Intelligent Transportation System (ITS) Program

Performance Measures Review

Florida Department of Transportation
Traffic Engineering and Operations Office

September 2007

Intelligent Transportation Systems

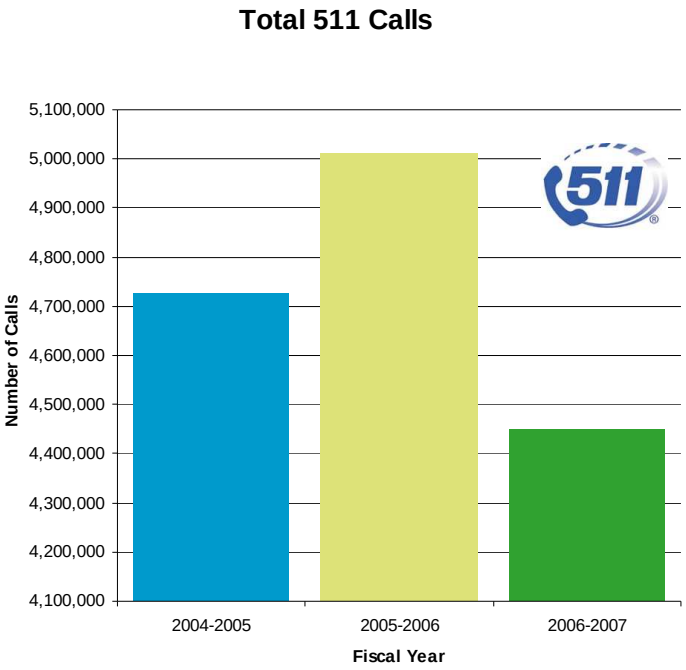
In order to better accommodate our rapid growth in population, tourism, and commerce, the Florida Department of Transportation (FDOT) is committed to develop and deploy sophisticated, fully integrated, statewide Intelligent Transportation Systems (ITS) in a cost-efficient manner. ITS represents the application of real-time information systems and advanced technologies as transportation management tools to improve the movement of people, goods, and services. ITS uses advanced technologies to remedy mobility and safety problems, so the building of new roads and expansion of existing ones is accomplished efficiently.

ITS is currently evolving in Florida, and thus the capability to report actual performance will initially be limited to measures of basic production and usage (*output*). These measures are Annual 511 Calls, Annual Road Ranger Stops and Miles Managed by ITS. Results for all of these measures are included in this report.

As ITS deployment and integration proliferate, performance and resulting benefits (or *outcome*) will be more accurately documented and reported herein. Three ITS *outcome* performance measures were identified by FDOT and subsequently approved by the Florida Transportation Commission (FTC) in 2005. These measures are: 1) incident duration; 2) travel-time reliability; and 3) customer satisfaction. Beginning July 1, 2006, available data for the incident duration *outcome* measure was collected and is included in this report. The customer satisfaction measure, based on data collected in 2006 is reported in this document. It is anticipated that travel time reliability and incident duration outcome measures will be reported in 2008.

Total Annual 511 Calls

Background: In July 2000, the Federal Communications Commission designated 511 as the national three-digit telephone number for traveler information. To date, over 80 million calls have been made to 511 systems throughout the country. The ultimate national goal is to provide coverage throughout the United States by 2010. Over 1.9 million calls per month are now being made to these existing systems (31 locations in 27 states), currently available to over 100 million people.[1] In Florida, most urban areas of the State currently offer this service to travelers; Southeast (Miami-Dade, Monroe, Broward, Palm Beach, Indian River, Martin, and St Lucie counties), Central (along I-4 in greater Orlando) Florida, and the greater Tampa Bay area, a statewide 511 service, in November 2006 the Northeast service for Northeast Florida (Duval, St. Johns and Nassau counties) covering Jacksonville launched in October 2006 and in July 2007 service for Southwest (Charlotte, Lee and Collier counties) was launched The Southeast and Central Florida systems were launched during 2002, and the greater Tampa Bay system began operation in September 2004. The Statewide service covers Southwest Florida and the Jacksonville metro area as well as freeways across the State, and was launched in November 2005. Since inception of the aforementioned systems, over 19 million 511 calls have been made in Florida.



Purpose: To provide accurate, real-time information on traffic and road conditions, alternate route information (during incidents), construction information, weather-related problems, and public transportation information/options.

Objective: To reduce traveler delay and improve the overall quality of trip-making as evidenced by growth in the number of 511 calls and different callers, and maintaining a high level of user satisfaction.

Methodology: Compilation of annual monthly (and ultimately, annual hourly) 511 service calls by each of the service providers. Currently, *Logic Tree* manages the Statewide, Southeast, and Central Florida systems. The Tampa Bay area system and the Southwest system are both managed by *Mobility Technologies (now Traffic.Com)* and Smartroutes manages the Northeast system.. FDOT is responsible for assessing statewide user satisfaction, including 511 affects on travel behavior, and the extent of **different** callers utilizing the service. The results of customer satisfaction for the 511 service are included in another section of this document.

[1] www.deploy511.org, July 2007.

