Real-Time System Management Information Program (RTSMIP) – 23 CFR 511

Phase II – Routes of Significance

November 8, 2016

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List of Acronyms

AADT	Average Annual Daily Traffic
ADMS	Arterial Dynamic Message Signs
AMP	Arterial Management Program
API	Application Programming Interface
APL	Approved Products List
APM	Arterial Performance Monitoring
ATIS	Advanced Traveler Information System
ATM	Active Traffic Management
ATMS	Advanced Traffic Management System
C2C	Center to Center
CAD	Computer-Aided Dispatch
CCTV	Closed Circuit Television
CFR	Code of Federal Regulation
CO	Central Office
CVO	Commercial Vehicle Operations
DMS	Dynamic Message Sign
DOT	Department of Transportation
FDOT	Florida Department of Transportation
FHP	Florida Highway Patrol
FHWA	Federal Highway Administration
FL511	Florida 511
GPS	Global Positioning System
HEFT	Homestead Extension of Florida's Turnpike
ICM	Integrated Corridor Management
ITS	Intelligent Transportation System
LCIS	Lane Closure Information System
LEO	Law Enforcement Offices
LRTP	Long Range Transportation Plan
MDX	Miami-Dade Expressway Authority
MIMA	Maintenance and Inventory Mobile Application
MPO	Metropolitan Planning Organizations
MVDS	Microwave Vehicle Detection Systems
NWS	National Weather Service
NWS-MDSS	National Weather Service's-Mobile Decision Support Services
RITSA	Regional ITS Architecture
RoS	Routes of Significance
RTMC	Regional Transportation Management Center
RTSMIP	Real-Time System Management Information Program
RWIS	Road Weather Information System
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SITSA	State ITS Architecture

SOP	Standard Operating Procedures
TERL	Traffic Engineering Research Lab
TPO	Transportation Planning Organizations
TSM&O	Transportation Systems Management and Operations
TSOC	Traffic Signal Operation Center

Executive Summary

This report for the Federal Highway Administration addresses the requirements set forth in Title 23, Code of Federal Regulations (CFR), Part 511, hereinafter referred to as "the Federal Highway Administration Regulation (FHWA Rule)". The FHWA Rule requires state Department of Transportations (DOTs) to establish a Real-Time System Management Information Program (RTSMIP) to make available construction, incident, weather, and other traveler information in real-time to both the motoring public and other entities that respond to these events. The FHWA Rule required that this information be made available for all interstate routes by November 8, 2014, and on other significant roadways as identified by all state DOTs and local transportation agencies by November 8, 2016. FHWA has determined that FDOT is in compliance with the intent of section 1201 23 CFR part 511 for interstates. This program review separated the RTSMIP program into the six areas required by the regulation and subsequent guidance: Construction, Incidents, Weather, Travel Times, Regional Intelligent Transportation Systems Architecture, and Routes of Significance (RoS). This Phase II report represents the continued effort and improvements for compliance with the metropolitan RoS by November 8, 2016.

The Florida Department of Transportation (FDOT) State Traffic Engineering and Operations Office, working with the FDOT Districts, has compiled a list of RoS that meet the criteria set forth in the FHWA Rule. Part of the RoS requirement is to coordinate with Metropolitan Planning Organizations and Transportation Planning Organizations to develop a list of corridors that are regionally significant using a set of criteria. FDOT worked with the FHWA Division Representative to demonstrate that the RoS meet the required criteria as set forth in the FHWA Rule to ensure that the required processes are followed and information are developed.

The result of the local agency and District coordination is a well-defined functioning list of RoS. The list of RoS contains 53 metropolitan area routes and four rural non-metropolitan routes. The real-time information data undergoes a strict quality assurance check before being disseminated to the public. The Florida 511, Dynamic Message Signs, Arterial Dynamic Message Signs, and social media disseminates all data well within the time limits stated in the regulation for the metropolitan and non-metropolitan regions.

The FHWA Rule has brought value to FDOT's RTSMIP by expanding the roles and responsibilities of the Regional Transportation Management Center, which is the key instrument for making this information available to the public. Through expanding their areas of coverage beyond the Interstate System to include these collaboratively designated RoS (that were not previously covered), FDOT has been able to provide travel information for construction activities, roadway or lane blocking incidents, road weather conditions, and travel time to the public on these RoS.

Report Outline

Section 1, Introduction and Background, introduces the Real-Time System Management Information Program (RTSMIP), the Federal Highway Administration Regulation (FHWA Rule) for Routes of Significance (RoS), and identifies the metropolitan areas in Florida.

Section 2, *Process of Identifying Routes*, describes the process and criteria the FDOT Districts and Metropolitan Planning Organizations (MPOs) and Transportation Planning Organizations (TPOs) went through to determine the RoS.

Section 3, *Metropolitan Area RoS*, provides a description of each Major Metropolitan Area in Florida and the RoS within those metropolitan areas.

Section 4, *Existing Means and Methods for Information Collection, Availability, and Dissemination*, describes how having an Intelligent Transportation Systems infrastructure helps this program, MPOs/TPOs, and the local agencies. It also explains the existing means and methods for information collection, information availability, and information dissemination.

Section 5, *Traffic Information Data Sources*, addresses the multiple data sources FDOT uses to gather traveler information for construction activities, roadway or lane blocking incidents, roadway weather conditions, and travel time.

Section 6, *Process and Procedures for Timeliness of Information Availability*, describes the process and procedures the RTMC operators take to ensure they are meeting the timeliness requirement for making the construction activity, lane or roadway blocking incidents, observed roadway weather conditions, and travel times available to the public.

