595	4.08%	I-75	3.91%
I-75	4.13%	Turnpike	3.76%	U.S. 441	3.44%
Powerline Road	3.54%	Powerline Road	3.61%	Sample Road	3.13%
Hollywood Boulevard	3.39%	Commercial Boulevard	3.29%	Hollywood Boulevard	3.13%
Sample Road	3.24%	Hollywood Boulevard	3.29%	U.S. 27	3.13%
Hallandale Boulevard	3.24%	Sunrise Boulevard	2.66%	University Drive	2.50%

The truck crashes have been sorted by a number of crash variables. These include: a description of the harmful event, location, roadway conditions, environment and weather, as well as a summary of time of day and day of week.

Harmful Event

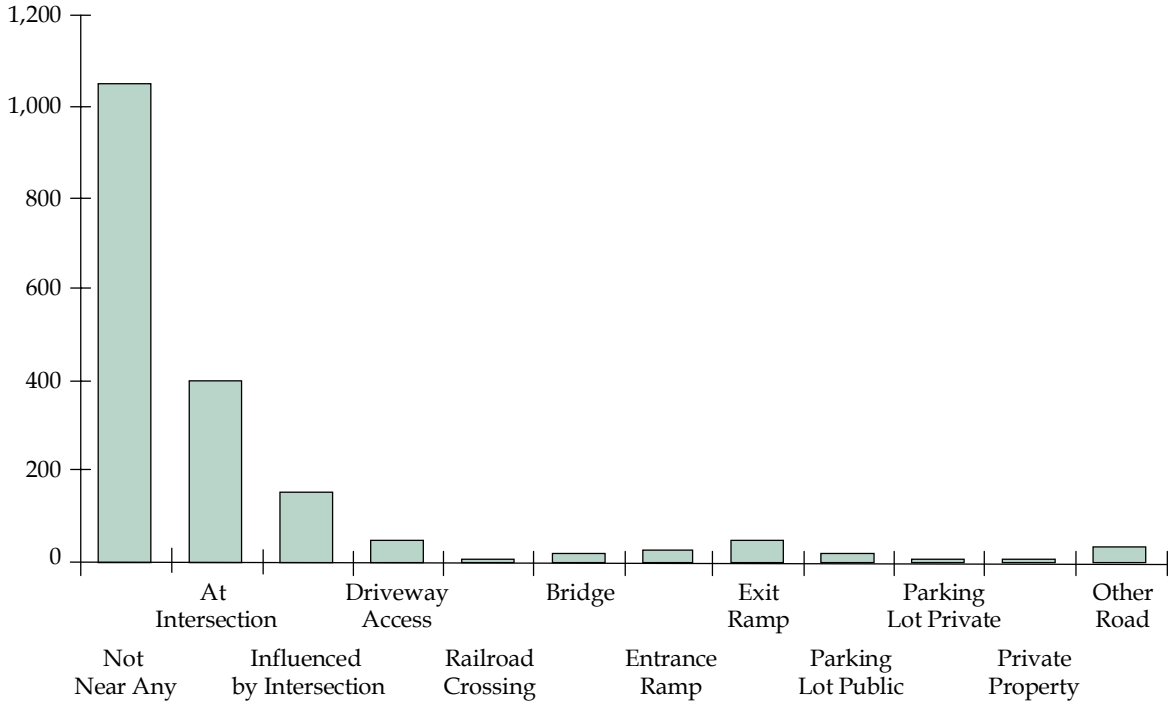
A harmful event is the main occurrence that resulted in harm. Figure 4.6 illustrates the number of each harmful event over the three-year period between 1998 and 2000. The events have been broken into two sections – crashes that occur with another vehicle, and crashes that do not occur with another vehicle. The rear-end vehicle crash is the most common. In the second section, it is interesting to note that an overturned crash is the most common – although only one-tenth of the rear-end crashes. Trucks primarily overturned on U.S. 27, I-95, I-595 and I-75. Along I-95 and I-595 the crashes were mostly located on the ramps, however, the crashes did not frequently occur on any particular ramp along these corridors.

Figure 4.6 Harmful Events for Truck Crashes



The locations of truck crashes are described in Figure 4.7. The majority of truck crashes are categorized as 'Not Near Any Intersection, Bridge or Crossing', followed by at or influenced by an intersection. Please note that 'Other Road' can be anything other than the listed categories, as defined by the police officer filling out the crash report.

Figure 4.7 Location of Truck Crashes



Road Conditions

The majority of truck crashes (98 percent) occurred on roadways with no defects. A small number of crashes (one percent) were reported on roadways under repair.

Environmental Conditions

The majority of truck crashes (93 percent) occurred when the drivers' vision was unimpaired. Inclement weather was reported for three percent of the incidences. Eighty-five percent of incidents occurred when it was daylight, dry and clear.

Traffic Control

Sixty-four percent of truck crashes were not affected by traffic control. Twenty-five percent occurred at signals and 3.5 percent occurred at special speed zones or stop signs.

Time and Hour of Day

Figure 4.8 illustrates the number of truck crashes by hour of the day. The distribution is relatively flat between 9:00 a.m. and 6:00 p.m. Figure 4.9 illustrates the number of crashes by day of the week. Most crashes occur on a Monday, Tuesday, or Friday.

Figure 4.8 Frequency of Crashes by Hour of the Day

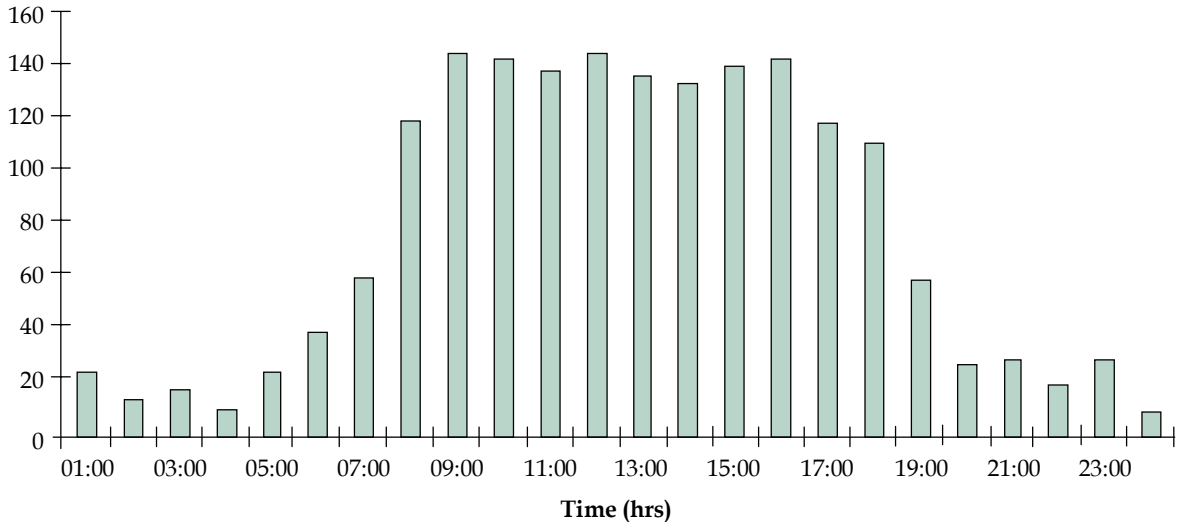
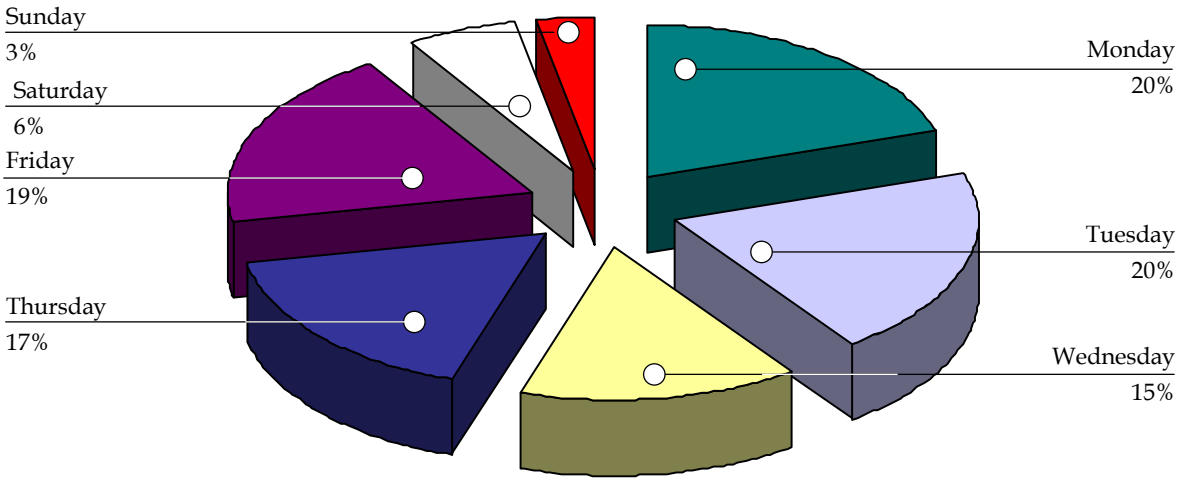


Figure 4.9 Frequency of Crashes by Day of the Week



The severity of the crash was also examined for the categories described above. In general the same conditions applied.

4.5 Summary

In an effort to identify the ITS and key transportation mobility, safety and security issues for freight movements a number of related documents have been reviewed.

Existing and planned ITS improvements were collated from a number of sources and have been broken into the following categories: Advanced Traveler Information Systems (ATIS); Advanced Traffic Information Systems (ATIS); Emergency Management (EM); and Commercial Vehicle Operations (CVO). The existing and planned ITS in Broward County are shown in Table 4.11.

Table 4.11 Summary of the Existing and Planned ITS in Broward County

Existing	Planned
Advanced Traveler Information Systems (ATIS)	
Commuter Services Info. Systems Ride Matching (South FL Commuter Services)	SunGuide Advanced Traveler Information System
District 4 Static and Planned Traveler Info. System (FDOT D4 Public Info Office)	
Turnpike District Static and Planned Information System	
SmartRoute Systems	
Florida DOT Traffic Information Web Page	
Advanced Traffic Management Systems (ATMS)	
Turnpike Traffic Management Centers	I-595/I-95 Dynamic Message Sign System
CSXNS and FEC Rail Operations Centers (Rail Operator)	Freeway Video Monitoring System
Ti-Rail Commuter Rail System (Tri-Co Commuter Rail Authority)	Advanced Traffic Management System (ATMS)
	Advanced Incident Information System (AIIS)
	Arterial Incident Detour Route Signing System
	Oakland Park Congestion Management System (CMS)
	17th Street Causeway CMS
	Sunrise Boulevard CMS
	Atlantic Boulevard CMS
	S.R. 7/U.S. 441 CMS

Table 4.11 Summary of the Existing and Planned ITS in Broward County (continued)

Existing	Planned
Emergency Management	
Broward County Fire Rescue Dispatch (Broward County Fire Rescue)	Freeway Incident Management Team
Broward/Palm Beach SunGuide Service Patrol Dispatch (FDOT D4)	SunGuide Road Rangers Service Patrol
FDOT District Emergency Operations Centers	
Florida Highway Patrol Dispatch (FL Highway Patrol)	
Commercial Vehicle Operations (CVO)	
HAZMAT (CHEMTREC)	CVO Parking Facility (FDOT)
Florida Vehicle Fleet Dispatch Systems (FL Vehicle Fleet Operators)	Automated Collision Notification System (Commercial Vehicle Fleet Operators)
Over Dimension Permit System (FDOT Central Maintenance)	Automated Routing and Permitting Software Design and Development (FDOT)
License, Registration, and Fuel Tax System (Florida Department of Highway Safety and Motor Vehicles)	Electronic Payment Option (FDOT)
	Electronic Screening and Weight Stations (FDOT)

Currently, there are several freight-related improvements within the County. The Port is focusing efforts to improve security access. Due to the increasing demand on Eller Drive from both cargo and cruise traffic at the Port, the Florida Department of Transportation is also investigating opportunities to improve operations along Eller Drive.

An investigation of speed, level of service, and high-crash locations in Broward County revealed consistent roadways with mobility and safety concerns:

- I-95;
- U.S. 441;
- Hallandale Beach Boulevard;
- Hollywood Boulevard;
- I-595;
- Davie Boulevard;
- Broward Boulevard;
- Oakland Park Boulevard;
- Commercial Boulevard;
- Cypress Creek Road;

- Atlantic Boulevard; and
- Sample Road.

In an effort to understand the truck crash conditions in Broward County, data has been summarized from the Florida Traffic Crash Database Directory provided by the Department of Highway Safety and Motor Vehicles, Office of Management and Planning Services. In general, the corridors with the highest truck safety issues include I-95, U.S. 441, I-595, I-75, U.S. 27 and the Turnpike. As part of the ITS Corridor Master Plan I-95, I-595, I-75 and the Turnpike will implement a number of ITS components – none specifically related to freight and goods movement.

The truck crashes were also sorted by a number of crash variables including: a description of the harmful event, location, roadway conditions, environment and weather, as well as a summary of time of day and day of week. These variables did not illustrate specific trends or locations of concern that could be addressed through ITS deployment.

5.0 Future Data Needs

Through the data collection process, future data were identified as potentially useful planning tools. Tying together the following data sets into one integrated database would vastly increase the understanding of freight-related issues in the region:

- Florida Department of Transportation (FDOT) Traffic Information CD – containing various traffic volume reports;
- FDOT Roadway Characteristics Inventory (RCI) Database – containing statewide general interest roadway data;
- FDOT Crash Analysis Reporting System (CARS) and Safety Management System (SMS) Database – containing statewide safety information;
- Real-time traffic database – containing information from the area's traffic management centers as well as truck volumes on the Turnpike;
- CVO database – containing administrative information on permitting; and
- MPO database – any available long-range traffic data from the three MPOs.

A few additional and existing resources were identified that would also be helpful. Cambridge Systematics will continue to collect these data as time and resources permit over the course of this project.

- A copy of the application package that FDOT District 6 submitted for FY 2003 federal funds to integrate their systems, with a focus on freight security-related functions for I-595, I-95, and I-75.
- Additional information on the plans for two intermodal centers being planned in Miami-Dade County: the Miami Intermodal Center at the Miami International Airport and the Golden Glades Intermodal Center.
- The current status of the proposed Miami-Dade MPO elevated truck bypass along I-95, which will extend from the Miami International Airport to 36th Street, north of the Palmetto Expressway.
- The status of traveler information kiosks at the Miami International Airport.
- More information on a possible private sector travel information provider run by the trucking industry.

- Information on the locations of DMS signs in Broward County. DMS signs were mentioned as an ITS technology that would improve FLL airport operations, as they would enable the airport to provide messages to airport visitors. This would be especially effective during security incidents, when one or more airport terminals could be shut down. Are there DMS currently deployed by other agencies on roadways accessing the airport? If so, does FLL use those signs in such emergency situations?

- More information on the Port Everglades Security Program. A summary of the Port's new security program, from an operational perspective, will soon be provided to Cambridge Systematics.

- A "high-crash list" from FDOT District 4 that lists most dangerous intersections in the region.

- As part of the District 4's Interim Traffic Management System, a database listing major incidents on I-95 in Broward and Palm Beach counties.

Appendix A

Port Everglades Security Program
Coordination Memorandum

May 29, 2002

Chris Novack
Broward County Commission
Port Everglades Department
1850 Eller Drive
Fort Lauderdale, Florida 33316-4201

Re: Communications Request for Consideration and Inclusion in the Port Security Program

Dear Mr. Novack:

Thank you for offering to install additional communications infrastructure as part of your security program. Such communications will facilitate information exchange as well as the future deployment of Intelligent Transportation Systems (ITS). As you are aware, ITS has tremendous potential to make Port access roads safer, more secure, efficient, and user-friendly. The installation of ITS devices would benefit the Port and your customers, the traveling public, as well as other regional agencies including the MPO, Florida Department of Transportation (FDOT) and Broward County Traffic Engineering. Strong communications and inter-jurisdictional information exchange are vital for a successful regional ITS program, especially during incidents, emergencies and special events. We appreciate your generosity and look forward to continuing to work with you in the future.

At the Port Security Program Coordination Meeting on April 26, 2002, we learned about your security program plans. It is our understanding that two conduits for fiber optic cable will be installed at the Port as part of the new security program. The specification for each conduit cross-section is 2-inch PVC. The conduits will be installed around the perimeter as well as within Port property. At this meeting, the Port requested information from Broward County and FDOT regarding what conduit capacity may be required for future information exchange purposes. This letter defines our requested communications infrastructure for your consideration and inclusion in the Port's security construction plans.

We would like to request the installation of two additional 2-inch PVC conduits in your communications trenches alongside the two you are already planning on installing in and around the Port (for a total of four conduits). We would like for the conduit to terminate in a Junction Box at the intersection of the easternmost edge of Port property at the northernmost border of Eller Drive/I-595. We believe that this is the safest location to protect the junction box from being damaged during the Eller Drive Reconstruction project.[1] Please keep in mind that

[1] It is assumed that the origination point of the conduit is the communications interface between the conduit and the Security Operations Center (SOC).

since the conduit will be installed before Broward County or FDOT will be prepared to tie into them, accurate as-built drawings will be extremely important. The availability of as-built drawings will ensure integration of the Port's communications infrastructure with those of FDOT and Broward County with minimal disruption.

Additionally, FDOT is required by the Federal Government to comply with the National Transportation Communications for ITS Protocol (NTCIP). To ensure interoperability with the Traffic Management Center (TMC) in Broward County and its related field devices, it is recommended that the Port's security program address the requirements of the NTCIP and the associated standards. Detailed information about NTCIP can be found at www.ntcip.org.

Most importantly, it's imperative to start defining the policies and procedures for coordination, information exchange and cross-agency operations among Port Everglades, Broward County and FDOT. This will likely require the development of a Memorandum of Understanding (MOU), partnership agreement, etc.

We look forward to future discussions on these topics to ensure the development of a coordinated intermodal ITS program for Broward County. If you have any questions on our requests, please do not hesitate to contact us. Again, we look forward to working with you.

Sincerely,

BROWARD COUNTY COMMISSION
Department of Planning and Environmental Protection

Bruce Wilson
Staff Director

cc: Mario Aispuro, Broward County MPO, fax: (954) 357-6645
Mark Plass, Florida DOT, District IV, fax: (954) 777-4398
Jeff Weidner, Florida DOT, District IV, fax: (954) 677- 7892
Richard Young, Florida DOT, District IV, fax: (954) 777-4671
Israel Rozental, Port Everglades, fax: (954) 765-5389
Scott Lagueux, Bermello, Ajamil & Partners, fax: (305) 859-9638
Patrick Szutar, Bermello, Ajamil & Partners, fax: (305) 859-9638
Cambridge Systematics, fax: (617) 354-1542 – MTW and JBS

Appendix B

Interview Guide

ITS Intermodal Plan for Broward County

Interview Guide

Agency Name: _____

Interviewee(s): _____

Title/Position: _____

Phone/Fax/Email: _____

Mailing Address: _____

HQ Location: _____

Purpose of study

Cambridge Systematics is about three-quarters of the way through a Freight and Goods Movement Study (FGMS) for the Broward County Metropolitan Planning Organization (BCMPO). As an additional component, the BCMPO, in close coordination with the and Florida Department of Transportation (FDOT) District 4, has expanded this study to include the development of an ITS Intermodal Plan for Broward County. This is driven in part by the necessity to consider the needs of the freight industry in developing Intelligent Transportation Systems (ITS) programs for the county, and in part by the recent homeland security issues that impact key freight generators, like ports, airports and railroad terminals.