511 calls

July 1, 2006 – June 30, 2007

	2006					
	July	**August**	**September**	**October**	**November**	**December**
S.E. Florida	172,650	166,825	173,709	179,855	188,484	170,149
Central Florida	104,051	91,683	75,034	82,946	98,552	97,655
Tampa Bay	40,285	44,735	44,843	47,634	44,101	44,094
Statewide	33,197	29,293	25,943	27,126	35,083	36,436
S.W. Florida						
State Total	**350,183**	**332,536**	**319,529**	**337,561**	**366,220**	**348,334**
National Total	1,384,282	1,439,826	1,422,535	1,620,629	2,363,670	3,331,449

	2007					
	January	**February**	**March**	**April**	**May**	**June**
S.E. Florida	179,176	190,937	225,888	190,705	199,943	179,796
Central Florida	79,092	101,980	105,699	87,614	105,268	92,060
Tampa Bay	40,522	43,690	61,977	48,216	65,404	40,881
Statewide	29,749	28,799	35,216	43,286	108,946	41,327
N.E. Florida			453	5,554	43,876	5,108
S.W. Florida				4,414	7,628	1,734
State Total						
National Total	2,778,154	2,945,074	2,590,394	1,775,762	1,860,638 *	*

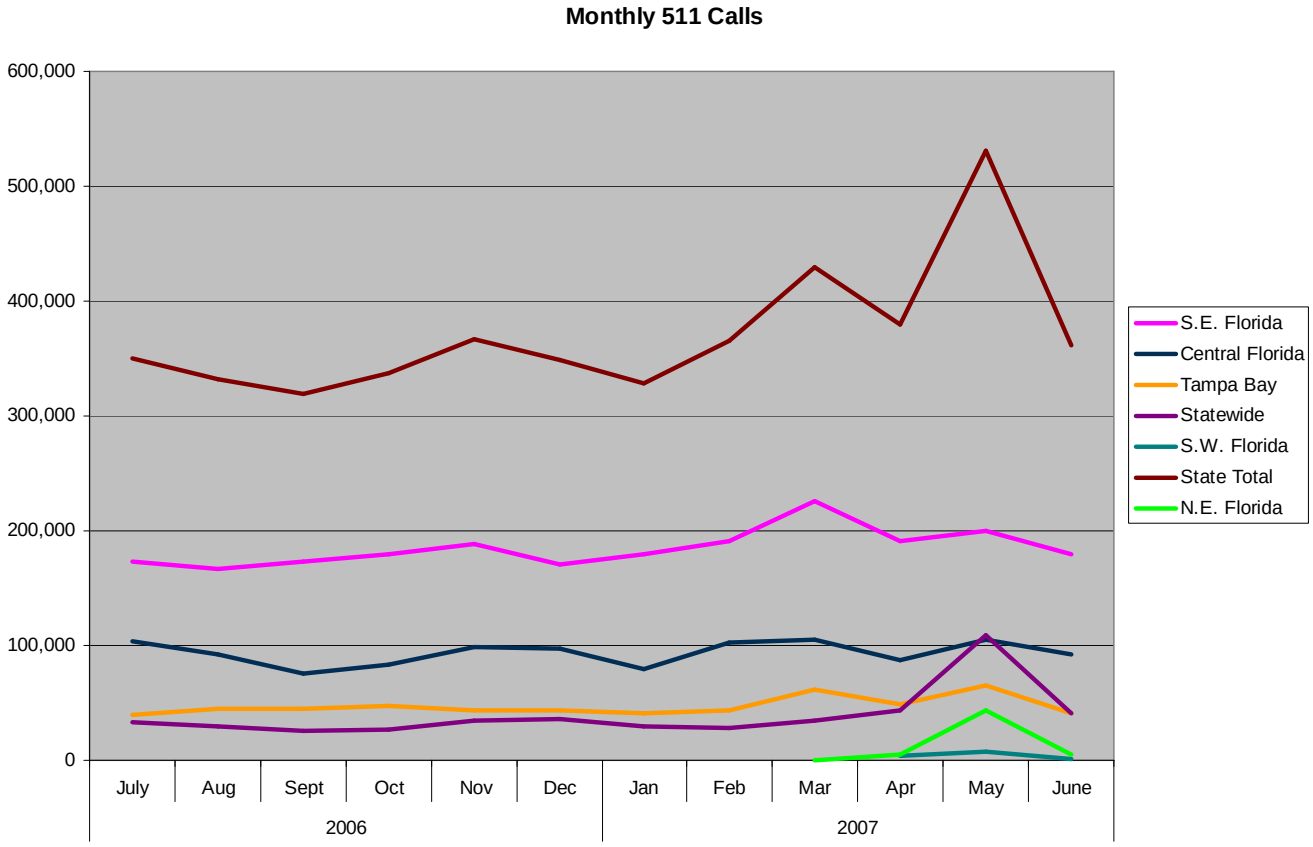
Totals	
S.E. Florida	2,218,117
Central Florida	1,121,634
Tampa Bay	566,382
Statewide	474,401
N.E. Florida	54,991
S.W. Florida	13,776
State Total	**4,449,301**
National Total	**23,512,413****

* National Total includes an estimated call count in May 2007 for Utah 511

** June 2007 National Total is not available

Results: 4.4 million 511 calls were made during the 12-month period from July 2006 through June 2007 under the five Florida systems. This represents 19 percent of the total 511 calls made in the entire country during this same period. As can be seen in the graphic and corresponding table below, the number of total monthly 511 calls now being made in Florida is approaching one-half million. Total statewide calls have a 12 percent overall decrease over 2006. There are two possible reasons for this decrease, 1) there was significantly less hurricane activity during the 2006 season and 2) there were several changes to the Southeast Florida 511 made during the year, including a new IVR customer interface, which may have caused reduced use by some of the previous customers.

