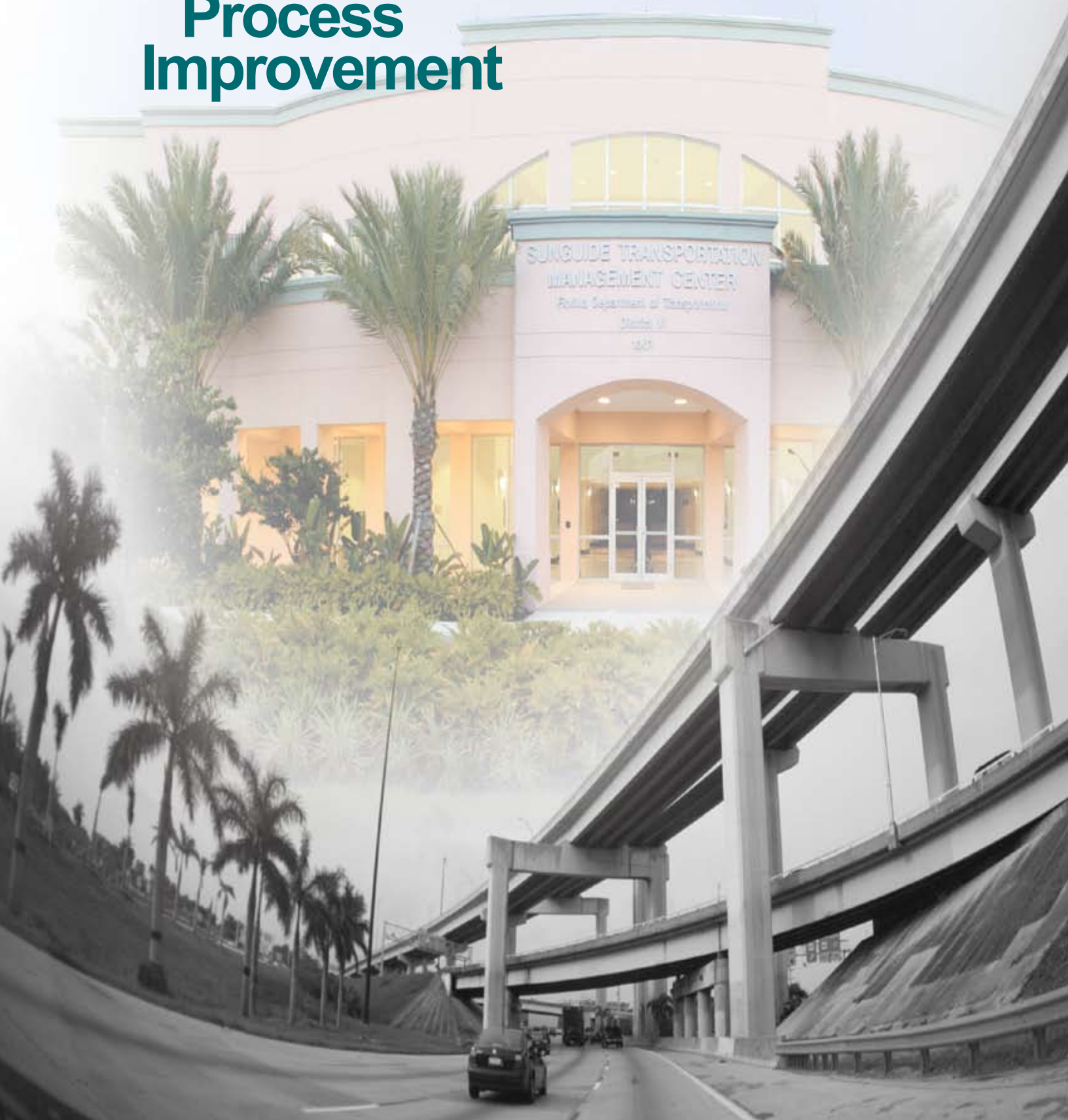# Focus on Process Improvement

A Message from the District Secretary

While our 2005 Annual Report introduced the FDOT District Six Intelligent Transportation System (ITS) program, the focus of this year's Annual Report is on assessing our performance. In addition, this year's reporting period was adjusted from calendar year to FDOT Fiscal Year (July to July). This adjustment reduces the number of data sets reported, thereby making our efforts more efficient. I am pleased to report that the District Six ITS program has significantly improved performance in virtually every facet of our business including ITS deployment, Transportation Management Center (TMC) operations, incident management, Road Ranger service and regional traveler information.

The number of ITS devices installed along our roadways has increased by adding 29 dynamic message signs, 54 closed circuit television cameras, 121 detector stations and 22 ramp meters. We anticipate that we will have full ITS coverage of the limited access facilities within the next two years. In addition, we have begun to expand the system to cover segments of our arterial system (e.g., US 1). This will provide our TMC operations staff with broader coverage of our roadway network within the District.

Our TMC operations have become more efficient. This is largely attributed to the collocation of our partners (i.e., FDOT District Six ITS Operations, Florida Highway Patrol, 511, MDX) as well as improved processes to transition our TMC operators from being Road Ranger dispatchers to traffic managers. Performance measures were refined, developed, and implemented with the 2006 documented results indicating a drastic improvement in using the dynamic message signs (DMS) from an average of just over 100 messages per month to 3,000 - 4,000 messages per month. The deployment of 29 DMS and improved regional coordination also contributed to the dramatic growth in DMS usage. Furthermore, specific quality control measures have been implemented and enforced with operator error rates being reduced to less than half in 2006 compared to 2005. In addition, TMC operations staff began answering after-hour telephone calls for the FDOT District Six Maintenance Department.

In terms of incident management (i.e., clearing blocked travel lanes as quickly as possible), our TMC operations were analyzed from an efficiency and quality control perspective. Recommendations included the development of Standard Operating Guidelines, software enhancements and quality control procedures to improve the accuracy,

timeliness and reliability of information. This resulted in a reduction in average incident duration that blocked lanes of 37 minutes compared to the 50-minute established baseline in 2005. Furthermore, our Traffic Incident Management team, comprised of 150 members representing emergency responders and local transportation agencies, has developed better methods to manage incidents based on post incident analyses conducted after major events. Through this forum, we were able to establish protocols among FHP, Monroe County Sheriff's Office and our TMC Operations to improve incident response.

Our Road Rangers have improved their efficiency by responding to more assists (i.e., over 92,000 in 2006 versus 80,000+ in 2005). This is largely attributed to improved efficiency in dispatching, improving Road Ranger response times and applying automated reporting systems. In addition, FDOT District Six is the first in Florida to expand the Road Ranger service to an arterial (i.e., US 1 south of I-95).

In terms of traveler information, our 511 service has received over 184,000 calls per month while our new e-mail alert service averages nearly 80,000 alerts sent per month. This usage is expected to grow as a result of more intensive marketing to inform more travelers about this service. Furthermore, the consistency of traveler information improved from 58% to 94% during the past year due to stricter controls in coordination among regional partners.

During the past year, the FDOT District Six ITS program yielded $17 of benefits for every dollar invested in the program as compared to $15 of benefits reported during the previous year. While we are proud of our accomplishments during 2006, we recognize that traffic delays continue to be prevalent within our region.