We currently are conducting interviews with the region's freight stakeholders to gain an accurate understanding of how the existing transportation infrastructure is being used for freight, to identify the strengths and weaknesses, and to provide all involved parties with the opportunity to participate in developing the list of recommended improvements. We are also looking to identify key transportation mobility, safety and security issues for freight movements that can potentially be mitigated through the use of ITS technologies. The goal of this effort is to define the existing system and provide recommendations for the development of an ITS intermodal infrastructure.

The purpose of our interview is to collect information from you on the roles and responsibilities of your agency, to learn about the region's current and planned ITS initiatives, and to give you an opportunity to identify any key issues facing the region.

1) Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]

   _____

   _____

   _____

   _____

2) Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]

_____

_____

_____

_____

3) What are the major transportation issues/problems in your urbanized area and/or region? Please list:

_____

_____

_____

_____

_____

4) What are the major transportation issues/problems for your agency? Please list:

_____

_____

_____

_____

_____

5) What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:

a) Congestion

_____

_____

b) Safety

_____

_____

c) Freight and goods movement

_____

_____

d) Lack of access/mobility

_____

_____

e) Air and noise pollution

_____

_____

f) Negative impact on surrounding land uses

_____

_____

g) Security

_____

_____

h) Tourism/Economic health

_____

_____

i) Other (please explain)

_____

_____

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with **1 being the least helpful** and **10 being the most helpful.**

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status

Rank [1-10]	ITS-related information
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with **1 being the least beneficial** and **10 being the most beneficial.**

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? **Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.**

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

_____

_____

_____

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

_____

_____

_____

11) What institutional barriers exist to implement new technologies in your organization?

_____

_____

_____

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

_____

_____

_____

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

_____

_____

_____

_____

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

_____

_____

_____

_____

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

_____

_____

_____

ii) How does coordination occur between agencies and other project participants?

_____

_____

_____

iii) Does the project involve freight/goods movement? If so, how?

_____

_____

_____

iv) Please describe strengths and weaknesses of the project.

_____

_____

_____

v) What could be done to improve the weaknesses?

_____

_____

_____

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

_____

_____

_____

vii) If freight is involved, are there specific improvements with regard to freight?

_____

_____

_____

viii) Can you supply any data or reports that might be helpful for our study?

_____

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

_____

_____

_____

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

_____

_____

_____

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

_____

_____

_____

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

_____

_____

_____

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

_____

_____

_____

22) Do you have any other comments or issues that you would like to discuss?

_____

_____

_____

Appendix C

Interview Summaries

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Broward County Metropolitan Planning Organization (MPO)**
115 S. Andrews Ave., Room 329-H, Ft. Lauderdale, FL 33301
Interviewee(s): **Enrique Zelaya: (954) 357-6635 ezelaya@broward.org**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Broward County Metropolitan Planning Organization (BCMPO) is responsible for directing urban transportation planning and the allocation of federal and state funds in the Broward County region. The BCMPO oversees the approximately $400 million the County regularly receives annually in federal and state transportation funding.

The BCMPO comprises nineteen members including representatives from thirteen cities, Tri-Rail, the Broward County School Board and the League of Cities, and three Broward County Commissioners. It is responsible for the county's long-range transportation plan (LRTP), a transportation improvement program (TIP) and a unified planning work program (UPWP) described below.

The MPO has increased its activity in freight planning through the development of the Broward County Freight and Goods Movement Study. However, despite the completion of the FGMS, there is not much emphasis on freight issues at the MPO. Most transportation improvements are geared at improving passenger mobility with only coincidental benefits provided to freight movements.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Enrique is heavily involved in congestion mitigation in the county and works very closely with Mario Aispuro, project manager for both the FGMS and the ITS plan. Enrique or another representative from the MPO regularly attends the ATIS Quarterly meetings.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

- **Congestion on major corridors**. Congestion is a particular concern on east-west routes, especially I-595.
- **Local distribution provided by major arterials**. Arterials in the Broward MPO region not only carry significant passenger traffic, but also serve as the primary network for local freight distribution.
- **Drawbridges on the Inter-Coastal Waterway**. Drawbridges along the Inter-Coastal Waterway cause delays and queues for both passenger and freight traffic, particularly

during peak season. This problem has been attenuated slightly, as Broward County now has some say in how often the bridges are raised and lowered.

- **At-grade rail crossings**. There are several at-grade rail crossings within the County which often cause queues and spill back to other intersections.
- **Drainage**. Some of Broward County's roadways are inadequately drained, resulting in flooding and decreasing the number of alternate routes available to travelers.

4) ***What are the major transportation issues/problems for your agency? Please list:***

- **Fragmented planning and project development process**. The SE Florida region is divided among several large MPOs (Miami-Dade, Broward, and Palm Beach) and two FDOT districts (IV and VI). These entities do not coordinate their transportation planning activities very well due, in part, to jurisdictional and other issues. As SE Florida is essentially one large urbanized area, transportation planning needs to happen on a more regional scale.
- **Lack of coordinated crash database**. Cities, counties, and the state all collect and maintain separate crash data, though there is little coordination among the three systems. As a result, it is difficult to obtain and analyze crash data in order to determine dangerous intersections and corridors. This is a particular problem on new roads built by developers, which often do not appear in any of the three crash databases.
- **MPO transition from roadway services to transit**. The focus of the MPO's planning efforts have begun to shift from traditional roadway improvements, services, and capacity enhancements to transit. This increased emphasis on improving transit service has recently become a focus of the political establishment in the area.
- **Lack of understanding by decision-makers**. Many decision-makers in the MPO region do not completely understand the benefits of investment in ITS. Perhaps an outreach/education/awareness initiative could strengthen their understanding.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion

East-west facilities, particularly I-595.

b) Safety

(See Lack of Coordinated Crash Database above)

c) Freight and goods movement

Major arterials (backbone of local distribution network)

d) Lack of access/mobility

N/A

e) Air and noise pollution

MPO is concerned with the transport of HAZMAT to and from Port Everglades.

f) Negative impact on surrounding land uses

N/A

g) Security

N/A

h) Tourism/Economic health

N/A

i) Other (please explain)

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

While it has no incident management responsibility, the Broward County MPO is involved in the SE Florida Incident Management Working Group, which has met approximately every 2 months for the past 3 years. Other members include public and private stakeholders from the tri-county region, the Florida Highway Patrol, other law enforcement agencies (Sheriffs) and FDOT. This group is active in identifying and addressing operational and coordination efforts for incident management.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

Not discussed.

11) What institutional barriers exist to implement new technologies in your organization?

There is a lot of investment in ITS at the state level ($1.5B over the next 10 years), but local decision-makers are not yet convinced enough of the benefits of ITS to invest in it.

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

If this study could identify a pilot program to demonstrate the benefits of ITS, local decision-makers may be more likely to invest in a larger-scale deployment.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

An outreach/education effort to inform end users (truckers, railroads, the public, etc.) about ITS would be helpful.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- The Arterial Incident Detour Route Signing Systems project involves traffic control devices, arterial incident detour system, and detour route signs countywide.

- The SunGuide Regional Advanced Traveler Information System project is a regional ATIS that will collect, compile and disseminate real-time travel information to motorists for the tri-county area.
- The ATIS Operations project provides technical staff to operate the DMS and CCTV cameras deployed throughout Broward and Palm Beach counties.
- The Advanced Public Transportation System (APTS) Master Plan project will guide the development of transit projects in Broward and Palm Beach counties. ITS components include SmartCards, transit priority at traffic signals, and automatic vehicle location (AVL) for buses.
- The Freeway Video Monitoring System (FVMS) includes the first phase of CCTV camera deployments along the freeway system in Broward County.
- The Advanced Incident Information System (AIIS) project will deploy flashing beacon signs and a highway advisory radio (HAR) system along arterials in Broward County that have interchanges with I-95.
- The I-75 ITS Master Plan project will generate a detailed plan for the deployment of ITS devices along the I-75 corridor in Broward County.
- The I-95-I-595 Video Monitoring System project will be the final phase of the CCTV deployment started under the FVMS.
- The Broward County ITS Operations Facility is a Traffic Management Center (TMC) that will be designed to house monitoring and control capabilities for the I-595/I-95 DMS System, the FVMS, the Broward County Signal System, the ATIS, and the AIIS.
- The Traffic Engineering project includes the installation of traffic signal preemption devices and replace approximately 200 traffic signal controllers on Oakland Park Boulevard, State Road 7, Sunrise Boulevard, and Atlantic Boulevard.
- The Broward County Advances Traffic Management System (ATMS) project involves the installation of a new centrally controlled signal system, new 2070 controllers, and a new fiber optic communications system.
- The Traffic Control Devices/System for Broward County Traffic Engineering ITS Program.
- The ITS Project Automatic Vehicle Location (AVL) Systems for transit.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Yes, see above. Currently, the efforts of FDOT Districts IV and VI, Broward County, Miami-Dade County, Palm Beach County, and the private sector are not well coordinated. As neither freight nor passengers acknowledge jurisdictional boundaries during their trips, transportation planning in the region- including ITS deployments- should occur at a regional level.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

Not discussed.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Scott Seeburger, FDOT District IV. Scott is the project manager for two large corridor projects (I-75 and I-95 improvements).

22) Do you have any other comments or issues that you would like to discuss?

No.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Broward County Commission**
Traffic Engineering Division
2300 West Commercial Blvd., Ft. Lauderdale, FL 33309

Interviewee(s): **Murali Pasumarthi: (954) 484-9600, ext. 280 mpasumarthi@broward.org**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Broward County Traffic Engineering Division will be responsible for staffing and managing the new Traffic Operations Center (TOC) when complete. Obviously, the TOC will track and manage all traffic, not solely freight or passenger movements. The basic infrastructure for the TOC is already in place. When compete, it will be a fully redundant IPO-internet based system with the following equipment:

- 300 CCTV cameras;
- 50+ DMS on freeways;
- 80+ DMS on arterials; and
- Adaptive traffic control signal system.

The 40,000 square foot, two story facility has already been funded. The construction contract is expected to awarded in July 2002 and the facility is expected to be complete in July of 2004.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Murali is an ITS Engineer and the project manager for the construction of the Broward County TOC.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

- **Congestion on major east-west arterials**. The east-west arterials in the region consist of major 6-lane divided boulevards. These arterials have very well defined directional traffic: 80% of traffic goes east during the AM peak and 80% goes west during the PM peak.

- **I-595 @ Port Everglades**. One major problem with access to Port Everglades is that though speed limits in the area have been reduced, truckers continue to speed. Speed, combined with the poor geometrics of the roadway leading to the Port, creates a major safety hazard.
- **At-grade rail crossings**. There are several at-grade rail crossings within the County which often cause queues and spill back to other intersections.

4) What are the major transportation issues/problems for your agency? Please list:

Not discussed.

5) What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:

a) ***Congestion***
Not discussed**.**

b) Safety

I-595 at Port Everglades

c) Freight and goods movement

Not discussed.

d) Lack of access/mobility

Not discussed.

e) Air and noise pollution

Not discussed.

f) Negative impact on surrounding land uses

Not discussed.

g) Security

Not discussed.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information

Rank [1-10]	ITS-related information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight

Rank [1-10]	Improvements
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

The Broward County TOC, when complete, will house multiple agencies in an attempt to enhance incident management and response capabilities. Agencies to be housed in the new TOC include FDOT, Broward County Traffic Engineering, and Broward County Transit. In addition, the TOC will be tied in to Florida Highway Patrol and the Broward County Emergency Operations Center.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Not discussed.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	Measures of Effectiveness
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time

Rank [1-10]	Measures of Effectiveness
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Not discussed.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

In addition to the TOC, Murali identified two other local and regional projects:

- **Bus priority & emergency preemption signal system**. This project will provide priority signals to buses and emergency vehicles at 200 intersections within Broward County. The GPS-based system will be deployed on one north-south roadway and three east-west roadways. The goal is to allow access to all 3 trauma centers in the area. As part of the project, ambulances and fire trucks in the region are being outfitted with transponders (not police). The project is expected to be complete on or about September 30th, 2002.
- **Railroad crossing information project**. This is a multi-phase project that is designed to provide a warning to train operators if an automobile or other obstacle is present along the tracks of an at-grade crossing. This system exists at five crossings within Broward County with the potential for expansion to other crossings in the future.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

Jeff Widener of FDOT District IV submitted a proposal to FHWA to conduct a speed study at Eller Drive (I-595 terminus). The proposal was not funded, but his write-up might be helpful to our study.

17) ***Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.***

Communication and coordination is key to the success of ITS. The new TOC has lots of capacity and will house FDOT, Broward County Traffic, Mass Transit, and a direct tie-in to the Emergency Operations Center (Broward County Emergency Management). Murali indicated that other agencies are welcome to have permanent working places in the TOC.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

Murali identified several ways in which ITS could be used to enhance freight movements in Broward County. The first is to adjust signal timings along major east-west arterials to improve flow, particularly during peak hours. Second is the use of reflective pavement markers in and around the access routes to Port Everglades. These markers, which are sensitive to weather and weather changes, can be used to alert truckers and other vehicles to hydroplaning conditions. Third is the use of DMS to direct truckers and other vehicles around Port Everglades.

For any project to be successful, however, communications are the key.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Not discussed.

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

Not discussed.

21) ***Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.***

Spencer Stoleson (Broward County Transit) sstoleson@broward.org (954)357-8392

Fabian Cevallos (Broward County Transit) fcevallos@broward.org (954)357-8338

22) ***Do you have any other comments or issues that you would like to discuss?***

No.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation (FDOT)**	
	District IV Office of Modal Development and	
	Office of Planning & Environmental Management	
	3400 West Commercial Blvd., Ft. Lauderdale, FL 33309	
Interviewee(s):	**Nancy Bomono:**	**(954) 777-4661 nancy.bonomo@dot.state.fl.us**
	Jeff Widener:	**(954) 777-4670 jeff.weidner@dot.state.fl.us**
	Richard Young:	**(954) 777-4323 richard.young@dot.state.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Freight issues have not really been addressed in District IV transportation planning process in the past, though the District does publish a Rail & Freight plan.

   ITS planning is handled through the district's traffic operations office. Jeff Widener estimates that there is one Level III planner within the Traffic Ops office spends ~25% of his/her time on ITS issues while there is one Level V planner that spends ~5% of his/her time on ITS issues.

   The Office of Modal Development (OMD) is responsible for all rail freight planning and all state funded seaport projects. As required by these functions, they coordinate with the Office of Planning and Environmental Management (OPEM) with regard to freight movement on the state highway system. OMD also coordinates regularly with Traffic Operations on ITS issues.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   As discussed above, freight issues have not traditionally been considered during the District's transportation planning process, though truck and rail-based freight issues are touched on in the District's Rail & Freight plan.

   OMD is responsible for the flow of goods in/out of seaports and airports, connections to rail freights, planning for freight and goods movement on rail, and coordination efforts for freight on highways.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   There are several issues and problems that affect freight movements within District IV, including:

- **Highway capacity**. The major highway facilities in the district operate at or above their design capacity, particularly during the morning and afternoon peak periods, hindering truck movements in the area. East-west traffic facilities are a particular problem, as most of the transportation infrastructure in the region caters to north-south movements.
- **Port Everglades Access**. Access to and from Port Everglades is provided by Eller Drive, which begins at the terminus of I-595 near the port. The geometrics as I-595 ends and Eller Drive begins are not amenable to truck operations, as there are several tight turns, low overpasses, and stop lights that not only hinder freight and other traffic entering the port, but also cause a major safety risk, particularly for trucks who do not normally operate in the area.
- **Security Gates along Eller Drive.** Following the events of September 11th, Port Everglades has transitioned from being an "open port," with little or no restrictions on vehicles accessing port facilities, to a "closed port," with security checkpoints located at major port access points. These security checkpoints, while necessary to ensure the safety and security of port facilities, often cause long queues for trucks and other vehicles entering the port.
- **Poor signage**. There are few warning or directional signs directing truck and other traffic into and out of Port Everglades, which often impedes the smooth flow of traffic in the port area. This is a particular problem for truckers who are visiting port facilities for the first time and for visitors/cruise passengers who are departing from the port's cruise facilities.
- **Airport Access**. Port Everglades has good access for travelers arriving at the port from the airport, but not vice versa, as tour buses and other vehicles are forced to traverse local and industrial roads to gain access from the port to the airport. In addition, there is poor access from the airport to U.S. 1 for air cargo shipments.
- **Intra-county truck traffic**. District IV estimates that ~75% of all truck traffic originating within Broward County stays within the county, exacerbating congestion on local highways and other roads. In other words, most of the truck traffic is local deliveries, not long-distance freight trips.
- **Lack of truck staging areas**. There are few areas within the county for trucks to consolidate or transfer loads. This is a particular problem for trucks pulling tandem trailers along Florida's Turnpike, which often must use rest areas, truck stops, or other facilities as de-facto staging areas.

4) ***What are the major transportation issues/problems for your agency? Please list:***

See above.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

   a) ***Congestion***

   All highways in the region suffer congestion to one degree or another. East-west facilities are a particular problem.

b) Safety

The is a major safety problem where Eller Drive connects with 7th Ave. This intersection is not hospitable to trucks due to a sharp turn, an incline, and a set of traffic lights at the intersection. These problems will be corrected during the Eller Drive Improvement project, when Eller Drive is elevated to eliminate its intersection with 7th Ave. However, construction will not be complete until six years from now, at a minimum.

c) Freight and goods movement

Eller Drive/I-595, which serves Port Everglades; I-95; 17th Street; and U.S. 1.

d) Lack of access/mobility

Access to the airport from the port is a major problem. Access from the airport to U.S. 1 for air cargo is also deficient.

Access to and from Port Everglades from Eller Drive is much more difficult now that the Port has become a closed facility.

e) Air and noise pollution

Unknown.

f) Negative impact on surrounding land uses

Unknown.

g) Security

The security of Port Everglades' tank farms is a major issue, as these tanks are relatively unprotected, yet carry enough petroleum to supply a 13-county area.

h) Tourism/Economic health

There are several deficiencies related to tourism. First, there is poor signage directing tourist traffic to the cruise terminals at Port Everglades. Second, there is limited access for cruise passengers returning to the airport from the port, as they must travel through industrial areas to access the airport. Finally, there are serious access issues for freight trucks delivering stores, goods, and other items to the cruise ships at the port, as new security policies only allow pier-side parking for one truck at a time. As a result, delivery trucks must queue along Eller Drive and await their turn for delivery.

i) Other (please explain)

Unknown.

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Note: specific rankings were not discussed, however a ✓indicates that the ITS-related information was discussed during the interview and received a positive response.