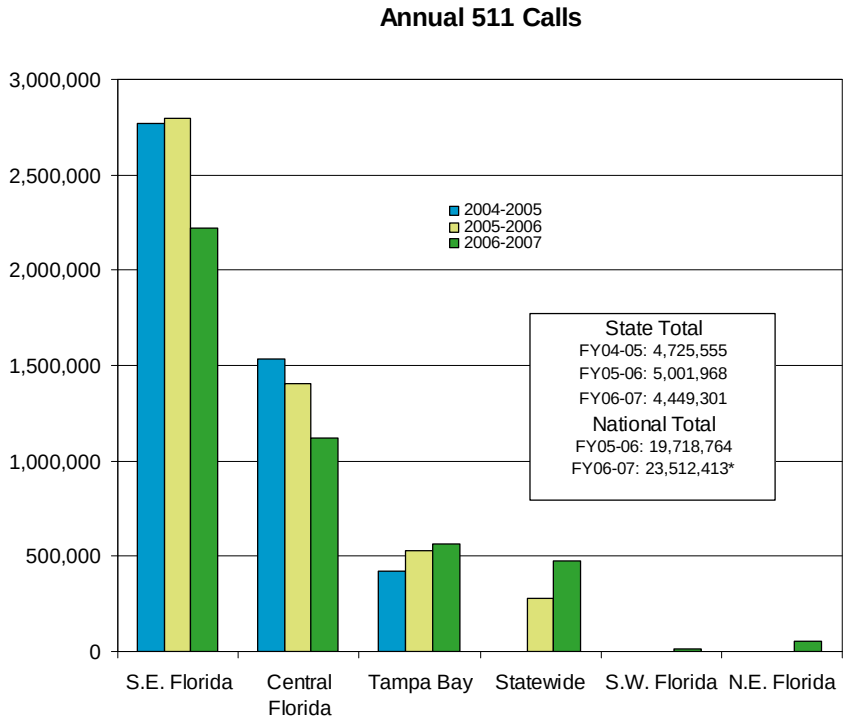
19 % of the total 511 calls made in the entire country occurred under the five Florida systems in fiscal year 2006-07



Additional Comments: Significant improvements (e.g., interactive voice response (IVR), intensified awareness marketing, trip planning applications, expanded real-time speed and travel-time data gathering capabilities, and related web site enhancements) are underway for the five systems.

There were two monthly spikes in 511 call activity in Florida in this period. One was in March 2007 where the largest increase in calls was in Southeast Florida, likely due to winter residents traveling back to the North. The other peak month was May 2007, which was caused by large wildfires in north Florida and in the Everglades occurring in mid-May. The largest increases at that time were in the statewide system.

Nationally, peak activities occur during winter months when weather causes delays and road closures.