Next year, FDOT District Six will be implementing new initiatives such as I-95 Express Lanes and the start-up of ramp metering operations along I-95. In addition, a consultant team will be brought on-board to continue to improve ITS operations. These initiatives will contribute to managing our traffic congestion more efficiently.

I hope you find our 2006 Annual Report to be informative. Please don't hesitate to provide suggestions on improving our ITS program to further reduce traffic delays and crashes while improving mobility. ∎

John Martinez, P.E.
District Secretary

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Focus on Process Improvement

Introduction

The State of Florida operates a statewide program, known as SunGuide, for planning, implementing, maintaining and operating Intelligent Transportation Systems (ITS). The Department has worked with federal, state, and local jurisdictions, regional authorities, and multiple interested stakeholders to implement ITS in Miami-Dade and Monroe
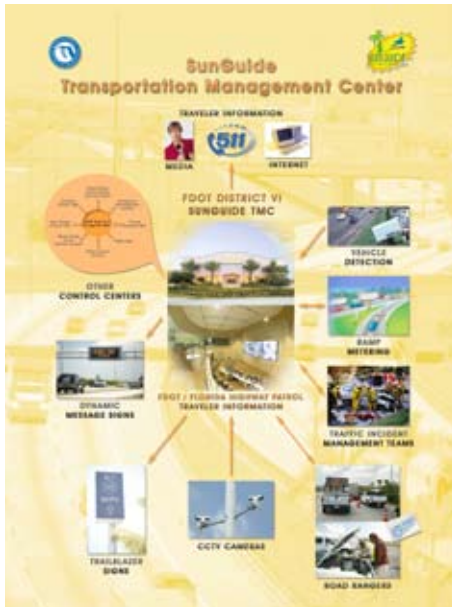
Counties. This program comprises an array of measures that work in tandem to smooth traffic flow, minimize the effect of traffic incidents, expedite recovery from such incidents, and provide the traveling public with up-to-date information that helps them plan their trips and minimize their encounters with time-consuming delays that inevitably arise on busy highways. Initially, the Department's ITS Program focused on deploying Advanced Traffic Management Systems (ATMS) on limited access facilities such as Interstates (I) 95, 75, 195, 395 and State Road (SR) 826. These deployments have resulted in approximately 54 centerline miles of roadways in Miami-Dade County that contain ITS infrastructure. Once most of the limited access facilities were implemented with ITS technologies, the Department began implementing ATMS on controlled access roadways such as SR 5 (US 1) in both Miami-Dade (approximately 16 centerline miles) and Monroe Counties (approximately 127 centerline miles) and SR A1A/MacArthur Causeway (approximately 3 centerline miles). Additionally, a limited

number of ITS devices such as Dynamic Message Signs (DMS) and Trailblazer Signs have been deployed on arterial roadways leading onto I-95. The Department's SunGuide Transportation Management Center (TMC), located at 1001 NW 111th Avenue, Miami, Florida, serves as the twenty-four (24) hour/seven (7) days per week- regional command and control center for the ITS Program within District Six.

Currently, the primary functions of the SunGuide TMC are:

- Incident Management

- Service Patrol Dispatching and Operations

- Traveler Information Dissemination

In 2006, the FDOT District Six ITS Program produced its first annual report for calendar year 2005, which focused on providing background information and some statistics on the magnitude and effectiveness of the program. In 2007, the FDOT District Six has decided to adjust the annual report effort to align the reporting period with the FDOT fiscal year (July to July), thereby improving the FDOT District Six's efficiency because now they are producing one annual data set as opposed to two. In addition, the new annual report content is intended to streamline the information as well as provide more emphasis on key milestones and performance measures. ■

ITS Mission:
Enhance the safety, security, and efficiency of Florida's transportation system through the implementation of interoperable ITS technology in support of local, regional, and statewide mobility.

ITS Vision:
Be the national leader in ITS by promoting multijurisdictional coordination for the provision of an efficient, secure, reliable, and safe transportation system.

A Year in Review

The FDOT District Six's ITS Program encompasses the following transportation solutions: incident management (primarily focusing on expediting the re-opening of travel lanes after crashes as well as minimizing secondary crashes), service patrol dispatching and operations, and traveler information dissemination through 511 and dynamic message signs. The FDOT District Six manages a number of ITS programs. The primary programs include:

- TMC Operations - Providing a central location for data collection and dissemination, and for dispatching Road Rangers—the essence of traffic management

- Road Rangers - Florida's version of a freeway service patrol: providing free assistance to motorists in need, supporting agencies responding to incidents and keeping our roadways open to traffic

- Advance Traveler Information System (ATIS) - Providing real-time traveler information services through various media, such as the telephone and the Internet

- Traffic Incident Management (TIM) Team - Coordinating multi-agency meetings to identify issues and develop solutions to improve incident management

- ITS Maintenance - Managing the maintenance of ITS field and Transportation Management Center (TMC) equipment to ensure system availability

The FDOT District Six's ITS Program continued to expand its ITS infrastructure in FY 2006/2007. With the continued design-build project delivery system, the FDOT was able to complete four new ITS deployment projects that added:

- 29 Dynamic Message Signs (DMS)

- 54 Closed Circuit Television (CCTV) Cameras

- 121 Roadway Detectors

- 22 Ramp Meters

Overall, the FDOT District Six completed $24.4 million of ITS deployments during the year, and has another $6 million under construction. This past year's accomplishments signifies the FDOT District Six's vision of true "corridor management" through deploying DMS along arterials. As indicated in the table below, the FDOT District Six will complete deployment of ITS along the District's limited access roadways within the next two years. ■

ITS Project	CCTV			DMS			Detectors			Ramp Metering		
	C	UC	P	C	UC	P	C	UC	P	C	UC	P
I-95	30			10			125			22		
SR-826	24		6	6		3	50		37			
I-75	7			3			30					
I-195	6			6			21					
I-395 & McArthur Cswy			10	1		1	--		10			
US 1 (SW 17 to 112 Ave)	1	17		1	4		1	6				
US 1 (South of Florida City)	44			11			2					
Card Sound Road	5											
SR 9	1			1								
US 441	2			1								
Florida's Turnpike Spur	1			1								
Other Arterials				12								
Totals	121	17	16	51	4	4	229	6	47	22		