Rank [1-10]	**ITS-related information**
✓	a) Real time general traffic information
✓	b) Real time personalized (route specific) traffic information
✓	c) Travel time information (current travel time between points in system)
✓	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
✓	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
✓	m) Security alerts
	n) Other [please specify]

Jeff Weidner later submitted the following responses:

Rank [1-10]	**ITS-related information**
10	a) Real time general traffic information
7	b) Real time personalized (route specific) traffic information
5	c) Travel time information (current travel time between points in system)
8	d) Notification of roadway incidents
7	e) Construction related information
6	f) Recommended detour routes for construction or incidents
2	g) Traffic data (volume, occupancy, speed)
6	h) Camera feeds
10	i) Transit vehicle location information
2	j) Fleet/emergency vehicle location information
2	k) Fleet/emergency vehicle status
1	l) Operating status of signal/traffic control devices

Rank [1-10]	ITS-related information
10	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Note: specific rankings were not discussed, however a ✓ indicates that the ITS-related information was discussed during the interview and received a positive response.

Rank [1-10]	Improvements
✓	a) Reduce traffic congestion
*** see note	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
✓	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
✓	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
✓	p) Improve security of public facilities
✓	q) Improve movement into and out of secure areas

Rank [1-10]	Improvements
	r) Other [please specify]

**** the District believes that increasing speeds and reducing stops would have an adverse impact on bicycle and pedestrian movements in the region.*

Jeff Weidner later submitted the following responses:

Rank [1-10]	Improvements
10	a) Reduce traffic congestion
5	b) Increase speeds and reduce stops
9	c) Provide quicker and safer response to incidents
7	d) Improve motorist safety
5	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
10	i) Prior to their trip
6	ii) En route
10	h) Reduce vehicle operating costs to all users
8	i) Reduce operating and maintenance costs of transportation system
7	j) Provide for safer, more efficient movement of freight
6	k) Improve efficiency of law enforcement agencies
7	l) Better manage construction projects
2	m) Better manage traffic for special events
9	n) Reduce air and noise pollution
2	o) Reduce vehicular impact on neighborhood streets
10	p) Improve security of public facilities
10	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			**U**
ii) In-vehicle route guidance			**U**
iii) In-vehicle traveler service information			**U**
iv) Pre-trip planning information			**U**
v) Traffic signal control			**U**
vi) Incident management technologies such as total station*			**U**
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			**U**
viii) Emissions testing and mitigation			**U**
ix) Rail grade crossing improvements			**U**
x) Four quad gates			**U**
xi) Advance warning on train length and speed			**U**
xii) Automatic braking on trains			**U**

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
xiii) Ride matching and reservation	**U**- this program is run by FDOT for the entire Tri-County area.		
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			**U**
c) Commercial Vehicle Operations			
i) CV electronic clearance			**U**
ii) Automated roadside safety inspection			**U**
iii) On-board safety monitoring			**U**
iv) Hazardous materials incident response	**U**		
v) CV administration processing			**U**
vi) Cargo tracking			**U**
vii) Electronic gate access to port and other secure areas	**U**	**U**	
d) Emergency Management			
i) Emergency vehicle management			**U**
ii) Evacuation Traffic Management			**U**
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			**U**
ii) Identification of high risk motorists and cargo			**U**
iii) Customs clearance			**U**

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

Unknown.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Unknown.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Freight and goods is a private industry that does not want government intervention.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Unknown.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
10	i) Number of accidents
10	ii) Number of fatalities
10	iii) Reduction in incident detection, response and clearance times
10	iv) Reduction in information dissemination time for incidents
10	v) Reduction in recurring congestion
4	vi) Reduction in vehicle miles traveled
4	vii) Reduction in traffic at specific locations
10	viii) Reduction in peak period/peak hour volumes
2	ix) Increase in average speeds
10	x) Reduction in vehicle emissions
10	xi) Increased transit ridership
8	xii) Reduction in operating and maintenance costs
2	xiii) Increase in operational capacity
10	xiv) Reduction in total trip time
7	xv) Increase in travel time reliability

14) ***What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?***

- **Better signage**. As discussed above, the signage directing both freight and passenger vehicles into and around the port is limited. Either static or dynamic message signs may improve the mobility of both passenger and freight trips. One specific suggestion included the installation of lane guidance signs to help sort vehicles in advance of port access points. For example, vehicles wishing to enter the port without identification are guided to one lane, trucks to another lane, etc.

- **Completion of the Eller Drive Improvement Project**. The Eller Drive Improvement project will increase the capacity and safety of Eller Drive, the port's primary access point, resulting in improved mobility in the port area.
- **Warning lights or DMS at the 7th Ave/Eller Drive intersection**. Until the Eller Drive Improvement project is complete (6 years minimum), there will still be major safety issues at the intersection of Eller Drive and 7th Avenue. In the interim, it may be useful to install warning lights and/or DMS to warn trucks and other vehicles of this perilous intersection. Specifically, warning signs should be installed that encourage reduced speeds, such as "slow down," "highway ending," "signal ahead," etc.
- **Improved connections to rail freight**. Interviewees felt that improving connections to rail freight facilities may cause some truck movements to divert to rail. This would have significant impacts on the regional transportation system.
- **Completion of cloverleaf on/off ramps to U.S. 1**. Otherwise known as "the Loop," the completion of a cloverleaf on and off ramp connection to U.S. 1 would improve the mobility of passengers returning to the airport from Port Everglades and improve access to the airport for air cargo shipments.
- **Freight education and outreach efforts**. The traveling public is largely unaware of the special handling characteristics of trucks, such as their large turning radii, their acceleration and deceleration characteristics, and other handling characteristics. Providing freight education and outreach efforts through driver's education programs may make the traveling public more aware of the capabilities of trucks, possibly reducing the number of passenger vehicle/freight vehicle crashes.
- **Funding for infrastructure improvements.** Generally, and in addition to the specific instances mentioned above, interviewees expressed the need for more funding to increase capacity and build grade separations to reduce the number of at-grade rail crossings.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- Miami Viaduct project in FDOT District VI, which is a freight-only roadway that serves the Miami International Airport (one of the largest cargo airports in the world).
- Overhead detection systems on some bridges within Palm Beach County.
- Tri-Rail SmartCards.
- ATIS and TMC – District 6 Traffic Operations.
- Broward County TMC – District 4 Traffic Operations.
- Broward County Transit AVL – Broward County.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

Steering Committee, Technical Support for Transit Studies, Port Everglades Access Control, Port Everglades Security Plan.

ii) How does coordination occur between agencies and other project participants?

Project Development – Steering Committees.

iii) Does the project involve freight/goods movement? If so, how?

These projects include port access gates, as well as the flow of freight and goods.

iv) Please describe strengths and weaknesses of the project.

Project will slow access to the ports.

v) What could be done to improve the weaknesses?

High speed scanners.

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

Yes, high speed scanners.

vii) If freight is involved, are there specific improvements with regard to freight?

Again, high speed scanners.

viii) Can you supply any data or reports that might be helpful for our study?

Unknown.

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

The planning processes of the District and Port Everglades seem very well coordinated, particularly as they relate to the Eller Drive Improvement Project and the ITS deployments associated with that project.

However, one interviewee felt that there is room for improvement with regard to coordination among all three ports and all three airports.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

Unknown.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Unknown.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Airport-Seaport Connector Planning Study, completed ~1994.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

- Scott Seeburger (FDOT)
- Sea and Air Ports

22) Do you have any other comments or issues that you would like to discuss?

Unknown.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation (FDOT)**	
	District IV Traffic Operations Division	
	3400 West Commercial Blvd., Ft. Lauderdale, FL 33309	
Interviewee(s):	**Mark Plass:**	**(954) 777-4351 mark.plass@dot.state.fl.us**
	Tahira Faquir:	**(954) 777-4370 tahira.faquir@dot.state.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   District IV Traffic Operations is responsible for developing scopes of services for ITS deployment contracts and managing deployment contracts in its five county region. ITS is getting a lot of attention at the state level. In fact, ITS is now a separate division within the FDOT Central Office. The Central Office ITS staff is responsible for deploying ITS technologies on critical statewide corridors, developing statewide architecture, and ensuring system compatibility among district deployments.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Mark is the District Traffic Operations Engineer and Tahira is the District ITS O/M Engineer.

   There are 23 people assigned to the District IV Traffic Ops office, four of which are dedicated ITS planners. These 4 people spend ~15-16% of their time on ITS and ITS-related issues. Their responsibilities include planning and design of ITS systems and the administration of maintenance contracts.

   Freight planning in the Traffic Operations division is non-existent, with the exception of projects that provide "coincidental" benefits to freight movements, such as signal timing optimization efforts.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   There are several issues and problems that affect freight movements within District IV, including:

   - **Incident management**. Regional politicians perceive that incident management in the District is a particular problem.
   - **Arterial congestion**. Particularly on east-west arterials.
   - **Extent of regional signal system.** The District is responsible for maintaining and operating 2,200 signals within Palm Beach and Broward counties.
   - **Public transit**. Expand and improve the public transit system to make it more attractive.

- **State tax structure**. Florida does not have a state income tax, so the state is dependent on property tax for its income. This, combined with the rather loose zoning structure in many counties in the state, results in decentralized development, such as strip malls and "big box" stores. As this development pattern cannot be easily served by transit, Floridians are dependent on the automobile for most day-to-day activities.
- **DOT downsizing**. FDOT employment levels have shrunk by 25% over the last five years, though the volume of work has increased in the same period ($1B in roadway contracts last year). As a result, most FDOT staff are over-extended.
- **DOT emphasis on urban redevelopment**. In the last several years, FDOT has expanded its mission to include urban redevelopment projects, leaving less money for transportation system capacity improvements.
- **DOT dependence on consultants**. As a result of downsizing, there is little in-house expertise residing at FDOT, particularly in ITS.

4) What are the major transportation issues/problems for your agency? Please list:

See above.

5) What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:

a) Congestion

- Commercial Blvd (E-W)
- Oakland Park Blvd (E-W)
- Sunrise Blvd (E-W)
- Broward Blvd (E-W)
- Pines Blvd (U.S. 27 east to University Drive)

b) Safety

Mark will provide a "high crash list" of most dangerous intersections in the region. I-595 at Eller Drive is an obvious example.

c) Freight and goods movement

I-95. As part of the District's Interim Traffic Management System, there is a database listing major incidents on I-95 in Broward and Palm Beach counties. Tahira can provide access to this database.

d) Lack of access/mobility

There is too much access in the District, caused by the "decentralized" development discussed earlier. Though the District has an access management program, the access issues caused by strip malls, big box stores, and other auto-dependent developments often impedes traffic flow.

e) Air and noise pollution

Unknown.

f) Negative impact on surrounding land uses

Unknown.

g) Security

I-595 is very close to the Port. The security of Port Everglades' tank farms is an issue, as "there's nothing to stop someone from pulling over on a bridge and launching a missile."

h) Tourism/Economic health

I-95, as it is the main route used by tourists.

i) Other (please explain)

Unknown.

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
5	a) Real time general traffic information
5	b) Real time personalized (route specific) traffic information
10	c) Travel time information (current travel time between points in system)
10	d) Notification of roadway incidents
10	e) Construction related information
10	f) Recommended detour routes for construction or incidents
10	g) Traffic data (volume, occupancy, speed)
10	h) Camera feeds
10	i) Transit vehicle location information
5	j) Fleet/emergency vehicle location information
5	k) Fleet/emergency vehicle status
11	l) Operating status of signal/traffic control devices
5	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
10	a) Reduce traffic congestion
10	b) Increase speeds and reduce stops
10	c) Provide quicker and safer response to incidents
10	d) Improve motorist safety
10	e) Improve safety of at-grade railroad crossings
5	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
10	i) Prior to their trip
5	ii) En route
5	h) Reduce vehicle operating costs to all users
10	i) Reduce operating and maintenance costs of transportation system
8	j) Provide for safer, more efficient movement of freight
5	k) Improve efficiency of law enforcement agencies
10	l) Better manage construction projects
10	m) Better manage traffic for special events
5	n) Reduce air and noise pollution
5	o) Reduce vehicular impact on neighborhood streets
5	p) Improve security of public facilities
8	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			**U**
ii) In-vehicle route guidance			**U**
iii) In-vehicle traveler service information			**U**
iv) Pre-trip planning information			**U**
v) Traffic signal control	**O** - on some corridors		
vi) Incident management technologies such as total station*			**U**
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			**U**
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements	**U** – railroads are doing some work	**U**	
x) Four quad gates			
xi) Advance warning on train length and speed		**U (?)**	
xii) Automatic braking on trains		**U (?)**	

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
xiii) Ride matching and reservation	**U**- this program is run by FDOT for the entire Tri-County area.		
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions	Broward County Transit has this and the District supports it		
c) Commercial Vehicle Operations			
i) CV electronic clearance			**U**
ii) Automated roadside safety inspection			**U**
iii) On-board safety monitoring			**U**
iv) Hazardous materials incident response			**U**
v) CV administration processing			**U**
vi) Cargo tracking			**U**
vii) Electronic gate access to port and other secure areas			**U**
d) Emergency Management			
i) Emergency vehicle management	**U** – limited signal preemption in Broward and Palm Beach ctys.		**U**
ii) Evacuation Traffic Management	**U** – some	**U**	**U**
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
ii) Identification of high risk motorists and cargo			**U**
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

There is an existing Incident Management Protocol, typically handled via phone calls among the various responding and interested agencies. Incident management efforts are increasingly being supported by the DOT's service patrols (Road Rangers), which are teams of roving vehicles that identify and assist stranded motorists. There are two vehicles per team currently, with plans to increase that to four vehicles per team in the near term. There are also plans to outfit the Road Ranger vehicles with arrow boards and one small dynamic message sign.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Since there is little in-house expertise at FDOT due to recent downsizing, the District should consider integrating on-site consultants with regular FDOT staff, much as is done at the Turnpike District.

In addition, DMJM Harris has developed 10 training modules designed to train government agencies in ITS related issues. The District should consider offering this training to all staff.

11) ***What institutional barriers exist to implement new technologies in your organization?***

FDOT Central Office ITS staff is a huge barrier, as they are not good at administering Design, Build, Operate, and Maintain, or DBOM contracts. DBOM contracts are increasingly popular ways to deploy ITS systems at the regional level. The Central Office staff also suffers from a lack of ITS expertise. Finally, there are jurisdictional issues between the two FDOT Districts in the region (VI and IV) that hinder ITS initiatives from being deployed on a regional level.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Currently, freeway operations signal management are handled by two different agencies (FDOT handles freeway operations, local public works departments handle signal management). Co-location and better coordination between these agencies may result in improved traffic flow.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	Measures of Effectiveness
	i) Number of accidents
	ii) Number of fatalities
10	iii) Reduction in incident detection, response and clearance times
10	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
10	ix) Increase in average speeds
	x) Reduction in vehicle emissions
10	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
10	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Any type of system that provides truckers information on traffic conditions in the area will improve effectiveness of the Traffic Operations Division. However, we must first focus on the communications links among Port Everglades, FDOT, Truckers, and Broward County.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- Camera monitoring of Intra-coastal waterway and 14 drawbridges in Broward County (this project currently in the master planning stage).
- There is currently a demo Advanced Public Transportation System (APTS) project in which real-time transit and trip planning information for Broward County Transit (BCT) buses will be provided by NextBus. The demo project will begin in October and last 1 year. Following that demonstration period, BCT will have the option of purchasing NextBus (or a similar system).
- There is also an Interim Transportation Management System (ITMS) being deployed on I-95 in Palm Beach County. ITMS is designed to be a temporary ITS deployment until capacity improvements on I-95 are complete. The system will include dynamic message signs (DMS), CCTV monitoring, and radar detectors. Permanent components will also be installed.
- The Broward County Advanced Traffic Management System (ATMS) is an initiative to upgrade the traffic signals to a centrally controlled system, replace controllers, and install a new fiber optic communications system.

- The Palm Beach County ATMS project involves the second phase of upgrading their traffic signal system.
- The Broward County ITS Operations Facility will be a Traffic Management Center (TMC) designed to house and control I-595/I-95 DMS, the Freeway Video Monitoring System (FVMS), the Advanced Traveler Information System (ATIS), the Broward County Signal System, and the Advanced Incident Information System. The facility will also provide operation consoles for Florida Highway Patrol and Broward County Transit. The anticipated completion date is May 2004.
- A DMS will be deployed at the 17th Street Causeway to warn drivers of bridge closings and beach traffic conditions.
- Broward and Palm Beach counties were both provided with funding for operating DMS and CCTV cameras for ATIS purposes.
- SunGuide is a regional ATIS project. It's a public-private partnership to collect, compile, and provide real-time traveler information to motorists for the Miami-Dade, Broward, and Palm Beach county area via phone, fax, web page, radio and TV.
- The I-595/I-95 DMS System project in Broward County includes 22 DMS, 3 vehicle detection stations, a PC-based remote control/monitoring system, and a telephone drop/single mode fiber optic communications system. The I-95 DMS System project includes 12 DMS at six interchanges that connect to Florida's turnpike, a PC-based remote control/monitoring system, and a telephone drop/single mode fiber optic communications system.
- This project includes the continuation of the I-95 DMS system in Broward County. It involves extending the system into Palm Beach County. Sixteen DMS will be constructed at eight interchanges that connect to the Turnpike. The project also includes 19 video cameras along I-95.
- The Freeway Video Monitoring System (FVMS) project will be the first phase of CCTV camera deployment along the freeway system in Broward County to monitor travel conditions and verify incidents.
- The I-95/I-595 Video Monitoring System project will complete the deployment of CCTV cameras begun in the FVMS.
- The Advanced Incident Information System (AIIS) will deploy flashing beacon signs and a Highway Advisory Radio system along the arterials in Broward County that have I-95 interchanges. The signs will be placed in advance of I-95 entrance ramps to warn drivers of incidents and delays on I-95 the HAR would suggest alternate routes.
- The Palm Beach County I-95 Video Monitoring System will expand the deployment of CCTV cameras along I-95 in Palm Beach County .
- The Freeway Incident Management (FIM) Team project involves FIM teams in Broward and Palm Beach counties that are involved in a variety of activities relating to incident management on the interstate highway system. These teams consist of approximately 60 members representing State, County, and local engineering, emergency management, law enforcement, and Fire Department agencies, towing/wrecker services, HAZMAT disposal services, and traffic information services.

- The SunGuide Road Rangers Service Patrol project utilizes specially equipped tow trucks that continuously patrol the roadway seeking stranded motorists, debris in the road, traffic accidents, etc.
- The APTS Master Plan will guide the development of transit projects in Broward and Palm Beach counties, such as electronic fare payment systems (SmartCards), a bus priority system, and Automatic Vehicle Location (AVL) devices.
- The Palm Beach County ITS Operations Facility Master Plan will guide facility site acquisition, design, and operation of the Palm Beach County TMC. The TMC will house monitoring and control capabilities for the I-95 DMS system, the FVMS, the Palm Beach County Signal System, and the ATIS.
- The I-75 ITS Master Plan will generate a detailed master plan for the deployment of ITS devices along the I-75 corridor in Broward County.
- Four separate Congestion Management Systems projects are planned for: (a) State Route 816/Oakland Park Boulevard, (b) State Route 638/Sunrise Boulevard, (c) State Route 814/Atlantic Avenue, and (d) State Route 7/U.S.-441. All of these projects include the installation of new traffic signal controllers that have a signal pre-emption capability.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

FDOT pays Broward County to purchase equipment and operate local signal systems.

ii) How does coordination occur between agencies and other project participants?