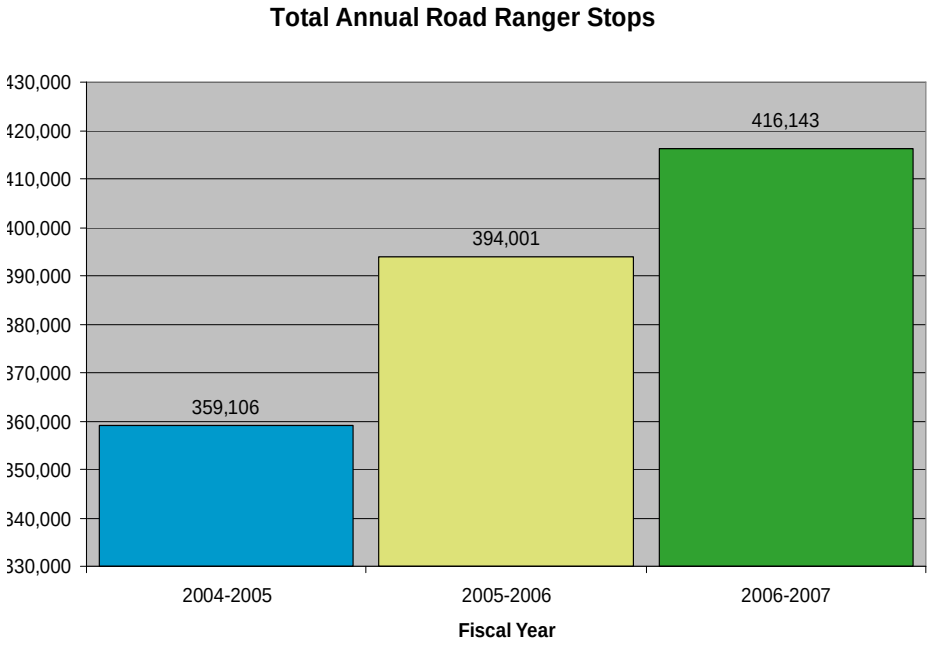
Total Annual Road Ranger Stops

Background: The Department began funding the Road Ranger Program in December 1999. Except for District 5, which is contracted to the local transit provider, LYNX, Road Ranger Services are contracted to private contractors. The Road Rangers are roving vehicles which patrol congested areas and high-incident locations of the urban freeway, and provide ***free*** highway assistance services during incidents to reduce delay and improve safety for the motoring public and responders. All of the districts and the Turnpike Enterprise currently operate a Road Rangers Program. However, the specific services provided, hours of operation, fleet size, and area coverage differs among these entities. The extent and automation of service documentation and general record-keeping also varies greatly. Road Ranger Log Forms are generally the same, but there is wide variation on what information from the form is electronically recorded. The latest version of the SunGuide software captures all the data required to calculate the incident duration timeline. District 4 was the first to use this version of SunGuide and has collected data for all of 2006-07. District 6 has collected incident duration data for January to June 2007. The Florida Turnpike Enterprise has been collecting incident duration data since 2004. The other Districts will be implementing this version of SunGuide within the next year. Some districts routinely breakdown assists by Road Ranger route, shift, or corridor. Likewise, the specific types of Road Ranger assists are not being delineated in the same manner across all programs. Generally all Districts' Road Ranger Programs provide assistance to public safety agencies during incident management.

Purpose: To provide roadside assistance to disabled or stranded motorists free of charge, remove debris and abandoned vehicles; assist with maintenance of traffic, and incident clearance during times of incident management.

Objective: To help reduce the overall travel delay associated with incidents by providing quick response to motorists in need.

Methodology: Compilation and summary of Road Ranger Log Forms (ultimately in electronic fashion). As mentioned previously, consistency in data reporting and assessment must be established for more meaningful performance reporting. The FDOT Central Office Program Manager for Road Rangers and Statewide



Traffic Incident Management is working to "standardize" Road Ranger performance reporting among all districts and the Turnpike Enterprise. All of the districts are now providing Road Ranger data to the Central Office on a quarterly basis.

Results: For the period July 2006-June 2007, there were 416,143 Road Ranger stops made statewide along 1,110.5 miles of coverage, as summarized in the table and graphic on the following page. Four of the Districts currently provide Road Ranger service on a "24/7" basis. Also, 40% of the 136 total statewide Road Ranger vehicle fleet is operating with automatic vehicle location (AVL) capabilities.

Additional Comments: The general motorist reaction has been overwhelmingly positive regarding this service. The specific findings for existing Road Ranger customer satisfaction is reported in the customer satisfaction section of this report.

Compared to the previous period of documentation (July 2005-June 2006), the total annual stops increased by 5.6 percent.

Road Ranger Stops
July 1, 2006 to June 30, 2007

District	Total Annual Stops	Total Fleet Vehicles[a]	Fleet Coverage (Centerline-Miles)	Hours of Operation
1	63,464	18 (7 with AVL)	241	24/7
2	14,622	8 (all with AVL)	103.5	6:30 AM to 6:30 PM, 5 days/week
3	3,067	5 (without AVL)	24	Varies[b]
4	86,846	30 (without AVL)	111	24/7
5	34,279	12 (all with AVL)	74	24/7
6	92,839	35 (without AVL)	97	24/7
7	29,939	9 (all with AVL)	101	24/7
Turnpike Enterprise	91,087	19 (all with AVL)	368	Varies[c]
Statewide	**416,143**	**136**	**1119.5**	**Varies**

a The total fleet vehicles is defined as the vehicles available as defined in the contractual agreement with the service provider.

b PENSACOLA METROPOLITAN AREA:

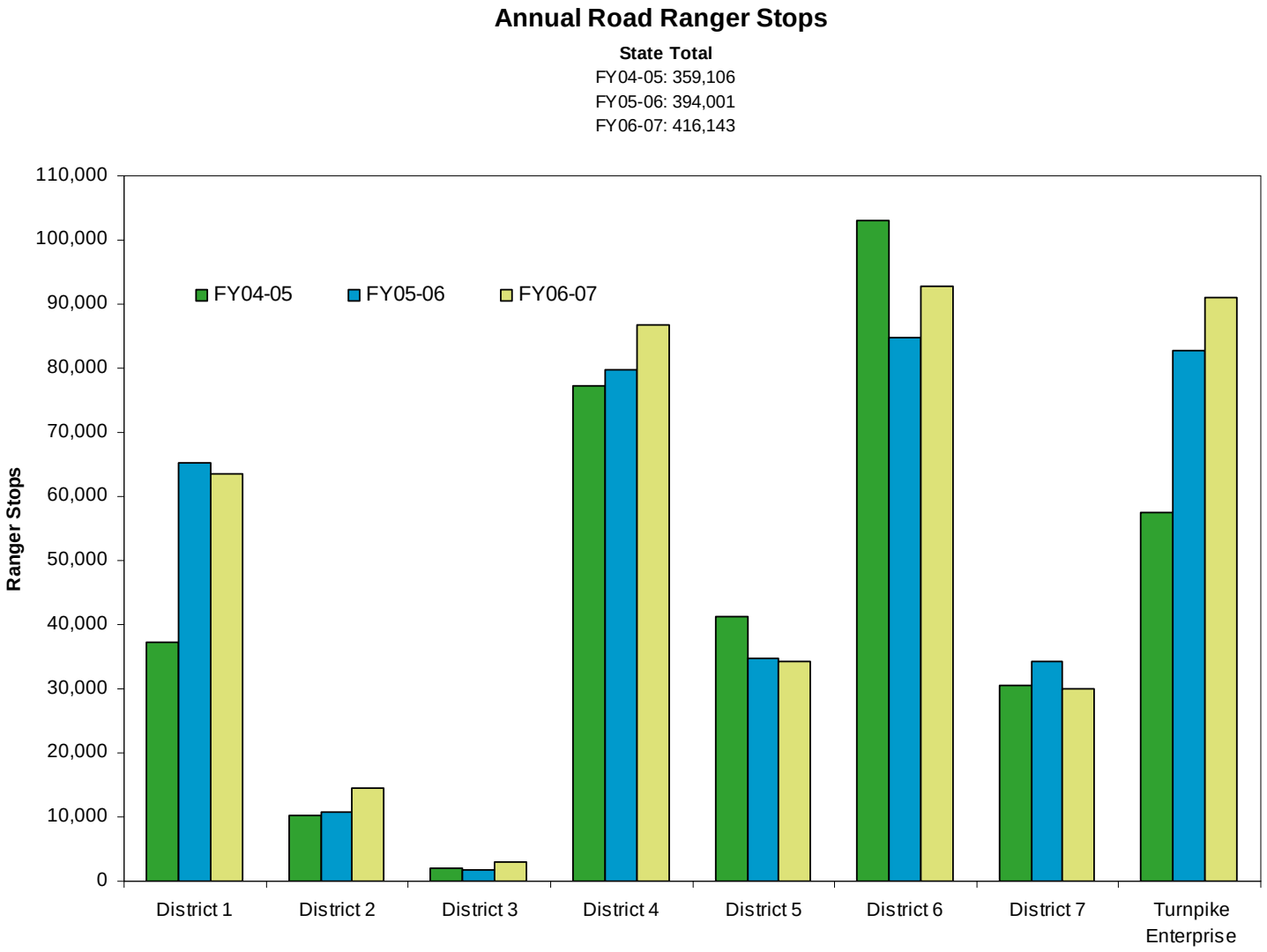
Interstate 10 / Interstate 110 service patrol (1 vehicle) - 6:00 a.m. – 8:00 p.m. Monday-Friday/7:00 a.m. – 7:00 p.m. Saturday / 9:00 a.m. – 5:00 p.m. Sunday. 7 days a week. Hours and number of vehicles may be increased as determined by FDOT (e.g., special events, emergencies, detours etc.).

Interstate 10 Escambia Bay Bridge Replacement service patrol (2 vehicles) – One vehicle operating 24 hours per day and one vehicle operating 14 hours per day. 7 days a week.

TALLAHASSEE METROPOLITAN AREA:

Interstate 10 Reconstruction Projects – Two vehicles operating 24 hours per day.

c 24/7 on Florida's Turnpike mainline and Sawgrass Expressway; 6:00 a.m.-7:30 p.m. on weekdays and 6:00 a.m. – 10:00 a.m. and 3:30 p.m. to 7:30 p.m. on weekends on OOCEA partnership roadways (Toll 417/Central Florida Greenway, Toll 528/Bee Line Expressway, Toll 408/East-West Expressway) and on Veteran's Expressway.

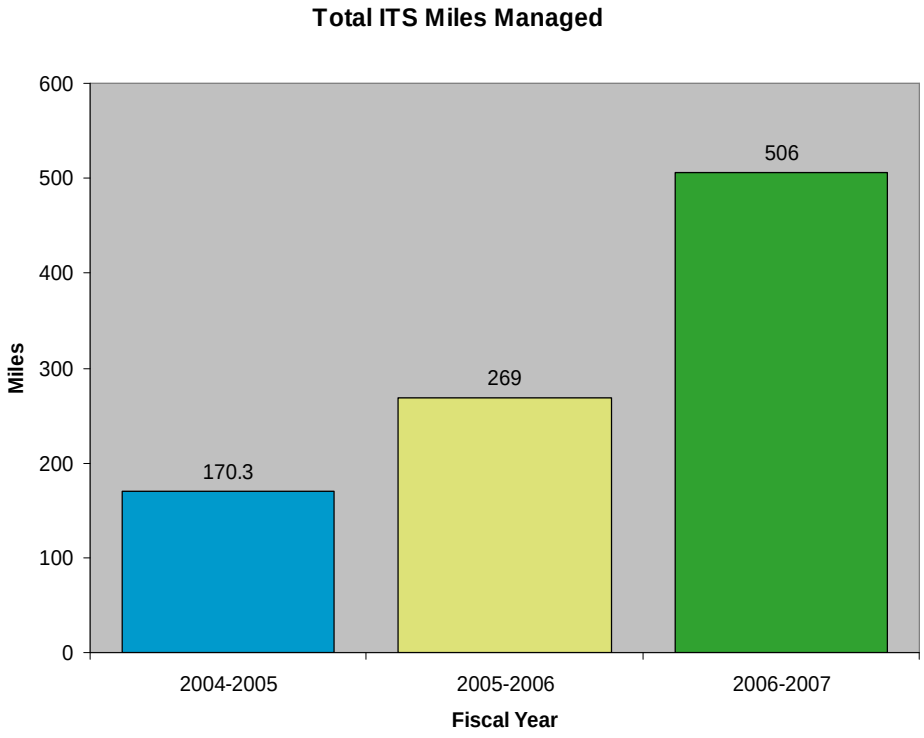


Miles Managed By ITS

Background: All districts and the Turnpike Enterprise are committed to the deployment of ITS, and each has embarked with this deployment in varying stages and pace in accordance with the *FDOT Ten-Year ITS Cost Feasible Plan*. As a percent of the limited-access Florida State Highway System (SHS) mileage in each district, "miles managed by ITS" has been defined as centerline mileage that must include ALL of the following attributes:

1. Traffic probes and/or sensors;
2. Real-time traffic information reporting coverage;
3. Real-time incident response capabilities; and
4. Availability of real-time traffic data to FDOT.