C = Completed
UC = Under Construction
P = Planned

TMC Operations

The SunGuide TMC in District Six works closely with other control centers within the region, sharing video images, data, and other real-time information to provide a seamless approach to traffic management. The regional coordination is facilitated through a committee of TMC managers known as the Southeast Florida Regional TMC Operations Committee (SEFRTOC). The SEFRTOC membership includes representatives from Broward and Palm Beach Counties, Florida's Turnpike Enterprise (FTE) and the Miami-Dade Expressway Authority (MDX). In 2006, the SEFRTOC facilitated regional TMC coordination before and after each hurricane, proving to be a vital part of the TMC operations for natural disasters. In addition to natural disasters, the SEFRTOC serves an important role in managing traffic for major events (e.g., Super Bowl XLI in February 2007).
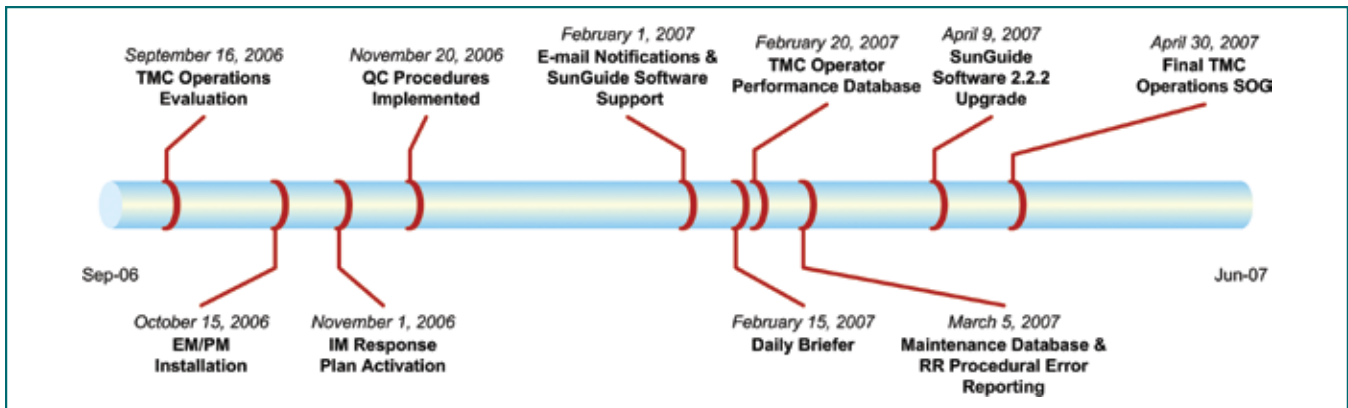
The Department's SunGuide Transportation Management Center (TMC) houses the FDOT Operations staff who monitor traffic, disseminate information, and dispatch Road Rangers twenty-four (24) hours/seven (7) days per week. In the event of a traffic incident, such as a crash or a hazardous materials spill, the operators coordinate with emergency responders and the Road Rangers to attend to the incident in order to provide the emergency and rescue services needed, while clearing the incident as quickly and safely as possible to reduce the probability of a secondary crash. This coordination has been enhanced by the collocation of the Florida Highway Patrol (FHP) Troop "E" dispatch in the TMC in 2006. The TMC also provides control room space for SmartRoute Systems (SRS): the 511 service provider that disseminates travel information to the public throughout the Southeast Florida region.

The critical nature of the TMC Operations and its collocated partners' operations warranted the development of a Hurricane Response Action Plan (HRAP). This document provides procedures and policies for TMC operations before, during and after a hurricane/natural disaster. The TMC updates the HRAP annually to address lessons learned from the previous year (from throughout the state).

Other FDOT District Six Departments recognized the value of the SunGuide TMC's 24/7 operations and its ability to serve as a hub for roadway operations. In early 2007, the TMC began fielding after-hour telephone calls for the FDOT Maintenance Department. In addition, the TMC has improved coordination with the FDOT Construction Department and actively uses the DMS for disseminating real-time lane closure information. The TMC has also actively supported various national and statewide safety campaigns to improve motorists' awareness of safety laws.

In FY 06/07, 40% of the 17,760 DMS messages posted by the SunGuide TMC supported Regional Partners. This includes; 18% for Regional TMCs, 15% for Construction Events, and 7% for Safety Campaigns/AMBER Alerts.

The timeline shows the following milestones:

- September 16, 2006 — TMC Operations Evaluation
- October 15, 2006 — EM/PM Installation
- November 1, 2006 — IM Response Plan Activation
- November 20, 2006 — QC Procedures Implemented
- February 1, 2007 — E-mail Notifications & SunGuide Software Support
- February 15, 2007 — Daily Briefer
- February 20, 2007 — TMC Operator Performance Database
- March 5, 2007 — Maintenance Database & RR Procedural Error Reporting
- April 9, 2007 — SunGuide Software 2.2.2 Upgrade
- April 30, 2007 — Final TMC Operations SOG

Sep-06 … Jun-07

The rapid increase in ITS Deployments and the collocation of FHP and SRS inside the SunGuide TMC, prompted the FDOT District Six to evaluate its TMC Operations in terms of resources and procedures. In September 2006, the FDOT completed an evaluation of the TMC Operations and began implementing recommendations that have made the TMC operate more efficiently. The timeline above highlights the major milestones, which are further described below.

- Event Management / Performance Measures (EM/PM) Installation – FDOT installed the new EM/PM module of the SunGuide\u1d39 Software. This provided a more robust application for collecting and reporting TMC related data and provided the basis for more improvements.

  - Incident Management (IM) Response Plan Activation – The activation of the IM Response Plan automated the generation of DMS messages and made the task of disseminating information to the DMS more efficient for the TMC Operators. This also standardized DMS message content.

  - Quality Control (QC) Procedures – The EM/PM produces an Event Chronology report that documents step-by-step how TMC Operators handled an event. The FDOT took advantage of this feature and reviewed the reports to identify areas that TMC Operators needed additional training. This launched a series of TMC Operators meetings that included mini training sessions for the TMC Operators.

  - E-mail Notifications – Implemented the e-mail notification feature in the SunGuide\u1d39 Software to facilitate incident related notifications to responders.
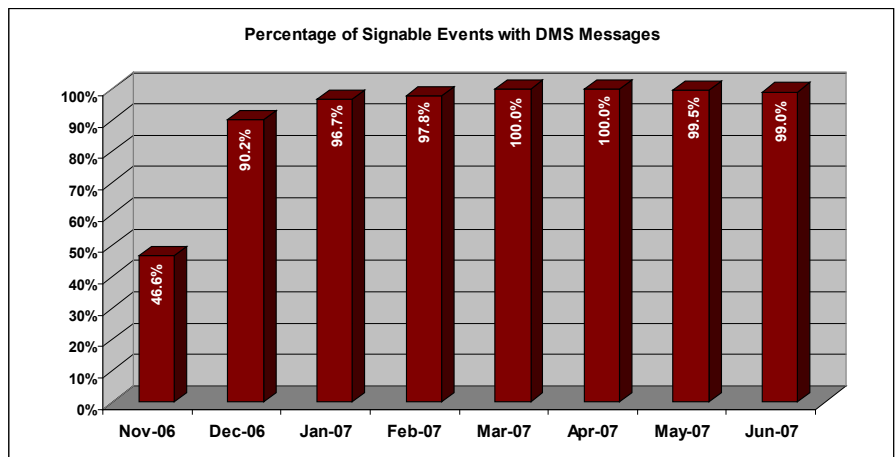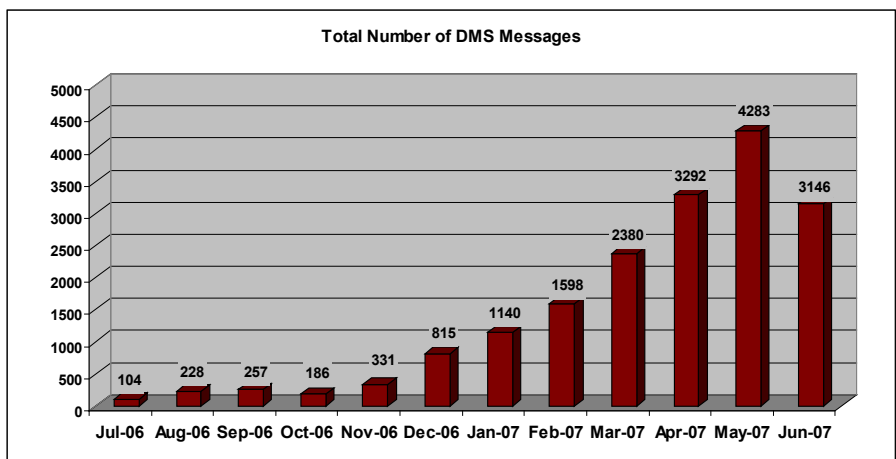
- SunGuide\u1d39 Software Support – The FDOT added additional software support to quickly resolve SunGuide\u1d39 Software issues and increase system availability.