There is currently a Joint Participation Agreement (JPA) outlining the roles and responsibilities of each agency.

iii) Does the project involve freight/goods movement? If so, how?

No direct involvement in freight and goods movement.

iv) Please describe strengths and weaknesses of the project.

The priorities of FDOT and the County sometimes differ and, since the County has "ownership" over the project, the County normally calls the shots.

v) What could be done to improve the weaknesses?

There needs to be a culture change at the County level. They need to consider the operation and maintenance of their signal systems as a public utility, set performance measures, and evaluate their performance.

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

Decision-makers, particularly at the County level, need to be educated in the fact that the proper use of signal systems at the County level can have the same kinds of impacts as capacity improvements.

vii) If freight is involved, are there specific improvements with regard to freight?

Unknown.

viii) Can you supply any data or reports that might be helpful for our study?

Unknown.

17) ***Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.***

Each of the three separate TOCs will have the capability to view each others traffic conditions through the use of shared CCTV images. However, control of the camera movements will not be allowed outside each TOC's jurisdiction.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

ITS can help freight movements in the region, but only if monitoring capabilities and communications extend regionwide.

Better quality and more reliable travel time information on I-95 vs. Turnpike would be valuable.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Decentralization of construction and maintenance responsibilities to the local level.

Getting system users to help defray operating and maintenance costs by forming a public/private partnership with the trucking industry.

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

Unknown.

21) ***Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.***

Scott Seeburger (FDOT Dist IV) and Jeff Widener (FDOT Dist IV)

22) ***Do you have any other comments or issues that you would like to discuss?***

Florida Highway Patrol is very understaffed.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation (FDOT)**
	Turnpike District
	Pompano Traffic Operations Center
	Milepost 65, Pompano Service Plaza, Pompano Beach, FL 33069
Interviewee(s):	**Kim Samson: (954) 975-4885, ext 1106 kim.samson@dot.state.fl.us**
	Bill Austin: (954) 975-4885, ext 1106 bill.austin@dot.state.fl.us
	Bruce Seiler: (954) 975-4885, ext 1247 bruce.seiler@dot.statefl.us
	Kent Rice: (954) 975-4885, ext 1104 kent.rice@dot.state.fl.us
	Ingrid Birenbaum: (954) 975-4885, ext 1293 ingrid.birenbaum@dot.state.fl.us
	Jeff Gresham: (954) 975-4885
	Kendra Blackford: (954) 975-4885, ext. 1370 kendra.blackford@dot.state.fl.us

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Turnpike (TP) has a "minimally active" freight program. The TP has relatively low truck volumes (~4-5% of all traffic), particularly compared to I-95, which parallels the TP. Most projects or potential projects are generated internally- there is little involvement by the private sector in identifying issues or constraints that hinder freight movements on the TP.

The TP has no specific freight planners on staff and the planning functions of the TP district are fairly limited. The district and the counties it serves tend to think "uni-modally." Intermodalism is just lip service. The TP district is heavily dependent on FDOT Central Office leadership and expertise on freight issues.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Kim and Bill work for URS as in-house consultants; Bruce is the Director of Operations; Kent is the Regional Planning Administrator; Ingrid is the Turnpike District's Traffic Operations Engineer; Jeff manages permits for tandem trailers on the Turnpike; and Kendra is an in-house consultant from TransCore functioning as a Senior Traffic Management Center (TMC) Operator.

As discussed above, the planning function at the TP is fairly limited. Any truck-specific planning is geared toward tandems (turnpike doubles), which are only allowed on TP facilities.

The TP has an active ITS program, however, and coordinates ITS deployments along the entire TP corridor, including separate deployments in the Orlando area and along a 70 mile corridor in SE Florida (see discussion in question 15).

3) What are the major transportation issues/problems in your urbanized area and/or region? Please list:

There are several issues and problems that affect freight movements on the TP, including:

- **Lack of rest areas**. The shortage of suitable rest areas along the TP often force truckers to park in local neighborhoods.
- **Limited opportunities for partnerships with county planning agencies**. There are no coordinated planning efforts between the TP district and local counties/MPOs. In fact, in many cases, they are working against each other, as was the case during the TP's efforts to construct a tandem trailer drop facility on the west side of the Sawgrass Expressway within the City of Sunshine. The City government does not want this facility, as it fears it would increase truck traffic in the area, while the TP district is pushing for it, as it feels it would be beneficial to truck movements on the TP.
- **"Extremely stubborn" politicians in the area**. Bruce Seiler indicated that the TP's efforts to make improvements, particularly improvements that would enhance freight movements, are often hindered by local politicians.
- **Lack of a champion at the MPO/county level**. The MPOs and county governments in the region are very powerful, particularly when it comes to approving and implementing transportation improvement projects. To date, however, there is little interest by local MPOs and county agencies in addressing freight issues and concerns in the area.
- **Incident management**. There are two issues surrounding incident management on the TP as it relates to truck movements. First, the salvage equipment operated by the TP is not sufficient to move heavy trucks and trailers. As a result, truck crashes are more difficult to clear than automobile crashes, resulting in longer delays for other TP traffic. A high number of secondary incidents result from the extended clearance times. The second issue involves the liability of the incident on-scene leader when attempting to move heavy trucks and equipment. On-scene commanders are often hesitant to clear truck accidents for fear that they would be liable for any cargo damage or loss during that operation. Currently, on-scene commanders in Florida are not absolved of responsibility for such moves, as they are in states such as Minnesota and Washington. Having some kind of "quick-clearance" agreement to absolve on-scene commanders in Florida from cargo liability may improve incident management operations on the TP.

4) What are the major transportation issues/problems for your agency? Please list:

See above.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion

I-95 in Miami-Dade County, I-75 in West Broward (North-South), HEFT in Dade, and the Sawgrass Expressway.

b) Safety

U.S. 41 in Dade, Krome Avenue (U.S. 27) in Dade, and I-95 in all three counties (due to high volumes).

c) Freight and goods movement

I-95, U.S. 27, U.S. 41 (tractors, trucks and farms), and the Turnpike (no terminals).

d) Lack of access/mobility

Lack of connectivity between air and sea ports.

e) Air and noise pollution

Unknown.

f) Negative impact on surrounding land uses

Unknown.

g) Security

Unknown.

h) Tourism/Economic health

Unknown.

i) Other (please explain)

Unknown.

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)

Rank [1-10]	ITS-related information
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities

Rank [1-10]	Improvements
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

Unknown, though see question 3 for incident management issues.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

Unknown.

11) What institutional barriers exist to implement new technologies in your organization?

Apparently none- the TP seems to have a very active ITS program that is supported by all members of the organization.

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

N/A.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

- **Better involvement by local MPOs/counties**. As discussed above, one obstacle to effective freight planning in the region is the reluctance of local MPOs and county governments to address freight transportation issues and champion freight improvement projects.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

The TP has several ITS-related projects "coming down the pike", though most are geared toward improving passenger movements. TP ITS initiatives include:

- **Highway Advisory Radio (HAR)**. There are 9 stations of HAR along the TP with 19 advisory signs posted at several locations along the TP. As with most HAR systems, when the lights atop the advisory signs are not flashing, HAR transmits general service messages. When the sign lights are flashing, traveler information specific to the sector is provided.
- **Dynamic Message Signs (DMS)**. The TP operates 19 DMS, all of which are expected to be placed on line in June 2002.
- **Traffic Management Centers (TMCs)**. The TP operates two TMCs, one in the Orlando area, and one at TP headquarters. The TMCs are currently staffed by FDOT personnel during normal working hours and by SmartRoutes personnel during non-working hours. In July, the TMCs will begin to be staffed by FDOT personnel on a 24-hour basis. The TMC at TP headquarters is not fully functional, as video monitors are not yet installed. Currently the TP headquarters TMC assesses traffic conditions by monitoring Florida Highway Patrol radios and receiving reports from its roving roadway assistance providers.
- **CCTV**. The TP has recently installed fiber optic cable along a 70 mile stretch of the main TP facility between Miami-Dade and Ft. Lauderdale and has plans to install 8 cameras along this corridor as time and budget allow. The cameras will feed images into the TP's TMC, which is currently being upgraded to receive such images. In the section of the TP around Orlando, there will be 100% coverage by CCTV.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

The TP district is multi-jurisdictional in nature, as it serves several counties and FDOT districts in the state. The different ITS initiatives spearheaded by the TP district, such as deployments in Orlando and in SE Florida, are well coordinated, though better coordination is needed between the TP and local MPOs, counties, and ports in the region.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

ITS can be very useful in streamlining ingress and egress to and from Port Everglades. FDOT Central Office and District IV have taken the lead on this initiative.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

There is a general feeling that truckers, through their existing internal communications systems, can access close to real-time traffic data and conditions before FDOT gets it. There may be a potential for FDOT to use ITS deployments to obtain that information and make it available to other motorists.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Unknown.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Mike Akridge (FDOT Central Office- ITS) can provide more information on CVO issues, WIM stations, and Florida's CVISN deployment efforts.

Jeff Gresham can provide info on the OS/OW permitting process used at the TP.

22) Do you have any other comments or issues that you would like to discuss?

The TP has no weigh stations and there are no plans to install them. Weight, height and width regulations are the same as state standards.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Broward County Commission**	
	Port Everglades Department	
	1850 Eller Drive, Ft. Lauderdale, FL 33316	
Interviewee(s):	**Israel Rozental:**	**(954) 523-3404, ext. 3350 irozental@broward.org**
	Patrick Szutar:	**(305) 859-2050**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Port Everglades is not responsible for transportation planning in the region, though it does try to coordinate its planning efforts with the planning efforts of other agencies, including the Broward County MPO and FDOT. Coordination will likely be enhanced now that the Port is considered a Broward County entity.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Israel is the Project Manager for the Port's new security program. He works in the Construction Management and Planning Division of the Port. Patrick works for Bermello-Ajamil & Partners, the Port's Architecture and Engineering consulting firm working on the security upgrade program.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   - **Poor signage**. Signage directing traffic to and from the Port, as well as circulating traffic within the Port, is lacking. This is not a particular concern for truck traffic operating within the Port complex, as most drivers conduct daily business at the Port and are familiar with its layout. Cruise passengers, however, are typically unfamiliar with the Port layout and often have difficulty finding their way to the appropriate cruise terminals.
   - **Port access issues**. There are several access issues that hinder the efficient flow of traffic in and around the Port complex. The first is I-595, which is not amenable to truck operations (low clearances, poor geometrics, signals, etc). Secondly, there is no easy access to Northbound U.S. 1 for traffic exiting the Port. This is particularly problematic for cruise passengers leaving the Port complex, as Northbound U.S. 1 is the primary access road to the Fort Lauderdale-Hollywood International Airport. Thirdly, there is a new convention center being constructed in Northport which may generate additional traffic to and from the Port, exacerbating existing access problems.

- **Cruise-specific freight traffic**. Cruise season runs from October 1st to Mother's Day, with the peak cruise season happening from the week after Thanksgiving to mid-January. Cruise ships typically sail at approximately 5pm. Prior to sailing, cruise ships accept deliveries of all sorts of supplies and equipment, including food, drink, laundry, and other stores. These shipments are typically not consolidated, resulting in several different trucks and vans providing deliveries to the ships prior to sailing. These deliveries often coincide with passengers arriving for cruises by bus or automobile resulting in "absolute mayhem" from a traffic perspective until the ship gets underway. Aggravating the problem are new security regulations which only allow one delivery vehicle on the pier at any one time. As a result, delivery vehicles are forced to queue along MacIntosh Road and are dispatched one at a time to serve the ships.

4) ***What are the major transportation issues/problems for your agency? Please list:***

- **Balancing freight efficiency and security**. The events of September 11th had an enormous impact on freight operations nationwide and at Port Everglades, in particular. Prior to September 11th, the Port was an open facility, with no security checkpoints. Since September 11th, however, the Port has constructed temporary security checkpoints at all access points, and has begun planning for permanent checkpoints at these locations. The challenge faced by the Port in this new era of port security is balancing the security needs of the Port and surrounding area with the need for fast, efficient freight movements into and out of the Port complex.
- **Getting out of the business of on-dock rail**. Port Everglades has on-dock rail capabilities, but is trying to get the FEC to take over operations (on-dock rail is rarely if ever used now).

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion
Not discussed.

b) Safety

I-595 @ Eller Drive

c) Freight and goods movement

Not discussed.

d) Lack of access/mobility

Not discussed.

e) Air and noise pollution

Port Everglades is the cause of a lot of noise and air pollution, as the majority of the ships that call at the Port are diesel and the amount of trucks operating within and around the Port complex adds to the diesel fumes in the region. Fumes are a particular problem when easterly winds are dominant, as the eastern winds blow them into town.

f) Negative impact on surrounding land uses

Not discussed.

g) Security

Port access points.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Note: specific rankings were not discussed, however a ✓indicates that the ITS-related information was discussed during the interview and received a positive response.

Rank [1-10]	**ITS-related information**
✓	a) Real time general traffic information
✓	b) Real time personalized (route specific) traffic information
✓	c) Travel time information (current travel time between points in system)
✓	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.

Rank [1-10]	**Improvements**

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
i) In-vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance	**U**- Customs operates 3 VACAs units for x-ray of containers. 2 are located in Southport, 1 at Terminal 29.		

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

Incidents outside of the Port are handled by local authorities. Within the Port complex, incident response is coordinated with Broward County EMS and Fire Departments. Contact Cliff Barry for more information.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

Not discussed.

11) What institutional barriers exist to implement new technologies in your organization?

Not discussed.

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

Not discussed.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Not discussed.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Not discussed.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

To maintain efficient flows of both passengers and goods into and out of the Port Complex, it is critical that Broward County share its traffic information with the Port. There is a lot of interest on the Port side for this type of coordination, though the particulars of an information-sharing agreement would have to be worked out. To start, the Port will designate a person to act as liaison with the Broward County Traffic Management Center.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

There are several ways in which ITS can be used at the Port:

- Dynamic Message Signs (DMSs) to direct freight and passenger traffic;
- Access control via proximity cards and readers; and
- "Invisible fences" around fuel tanks.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Cliff Barry – incident response.

Bob Flint – Port operations.

22) Do you have any other comments or issues that you would like to discuss?

No.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Tri-County Commuter Rail Authority (Tri-Rail)**	
	800 NW 33rd Street, Suite 100, Pompano Beach, FL 33064	
Interviewee(s):	**Loraine Kelly-Cargill:**	**(954) 788-7898 kellycargill@tri-rail.com**
	Edward Byers::	**(954) 788-7948 byerse@tri-rail.com**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Tri-Rail is not heavily involved in transportation planning at the county or regional levels, though is involved in the ATIS steering committee and is pushing for creation of a Regional Transit Authority (RTA) that would include the transit agencies serving Miami-Dade, Broward, and Palm Beach counties.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Tri-Rail is not involved in freight transportation planning. Loraine is a Transportation Planning Manager and Ed is an Operations Manager.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   Not discussed.

4) ***What are the major transportation issues/problems for your agency? Please list:***

   - **South Florida Rail Corridor (SFRC)**. The SFRC was purchased by FDOT, though both Amtrak and CSX operate on the line. CSX currently maintains corridor infrastructure and handles all dispatching on the SFRC out of its Jacksonville headquarters. There are some issues surrounding dispatching. An Agreement was signed granting priority to freight trains during off-peak travel times, and to Tri-Rail during the peak periods. Tri-Rail wants (and generally gets) priority for its trains. However, CSX often does not clear the SFRC in time for Tri-Rail to run their trains. Reasons for this include delayed freight trains (which are often supposed to run on the SFRC at 3 am, but can be delayed until 7/8 am, which coincides with the passenger peak hour on the corridor; hours of work regulations, which force CSX to stop trains (sometimes on the SFRC) when crews approach daily hours of service limits; and sometimes an unwillingness of CSX dispatchers to divert trains. To address some of these issues, Tri-Rail is currently double-tracking the entire corridor (50% complete- should be totally complete in 2005) and may take over dispatching responsibilities from CSX in 2004. Additionally, there are six Amtrak trains per day on the SFRC, three northbound trains that are generally on time, and three southbound trains that are typically running two hours late.

- **At-grade rail crossings**. There are 72 at-grade rail crossings along Tri-Rail's system-approximately 1 per mile. Some of these crossings will be upgraded with cameras and 4-quad gates as part of the double-tracking effort. Tri-rail would like 4-quad gates at all the at-grade crossings.
- **Aging signal system.** Tri-Rail's existing signal system is aging and can be affected by severe weather, particularly thunderstorms. There is funding allocated to upgrade the signal system as part of the double-tracking project.
- **On-time performance**. Tri-Rail currently runs 95% of its trains on-time, though on-time performance is sometimes hindered by CSX operations. In addition, Tri-Rail trains cannot operate in winds in excess of 45 mph.
- **Incident response time**. Incidents on Tri-Rail right-of-way, particularly fatalities, can take as long as 2-3 hours to clear. This can have serious implications for on-time performance and, hence, ridership. To address incident management issues, Tri-Rail is working with the various County Sheriff's departments to expedite the process. Dick Mischefsky (sp?), Tri-Rail's security liaison, can provide further information.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

   a) ***Congestion***

      N/A

   b) ***Safety***

      N/A

   c) ***Freight and goods movement***

      N/A

   d) ***Lack of access/mobility***

      N/A

   e) ***Air and noise pollution***

      N/A

   f) ***Negative impact on surrounding land uses***

      N/A

   g) ***Security***

      N/A

   h) ***Tourism/Economic health***

      N/A

   i) ***Other (please explain)***

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip

Rank [1-10]	Improvements
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements		**O** - as part of SFRC double-tracking efforts	
x) Four quad gates		**O** - as part of SFRC double-tracking efforts	
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions	**O –** installed on all trains, which are tracked from Hialeah Yard	(also have pilot program to provide info on signs at one station)	

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

As discussed earlier, incidents on Tri-Rail right-of-way, particularly fatalities, can take as long as 2-3 hours to clear. This can have serious implications for on-time performance and, hence, ridership. To address incident management coordination issues, Tri-Rail is working with the various County Sheriff's departments to expedite the process.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Not discussed.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) ***What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?***

Track Signal System Upgrade and Double Tracking.

15) ***What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.***

FDOT District VI is developing a Consumer Information Network (CIN) which will become the transit information component of the ATIS (511). A consultant has been selected to inventory all the software and hardware in transit agencies for trip planning, real-time incidents/delays, DMS (during major incidents), all customer service functions, lost and found, and a web page.

Another ITS project is the Regional SmartCard system. Tri-Rail is spearheading this effort on behalf of the RTO. The fare payment system is expected to be upgraded by 2004. They are trying to work with other transit agencies (including Miami-Dade) to leverage the effort in hopes of getting a better value.

Recently, Tri-Rail began offering train tracking status online for their trains. It can be viewed at: http://www.tri-rail.com/schedules_fares/train_tracking.htm.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Tri-Rail is spearheading the effort for the development of a Regional Transit Authority (RTA) that would include all three transit agencies in the region. An RTA would have an easier time developing and implementing a regional smartcard system.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

ITS can be helpful in diverting passengers from a congested highway onto Tri-Rail or other transit systems, thus increasing the capacity available to freight trucks.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Dave Gordon at Amtrak (305-835-1231) and Craig Kurtz at CSXT (813-664-6205).