Additionally, all of these attributes must be continuously operated and maintained, permitting contiguous coverage of the mileage noted in order to meet the definition.



Purpose: Report progress in completing deployment of the *FDOT Ten-Year ITS Cost Feasible Plan*, and beyond as appropriate.

Objective: To initially deploy ITS across the limited-access portion of the SHS, and ultimately to integrate all ITS and ITS-related user services across the entire state in a seamless, fully operational, real-time fashion. This deployment will help improve mobility and safety throughout the State.

Compared to the previous period of documentation (June 2005-July 2006), the Miles Managed by ITS have increased 88% percent statewide

Methodology: Deployment progress, on an annual basis, as reported by each district and the Turnpike Enterprise. Corresponding geographic coverage also should be reported and mapped in terms of mile point limits.

Results: As of the end of June 2007, 628.6 miles (505.68 miles on Limited Access FIHS, 27.94 miles on Controlled Access FIHS, and 95.02 miles on Arterial Facilities) are managed by ITS, as summarized by the table and graphic below. The limited access FIHS is now 23.8%

managed by ITS. Extensive ITS deployment will be taking place during the next year in all districts, as well as the Turnpike Enterprise. Compared to the previous period of documentation (June 2005-July 2006), the Miles Managed by ITS have increased 88% percent statewide.

Miles Managed by ITS by District

District	Total ITS Miles	Limited-Access FIHS Miles**	Facility, Extent, and Location
1	27.8 (12.5%)	222.9	I-4: 27.8 miles (MM 28.2 to MM 56) [a]
2	43 (11.5%)	372.3	I-10: 9 miles (MM 354 to MM 363 in Duval County).
			I-95: 34 miles (MM 332 to MM 366 in Duval County).
3	22 (9.1%)	242.2	I-10: 2 miles (MP 11 to MP 13)
			I-10: 10 miles (MP 13 to MP 22)
			I-10: 8 miles (MP 195 to MP 203)
			I-110: 3 miles (MP 3 to MP 6 in Escambia County).[b]
4	92 (45.3%)	201.1	I-95: 46 miles (MP 0 to MP 46 in Palm Beach County).
			I-95: 40 miles (in Broward County).
			I-595: 6 miles (in Broward County). [c]
5	243.2 (63.0%)	386.1	I-4: 74.5 miles
			I-95: 124.7 miles
			SR 528: 44 miles.
6	52.2 (97.6%) + *123 on controlled access FIHS and arterial facilities*	53.5	I-75: 5.44 miles (SR 826/Palmetto Expressway to Miami-Dade/Broward County Line)
			I-95 :17.26 miles (SR 5/US 1 to Miami-Dade/Broward County Line)
			I-195 :4.91 miles (NW 11 Avenue to SR 907/Alton Road)
			SR 826: 24.57 miles (SR 5/US 1 to Golden Glades Interchange)[d]
			SR 5/US 1: 123 miles in Dade and Monroe Counties
7	17.5 (10.5%)	166.5	I-275: 11 miles (MP 43.0 to MP 54.0)
			I-4: 6.5 miles (MP 3.5 to MP 10.0).[f]
TPE	8 (1.8%)	460.0	Sawgrass Expressway: 8 miles (I-595 to Atlantic Blvd in Broward county).
Statewide	**505.7 (23.8%)**	**2132.8***	

Percent indicated under "Total ITS Miles" column is based on the percentage ITS miles on Limited Access FIHS over District total FIHS limited-access miles.

* includes all expressways managed by toll authorities

[a] The I-4 Portable Intelligent Transportation System, which was deployed and utilized during the widening of I-4 in Polk County has been retained and remained operational after construction. This system became operational in January 2004, and remained in place until June 2007. The systems were removed and users of the website were directed to the statewide 511 website for traveler information.

[b] The I-10/I-110 Portable Intelligent Transportation System is being utilized through the I-10/I-110 Interchange

Improvement construction work zones in Escambia County. This temporary system became operational in 2004, and is scheduled to remain in place until the end of construction (anticipated September 2007). It is the intention of District 3 to transition to a continuously operated and maintained permanent system at the beginning of 2009.

[c] This I-95 portable system will be in place until 2008 (anticipated completion of widening). It is the intention of District 4 to immediately transition to a continuously operated and maintained permanent system beyond 2008;.

[d] SR 826 from SR 5/US 1 (BMP 0.000) to NW 122 Street (EMP 14.100) in Miami-Dade County has 14.1 Total Centerline ITS Miles operated and maintained with the exception of traffic probes and/or sensors present..