- Daily Briefer – The TMC began to identify issues in a daily report to management. This helped the management proactively address issues and played   a critical role in the development of Standard Operating Guidelines.

- TMC Operator Performance Database – The database provides a method for logging and reporting TMC Operator errors collected through the QC procedures. This provides an effective method for communicating key individual performance and accountability.

- Maintenance Database – FDOT implemented an automated process for quick, clear notifications of ITS equipment failures. Also, procedures were implemented for TMC Operators to regularly check equipment and conduct initial diagnostics to assist with maintenance responses.

- Road Ranger Procedural Error Reporting – TMC Operators began logging Road Ranger procedural errors and the Road Ranger contractors were notified daily of issues, which are addressed immediately.

- TMC Operations Standard Operating Guidelines (SOG) – The FDOT District Six began developing SOGs for TMC Operations in October 2006 and they were finalized in April 2007. Throughout this period, the TMC Operators were provided training at monthly meetings to minimize impacts to operations. A key achievement in the SOG development effort was the improved operational coordination among FDOT, FHP and Monroe County Sherriff's Office.

Other recommendations implemented from the evaluation include:

- Established presets to expedite pan-tilt-zoom (PTZ) feature of CCTVs.

- Message for "lane blocking" incidents as soon as confirmed either through Road Ranger or CCTV (do not wait for Road Ranger confirmation if confirmed via CCTV).

- Configure video display wall in a logical north to south configuration and require TMC Operators to monitor video wall regularly.

- Establish consistent DMS messaging policy.

- Implement shift reports to document and improve communication during shift changing (discuss active events, major events, maintenance/operations issues).

- Schedule lunch breaks during non-peak hours.

- Implement a telephone log to track telephone activity not entered in the software.

- Have Operations Supervisors on the floor from 6:00 AM to 8:00 PM (Monday – Friday).

- Schedule Senior Operators during off-peak times to provide supervision.

- Change Operator's schedule to minimize part-time staff dependency.

All of these aforementioned improvements were based on philosophical change from being reactive to proactive in the FDOT District Six ITS Program's approach to TMC Operations. In the last 9 months, the FDOT District Six has transformed their TMC Operations staff from being Road Ranger dispatchers to Traffic Managers. This is evident based on the increase in DMS message output as shown in the charts below. This is a direct relationship to the improved coordination with regional TMCs, construction and law enforcement. In addition, the TMC Operators have improved their efficiency in disseminating real-time information to motorists via the DMSs. They have increased their percent of signing for signable events from 45% to over 99% of the time.

Total Number of DMS Messages

Month	Value
Jul-06	104
Aug-06	228
Sep-06	257
Oct-06	186
Nov-06	331
Dec-06	815
Jan-07	1140
Feb-07	1598
Mar-07	2380
Apr-07	3292
May-07	4283
Jun-07	3146

Percentage of Signable Events with DMS Messages

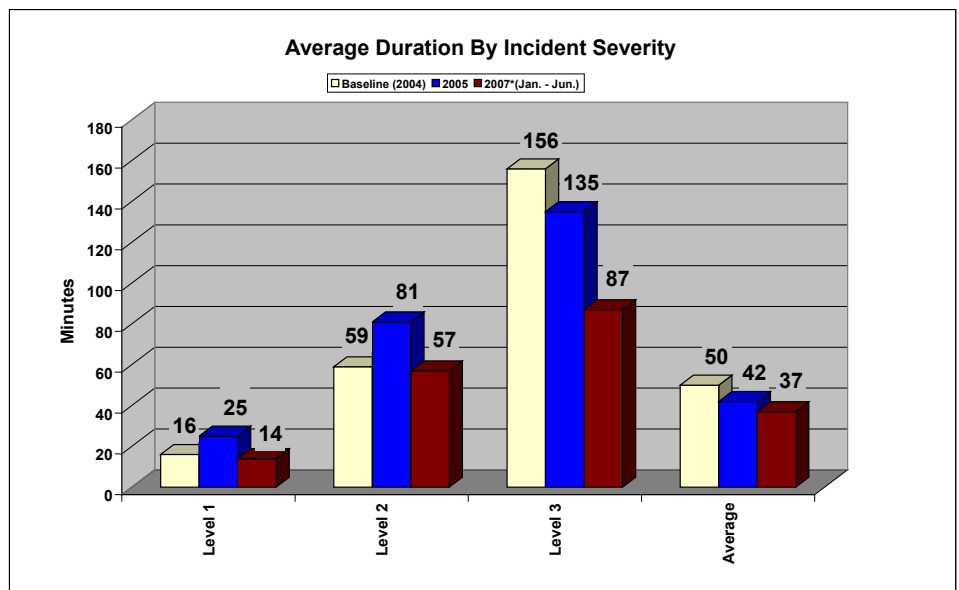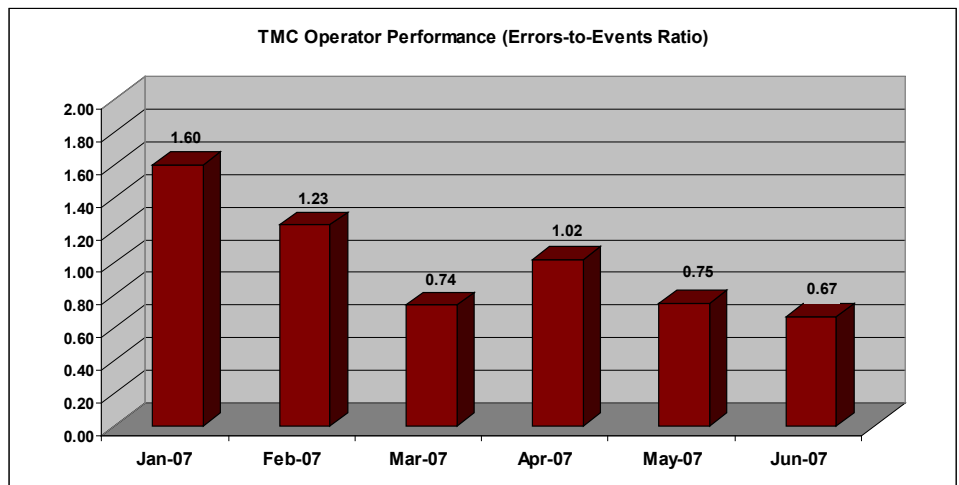| Month	Value
Nov-06	46.6%
Dec-06	90.2%
Jan-07	96.7%
Feb-07	97.8%
Mar-07	100.0%
Apr-07	100.0%
May-07	99.5%
Jun-07	99.0%

The implementation of TMC SOGs, in conjunction with regularly scheduled TMC Operator meetings, has improved overall TMC Operator performance. The chart below depicts the number of errors made by TMC Operators in relationship to the number of events they managed. These errors ranged from timeliness to post DMS messages to recording important comments. They are grouped into the following categories:

- Data Entry,

- Notifications-Initial, Follow-up, Incorrect,

- DMS Procedures,

- Email Notifications,

- Road Ranger Dispatch, and,

- Miscellaneous.