22) Do you have any other comments or issues that you would like to discuss?

There are long-term plans for expanding the rail corridor further north to Jupiter. In Miami-Dade County, it's possible to expand westward on the current CSX line. The Master Plan includes other potential expansion possibilities.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Broward County Aviation Department**	
	Ft. Lauderdale – Hollywood Int'l Airport and North Perry Airport	
	320 Terminal Drive, Ft. Lauderdale, FL 33315	
Interviewee(s):	**Diana D. Lewis:**	**(954) 359-6172 dlewis@co.broward.fl.us**
	Gary M. Sypek:	**(954) 359-6142 gsypek@broward.org**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   The Broward County Aviation Department manages and operates Ft Lauderdale-Hollywood International Airport (FLL) and the North Perry (general aviation) Airport. The Aviation Department is active in expansion planning for airport facilities, but does not do much work in terms of freight or ITS planning.

   The 1700-acre airport does not have freight customs and therefore cannot accommodate international cargo. FLL therefore focuses on international passengers. Federal Express, UPS and some others do operate here, but it's on a small scale.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Diana Lewis is the Director of Planning and Development and Gary Sypek is the Manager of Airport Planning. Both are involved in the Moving Broward Collaborative, a consortium of transportation planning agencies, transit providers, environmental interests, and local businesses designed to "provide guidance and develop efficient and sustainable mobility systems that serve public and private interests in Central Broward County." Moving Broward meets on a quarterly basis.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   - **Congestion on I-595**. Congestion is a particular concern on I-595, which serves both Port Everglades and FLL. Congestion has worsened recently, as Port Everglades has installed temporary security gates which often result in long truck queues around the port entrance. Planned improvements to this roadway would benefit both Port Everglades and FLL.
   - **Lack of regional transit**. Southeast Florida behaves as one region, particularly in transportation, as travelers do not recognize or consider the jurisdictional boundaries of Miami-Dade, Broward, and Palm Beach counties when making travel decisions. The

fact that there is no single regional transit authority discourages travelers from using transit and contributes to congestion on the region's highway system.

4) ***What are the major transportation issues/problems for your agency? Please list:***

- **Tourist buses**. Port Everglades is one of the largest cruise ports in Florida and the U.S., handling over 2.7 million single and multi-day cruise passengers in 1999. Many of these cruise passengers arrive through FLL where large buses take them to the cruise terminal at Port Everglades. These buses, which are chartered by the individual cruise lines, often clog the roadways leading into and out of FLL and make it difficult for other travelers to access the airport. Roadway expansion could help alleviate this problem, but there is little room to increase the capacity of the roadways leading into FLL without affecting parking garages or terminals. Instead, FLL is working with the cruise lines to develop operational strategies to help smooth the flow of bus traffic into and out of the airport complex. One option being considered is to consolidate bus operations at an off-site location.
- **Signage**. There is a lack of consistent signage directing tourists and cruise passengers both to and from the airport. There is talk about upgrading the signage around the airport, but no action has yet been taken.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion

I-595, I-95, and U.S. 1 (not congested now, but likely will become congested in the near future).

b) Safety

Not discussed.

c) Freight and goods movement

Not discussed.

d) Lack of access/mobility

Not discussed.

e) Air and noise pollution

Not discussed.

f) Negative impact on surrounding land uses

Not discussed.

g) Security

Not discussed.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists

Rank [1-10]	Improvements
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

All security and incident management is coordinated with the Broward County Sheriff through the communications division of the airport's operations center.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

None. The Airport Department feels that there is good coordination with other departments within the county organization, particularly the transportation planning functions. In fact, Diana indicated that "if we [the airport] are interested in an issue, our opinion is heard."

In terms of community involvement, there was a very negative perception from the public with regard to a recent Environmental Impact Statement outlining the plans for a runway extension.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	Measures of Effectiveness
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Dynamic Message Signs (DMSs) were mentioned as an ITS technology that would improve airport operations, as they would enable the airport to provide messages to airport visitors. This would be especially helpful during security incidents, when one or more airport terminals could be shut down.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Proposed people-mover running between FLL and the cruise terminals at Port Everglades.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

The Airport Department feels that there is good coordination with other departments within the county organization, particularly the transportation planning functions. The need for regional coordination, particularly regarding transit, was stressed.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

Not discussed.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

2020 Vision Plan (copy obtained).

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Dirk Herbers is the Security contact person for FLL should we have any questions`.

22) Do you have any other comments or issues that you would like to discuss?

One at-grade railroad crossing impacts the southern quadrant.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation**	
	District IV Office of Planning & Environmental Management	
	3400 West Commercial Blvd., Ft. Lauderdale, FL 33309	
Interviewee(s):	**Shi-Chiang Li:**	**(954) 777-4655 shi-chiang.li@dot.state.fl.us**
	Scott Seeburger:	**(954) 777-4632 scott.seeburger@dot.state.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Freight issues have not really been addressed in District IV transportation planning process in the past, though the District does publish a Rail & Freight plan. ITS planning is handled through the district's traffic operations office.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Shi-Chiang is a Senior Transportation Planner at District IV. His role is in long-range planning and travel demand forecasting. He is involved in the freight subcommittee of the Regional Model Task Force, headed by Frank Baron (Miami-Dade MPO).

   Scott's title is Special Projects Manager. In terms of ITS and freight, Scott works on the incorporation of ITS User Services into the Master Plan, and also reviews truck accidents. His responsibilities include Interstate Master Planning, FIHS Action Planning and managing other special projects.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   There are several issues and problems that affect freight movements on within District IV, including:

   - **Fragmented planning and project development process**. The SE Florida region is divided among several large MPOs (Miami-Dade, Broward, and Palm Beach) and two FDOT districts (IV and VI). These entities do not coordinate their transportation planning activities very well due, in part, to jurisdictional and other issues. As SE Florida is essentially one large urbanized area, transportation planning needs to happen on a more regional scale.
   - **Sprawl**. The eastern (coastal) areas of the district are heavily developed and urbanized. Much of the affordable housing in the region is located inland, which is becoming more and more developed. Growth in these areas will have significant transportation impacts, the most obvious being congestion.
   - **Regional transit.**

- **Funding priorities.** ITS deployment is piecemeal, resulting in lost funding opportunities.
- **Population growth and resultant congestion.**

4) ***What are the major transportation issues/problems for your agency? Please list:***

- **Lack of regional strategy**. Shi-Chiang believes that there is no guiding regional strategy with which to address freight and passenger movements in the region.
- **Land use planning.** The Department has no control over the local government's land use plan nor the approval of development, which is the driving force behind transportation facility demands and congestion.
- **Staff downsizing.** Staff has been reduced and workloads have increased.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion

- East-west highway facilities, particularly Commercial Boulevard.
- Oakland Park Boulevard.
- Major arterials on the west side of Broward County, such as University Drive.
- I-595 from I-95 to Flamingo.
- I-95 from Commercial to Sample.

b) Safety

U.S. 27, I-75, I-95, and I-595.

c) Freight and goods movement

U.S. 27, I-95.

d) Lack of access/mobility

Unconnected local roads.

e) Air and noise pollution

I-595, I-75, I-95 in isolated locations.

f) Negative impact on surrounding land uses

Not discussed.

g) Security

Not discussed.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

Unknown.

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Shi-Chiang provided the following responses:

Rank [1-10]	**ITS-related information**
7	a) Real time general traffic information
6	b) Real time personalized (route specific) traffic information
5	c) Travel time information (current travel time between points in system)
8	d) Notification of roadway incidents
8	e) Construction related information
7	f) Recommended detour routes for construction or incidents
9	g) Traffic data (volume, occupancy, speed)
6	h) Camera feeds
7	i) Transit vehicle location information
5	j) Fleet/emergency vehicle location information
6	k) Fleet/emergency vehicle status
6	l) Operating status of signal/traffic control devices
4	m) Security alerts
	n) Other [please specify]

Scott provided the following responses:

Rank [1-10]	**ITS-related information**
8	a) Real time general traffic information
10	b) Real time personalized (route specific) traffic information
8	c) Travel time information (current travel time between points in system)
10	d) Notification of roadway incidents
6	e) Construction related information
6	f) Recommended detour routes for construction or incidents
10	g) Traffic data (volume, occupancy, speed)
10	h) Camera feeds
6	i) Transit vehicle location information
3	j) Fleet/emergency vehicle location information
3	k) Fleet/emergency vehicle status

Rank [1-10]	ITS-related information
3	l) Operating status of signal/traffic control devices
8	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Shi-Chiang provided the following responses:

Rank [1-10]	Improvements
10	a) Reduce traffic congestion
9	b) Increase speeds and reduce stops
7	c) Provide quicker and safer response to incidents
6	d) Improve motorist safety
4	e) Improve safety of at-grade railroad crossings
5	f) Improve vehicle and personal security
6	g) Provide traffic-related information to motorists
	i) Prior to their trip
4	ii) En route
3	h) Reduce vehicle operating costs to all users
1	i) Reduce operating and maintenance costs of transportation system
8	j) Provide for safer, more efficient movement of freight
2	k) Improve efficiency of law enforcement agencies
8	l) Better manage construction projects
3	m) Better manage traffic for special events
1	n) Reduce air and noise pollution
2	o) Reduce vehicular impact on neighborhood streets
2	p) Improve security of public facilities
2	q) Improve movement into and out of secure areas

Rank [1-10]	Improvements
	r) Other [please specify]

Scott provided the following responses:

Rank [1-10]	Improvements
8	a) Reduce traffic congestion
8	b) Increase speeds and reduce stops
10	c) Provide quicker and safer response to incidents
8	d) Improve motorist safety
8	e) Improve safety of at-grade railroad crossings
6	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
10	i) Prior to their trip
8	ii) En route
8	h) Reduce vehicle operating costs to all users
8	i) Reduce operating and maintenance costs of transportation system
10	j) Provide for safer, more efficient movement of freight
10	k) Improve efficiency of law enforcement agencies
10	l) Better manage construction projects
8	m) Better manage traffic for special events
8	n) Reduce air and noise pollution
7	o) Reduce vehicular impact on neighborhood streets
7	p) Improve security of public facilities
10	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			**U**
ii) In-vehicle route guidance			**U**
iii) In-vehicle traveler service information			**U**
iv) Pre-trip planning information			**U**
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			**U**
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

N.A.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

N.A.

11) What institutional barriers exist to implement new technologies in your organization?

There are sometimes holes in intra-agency coordination, but for the most part, staff across all divisions proactively share information.

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

N.A.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Shi-Chiang Li provided the following responses:

Rank [1-10]	**Measures of Effectiveness**
2	i) Number of accidents
4	ii) Number of fatalities
5	iii) Reduction in incident detection, response and clearance times
6	iv) Reduction in information dissemination time for incidents
10	v) Reduction in recurring congestion
7	vi) Reduction in vehicle miles traveled
7	vii) Reduction in traffic at specific locations
8	viii) Reduction in peak period/peak hour volumes
10	ix) Increase in average speeds
5	x) Reduction in vehicle emissions
8	xi) Increased transit ridership
5	xii) Reduction in operating and maintenance costs
8	xiii) Increase in operational capacity
9	xiv) Reduction in total trip time
8	xv) Increase in travel time reliability

Scott provided the following responses:

Rank [1-10]	**Measures of Effectiveness**
10	i) Number of accidents
10	ii) Number of fatalities
8	iii) Reduction in incident detection, response and clearance times
8	iv) Reduction in information dissemination time for incidents
10	v) Reduction in recurring congestion
8	vi) Reduction in vehicle miles traveled
10	vii) Reduction in traffic at specific locations
10	viii) Reduction in peak period/peak hour volumes
10	ix) Increase in average speeds
10	x) Reduction in vehicle emissions
10	xi) Increased transit ridership
10	xii) Reduction in operating and maintenance costs
10	xiii) Increase in operational capacity
10	xiv) Reduction in total trip time
8	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Coordination of information with FIHS group.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Broward TMC, I-595 DMS/CCTV, I-95 DMS/CCTV in Palm Beach County.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

Unknown.

ii) How does coordination occur between agencies and other project participants?

Unknown.

iii) Does the project involve freight/goods movement? If so, how?

Unknown.

iv) Please describe strengths and weaknesses of the project.

Unknown.

v) What could be done to improve the weaknesses?

Unknown.

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

Unknown.

vii) If freight is involved, are there specific improvements with regard to freight?

Unknown.

viii) Can you supply any data or reports that might be helpful for our study?

Unknown.

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Yes. Many people travel across county lines in their day-to-day travel. There needs to be more regional thinking and planning for ITS and transit initiatives in the Southeast Florida

region. Developing a regional strategy to address freight and passenger movements would be a good start.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

There are several potential ITS and non-ITS projects and strategies that may enhance freight operations in the region:

- Vehicle automation,
- Automated delivery systems for trucks, and
- Encouraging employers to offer "flex time" to discourage peak period commuter travel.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Not discussed.

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

CUTR study to identify key truck routes.

21) ***Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.***

Ashley (CUTR)

Marty Berger (Growth Management Division)

22) ***Do you have any other comments or issues that you would like to discuss?***

It would be beneficial to get information from drivers/dispatch regarding the location of problem areas – design, access/mobility, congestion and safety.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation (FDOT)**
	District VI SunGuide Control Center, Room 6203
	1000 NW 111th Ave., Miami, FL 33172
Interviewee(s):	**Rene DeHuelbes: (305) 470-5341 rene.dehuelbes@dot.state.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   District VI has very little involvement in freight planning right now. However, the District will be attempting to reach out to private sector freight interests (trucking companies, mainly) in an attempt to develop some sort of freight stakeholders committee or forum so that the District can better understand and address freight issues.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   As the Freeway Operations Engineer, Rene is heavily involved in ITS and looks over the ATIS and the Consumer Information Network (CIN) projects. The CIN project, which is designed to develop a transit operations database for integration into the existing freeway operations database, started two months ago. While the network is scheduled to be implemented in seven months (January 2003), Rene believes that schedule is very optimistic. Other agencies involved in the CIN project include Tri-Rail, and the Metro-Dade, Broward, and West Palm Beach transit agencies. Rene spends the majority of his time on freeway operations and ITS work. Approximately 1% of his time is spent on freight issues.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   There are several issues and problems that affect freight movements within District VI, including:

   - **Highway congestion**. Every major highway, freeway, and arterial in the region is congested, particularly during the AM and PM peak periods.
   - **Incidents**. The State of Florida, and the Miami-Dade area, in particular, has a high occurrence of crashes and other incidents on its highway system. These incidents exacerbate existing congestion on area roadways.

4) ***What are the major transportation issues/problems for your agency? Please list:***

   See above.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

a) Congestion

I-95, Palmetto Expressway (SR 826), Dolphin Expressway (SR 836)

b) Safety

Traffic entering and exiting congested freeways (particularly I-95) is a major safety concern in the region. It is of such concern that the District is implementing ramp metering systems at 22 locations along I-95.

c) Freight and goods movement

Most freight and goods movement issues are handled at the MPO level (Frank Baron-Miami-Dade MPO).

d) Lack of access/mobility

Access and mobility are major concerns in the region, particularly as the region's interstate highways typically carry commuter and visitor (tourist) traffic.

e) Air and noise pollution

The Palmetto Expressway is a major cause of noise pollution in the area, as trucks often have to quickly apply their brakes (causing screeching sounds) where the expressway moves from a north-south orientation to east-west.

f) Negative impact on surrounding land uses

Unknown.

g) Security

Not discussed.

h) Tourism/Economic health

Tourists often stick to the major, well-marked freeways and expressways in the area. These are often the facilities that serve commuter and other local traffic, exacerbating existing congestion.

i) Other (please explain)

Truck traffic in the region is made up of many small trucks for local delivery, such as FedEx or UPS. These small trucks often clog downtown roadways during peak hours.

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
10	a) Real time general traffic information
10	b) Real time personalized (route specific) traffic information
10	c) Travel time information (current travel time between points in system)

Rank [1-10]	ITS-related information
10	d) Notification of roadway incidents
10	e) Construction related information
10	f) Recommended detour routes for construction or incidents
10	g) Traffic data (volume, occupancy, speed)
10	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies

Rank [1-10]	Improvements
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

Unknown, though Angel Reanos would know the answer to this question. The Florida Highway Patrol (FHP) is heavily involved in the Advances Traveler Information System (ATIS) project.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

FDOT has downsized in the last several years, resulting in an increasing workload for a decreasing workforce. The staff that remain often do not have the necessary skills or training to properly implement ITS and other programs, as highly trained FDOT staff are often lost to consulting firms.

11) ***What institutional barriers exist to implement new technologies in your organization?***

None. District leadership is very supportive of ITS and other technology implementation.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

N.A.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	Measures of Effectiveness
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time

Rank [1-10]	Measures of Effectiveness
	xv) Increase in travel time reliability

Performance measurement is not handled directly by the district or district staff. However, Rene was aware of three different performance evaluation efforts for district ITS implementations:

- **SAIC**. SAIC is performing a national evaluation of ITS deployments. Rene will provide a copy of any related documentation he has on hand.
- **Annual Evaluation**. FDOT performs an annual statewide evaluation of ITS deployments which includes user evaluations. Rene will provide a draft copy of the latest report.
- **FHWA Funding Evaluation**. FHWA requires a post-construction or post-deployment evaluation for all projects funding with federal money, including ITS projects.

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

- **Better data/information on truck movements**. The lack of comprehensive data describing truck movements and commodities in the District makes it difficult to conduct effective freight planning.
- **Outreach to the private sector freight community**. By reaching out to the private sector freight community, the District will be better able to understand the needs and concerns of freight carriers in the region as well as determine the ways in which freight movements would benefit from ITS deployments.
- **Using freight trucks as "probes**." Freight trucks operating along the District's roadways can provide first-hand information describing traffic conditions throughout the region. This information may help the District manage traffic operations and incident response.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- "Package B" of I-95 ITS implementation.
- Fiber installation on SR826 and in the Florida Keys.

(See Sergio Bravo for more information on either of these projects).

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

Rene is heavily involved in the ATIS and Consumer Information Network projects described earlier.

ii) How does coordination occur between agencies and other project participants?

Unknown.

iii) Does the project involve freight/goods movement? If so, how?

Any freight benefits are "coincidental." All projects that improve traffic flow on the highways and interstate will benefit freight movements, which are dominated by trucks.

iv) Please describe strengths and weaknesses of the project.

Unknown.

v) What could be done to improve the weaknesses?

Unknown.

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

Unknown.

vii) If freight is involved, are there specific improvements with regard to freight?

Unknown.

viii) Can you supply any data or reports that might be helpful for our study?

Unknown.

17) ***Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.***

Coordination is good, but there is room for improvement. Some agencies do not participate in regional planning activities.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

Unknown.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Unknown.

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

None.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

- Frank Baron (Miami-Dade MPO) regarding the MPO Freight Study.
- Rene suggested that we try to contact major carriers in the region, such as Yellow Freight or JB Hunt.

22) Do you have any other comments or issues that you would like to discuss?