MDX Facility – SR 836 (MP 0.000 to MP 11.756). Total ITS Miles 11.756 – currently traffic probes and/or sensors are not available within the specified limits.

[e] SR 5/US 1 from 0.5 Mi. South of McDonald Avenue in Monroe County to SR 5/US 1 in Miami-Dade County at SR 821/HEFT has 122.97 Total Centerline ITS Miles operated and maintained with the exception of traffic probes and/or sensors present. This includes sections of both controlled access FIHS roadways and arterial roadways.

[f] FDOT D-7 has entered into an agreement with Traffic.com to utilize the FHWA ITIP Program. Through this program, FDOT D-7 has placed sensors at 80 sites along I-4, I-75, and I-275 in Hillsborough and Pinellas counties to collect travel times for 511 Tampa Bay service. The Traffic.com sensors cover 80 miles of roadway. As permanent deployment of detectors occurs in these covered areas, D-7 will look to Traffic.com to relocate these sensors, per their agreement, to areas that currently are not covered.

Customer Satisfaction

Background: In late 2005, the FDOT Central Office ITS Program initiated a project to conduct a customer satisfaction survey in order to determine public attitudes toward ITS services provided by the FDOT Districts. A draft questionnaire was developed and submitted for review by the districts at the December 8, 2005 ITS Working Group meeting. Further review was conducted by the FDOT Central Office Traffic Engineering and Operations Office staff. Approval of the Customer Satisfaction Outcome Performance Measure questionnaire was obtained in February 2006. The telephone survey for all seven geographical districts was conducted in March 2006, and a draft analysis of the survey was delivered in May 2006.

Purpose: Report a qualitative measure of public satisfaction with services provided by the FDOT ITS Program.

Objective: To obtain the percentage of survey respondents that is satisfied with ITS services including Dynamic Message Signs (DMS) usage and performance, Road Ranger performance, 511 and traveler information web site usage and performance.

Methodology: Customer satisfaction was measured by collecting a statistically valid sample survey data from ITS users throughout the State. This task surveyed via telephone a random sample of 400 adults age 18 and over in each of the seven FDOT districts. Respondents must drive at least three times per week on freeways to qualify. The purpose of this survey is to gauge awareness and perceived value of the traffic management services offered by FDOT, including Road Ranger services, DMS, and 511. The surveys provide a benchmark against which to measure changes in awareness and perceptions in the future. Each interview lasted approximately 10 minutes.

For each district, a written report summarizing the telephone survey findings and displaying the appropriate graphic (chart or table) for each question was prepared. The reports also contain an analysis of each question by various demographic subgroups (i.e., geographic, age, type of freeway use). Finally, the reports contain an overall summary, and identify key findings. A statewide summary report also was produced. The results was presented in detail at an ITS Working Group meeting in July 2006.

Results: The following is a listing the key findings of the customer satisfaction survey:

- About two-thirds of drivers get traffic information from television, but only 23 percent tune in often;
- About three in four drivers listen to radio traffic reports; over 30 percent listen often;
- Twenty-two percent of drivers know about 511; about one-third of them have used it;
- A vast majority of drivers read DMS (94 percent), and most read them frequently;
- Seventeen percent of drivers use the Internet for traffic information;