Overall, the TMC Operators have improved their performance from an average 1.60 errors per event to 0.67 errors per event.

The true measure of performance is how these improvements impact motorists. As indicated below, the average travel lane blocking duration for each level of severity has gone down in the first half of 2007 when compared to 2005, as well as the baseline durations established in 2004. The 2007 average incident duration is 5 minutes or 12% less than 2005 and 13 minutes or 26% less than the 2004. ■

TMC Operator Performance (Errors-to-Events Ratio)

Month	Ratio
Jan-07	1.60
Feb-07	1.23
Mar-07	0.74
Apr-07	1.02
May-07	0.75
Jun-07	0.67

Average Duration By Incident Severity

Legend: Baseline (2004), 2005, 2007*(Jan. - Jun.)

	Baseline (2004)	2005	2007*(Jan. - Jun.)
Level 1	16	25	14
Level 2	59	81	57
Level 3	156	135	87
Average	50	42	37

Note:
Level 1 - Incident Duration is less than 30 minutes
Level 2 - Incident Duration is greater than 30 minutes and less than 120 minutes
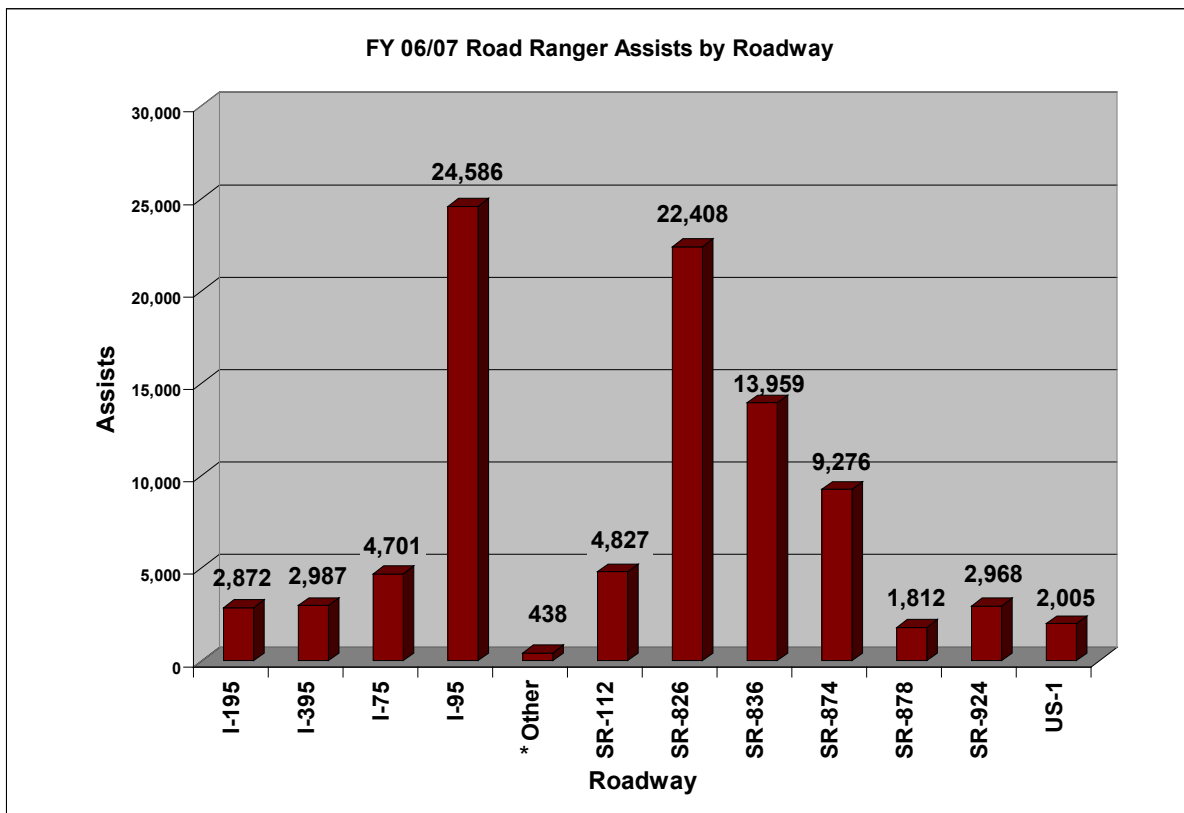Level 3 - Incident Duration is greater than 120 minutes or all lanes blocked for any time period

Road Rangers

The Road Ranger service patrol is a free service of the Florida Department of Transportation. Road Rangers in District Six currently patrol I-95, I-395, I-75, I-195, SR 826, and the Miami-Dade Expressway Authority (MDX) toll roads. The FDOT District Six is the first in Florida to expand Road Ranger coverage to a local arterial (SR 5/US 1 from SW 112 Street to SW 17 Avenue). This expansion has not only benefited the motorists along US 1, but has also strengthened the relationships among the FDOT and the local agencies supported by the expanded Road Ranger coverage. As one might expect, two major roadways—I-95 and SR 826—consume the lion's share of Road Ranger time and attention. However, the MDX Roadways (SR 836, SR 874, SR 924, SR 878 and SR 112) account for nearly 35 percent of the assists provided in FY 06/07.
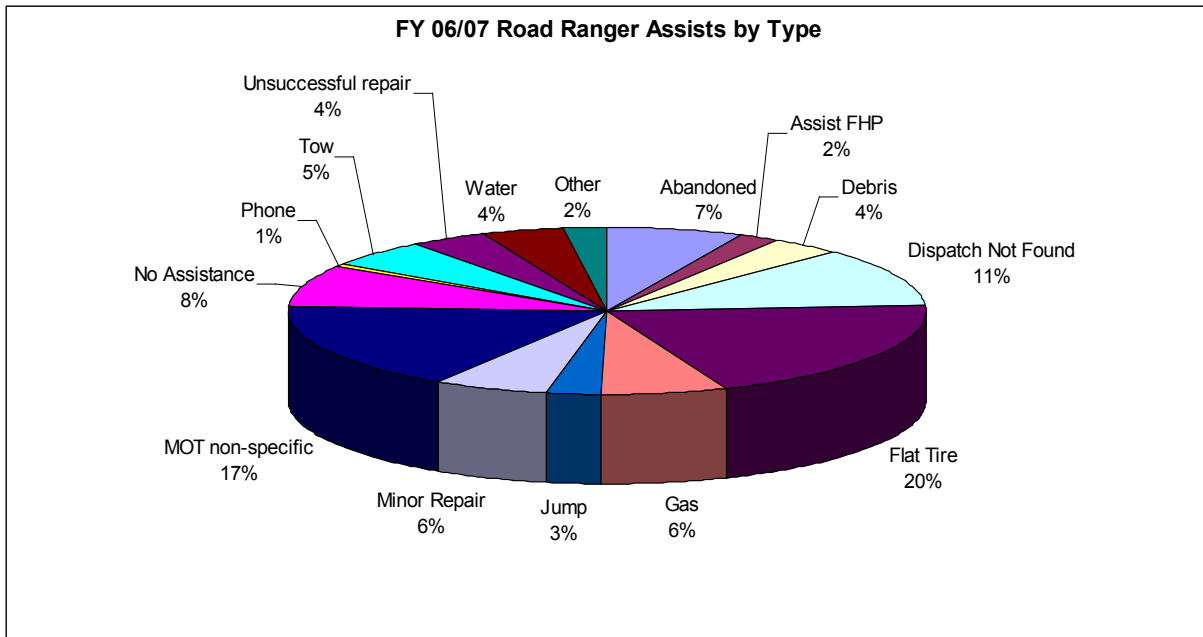
Road Rangers in District Six delivered 92,839 services to motorists in FY 06/07. Road Rangers do more than just change flat tires (20 percent of the assistance events) or provide stranded motorists with enough fuel to get to the nearest gas station if they run out of gas. In fact, they perform all of the following services free of charge:

- Tow stranded cars to the nearest safe location.

- Detect and report road conditions and incidents. Spend up to 30 minutes to try to fix a stranded vehicle.

- Secure the scene of a crash and set up a safe zone for emergency vehicles.

- Set up maintenance-of-traffic measures so commuters know how to avoid an incident.

- Pick up road debris.

- Patrol during hurricane evacuations to assist stranded motorists.

FY 06/07 Road Ranger Assists by Roadway

Roadway	Assists
I-195	2,872
I-395	2,987
I-75	4,701
I-95	24,586
*Other	438
SR-112	4,827
SR-826	22,408
SR-836	13,959
SR-874	9,276
SR-878	1,812
SR-924	2,968
US-1	2,005

*Note: Other refers to roadways not yet configured in SunGuide℠ Software.

FY 06/07 Road Ranger Assists by Type

As the above pie chart shows, the Road Ranger patrols perform a variety of services to manage roadway incidents, minimize secondary crashes, and keep traffic moving.

TMC operational improvements also increase the efficiency of Road Ranger services. The TMC operational improvements contributed to a 16% increase in Road Ranger assists from 2005 to FY 2006/2007, even though the number of patrolling trucks remained the same. The other aspect to the Road Ranger Program's success is contract management. The FDOT District Six has begun to automate contract management tasks to increase its contract management capabilities for project oversight. The traditional data collection and reporting processes were automated, which provided the FDOT more tools to work with the Road Ranger Program's contractors to improve the quality of service. The improvements include:

• A field inspection database is accessed via a Tablet PC. The Road Ranger Inspector uses a touch screen to enter deficiencies (when found) into the database that automatically prints (and soon will e-mail) the inspection results from the field, while storing the data for easy to access monthly reports and invoice reductions, if necessary.

• A database to track and report Road Ranger Procedural errors. The FDOT reports Road Ranger procedural errors to the Contractor so they can address issue immediately. This increased the quality of service

provided by the Road Rangers. At month's end a report can be produced to identify areas of additional training or corrective action depending on the nature of the errors.

The FDOT also created a method for monthly contractor evaluations that established accountability. This served to clearly communicate the FDOT expectations and bring better awareness to the contractors on their performance.

All of these improvements will increase efficiency of the existing FDOT staff and allow them to focus on Road Ranger Program strategic/ operational improvements in an effort to further increase the quality of service to motorists and reduce incident durations. ∎

ATIS

The Advanced Traveler Information System (ATIS) project provides uniform, multimodal, real-time traveler and traffic information in South Florida under the SunGuide Program. The FDOT District Six leads this regional project with support from the FDOT District Four, Florida's Turnpike Enterprise, and the Miami-Dade Expressway Authority. The services are provided by SmartRoute Systems (SRS), a private ATIS partner that currently operates from within the FDOT District Six SunGuide TMC. In addition to disseminating real-traffic information via the Web (www.511southflorida.com), SmartRoute Systems hosts a 511 telephone service that was upgraded to include voice recognition in January 2006. In FY 06/07, the 511 service received a total of 2,217,974 calls or an average of 184,831 per month. This total is down from 2,797,778 calls in FY 05/06 or an average of 233,148 per month. This reduction in calls may be contributed to an increase in DMS usage and the 511 e-mail alerts service, which averages 79,059 e-mail alerts sent out each month.

The 511 service served as a critical part in disseminating traffic information during natural disasters. SRS worked with the SEFRTOC to develop a coordinated response to the I-75 Alligator Alley wildfire closures at US 27 in Broward County. South Florida TMCs messaged the closure and referred drivers to 511 for more information. 511 floodgate messages offered specific alternates to those attempting to travel to the west coast of Florida.

In May 2006, the FDOT Central Office conducted a survey of Florida drivers and ITS services that showed only about 25% of motorists were aware of the 511 Traffic Information service. A full-time 511 Marketing Manager was soon hired to plan and coordinate promotional efforts. Key highlights of this effort include:

- **Special Events -** 511 was a sponsor for the 2007 Air & Sea Show in early May. Partnering with KISS Country (99.9 FM) and Power 96 (96.5 FM), the 511 booth drew its share of the million-plus crowd each day. Over the jammed beachfront, a giant 511 banner was flown, and the Air and Sea Show announcer delivered scripted 511 messages. The next big 511 event involves Racefest and NASCAR this coming November.

- **Radio -** The 511 radio campaign was approved in mid-2006 with ad schedules targeted through November. Radio listeners could catch the 511 message anywhere in South Florida since the ads ran on stations in Miami-Dade, Broward and Palm Beach County. Another month-long radio and web campaign for 511 involved KISS Country and Power 96, at same time as weekly newsletters were sent out to listeners. Additionally, the first 511 Hispanic Campaign was successfully launched in South Florida in May 2007.

- **Municipalities -** 511 has begun a campaign to enlist the support of the various communities in the five-county area by letting commuters know about 511. The

effort has already borne fruit in the cities of Miami Beach, Aventura, Miami Springs, and Lauderdale Lakes, each of whose websites now include links to the 511 website.

- **Marketing Materials -** 511 marketing materials have been updated to include their new branding campaign slogan. The new slogan "*GET THE 511* Traffic Information at Your Fingertips," can be seen on rack cards and wallet cards both in English and Spanish. These materials were created to provide motorists with a quick reference for using the 511 Interactive Voice Recognition System.

With SRS working from the SunGuide TMC, the level of coordination and accuracy of traffic information improved. In early 2006, the partners and SRS began tracking the level of consistency of 511 with that collected by the regional TMCs. This quickly identified the need to improve the method and means for coordinating traffic data. SRS began to implement changes that improved the level of coordination, and as such, the level of consistency of information. SRS improved the process by:

- Reorganization of 511 Operations staff.

- Development of guidelines for 511 Shift Supervisors and Operators to communicate performance expectations while providing more structure and involvement for the 511 Shift Supervisors.