Unknown.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Florida East Coast Railway (FEC)**

10050 NW 116th Way, Suite 18, Miami, FL 33178

Interviewee(s): **Ray Jones: (305) 889-5586 rjones@feci.com**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Florida East Coast (FEC) Railway is a regional rail carrier that operates 386 miles of track between Jacksonville and Miami. The railroad also operates a branch line from Ft. Pierce to Cana as well as two branches in the Miami area. Major commodities handled by the FEC include non-metallic minerals, vehicles, and intermodal traffic.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Ray Jones is the Director of Real Estate Development for the FEC and is very active in regional transportation planning efforts. Ray is a member of the Regional Transportation Organization's Technical Advisory Committee, the Broward County Transportation Forum, and attends all transportation-related meetings in the region in order to bring a private-sector perspective to freight and ITS planning efforts.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

- **At-grade rail crossings**. There are several at-grade rail crossings along the FEC right-of-way within SE Florida. In an attempt to minimize the disruption caused by at-grade crossings, the FEC adjusts train lengths and runs smaller trains more frequently. At-grade rail crossings are a concern to the FEC for a few reasons. The first is the inefficiencies they cause to the railroad, as trains must slow down in order to pass over these crossings. Some communities have regulations that limit wait times at crossings to five minutes, causing the FEC to run even shorter trains. The second is traffic congestion. At-grade rail crossings can often cause queues and spill back to other intersections. The third is trespassing on FEC right-of-way, which poses both a safety and security problem for the railroad.
- **Little River Corridor**. The Little River corridor runs along 79th Street in Miami, a run-down neighborhood. The FEC often has problems with break-ins, thefts, and derailments along this corridor.
- **Miami bottleneck**. Ray indicated that Miami is a bottleneck for both inbound and outbound containerized traffic for the railroad.

- **Port of Miami access**. The Port of Miami, one of the state's 14 deepwater seaports and a major handler of containerized freight traffic, must be accessed via a bridge from downtown Miami. As a result, trucks must traverse already crowded downtown streets, worsening congestion in this area.

4) What are the major transportation issues/problems for your agency? Please list:

State of Florida lacks a long-term goal to improve the mobility of passengers and goods.

5) What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:

a) Congestion

Miami.

b) Safety

At-grade rail crossings, region-wide.

c) Freight and goods movement
Not discussed.

d) Lack of access/mobility
Port of Miami access

e) Air and noise pollution
Not discussed.

f) Negative impact on surrounding land uses
Not discussed.

g) Security

Little River Corridor, Miami.

h) Tourism/Economic health
Not discussed.

i) Other (please explain)

Not discussed.

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information

Rank [1-10]	ITS-related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	Improvements
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events

Rank [1-10]	Improvements
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
ix) Rail grade crossing improvements	**O**		
x) Four quad gates	**O**		
xi) Advance warning on train length and speed	**O**		
xii) Automatic braking on trains	**O**		
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking	**O**		
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

Since September 11th, 2001, the FEC has changed the way it handles security. The FEC has its own police department, which is in daily contact with its counterparts at CSX and Norfolk Southern (NS) and the FBI. They have also increased security patrols at all terminal gates and yards.

If a security or HAZMAT-related incident arises, the railroad will put out an immediate "stop HAZMAT" order to modify service on dangerous and highly flammable cargo. The FEC police chief contacts and coordinates with local response agencies. Moreover, guards are now stationed at all the FEC rail yards.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Not discussed.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Not discussed.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Several safety-related technologies currently in use at the FEC:

- Dynamic braking system;
- "Dead-man's" switch (which turns off automatic controls);
- Rear-end detectors;
- Hot-box detectors (which notify the engineer of sticking brakes, wide loads, dragging cars, etc);
- Fire department alarm (local FDs can track FEC trains to determine which at-grade crossings are clear for responder use and which are blocked by a crossing train)

Other technologies in use at FEC:

- Customer routing information (through website).

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

The state needs a long-range goal for facilitating the mobility of passengers and goods. The lack of such a goal is frustrating to the MPOs, other local planning agencies, and to the FEC.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

Not discussed.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Not discussed.

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

Updated FEC train schedule (Ray Jones provided copy).

21) ***Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.***

None.

22) ***Do you have any other comments or issues that you would like to discuss?***

None.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Miami-Dade Metropolitan Planning Organization (MPO)**
Office of the County Manager
111 NW First Street, Suite 910, Miami, FL 33128

Interviewee(s): **Carlos Roa: (305) 375-4507 rdf@co.miami-dade.fl.us**
Frank Baron (305) 375-4507 fbaron@co.miami-dade.fl.us

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Miami-Dade Metropolitan Planning Organization (MPO) is responsible for directing urban transportation planning and the allocation of federal and state funds in the Miami-Dade region. Like most MPOs, it is responsible for the county's long-range transportation plan (LRTP), a transportation improvement program (TIP) and a unified planning work program (UPWP).

The Miami-Dade MPO is located within FDOT District VI, which has been a leader in ITS planning and deployments. The Miami-Dade MPO has played an active role in ITS planning since 1995 when it began to develop the Miami-Dade County ITS Plan. This plan, which was formally adopted in 1997 and has been revised since, was designed to provide a county-wide blueprint for ITS deployments in the hope of attracting federal funding.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Carlos is the ITS contact in the MPO office. He is responsible for organizing the county's ITS Coordinating Committee, the 1997 ITS Plan for the County and regional coordination for the ATIS. He spends more that 20 percent of his time on ITS-related issues. Frank Baron is responsible for freight transportation planning at the MPO.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

- **Public support**. Carlos believes that the public has a hard time getting behind ITS projects because there is often little in the way of deliverables. This is particularly true for fiber-optic cable installations, most of which occur behind the scenes of the tax-paying public. Without a deliverable that the public can utilize, it is difficult to build support.
- **Truck parking in downtown**. Miami has a very "tight" downtown with many one-way streets and narrow corridors. Trucks making pick-ups or deliveries in this area can hinder the smooth flow of traffic, as they are often forced to double-park or take wide

turns. Exacerbating this situation is the fact that few of the buildings in downtown Miami include a dedicated truck loading and unloading apron.

- **Port of Miami access**. The Port of Miami, one of the state's 14 deepwater seaports and a major handler of containerized freight traffic, must be accessed via a bridge from downtown Miami. As a result, trucks must traverse already crowded downtown streets, worsening congestion in this area.
- **Congestion, mobility, safety and air quality.** These are focal points for the organization.
- **Lack of dedicated funding for transit.**

4) *What are the major transportation issues/problems for your agency? Please list:*

- **Fragmented planning and project development process**. The SE Florida region is divided among several large MPOs (Miami-Dade, Broward, and Palm Beach) and two FDOT districts (IV and VI). These entities do not coordinate their transportation planning activities very well due, in part, to jurisdictional and other issues. As SE Florida is essentially one large urbanized area, transportation planning needs to happen on a more regional scale.
- **Institutional barriers.** ITS deployments are a priority for the USDOT, but local agencies often have other (non-ITS) priorities, such as congestion relief, etc.
- **Funding.** Scarce transportation funding is a common barrier to all types of transportation improvement projects; a particular problem with ITS funding is that it cannot be "flexed" and used toward other (non-ITS) programs and projects.
- **MPO role.** The Miami-Dade MPO, like many of its counterparts, is unclear of its role with regard to ITS. Is the MPOs role to conduct ITS planning? To deploy, operate, and manage ITS systems? A combination of the two?
- **Regional ITS knowledge.** ITS has significant regional impacts, though the knowledge and use of ITS technologies varies among counties in the Southeast Florida region. Miami-Dade considers itself the leader among the three counties, with Broward County about three years behind and Palm Beach County five years behind. Until all three counties are "up to speed" on ITS, it will be difficult to advance regional initiatives.
- **Lack of inter-agency coordination/priorities**. In a related concern, it is often difficult to conduct regional planning, as ITS priorities among the three MPOs vary considerably. For example, Carlos believes that the Palm Beach MPO is not at all interested in ramp metering or other ITS projects. Similarly, Carlos preceives that Broward County is very conservative and hesitant to invest in ITS projects.
- **Data/planning**. Freight planning at the Miami-Dade MPO, as it is at most MPOs, is hindered by a lack of disaggregate, accurate data describing truck movements at the local level. Freight data is particularly hard to come by at the local level, as much of the data are proprietary and it is often difficult to collect sufficient data to ensure statistical validity. The MPO is also unclear of its role in freight planning, as it struggles to plan for what is, essentially, an economic activity governed by market forces.

- **No recognition of the importance of freight.** Though transportation planning organizations, including the Miami-Dade MPO, have recently increased the amount of attention and resources dedicated to freight and freight issues, there is still a lack of understanding by decision-makers of the importance of considering freight in the context of a local or regional transportation plan. The general public is often not entirely aware of the importance of freight in their daily lives and exerts little if any pressure on local elected officials to address freight issues.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

   a) Congestion

   Downtown Miami, I-95, SR 826 (Palmetto Expressway), SR 836 (Dolphin Expressway).

   b) Safety

   Krome Avenue.

   c) Freight and goods movement
   I-95, I-395, NW 36/41 Street, SR 836, and NW 87 Avenue. Some areas are more prone to problems due to a high demand for truck movements in combination with mixed use congestion and/or poor infrastructure geometries (e.g., downtown, Airport West).

   d) Lack of access/mobility
   Port of Miami, Miami International Airport (MIA), and Downtown (the three largest economic generators).

   e) Air and noise pollution
   I-95, SR 826, SR 836, SR 874.

   f) Negative impact on surrounding land uses
   Local people do not appreciate trucks in their residential, recreational, or work places.

   g) Security

   This issue is increasingly important post 9-11 at MIA and the Port of Miami (POM).

   h) Tourism/Economic health
   Tourism usually directly conflicts with trucking, despite the fact that trucks are necessary to supply recreational facilities with goods.

   i) Other (please explain)

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Carlos provided the following answers:

Rank [1-10]	**ITS-related information**
10	a) Real time general traffic information
8	b) Real time personalized (route specific) traffic information
10	c) Travel time information (current travel time between points in system)
9	d) Notification of roadway incidents
9	e) Construction related information
9	f) Recommended detour routes for construction or incidents
10	g) Traffic data (volume, occupancy, speed)
9	h) Camera feeds
8	i) Transit vehicle location information
8	j) Fleet/emergency vehicle location information
8	k) Fleet/emergency vehicle status
8	l) Operating status of signal/traffic control devices
8	m) Security alerts
	n) Other [please specify]

Frank provided the following answers:

Rank [1-10]	**ITS-related information**
8	a) Real time general traffic information
8	b) Real time personalized (route specific) traffic information
8	c) Travel time information (current travel time between points in system)
10	d) Notification of roadway incidents
4	e) Construction related information
6	f) Recommended detour routes for construction or incidents
8	g) Traffic data (volume, occupancy, speed)
2	h) Camera feeds
0	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
6-8	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Carlos provided the following answers:

Rank [1-10]	**Improvements**
10	a) Reduce traffic congestion
8	b) Increase speeds and reduce stops
9	c) Provide quicker and safer response to incidents
8	d) Improve motorist safety
8	e) Improve safety of at-grade railroad crossings
8	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
8	i) Prior to their trip
10	ii) En route
9	h) Reduce vehicle operating costs to all users
8	i) Reduce operating and maintenance costs of transportation system
9	j) Provide for safer, more efficient movement of freight
7	k) Improve efficiency of law enforcement agencies
9	l) Better manage construction projects
8	m) Better manage traffic for special events
7	n) Reduce air and noise pollution
8	o) Reduce vehicular impact on neighborhood streets
10	p) Improve security of public facilities
10	q) Improve movement into and out of secure areas
	r) Other [please specify]

Frank provided the following answers:

Rank [1-10]	**Improvements**
10	a) Reduce traffic congestion
10	b) Increase speeds and reduce stops
8	c) Provide quicker and safer response to incidents
4-8	d) Improve motorist safety
3-6	e) Improve safety of at-grade railroad crossings
4-10	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
4-8	i) Prior to their trip
6-8	ii) En route
10	h) Reduce vehicle operating costs to all users
8	i) Reduce operating and maintenance costs of transportation system
10	j) Provide for safer, more efficient movement of freight
4-8	k) Improve efficiency of law enforcement agencies
4-10	l) Better manage construction projects
4-6	m) Better manage traffic for special events
2-6	n) Reduce air and noise pollution
2-6	o) Reduce vehicular impact on neighborhood streets
4-8	p) Improve security of public facilities
4-10	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

Note: Since the MPO is not an operations and maintenance agency, the MPO is dedicated to recognizing and supporting public-sector advances where appropriate.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information	**U**		
v) Traffic signal control		**U**	
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			**U**
viii) Emissions testing and mitigation			**U**
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation	**O** – (VPSI)		
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

The MPO is only involved in incident management by participating at the coordinating committee level.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

- Education.
- ITS trained specialist and/or traffic engineer with operational experience.
- Funding.

11) What institutional barriers exist to implement new technologies in your organization?

- Carlos explained that there is an institutional hierarchy combined with funding requirements for implementation. This combination nearly excludes agencies without funding schemes.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
8	i) Number of accidents
8	ii) Number of fatalities
10	iii) Reduction in incident detection, response and clearance times
8	iv) Reduction in information dissemination time for incidents
8	v) Reduction in recurring congestion
10	vi) Reduction in vehicle miles traveled
8	vii) Reduction in traffic at specific locations
9	viii) Reduction in peak period/peak hour volumes
10	ix) Increase in average speeds
8	x) Reduction in vehicle emissions
10	xi) Increased transit ridership
8	xii) Reduction in operating and maintenance costs
10	xiii) Increase in operational capacity
10	xiv) Reduction in total trip time
9	xv) Increase in travel time reliability

Note: Regarding performance measures specifically for freight, the measures are not universal for all applications. Therefore, the best measures are the most general and most widely applicable, including: average speeds, trip times, travel time reliability, recurrent congestion reduction, and reduction in O&M costs.

14) ***What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?***

- **Communication and coordination**. All sectors of the freight/trucking community should be involved in the planning process. The private sector focuses on short-term planning and the public sector is forced to focus on long-term planning. Therefore, it's difficult to get the private sector to participate in long-term planning, even on issues directly related to their industry. The private sector needs to understand that the scope and magnitude of public-sector work requires much longer lead times and enormous funding to accomplish many improvements.
- **Better data**. It would also be helpful to have better data on where and when trucks are traveling, for what purposes.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

SunGuide (electronic toll payment system).

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Yes- see above. Currently, the efforts of FDOT Districts IV and VI, Broward County, Miami-Dade County, Palm Beach County, and the private sector are not well coordinated. As neither freight nor passengers acknowledge jurisdictional boundaries during their trips, transportation planning in the region- including ITS deployments- should occur at a regional level.

Coordination "reached its peak" at a regional level for the ATIS project by securing support for a Memorandum of Agreement. However, the level of coordination has dropped in operational stages. ITS plans are rarely discussed among the three counties.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

- Weigh-in-motion for truckers.
- Collision avoidance systems.
- Anything that "stops a stop", by improving signal timings, improving flow along major corridors, etc.
- Provide a "private TMC" as a subscription service through which truckers can access traffic information.

- Anything that improves/minimizes the flow of paperwork.
- Install contra-flow lanes along I-95.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Try Design-Build.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

- Miami-Dade Regional Freight Plan
- Airport West Truck Traffic Study (Frank Baron to provide copy when complete)

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Suneil Harmon, Miami International Airport

22) Do you have any other comments or issues that you would like to discuss?

- Carlos wondered whether this effort will result in a "plan" in the traditional sense, i.e., something that will be blessed and adopted by the MPO Board. If it is indeed a plan, it could be used by the MPO to secure federal funding.

- Carlos also suggested that the final report be placed on the MPO website to ensure wide distribution.

- Finally, Carlos encouraged the interviewers to ensure that the final documents are consistent with existing ITS architecture.

- Frank expressed the need for a "champion" to emphasize the importance of freight and goods movement and encourage tolerance of the industry. Most do not fully understand the importance of freight and instead perceive it as an obstruction to personal mobility, or as a source of danger, noise, or visual pollution.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Palm Beach County Metropolitan Planning Organization (MPO)**
160 Australian Avenue, Suite 201, West Palm Beach, FL 33406
Interviewee(s): **Randy Whitfield: (561) 684-4170 mpopbc@co.palm-beach.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

The Palm Beach County Metropolitan Planning Organization (MPO) is responsible for directing urban transportation planning and the allocation of federal and state funds in the Palm Beach County region. Like most MPOs, it is responsible for the county's long-range transportation plan (LRTP), a transportation improvement program (TIP) and a unified planning work program (UPWP).

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

Randy is the Director of the Palm Beach MPO.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

- **Congestion**. The Southeast Florida region (Miami-Dade, Broward, and Palm Beach) is the 2nd fastest congestion growth rate in the U.S. (after Raleigh-Durham, NC).
- **Sprawl**. The western portion of Palm Beach County is heavily agricultural, while the eastern (coastal) areas are heavily developed and urbanized. Much of the affordable housing in the region is located on the western side, which is becoming more and more developed. Growth in this area will have significant transportation impacts.
- **Drawbridges on the Inter-Coastal Waterway**. Drawbridges along the Inter-Coastal Waterway cause delays and queues for both passenger and freight traffic, particularly during peak season.
- **Lack of capacity**. Increasing transportation system capacity may relieve some of the congestion issues facing the county, but there is little land available for capacity improvements to the region's highway system. Compounding the problem is the fact that there are no resources for improving transit service, which is not viewed as a viable travel option by most county residents.
- **At-grade rail crossings**. There are over 100 at-grade rail crossings within the County which often cause queues and spill back to other intersections.

4) *What are the major transportation issues/problems for your agency? Please list:*

- **Aging population**. Approximately 25-30% of Palm Beach County residents exceed 65 years of age. An aging population presents unique challenges to transportation planning agencies, such as long street crossing times.
- **Bicyclist/pedestrian safety**. Palm Beach County has the highest number of bike fatalities in the U.S.
- **Passenger/freight conflicts on interstate highways**. The Port of Palm Beach handles a significant amount of containerized freight, most of which is transported to and from the Port facility on trucks, leading to frequent passenger car/truck conflicts on regional roadways.
- **Low population density**. Residential areas are very low density, hindering the development of a fruitful transit system. Therefore, transit is only used now by those with no alternative.

5) *What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:*

a) *Congestion*

Not discussed.

b) *Safety*

Not discussed.

c) *Freight and goods movement*

Port of Palm Beach.

d) *Lack of access/mobility*

Access to and from Port of Palm Beach. The main access road to the Port not directly connected to the Interstate. The Port and MPO would like to see a direct interchange from the Turnpike, but are getting resistance from area residents.

e) *Air and noise pollution*

Not discussed.

f) *Negative impact on surrounding land uses*

Not discussed.

g) *Security*

Palm Beach Airport.

h) *Tourism/Economic health*

Not discussed.

i) *Other (please explain)*

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip

Rank [1-10]	Improvements
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

While it has no incident management responsibility, the Palm Beach County MPO is involved in the SE Florida Incident Management Working Group, which has met approximately every two months for the past three years. Other members include public and private stakeholders from the tri-county region, the Florida Highway Patrol, other law enforcement agencies (Sheriffs) and FDOT. This group is active in identifying and addressing operational and coordination efforts for incident management.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

Not discussed.