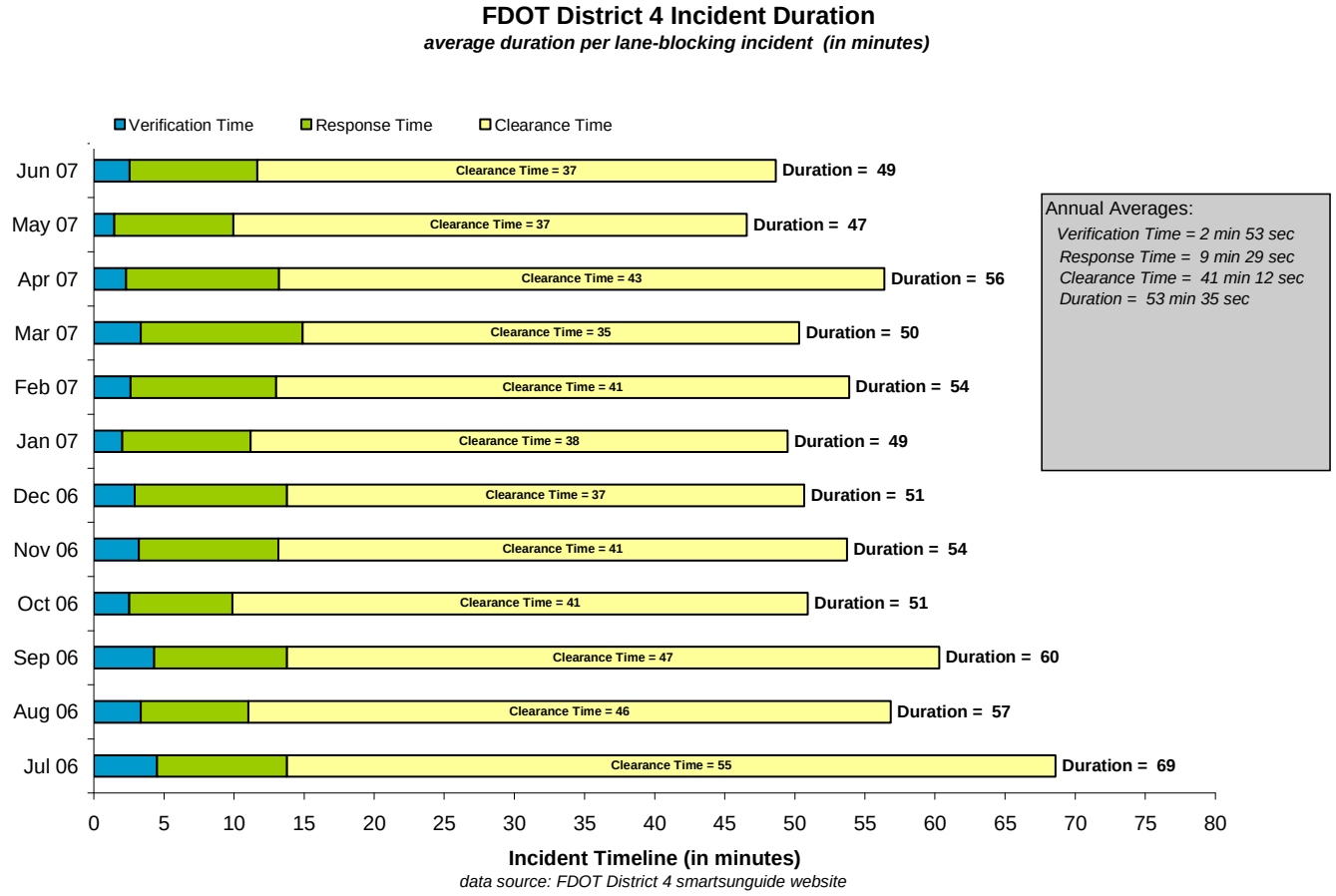
- Eighty-six percent of 511 users are likely to change their route based on the information provided by 511;
- Thirty-one percent of 511 users have called 511 to obtain more information about a DMS message;
- Thirty percent of 511 users usually call ahead of time to plan their trip, and 64 percent usually call after running into traffic problems;
- Eighty-nine percent of drivers think DMS are easy to read;
- Traffic delay information is useful to almost all drivers (93 percent);
- Ninety-four percent of drivers stated that they believed the information on DMS to be accurate;
- Eighty-three percent of drivers who read DMS are likely to change their routes based on posted information;
- Fifty-nine percent of drivers who are familiar with DMS are aware that they post hurricane evacuation information;
- Almost one-third have used information posted on a DMS during a hurricane evacuation;

99% of customers assisted by Road Rangers report that the driver was helpful

- Among 511 users, only 9 percent called for information during a hurricane evacuation;
- Half of drivers are aware of Road Rangers; less than half of them know how to request one by dialing *FHP; and
- Ninety-nine percent of those customers that have been assisted by Road Rangers report that the driver was helpful or very helpful.

Incident Duration

Background: In 2005 the FDOT ITS Program identified three statewide outcome measures to be reported to the Florida Transportation Commission: incident duration, travel time reliability, and customer satisfaction. Initially an effort was conducted to collect incident timeline data from manual (paper) records. This pilot test results determined that collecting incident timeline data was too complex and time-consuming to be done manually. In 2006 the SunGuide statewide TMC software was modified to include the data collection and reporting requirements for obtaining incident duration data. In fiscal year 2006-2007, FDOT District 4 was able to collect this data for the entire year using the modified SunGuide software. District 6 was able to collect several months of data. The Turnpike has collected incident duration data since 2004, however, the complete incident timeline data was not included. In late 2007 or early 2008 it is anticipated that Districts 1, 2, 5, 7 and the Turnpike will also be able collect and report incident duration data.



Purpose: Report the total time of impact on traffic for an incident.

Objective: To obtain the incident timeline from the time any FDOT or FHP staff is notified to the time that all travel lanes are cleared.

Methodology: In fiscal year 2006-2007, Districts Four and Six started to collect incident information, including incident type, detection time, verification time, response time, and clearance time. This data was collected directly from reports that are included in the SunGuide version 3.0 software. District 4 posts weekly and quarterly performance measure reports on the Smart SunGuide web site.

Results: In District 4 during fiscal year 2006-2007, the average verification time is 2 minutes and 53 seconds, the average response time is 9 minutes and 29 seconds, and the average clearance time is 41 minutes and 12 seconds, resulting in average incident duration of 53 minutes and 35 seconds for each lane-blocking incident. District 6 reported for the six months between January and June 2007 that the average verification time was 3 minutes and 34 seconds, the average response time was 2 minutes, 29 seconds, and the average clearance time was 30 minutes 43 seconds, resulting in total incident duration of 36 minutes and 55 seconds. The Florida Turnpike Enterprise also reported that average incident duration time in 2006-07 was 43 minutes.

Clearance time is defined as the time that begins with the arrival of the first responder, either Florida Highway Patrol or FDOT, and ends when all mainline travel lanes are cleared. This clearance time definition is directly comparable with the Open Roads Policy of clearing all travel lanes in 90 minutes or less. The overall Incident Duration time as discussed in this section includes not only the clearance time but also the verification time and response time. As an example using the collected incident data compared to the Open Roads Policy, FDOT District 4 average clearance time for 2006-2007 of 41 minutes, 12 seconds is far less than the target of 90 minutes.