- Constantly monitoring TMC output from the SunGuide^{SM} Software and cameras by 511 operators from the SunGuide TMC control room floor.

- Activating an email alert system on the TMC floor to provide an added alert and communication device to receive notifications from TMCs, Public Information Offices of the FDOT District Offices, and other agencies.

- Designing more descriptive, easier to use forms for 511 operators.

- Enforcing 511 Shift Supervisors check and compile data per shift.

As a result of these efforts, the consistency of traffic information among the partners and 511 has increased from 58% to 94%. ■

511 / TMC Consistency of Information
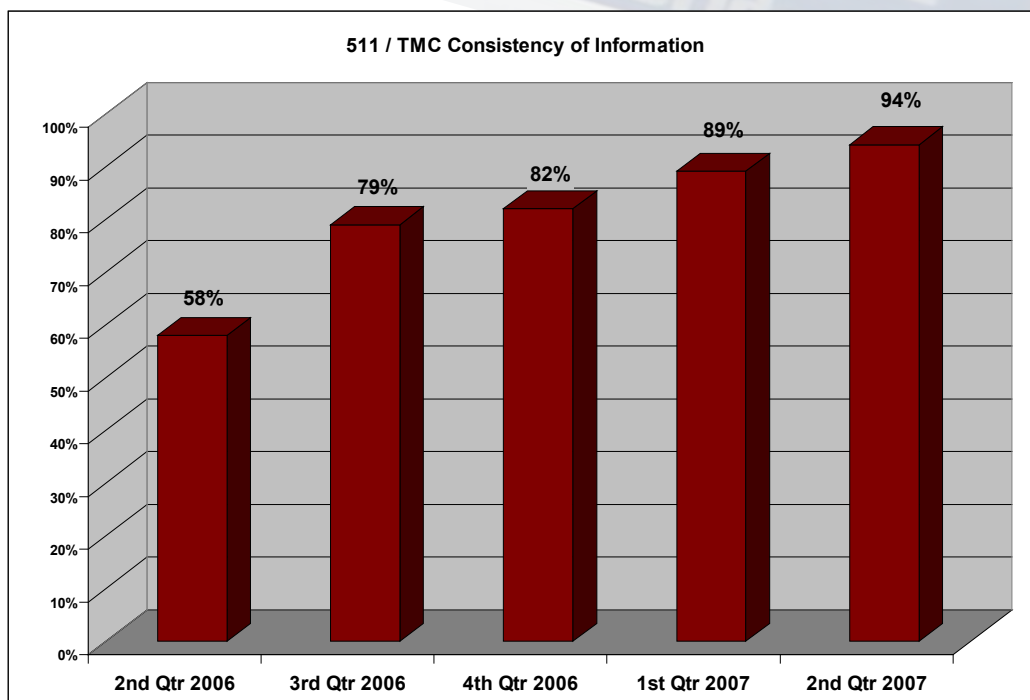
TIM Team

The FDOT District Six ITS Program continues to organize meetings among the 150 local, regional and state agency members of the Miami-Dade Traffic Incident Management (TIM) Team. The TIM team began the development of the Miami-Dade TIM Program Action Plan during 2006. The TIM team organized technical workshops and stakeholder meetings to develop a draft version of the Action Plan. The Florida Statewide TIM Strategic Plan and results from the 2006 and 2007 FHWA TIM Program Self Assessments served as a basis for the statements included in the Action Plan. The Action Plan will serve as a road map for the TIM team to focus in the next 12 to 18 months.
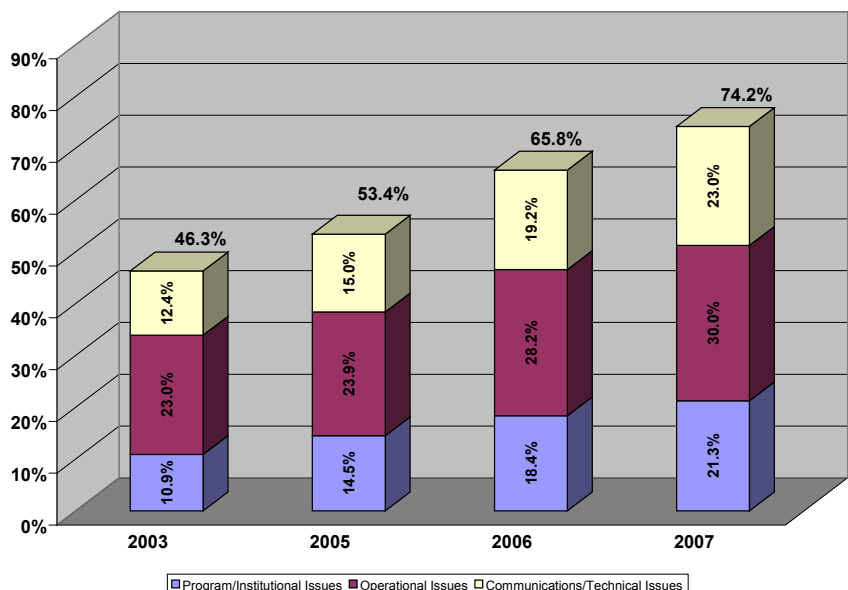
The TIM Team meeting agendas have been revised to include post incident debriefings and regional updates. The post incident debriefings on major incidents provide a detailed timeline of events; a valuable asset in facilitating an open discussion to identify areas of improvement, as well as success stories. The TIM Team meetings have added updates on regional TMC activities (e.g., SEFRTOC)) and training / workshops / seminars announcements to ensure the members are well informed and view the TIM Team meetings as a valuable source of information.

The TIM Program has begun to establish task force committees to improve productivity from the TIM members. These task force committees are established at the regularly scheduled TIM Team meetings and include members with the expertise and significant interest in developing solutions to the issues raised. They have proven to be effective in moving the larger issues forward by providing a forum that allows

the members to roll up their sleeves and get things done. Key task force committees include:

- Hurricane Preparedness Task Force: They developed a hurricane preparedness plan including protocols and timelines for interagency communications during hurricane emergencies.

- I-95 Diversion Route Task Force: They developed diversion route plans that could be activated in response to major incidents causing complete roadway closures in one or both directions on I-95. A "Guidelines Document" is being developed to include incident criteria and to implement diversion plans to be deployed for non-hazmat incidents.

- Open Roads Policy Task Force: They will expand and localize the Open Roads Policy in Miami-Dade County to include other local incident response agencies in addition to the FDOT and FHP. MDX entered into an inter-agency agreement with FHP to adopt Open Roads Policy on all the MDX's roadways.

The FHWA TIM self assessment for the Miami-Dade TIM Program has been conducted annually since 2005 and has shown continuous improvements in the program (see chart). The overall TIM Program score for 2007 was calculated at 74.2%, which is an improvement of 8.4% over the 2006 score. ■

Chart legend: Program/Institutional Issues · Operational Issues · Communications/Technical Issues

Year	Program/Institutional Issues	Operational Issues	Communications/Technical Issues	Total
2003	10.9%	23.0%	12.4%	46.3%
2005	14.5%	23.9%	15.0%	53.4%
2006	18.4%	28.2%	19.2%	65.8%
2007	21.3%	30.0%	23.0%	74.2%

ITS Maintenance

The FDOT District Six ITS Program is highly interactive, and dependent on state-of-the-art technology that is used to monitor and report roadway status system wide. The entire network of equipment—the roadway detectors and closed circuit television (CCTV) cameras that track and monitor vehicle flow, the communications infrastructure, SunGuide™ Software, and computer servers that assess and respond to traffic congestion, dynamic message signs (DMS) and the 511 traveler information service that warn motorists of travel conditions in real time—must remain in operation 24/7. These systems, in turn, call for an aggressive maintenance program that ensures ITS equipment is in shape to detect, report, and redirect the flow of traffic throughout the region.