11) What institutional barriers exist to implement new technologies in your organization?

It is MPO policy to consider ITS during project development, but there still exist some barriers that sometimes hinder ITS deployments in the region, including

- Funding (though the County's signalization improvements were funded using CMAQ funds); and
- FDOT Central Office.

12) What institutional barriers that now exist in your organization could be overcome through the implementation of new technologies?

Not discussed.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

Not discussed.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- NextBus System (bus locator and travel information) to be installed on three Broward County Transit routes (E-W, Dade connection, and Palm Beach connection).
- Palm Beach Traffic Management Center (located in same building as MPO) will be expanded when MPO relocates).
- Temporary ITS deployment along I-95 (discussed with Mark Plass/Tahira).

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

It's MPO policy to consider ITS components for all projects.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Yes. Currently, the efforts of FDOT Districts IV and VI, Broward County, Miami-Dade County, Palm Beach County, and the private sector are not well coordinated. As neither freight nor passengers acknowledge jurisdictional boundaries during their trips, transportation planning and data sharing in the region should occur at a regional level.

Randy feels that there is good coordination with the Port of Palm Beach. In fact, the Port can propose projects for the MPO's TIP. However, turnover in Port Authority leadership (third director in three years) has hindered planning efforts a bit.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

Not discussed.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Greg Calhoun (NextBus Project).

22) Do you have any other comments or issues that you would like to discuss?

No.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name: **Broward County Commission**

Port Everglades Department

1850 Eller Drive, Ft. Lauderdale, FL 33316

Interviewee(s): **Robert J. Flint:** **(954) 765-4643 rflint@broward.org**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Port Everglades is a major trip generator in the Broward County region for both passengers and freight, handling significant amounts of containerized cargo as well as cruise passenger traffic. The port is a "landlord", i.e., the individual terminals are leased to tenants who then operate them; Port Everglades does provide linehandling and harbormaster services.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Bob Flint is the Director of Operations for the port and is responsible for the day-to-day operations on port facilities. While he is engaged in planning for on-port improvements, he has not been involved in "off-port" planning for either freight or ITS, except for the Eller Drive improvement project.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   - **Increasing freight volume**. International trade is expected to double over next 20 years, which will have a major effect on Port Everglades and the surrounding transportation system. Currently, the Port is operating under capacity, handling approximately 1,500 petroleum trucks per day in addition to significant container (truck intermodal) traffic. The port has 150 acres available for expansion and will need the extra space to accommodate the anticipated increase in container traffic.
   - **Cruise passenger traffic**. Port Everglades is one of the largest cruise terminals in Florida and in the U.S., handling approximately 2.7 million cruise passengers (single and multi-day) in 1999. Since September 11th, 2001, however, more and more cruise passengers are arriving by car, not by air. These cruise passengers share the same entrance to the port complex with freight traffic and can often cause bottlenecks as they meander their way through the port on their way to the cruise ship terminals. There is also a need to prevent cruise ship passengers from entering secure parts of the port, such as fuel storage tank areas, etc.

4) What are the major transportation issues/problems for your agency? Please list:

- **New security gates**. Until September 11th, 2001, Port Everglades was an "open port", i.e., there was no main security checkpoint for either freight or passenger traffic entering or departing the port complex. New security requirements will necessitate the construction of permanent gates and checkpoints at each port entrance; these gates are expected to be completed within a year. The new gates, while increasing safety and security within the port complex, will likely reduce the overall efficiency of port movements and cause bottlenecks along the main port entrance at Eller Drive.
- **Signage**. There are some signs directing both freight and cruise passenger traffic around the port complex, but the current signage was designed to be temporary and is beginning to show its age. Signage is not terribly crucial for truck traffic operating on the port, as most truck drivers are familiar with the port layout and where they need to pick up their loads. One potential concern for signage, though, is the fact that 90 percent of truck drivers speak Spanish only, so information on new signs may need to be displayed in both English and Spanish. Signage is most important for cruise passengers entering the port complex, as they are not typically familiar with the port layout.
- **New security requirements relating to cruise ship stores loading**. Large cruise ships require deliveries of all sorts of stores, such as food, drink, laundry, and other necessities, prior to departing on multi-day cruises. New security regulations instituted after September 11th, 2001 only allow two trucks dockside at any time, however. This can cause large queues of delivery trucks waiting to unload. Currently these trucks queue along an infrequently used road and vacant terminal, but as Port Everglades expands, new loading/unloading strategies may need to be developed.

5) What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:

a) Congestion
Not discussed.

b) Safety

Passenger/truck conflicts on-port and at port entrances.

c) Freight and goods movement
Not discussed.

d) Lack of access/mobility
Not discussed.

e) Air and noise pollution
Not discussed.

f) Negative impact on surrounding land uses
Not discussed.

g) Security

New security requirements affect all movements into and out of the port complex.

h) Tourism/Economic health
Not discussed.

i) Other (please explain)

Not discussed.

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
10	c) Travel time information (current travel time between points in system)
10	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
10	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety

Rank [1-10]	Improvements
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
10	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
10	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			**O**
ii) Identification of high risk motorists and cargo			**O**
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

Operations supervisor notifies local and regional agencies.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Not discussed.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	Measures of Effectiveness
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled

Rank [1-10]	Measures of Effectiveness
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

New gate security requirements may necessitate the implementation of a truck appointment system to smooth truck flows into the port complex. Truck driver ID or proximity cards may also be required.

The most important aspect of deploying any new system, ITS or otherwise, is education. Educating and training truck drivers is especially important to build support for new services/projects at the Port.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Not discussed.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) ***Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.***

Not discussed.

18) ***Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?***

Not discussed.

19) ***Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?***

Not discussed

20) ***Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.***

Not discussed.

21) ***Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.***

None.

22) ***Do you have any other comments or issues that you would like to discuss?***

None.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Broward County Commission**
	Department of Safety and Emergency Services
	2601 West Broward Boulevard, Fort Lauderdale, Florida 33312
Interviewee(s):	**George Keller: (954) 831-8201 gkeller@broward.org**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   George's agency is slanted more toward regulatory oversight than on transportation planning. Specifically, the agency deals with:

   - Permitting;
   - Zoning and code enforcement;
   - Medical examiner issues; and
   - Fire/rescue coordination

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   George is the Assistant Director of the department and becomes involved in projects from a project management/regulatory standpoint. For example, he was consulted on the Ft. Lauderdale/Hollywood Airport and Port Everglades projects in order to:

   - Obtain building permits;
   - Ensure planned facilities had good ingress and egress for emergency vehicles; and
   - Ensure that planned facilities considered emergency evacuation.

   George is also active in a special group formed to address post-September 11th security concerns. The Broward Emergency Support Team (BEST) is designed to improve on-scene communications during incidents and is also attempting to identify high-risk terrorist targets, such as Port Everglades, major bridges, etc. BEST is headed by Broward Fire and Rescue and trains and practices routinely.

3) *What are the major transportation issues/problems in your urbanized area and/or region? Please list:*

- **Congestion**. Congestion is a particular concern along I-95, I-595, Florida's Turnpike, and other major arterials.
- **Sprawl/population growth**. The eastern (coastal) areas of the region are heavily developed and urbanized. Much of the affordable housing in the region is located inland, which is becoming more and more developed. Growth in these areas will have significant transportation impacts.
- **Transit**. The region's transit system has minimal impact on transportation problems in the region, as there is not sufficient population density to support efficient transit operations.
- **Airport Growth**. FLL's passenger load is expected to double by 2025 (to 25 million). This growth will have tremendous impacts on the surrounding transportation system.
- **Cruise passenger traffic**. Port Everglades is one of the largest cruise terminals in Florida and in the U.S., handling approximately 2.7 million cruise passengers (single and multi-day) in 1999. These cruise passengers share the same entrance to the port complex with freight traffic and can often cause bottlenecks along Eller Drive/I-595.

4) *What are the major transportation issues/problems for your agency? Please list:*

- **Evacuations from Barrier Islands**. There is a burgeoning retiree population along the barrier islands in the region. Emerging evacuations (by EMS) from these areas are challenging, however, as there is limited access to these areas. The islands do not have a hospital or Fire Rescue. If there are drawbridge problems, it's difficult to respond to emergencies.
- **Multi-jurisdictional response**. Emergency or HAZMAT incidents are typically responded to by a variety of agencies, including county and local police, fire, rescue, and others. A major issue facing the Emergency Management Department is coordinating incident command responsibilities among these agencies. In most cases, there are jurisdictional overlaps, but in some cases, there are gaps in the system that cause confusion as to what agency is responsible for response. In fact, there are several segments of I-95 and Turnpike right-of-way that are not incorporated into the jurisdictions they traverse. Incidents occurring on these segments can fall between the cracks of jurisdictional responsibility.

5) *What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:*

a) *Congestion*

Westbound I-595
North and Southbound I-95
E-W arterials, specifically Oakland Park Blvd

b) Safety

Route A1A is a narrow, 2 lane road that floods easily; presents a significant challenge to emergency vehicles.

c) Freight and goods movement

HAZMAT movements.

d) Lack of access/mobility

Access to barrier islands (see above).

e) Air and noise pollution

Not discussed.

f) Negative impact on surrounding land uses

Not discussed.

g) Security

Not discussed.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

6) ***What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.***

Rank [1-10]	**ITS-related information**
8	a) Real time general traffic information
8	b) Real time personalized (route specific) traffic information
8	c) Travel time information (current travel time between points in system)
8	d) Notification of roadway incidents
6	e) Construction related information
6	f) Recommended detour routes for construction or incidents
4.5	g) Traffic data (volume, occupancy, speed)
5	h) Camera feeds
4-5	i) Transit vehicle location information
8	j) Fleet/emergency vehicle location information
8	k) Fleet/emergency vehicle status
6	l) Operating status of signal/traffic control devices
8	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) ***What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.***

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements			
x) Four quad gates			
xi) Advance warning on train length and speed			
xii) Automatic braking on trains			
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?

Broward Emergency Management Department is involved in the BEST program (see above), designed to improve communications among responding agencies during incidents. In addition, the Department coordinates planned hazardous material movements through its HAZMAT response unit. During planned HAZMAT movements, such as shipments of spent nuclear fuel or other shipments, all actions are coordinated by this unit. During unplanned incidents or movements, the responding EMS coordinates actions. George indicated that EMS units are very territorial in the Broward County region and sometimes only grudgingly cooperate with his department.

10) What changes in staffing or training requirements would be required to implement new technologies in your organization?

Not discussed.

11) What institutional barriers exist to implement new technologies in your organization?

Not discussed.

12) What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?

Not discussed.

13) What criteria would be important in measuring the effectiveness of transportation improvements?

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?

- Weather information, particularly data on prevailing winds is critical during hazmat response. Locations of drainage areas and sewers also important.
- Real-time information sharing is critical in emergency management and incident response. Wireless technologies will have important impacts on emergency management and dispatch in the future.
- Co-location of hazmat permitting and licensing databases would improve administrative efficiency.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

- County is deploying a signal priority system for emergency vehicles (fire and rescue only). Work on the first 100 intersections is underway…the system will eventually include over 400 intersections around the county.
- Mobile data terminals being placed in emergency vehicles (?)
- Temporary ITS deployment along I-95 (discussed with Mark Plass/Tahira)

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

In general, the coordination between and among different EMS providers is good, though EMS personnel can be quite territorial (see above). Coordination between the County and the FEC is good.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

Not discussed.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

City Traffic Engineer Jihad El Eid.

22) Do you have any other comments or issues that you would like to discuss?

No.

ITS Intermodal Plan for Broward County
Interview Notes

Agency Name:	**Florida Department of Transportation (FDOT)**
	Office of the South Florida Rail Corridor Manager
	3400 West Commercial Blvd., Ft. Lauderdale, FL 33309
Interviewee(s):	**Ray Holzweiss: (954) 777-4425 ray.holzweiss@dot.state.fl.us**

1) ***Please describe your agency's role in transportation planning, specifically focusing on freight and ITS planning? [What percentage of time does your agency spend on ITS and freight planning activities?]***

   Ray is the Manager of the South Florida Rail Corridor (SFRC). His unit is the only one of its type in the State, and Ray is the only person in his department. FDOT purchased the rail line from CSX. It's spans 80 miles from Miami to West Palm Beach, thereby traversing both District IV and VI. The track, signals, and bridges are all state-owned. FDOT also owns the Hialeah Rail Yard. CSX is responsible for maintenance, and FDOT shares the maintenance costs with CSX. However, CSX is more reactive than planning-oriented with regard to its maintenance activities.

2) ***Please describe your job function and particularly any responsibilities related to ITS and freight transportation planning. [What percentage of time do you spend on ITS and freight?]***

   Ray works closely with the Tri-County Commuter Rail Authority (Tri-Rail), CSX and Amtrak, the three users of the SFRC. He described his role as being similar to a "referee" for the three users. Ray also manages State and Federal funding for Tri-Rail, which is a large portion of Tri-Rail's operating budget.

3) ***What are the major transportation issues/problems in your urbanized area and/or region? Please list:***

   Not discussed.

4) ***What are the major transportation issues/problems for your agency? Please list:***

   - **South Florida Rail Corridor (SFRC) Expansion**. The SFRC was purchased by FDOT, though Tri-Rail, Amtrak and CSX operate on the line. A Joint Partnership Agreement (JPA) was signed granting priority to freight trains during off-peak travel times, and to Tri-Rail during the peak periods. Tri-Rail generally gets priority for its trains; however, CSX often does not clear the SFRC in time for Tri-Rail to run their trains. To address these issues, they are currently working on a double-tracking initiative for the entire corridor (50% complete – should be totally complete in 2005).
   - **Regional Transit Organization (RTO) concept**. The RTO is based on a tri-county agreement. It's comprised of elected officials, representatives of business organizations, representatives of the MPOs of Miami-Dade, Broward and Palm Beach Counties, in addition to representatives of the Tri-Rail and FDOT. Tri-Rail provides administrative and legal counsel support to the RTO.

- **Connections.** The corridor is great for North-South movements, but more service is needed in the East-West directions. Additionally, access to and from the Tri-Rail stations needs to be improved.
- **Land use and development.** The public needs more incentive to use transit. The density of areas surrounding the rail corridor need to be increased, and appropriate zoning changes should be made to encourage such high-density development. Park and ride facilities should also be implemented.
- **Funding.** Funding is always an issue for maintenance and operations. Since the number of track, signals and bridges will double with the new double-tracking effort, it's anticipated that this problem will worsen.
- **Coordination.** There are many public and private players in three counties that use or are involved in using the rail corridor. The Federal Railroad Administration (FRA) holds quarterly meetings with the corridor, but more coordination efforts are needed.

5) ***What specific segments/corridors of the regional transportation system have the most serious deficiencies in terms of:***

   a) ***Congestion***

      See above.

   b) ***Safety***

      As part of the double-tracking project, all 72 at-grade crossings in the SFRC will have gates and a median curb installed. Additionally, trespassers in rail yards or on tracks sometimes pose a safety issue.

   c) ***Freight and goods movement***

      Not discussed.

   d) ***Lack of access/mobility***

      See above.

   e) ***Air and noise pollution***

      Double-tracking will increase noise from the trains. The SFRC is adjacent to the I-95 corridor where construction activity is taking place, thereby creating even more noise. People in surrounding neighborhoods have complained. There are different standards for highway noise and rail noise.

      The noise from train whistles is also an issue. To mitigate this problem, they are working on a policy to establish blocks of time in which trains can and cannot blow their whistles (i.e., not after 10:00 p.m.).

   f) ***Negative impact on surrounding land uses***

      See Air and noise pollution.

g) Security

Securing rail property is close to impossible due to at-grade crossings that must be opened and closed regularly. FDOT is looking into tighter security equipment for its rail yards, however more funding is needed.

h) Tourism/Economic health

Not discussed.

i) Other (please explain)

6) What ITS-related information would be helpful to your organization in conducting your mission? Please rate each on a scale of 1 to 10, with 1 being the least helpful and 10 being the most helpful.

Rank [1-10]	**ITS-related information**
	a) Real time general traffic information
	b) Real time personalized (route specific) traffic information
	c) Travel time information (current travel time between points in system)
	d) Notification of roadway incidents
	e) Construction related information
	f) Recommended detour routes for construction or incidents
	g) Traffic data (volume, occupancy, speed)
	h) Camera feeds
	i) Transit vehicle location information
	j) Fleet/emergency vehicle location information
	k) Fleet/emergency vehicle status
	l) Operating status of signal/traffic control devices
	m) Security alerts
	n) Other [please specify]

7) ***What improvements would have the greatest benefit to your organization and/or the customers of your organization? Please rate each on a scale of 1 to 10, with 1 being the least beneficial and 10 being the most beneficial.***

Rank [1-10]	**Improvements**
	a) Reduce traffic congestion
	b) Increase speeds and reduce stops
	c) Provide quicker and safer response to incidents
	d) Improve motorist safety
	e) Improve safety of at-grade railroad crossings
	f) Improve vehicle and personal security
	g) Provide traffic-related information to motorists
	i) Prior to their trip
	ii) En route
	h) Reduce vehicle operating costs to all users
	i) Reduce operating and maintenance costs of transportation system
	j) Provide for safer, more efficient movement of freight
	k) Improve efficiency of law enforcement agencies
	l) Better manage construction projects
	m) Better manage traffic for special events
	n) Reduce air and noise pollution
	o) Reduce vehicular impact on neighborhood streets
	p) Improve security of public facilities
	q) Improve movement into and out of secure areas
	r) Other [please specify]

8) What specific technologies, or user services, are of interest to your organization? Note whether you/your organization would have an interest in operating these services yourself or using the information supplied by others? Please place 'O' beside those you would be interested in operating and 'U' beside those services you might use if someone else operated them.

User Services	**Have Now? [O or U]**	**Planned? [O or U]**	**Interested? [O or U]**
a) Travel & Transportation Management			
i) In vehicle driver information			
ii) In-vehicle route guidance			
iii) In-vehicle traveler service information			
iv) Pre-trip planning information			
v) Traffic signal control			
vi) Incident management technologies such as total station*			
vii) Real-time rerouting to minimize impact of RR at-grade crossings and drawbridges			
viii) Emissions testing and mitigation			
ix) Rail grade crossing improvements	**U**		
x) Four quad gates	**U**		
xi) Advance warning on train length and speed	**U** – not on all trains. Amtrak, CSX do not always use same train sets.		

* Total stations are a combination of a theodolite and an electronic distance meter for use in accident investigations. They are intended to reduce the time of incident clearance, improve the accuracy of accident investigation, and increase safety for accident investigators. Traditionally, investigators use the coordinate method to make needed field measurements (i.e., skid marks, road characteristics, debris patterns, etc.) by hand. Total stations are portable devices that take measurements from a central point using an infra-red beam and prism. Measurements are then stored on a computer, and accident recreation can be performed simply by downloading the data to a drafting program.

User Services	Have Now? [O or U]	Planned? [O or U]	Interested? [O or U]
xii) Automatic braking on trains	**U** – same as xi.		
xiii) Ride matching and reservation			
b) Public Transportation Operations			
i) Automated Vehicle Location for providing information on traffic conditions			
c) Commercial Vehicle Operations			
i) CV electronic clearance			
ii) Automated roadside safety inspection			
iii) On-board safety monitoring			
iv) Hazardous materials incident response			
v) CV administration processing			
vi) Cargo tracking			
vii) Electronic gate access to port and other secure areas			
d) Emergency Management			
i) Emergency vehicle management			
ii) Evacuation Traffic Management			
e) Security			
i) Access/clearance to secure areas (ports, airports, etc.)			
ii) Identification of high risk motorists and cargo			
iii) Customs clearance			

9) ***If your agency is involved in Incident Management, how is emergency response handled for incidents that require area-wide or regional action? How is incident management coordinated among the various jurisdictions?***

There are formal emergency response plans for train incidents. Herzog is the contractor. However, there is usually some confusion when a fatality occurs. Questions arise such as: In what jurisdiction did the incident occur? Who is responsible to take the lead? Tri-Rail is working with local authorities to create an incident management plan to mitigate such circumstances.

10) ***What changes in staffing or training requirements would be required to implement new technologies in your organization?***

Not discussed.

11) ***What institutional barriers exist to implement new technologies in your organization?***

Not discussed.

12) ***What institutional barriers that now exist in your organization could be overcome through implementation of new technologies?***

Not discussed.

13) ***What criteria would be important in measuring the effectiveness of transportation improvements?***

Please rate each on a scale of 1 to 10, with **1 being the least important** and **10 being the most important.**

Rank [1-10]	**Measures of Effectiveness**
	i) Number of accidents
	ii) Number of fatalities
	iii) Reduction in incident detection, response and clearance times
	iv) Reduction in information dissemination time for incidents
	v) Reduction in recurring congestion
	vi) Reduction in vehicle miles traveled
	vii) Reduction in traffic at specific locations
	viii) Reduction in peak period/peak hour volumes
	ix) Increase in average speeds
	x) Reduction in vehicle emissions
	xi) Increased transit ridership
	xii) Reduction in operating and maintenance costs
	xiii) Increase in operational capacity
	xiv) Reduction in total trip time
	xv) Increase in travel time reliability

14) ***What improvements, either organizational or technological, would most improve your job effectiveness in freight and goods movement?***

Not discussed.

15) What other ITS projects are you aware of in the region (freight-related and otherwise)? Please provide names and contact information where possible.

Tri-Rail provides real-time train tracking capability on its website. The hyperlink is: http://www.tri-rail.com/schedules_fares/train_tracking.htm.

16) Are you or have you been involved in the operation of existing ITS projects?

a) If yes:

i) Please describe the project and your role.

ii) How does coordination occur between agencies and other project participants?

iii) Does the project involve freight/goods movement? If so, how?

iv) Please describe strengths and weaknesses of the project.

v) What could be done to improve the weaknesses?

vi) Do you foresee a potential role for ITS in making such improvements? If so, how?

vii) If freight is involved, are there specific improvements with regard to freight?

viii) Can you supply any data or reports that might be helpful for our study?

17) Do you see a need for enhancing coordination, system integration, and/or resource sharing capabilities for existing and planned ITS programs between your region and other neighboring regions? Please explain.

Not discussed.

18) Other than what has already been mentioned, how else can ITS help mitigate freight problems in your region?

- Implement preemption for traffic signals controlling vehicular traffic at train crossings. At times, congestion and queuing causes vehicles to get backed up onto the tracks, posing a serious safety hazard. Perhaps ITS devices such as flashing lights and signs could help prevent such problems at problem locations.
- Install cameras to monitor blockages at grade crossings.
- Provide real-time operational information to train operators via in-vehicle (in-train) devices or on dynamic message signs (DMS) along the rail corridor. For example, the devices could provide such information as speed restrictions.

19) Do you have any ideas for streamlining the deployment of new ITS projects or the operation of existing ITS projects for freight/trucks?

Not discussed.

20) Please identify any data/resources/studies you believe we should be collecting and reviewing as part of this study.

Not discussed.

21) Are there any individuals in the public or private sectors that you believe we should make sure and speak with? If so, please provide names and contact information.

Larry Merritt has extensive knowledge on the grade crossings in the rail corridor. Nazih Haddad could also be helpful, as he works in the Tallahassee Rail Office.

22) Do you have any other comments or issues that you would like to discuss?

No.

Appendix D

Current/Planned ITS and Freight Projects in the Region

Current/Planned ITS and Freight Projects in the Region

During the interviews, stakeholders provided the following list of current and planned freight- and/or ITS-related projects in the region. As this information was provided by a number of sources, some projects are likely repeated with varying names.

- The SunGuide Work Program lists the following ITS projects:
  - ATMS – Signal System Upgrade;
  - ATIS – Traveler Information;
  - ITS Implementation – SR 826 E/W ITS Phase 1 – NW 154 Street to GGI;
  - ITS Implementation – ITS Building Package "C";
  - ITS Implementation – I-95 from U.S. 1 to West Palm Beach;
  - ITS Implementation – ITS for I-95 Package "A";
  - ITS Implementation – GGI-CCTV Expansion; Design Build;
  - ITS Implementation – ITS I-95 Package "B";
  - ITS Implementation – SR 112/I-95 ITS from NW 11 Avenue to Alton Road (SR 907);
  - ITS Implementation – SR 931/I-75 ITS from SR 826 to County Line;
  - ITS Implementation – SR 836/I-395 ITS from I-95 to MacArthur Causeway;
  - ITS Implementation – ITS Video Wall and Consoles;
  - ITS Implementation – ITS Communication Equipment;
  - ITS Implementation – ITS for 18-mile stretch;
  - ITS Implementation – ITS for the lower Florida Keys;
  - ITS Post Construction Services – I-95 (GGI) Post Construction Operations and Evaluation;
  - ITS Post Construction Services – I-95 (Phases A, B, and C) Post Construction Operations and Evaluation;
  - ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Manager;
  - ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Operations and Maintenance;
  - ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Maintenance;

- ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Public Involvement;
- ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Technical Consultant;
- ITS Management, Technical, Operations, Maintenance, and Public Involvement – SunGuide ITS System Upgrade;
- ITS Management, Technical, Operations, Maintenance, and Public Involvement – ITS Personnel Support;
- Service Patrols – SR 826 Reserve Box;
- Service Patrols – I-95 and SR 836;
- Service Patrols – I-95 and SR 837;
- Service Patrols – MDX E-ways 924, 874, 112, 878; and
- Service Patrols – Miami-Dade County-wide.

- **SunGuide Road Rangers Service Patrol Program.** The Miami-Dade Expressway Authority and FDOT District VI coordinate to provide a Road Ranger program to assist motorists in their region. They operate a total of 30 vans 24 hours a day, seven days a week, with reduced coverage during late night hours (50 percent). The vans are used to push disabled vehicles to a safe spot on the side of the roadway and for debris removal. They also provide basic motorist assistance services, including replacement of flat tires, provision of gasoline, etc. Road Ranger vehicles are equipped with arrow boards and on-board DMS.

- **District IV Road Rangers Service Patrol Program.** Incident management efforts are increasingly being supported by FDOT's service patrols (Road Rangers), which are teams of roving vehicles that identify and assist stranded motorists. There are two vehicles per team currently, with plans to increase that to four vehicles per team in the near term. There are also plans to outfit the Road Ranger vehicles with arrow boards and one small DMS.

- **HAZMAT Program**. Miami-Dade operates a county-wide HAZMAT program.

- **Miami Freight Viaduct.** FDOT District VI has sponsored the Miami viaduct project, a freight-only roadway that serves the Miami International Airport, one of the largest cargo airports in the world.

- **Consumer Information Network (CIN).** The CIN project involves the development of a transit operations database which will become the transit information component of the regionwide ATIS (511). FDOT, Tri-Rail and the other transit agencies in Broward, Palm Beach, and Miami-Dade counties are involved in this initiative. A consultant has been selected to inventory all the software and hardware in transit agencies for trip planning, real-time incidents/delays, DMS (during major incidents), all customer service functions, lost and found, and a web page.

- **Port Everglades Security Program.** The security program at the Port will include the installation of security gates (similar to toll booths) with security cameras and high-speed vehicle/cargo security scanners. They are also building a new security operations center with complete monitoring capabilities.

- **NextBus.** This system employs Automatic Vehicle Locator (AVL) technology to provide traveler information to public transit bus passengers. The project will be initiated on selected bus routes in each of the three counties in the region.

- **Broward Traffic Management Center (TMC).** Construction on a new TMC for Broward County is underway. The ITS operations facility will be a TMC designed to house and control the I-595/I-95 DMS System, the Freeway Video Monitoring System (FVMS), the Advanced Traveler Information System (ATIS), the Broward County Signal System, and the Advanced Incident Information System. The facility will also provide operation consoles for Florida Highway Patrol and Broward County Transit. When compete, it will be a fully redundant IPO-Internet-based system with 300 CCTV cameras, over 50 DMS on freeways, over 80 DMS on arterials, and an adaptive traffic control signal system. The 40,000-square-foot, two-story facility has already been funded. The construction contract is expected to awarded in July 2002 and the facility is expected to be complete in the summer of 2004.

- **Palm Beach TMC.** Currently, the TMC is co-located with the Palm Beach MPO. When the MPO relocates, the TMC will be expanded.

- **Overheight Detection.** Overheight detection systems have been installed on some bridges in Palm Beach County.

- FEC Railway currently employs the following technologies:

  - Automatic braking;
  - Cargo tracking;
  - Dynamic braking system;
  - "Dead-man's" switch (turns off automatic controls);
  - Rear-end detectors;
  - Hot-box detectors (notifies the engineer of sticking brakes, wide loads, dragging cars, etc.);
  - Fire department alarm (local FDs can track FEC trains to determine which at-grade crossings are clear for responder use and which are blocked by a crossing train); and
  - Online customer routing information.

- Several technologies are currently planned at Florida's Turnpike:

  - **Highway Advisory Radio (HAR).** There are nine stations of HAR along the Turnpike with 19 advisory signs posted at several locations. As with most HAR systems, when the lights atop the advisory signs are not flashing, HAR transmits

general service messages. When the sign lights are flashing, traveler information specific to the sector is provided.

- **Dynamic Message Signs (DMS).** The Turnpike operates 19 DMS, all of which were expected to be placed on-line in June 2002.
- **Traffic Management Centers (TMC).** The Turnpike operates two TMCs, one in the Orlando area, and one at headquarters. The TMCs are currently staffed by FDOT personnel during normal working hours and by SmartRoutes personnel during non-working hours. As of July 2002, the TMCs were expected to be staffed by FDOT personnel on a 24-hour basis. The TMC at headquarters is not fully functional, as video monitors are not yet installed. Currently the Turnpike headquarters TMC assesses traffic conditions by monitoring Florida Highway Patrol radios and receiving reports from its roving roadway assistance providers.
- **Camera Monitoring.** The Turnpike has recently installed fiber optic cable along a 70-mile stretch of the main Turnpike facility between Miami-Dade and Ft. Lauderdale and has plans to install eight closed circuit television (CCTV) cameras along this corridor as time and budget allow. The cameras will feed images into the Turnpike's TMC, which is currently being upgraded to receive such images. In the section of the roadway around Orlando, there will be 100 percent coverage by CCTV.

- **Tri-Rail SmartCards.** Tri-Rail is spearheading this effort on behalf of the Regional Transit Organization (RTO). The fare payment system is expected to be upgraded by 2004. They are trying to work with other transit agencies (including Miami-Dade) to leverage the effort in hopes of getting a better value.

- **Tri-Rail Train Tracking.** Tri-Rail has installed AVL technology on each of its trains. Train locations are tracked in real-time at the Hialeah Rail Yard and disseminated to the public via Tri-Rail's web site. It can be viewed at: http://www.tri-rail.com/schedules_fares/train_tracking.htm.

- **Camera Monitoring of Intercoastal Waterway.** An initiative to install cameras on the Intercoastal Waterway on 14 drawbridges in Broward County is currently in the master planning stage.

- **Interim Transportation Management System (ITMS).** There is also an ITMS being deployed on I-95 in Palm Beach County. ITMS is designed to be a temporary ITS deployment until capacity improvements on I-95 are complete. The system will include dynamic message signs (DMS), CCTV monitoring, and radar detectors. Permanent components will also be installed.

- **Broward County Advanced Traffic Management System (ATMS).** The Broward County ATMS project involves upgrading the traffic signals to a centrally controlled system, installing 2070-type controllers and a new fiber optic communications system.

- **Palm Beach County ATMS.** The Palm Beach County ATMS project involves the second phase of upgrading their traffic signal system.

- **DMS at 17th Street Causeway.** A DMS will be deployed at the 17th Street Causeway to warn drivers of bridge closings and beach traffic conditions.

- **Funding for ITS Devices in Broward and Palm Beach Counties.** The two counties were both provided with funding for operating DMS and CCTV cameras for ATIS purposes.

- **SunGuide ATIS.** SunGuide is a regional ATIS project. It's a public-private partnership to collect, compile, and provide real-time traveler information to motorists for the Miami-Dade, Broward, and Palm Beach county area via phone, fax, web page, radio and TV. There is a SunGuide Operations Center in Miami-Dade County.

- **I-595/I-95 DMS System.** The I-595/I-95 DMS System project in Broward County includes 22 DMS, three vehicle detection stations, a PC-based remote control/ monitoring system, and a telephone drop/single mode fiber optic communications system. The I-95 DMS System project includes 12 DMS at six interchanges that connect to Florida's Turnpike, a PC-based remote control/monitoring system, and a telephone drop/single mode fiber optic communications system.

- **I-95 DMS System Expansion.** This project includes the continuation of the I-95 DMS system in Broward County. It involves extending the system into Palm Beach County. Sixteen DMS will be constructed at eight interchanges that connect to the Turnpike. The project also includes 19 video cameras along I-95.

- **Freeway Video Monitoring System (FVMS).** The FVMS project will be the first phase of CCTV camera deployment along the freeway system in Broward County to monitor travel conditions and verify incidents.

- **I-95/I-595 Video Monitoring System.** The I-95/I-595 Video Monitoring System project will complete the deployment of CCTV cameras begun in the FVMS.

- **Palm Beach County I-95 Video Monitoring System.** The Palm Beach County I-95 Video Monitoring System will further expand the deployment of CCTV cameras along I-95 in Palm Beach County.

- **Advanced Incident Information System (AIIS).** The AIIS will deploy flashing beacon signs and a Highway Advisory Radio system along the arterials in Broward County that have I-95 interchanges. The signs will be placed in advance of I-95 entrance ramps to warn drivers of incidents and delays on I-95. The HAR would suggest alternate routes.

- **Freeway Incident Management (FIM) Team.** FIM teams in Broward and Palm Beach counties are involved in a variety of activities relating to incident management on the interstate highway system. These teams consist of approximately 60 members representing state, county, and local engineering, emergency management, law enforcement, and Fire Department agencies, towing/wrecker services, HAZMAT disposal services, and traffic information services.

- **APTS Master Plan.** The APTS Master Plan will guide the development of transit projects in Broward and Palm Beach counties, such as electronic fare payment systems (SmartCards), a transit bus priority system for traffic signals, and Automatic Vehicle Location (AVL) devices.

- **Palm Beach County ITS Operations Facility Master Plan.** The Palm Beach County ITS Operations Facility Master Plan will guide facility site acquisition, design, and operation of the Palm Beach County TMC. The TMC will house monitoring and control capabilities for the I-95 DMS system, the FVMS, the Palm Beach County Signal System, and the ATIS.

- **I-75 ITS Master Plan.** The I-75 ITS Master Plan will generate a detailed master plan for the deployment of ITS devices along the I-75 corridor in Broward County.

- **Congestion Management Systems.** There are four separate Congestion Management Systems projects underway. All of these projects include the installation of new traffic signal controllers that have a signal preemption capability. The projects are taking place at the following four locations:

  - State Route 816/Oakland Park Boulevard;
  - State Route 638/Sunrise Boulevard;
  - State Route 814/Atlantic Avenue; and
  - State Route 7/U.S. 441. All of these projects include the installation of new traffic signal controllers that have a signal pre-emption capability.

- **Broward County Arterial Incident Detour Route Signing Systems.** This project involves installing traffic control devices, an arterial incident detour system, and detour route signs county-wide.

- **ATIS Operations Staff.** The ATIS Operations project provides technical staff to operate the DMS and CCTV cameras deployed throughout Broward and Palm Beach counties.

- **Bus Priority and Emergency Preemption Signal System**. This project will provide priority signals to buses and emergency vehicles at 200 intersections within Broward County. The GPS-based system will be deployed on one north-south roadway and three east-west roadways. The goal is to allow access to all three trauma centers in the area. As part of the project, ambulances and fire trucks in the region are being outfitted with transponders (not police). The project is expected to be complete on or about September 30, 2002.

- **Railroad Crossing Information Project**. This is a multi-phase project that is designed to provide a warning to train operators if an automobile or other obstacle is present along the tracks of an at-grade crossing. This system exists at five crossings within Broward County with the potential for expansion to other crossings in the future.

Appendix E

References

References

1. Broward County, 2020 Vision Plan – Fort Lauderdale Hollywood Airport; Progress Report and Project Update, http://www.fll.net/avi03831.pdf May June 2002
2. Cambridge Systematic Inc, Commercial Vehicle Information Systems and Networks (CVISN) http://www.floridaits.com/CVISN.htm#CVISN, March 2001
3. Florida Department of Transportation District 4, District 4 ITS Program, June 3, 2002
4. Florida Department of Transportation District 4, Eller Drive PD&E Fact Sheet, 2002
5. Jaffe Engineering, Florida Statewide Intelligent Transportation System (ITS) Architecture & Standards, FDOT D4 and 6, http://www.jeng.com/html/florida/web/Southeast Florida/InventorybyEntity.htm, 2000
6. JHK & Associates, Southeast Florida Intelligent Corridor System, November 1993
7. Justice, T., & Chang, D., ITS Corridor Master Plan and ITS Program Plan, http://www.floridaits.com/corridor_concept_plans.htm, July 2002
8. Kittelson & Associates, Mobility Performance Measures – Database and Documents, August 2001
9. Kittelson & Associates, Mobility Performance Measures – Comparison of 2001 Reliability Results with 2000 Results, November 2001
10. Kittelson & Associates, Broward County 2025 Long-Range Plan, May 2002
11. Kittelson & Associates, South Florida Transportation Summit, Goods Movement Track Notes, Unpublished 2002
12. Lawther, W., Berman, E., Annual Evaluation of the SmartRoute Systems Advanced Traveler Information Services Contract for Miami-Dade, Broward and Palm Beach Counties (Draft), March – May 2002
13. Miami Dade County Metropolitan Planning Organization, Quarterly Newsletter – Freight, Spring 2002
14. Sari Radin, Tracking State Deployments of Commercial Vehicle Information Systems And Networks: 1998 Florida State Report, April 2000
15. TranSystem Corporation, Port Everglades Master Plan http://www.broward.org/poi05000.htm, August 2001
16. United States Department of Transportation, ITS Deployment in your State – Florida www.its.dot.gov/staterpt/FL.HTM, September 2001
17. Cambridge Systematics Inc, Broward County Freight and Goods Movement Study, 2002
18. FDOT District VI, SunGuide Work Program, 2001