As new devices and systems come on line, the FDOT District Six ITS Maintenance Program tackles various special projects to support integration/testing, as well as further enhancements. The following highlights key special projects tackled in FY 06/07:

- Upgraded the TMC Operator Workstation Computers.

- ITS Maintenance Staff actively participated in the integration of the new arterial DMS. In addition, they provided valuable support with bringing one ramp metering site online. This included the testing of the SunGuide^{SM} Software Ramp Metering Module and new firmware for the 170 ramp meter controller.

- Supported the integration into the 511 website of the new CCTV installed along the Lower Keys, I-195 and I-75.

- Actively supported the upgrade of the SunGuide^{SM} Software version 2.2.2.

- Configured uninterrupted power supply (UPS) devices in the field to be controlled from the TMC, such that the field devices can be remotely re-booted when power is temporarily loss.

In late 2006, the FDOT District Six recognized that the ITS Maintenance Program must adapt to the rapidly growing ITS deployments. In April 2007, the FDOT District Six completed an assessment of the current ITS Maintenance Program and recommendations were identified and

implemented. These recommendations identified additional resources, maximization of existing resources, and improvements to the existing processes for managing the ITS Maintenance Program contractor.

- Additional Resources – Two additional positions were added to the ITS Maintenance Program staff: one IT technical support position and additional IT/ITS Technical Support Services. In addition to personnel, a database was developed and implemented to provide the TMC Operations staff a means to log equipment failures and send e-mail alerts to the ITS Maintenance staff. As a result, the overall communications, documentation and reporting of failed equipment was improved dramatically. The database is an interim solution to allow the FDOT District Six to better understand requirements for a more comprehensive "Help Desk" type system.

- Maximize Existing Resources – The two field technicians provided by the ITS Maintenance contractor were brought in-house and reported directly to the IT/ITS Administrator. The existing TMC Operations staff was better utilized by establishing monitoring and reporting procedures that included system checks on all equipment at the end/beginning of each shift. Simple troubleshooting procedures were communicated to the TMC Operations staff to quickly identify the nature of the problem so the correct resources could be deployed more efficiently.

- ITS Maintenance Contractor Management - Oversight of the ITS Maintenance contractor was improved by establishing quality control procedures for troubleshooting problems in the field, as well as preventive maintenance activities, changing the invoicing process from quarterly to monthly and holding weekly meetings to quickly address issues.

As result of these improvements, the FDOT has been able to increase the ITS Maintenance Program's level of service, while reducing monthly costs. ■

Benefits to the Public

The FDOT District Six ITS Program budgets for FY 06/07 include capital improvement, operating and maintenance costs. As indicated below, the total costs shown are considerably less than the normal capital costs associated with expanding highways and facilities.

Reducing incident duration has both a direct and financial benefit for South Florida motorists as well, substantially trimming the costs they must absorb. When the delays associated with incidents are reduced, motorists save time—which can be directly translated to dollars. In 2005, FDOT established a baseline average duration of incidents that blocked travel lanes of 50 minutes. In the first six months of 2007, the average duration was reduced to 37 minutes. Using published, widely accepted statistical methods for estimating the cost implications of traffic delays, this translates into savings of over $146.6 million. (That estimate only includes motorists' time saved; it does not address fuel expenses and other associated costs.) Additional benefits from the free Road Ranger services were $9 million over the same period. This brings a total benefit of $155.6 million of six months or $311.2 million annually.

When this estimate is weighed against the total capital investments (annualized over 10 years at 7 percent) and annual operating expenses, the ITS program is shown to be yielding a benefit cost ratio of 17.04. For every dollar invested, about $17 in economic benefit is valued for the motoring public. This is a 13% increase in benefits from 2005. ■

Annual Operating Expense	
Other (ATIS, Consultants and FIU):	$1,660,938
FDOT Cost Center Operating Budget:	$2,760,749
TMC Contract Personnel:	$1,452,518
ITS Maintenance Contract:	$662,993
Road Ranger Contracts:	$5,486,715
Total Annual Cost:	$12,023,913
Capital Improvement Costs	
ITS field deployment projects completed through 2006:	$57,000,000
Annualized Capital Costs	$6,258,294
Total Annualized Costs	$18,282,207

A Look Ahead to FY 2007/2008

The ITS Program in Florida Department of Transportation District Six will be very active in FY 07/08. With the award of a performance based ITS Operations Contract, the FDOT District Six will continue to focus on operational efficiency. Several other initiatives will start up in FY 07/08 as well:

- Control Room Operations Intranet is being developed and the first phase should be launch by the December 2007. This will provide critical operational documents, such as maps, schedules and guidelines, at the finger tips of the TMC Operators.

- Ramp metering along I-95 is coming to Southeast Florida in 2008. Ramp meters are red-green traffic signals placed at freeway on-ramps. They control the rate at which vehicles enter the freeway. The signals can be set for different rates to optimize traffic flow and minimize congestion. Most importantly, ramp meters reduce crashes at ramp merges and makes it easier for drivers to enter the traffic stream.

- The SunGuide℠ Software will be upgraded to Release 3.0. This will bring more stability to the software and add several additional data collection and reporting features. The user interface and configuration platform will be improved, as well. One significant feature will be an integrated Automatic Vehicle Location for tracking Road Rangers, which will improve Road Ranger safety and overall quality of service.

- Road Ranger Driver Information System that will automate the management of Road Ranger personnel documents, shift schedules and other important contract documentation.

- The Miami-Dade Expressway Authority (MDX) will begin management of Road Rangers along its facilities, which includes TMC Operations. The MDX TMC Operations will be collocated in the SunGuide TMC.

- The FDOT District Six will implement a new federally funded congestion mitigation strategy referred to as managed lanes. This will convert the existing High Occupancy Vehicle (HOV) lanes to a toll facility for single and double occupancy vehicles. The HOV (which increase to 3+) and transit will traverse this segment for free. Phase 1, which includes I-95 northbound from SR 112 to the Golden Glades interchange is planned to be operational in spring of 2008 ∎
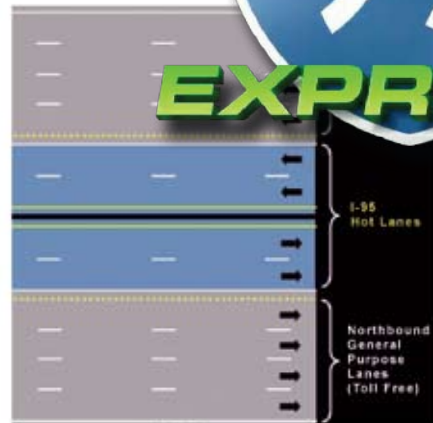
95 Express

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