Section 7, *Methods to Ensure Data Quality*, covers the methods FDOT has in place to ensure data quality of information made available to the public. Data quality is a combination of data accuracy and data availability. FDOT ensures data quality by testing devices at the TERL and making sure the FDOT Standard Specifications for Road and Bridge Construction are followed.

Section 8, *Non-Metropolitan RoS*, identifies the non-metropolitan RoS. There are routes on the State Highway System in Districts 1 and 3 that are crucial to the movement of motorists to and from our freeways, tourist destinations, military installations, and diversion routes.

Section 9, *Florida's RoS Map*, shows both the RoS for metropolitan areas as well as the RoS for the non-metropolitan areas.

Section 10, *Planned RoS for the Program Enhancement*, identifies the RoS that would expand the RTSMIP, and explains why FDOT has identified additional routes for the RTSMIP.

Section 11, *Eligibility for Funding*, states the funding eligibility regulation from FHWA.

Section 12, *Conclusion*, explains the value brought to FDOT's RTSMIP because of the FHWA Rule and describes how Florida expanded from freeways to arterials.

1. Introduction and Background

1.1. FHWA Rule on Routes of Significance

This report for the Federal Highway Administration addresses the requirements set forth in Title 23, Code of Federal Regulations (CFR), Part 511, hereinafter referred to as "the Federal Highway Administration Regulation (FHWA Rule)". Title 23, Code of Federal Regulations (CFR), Part 511 was created as a result of Section 1201 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which established provisions and parameters for the Real-Time System Management Information Program (RTSMIP, 2010) to provide construction, incident, weather, and other traveler information in real-time to both the motoring public and other entities that respond to these events. The FHWA Rule requires that this information be provided for all interstate routes by November 8, 2014 (23 CFR 511.311(e)), and for other significant roadways as identified by State Departments of Transportation and local transportation agencies by November 8, 2016 (23 CFR 511.313(d)). The metropolitan Routes of Significance (RoS) is supplemental to the interstate portion of the program. This program review separated the RTSMIP program into the six areas required by the regulation and subsequent guidance: Construction, Incidents, Weather, Travel Times, Regional Intelligent Transportation Systems Architecture, and RoS.

According to the FHWA rule, the definition of RoS is, *"Routes of significance are non-Interstate roadways in metropolitan areas that are designated by States as meriting the collection and provision of information related to traffic and travel conditions. Factors to be considered in designating routes of significance include roadway safety (e.g., crash rate, routes affected by environmental events), public safety (e.g., routes used for evacuations), economic productivity, severity and frequency of congestion, and utility of the highway to serve as a diversion route for congestion locations"* (23 CFR 511.303).

The Federal Highway Administration (FHWA) Florida Division Office, in coordination with the Florida Department of Transportation (FDOT) had determined that Florida is in compliance with the intent of the regulation for interstate systems on November 8, 2014 (23 CFR 511.311(e)). The letter of compliance to the RTSMIP Phase I: Interstates is provided in Appendix A. As part of this RoS implementation effort, FHWA has determined that FDOT is in compliance with all the requirements of RTSMIP (23 CFR 511.313(d)). FHWA and FDOT will work together to maintain compliance with this regulation through the programmatic agreement between FHWA and FDOT (23 CFR 511.315).

1.2. Information Availability and Dissemination Types

The RTSMIP identifies the four types of information as they pertain to the RoS:

- Construction activities, including all lane closures, excluding short-term or intermittent closures or activity that does not close a lane (23 CFR 511.309)
- Roadway or lane blocking incidents, including all unplanned incidents that block a lane
- Road weather observations, including adverse or hazardous driving conditions and lane closures or restrictions due to environmental conditions
- Travel time information, on limited access roads, within specified metropolitan areas

Each of these categories of information includes requirements for information timeliness, availability, and accuracy. The information on construction, incidents, and road weather is to be provided on all designated RoS. The designation of these routes consider all public roadways in the applicable metropolitan areas, including non-interstate limited access highways, arterial roadways, and toll roads (23 CFR 511.303). As per the FHWA Rule, the travel time information is required on the designated limited-access roads that are part of the RoS (23 CFR 511.309(a)(4)).

1.3. Florida's Metropolitan Areas Subject to the Rule

FHWA defines Metropolitan Area as *"the geographical areas designated as Metropolitan Statistical Areas by the Office of Management and Budget in the Executive Office of the President with a population exceeding 1,000,000 inhabitants"* (23 CFR 511.303).

Part of the FHWA Rule is to establish the real-time information program for traffic and travel conditions reporting along the State-designated metropolitan area RoS by November 8, 2016 (23 CFR 511.313(b)). The State-designated metropolitan areas subject to the rule in Florida are Miami/Ft. Lauderdale (FDOT District 4/6), Tampa (FDOT District 7), Orlando (FDOT District 5), and Jacksonville (FDOT District 2) as shown in Figure 1 below. The Florida Turnpike Enterprise (FTE) has limited access roadways that exists within the Miami/Ft. Lauderdale, Tampa, and Orlando metropolitan areas.

Figure 1: State of Florida Metropolitan Areas and their MPOs/TPOs

2. Process of Identifying Routes

The FDOT Districts worked closely with their MPOs/TPOs through various meetings and correspondences. Together they identified their regionally significant RoS from taking all public roads into consideration (23 CFR 511.303). The FDOT State Engineering and Operations Office provided a guidance document to each District for identifying each route. The Districts were asked to develop the following when working with their MPOs/TPOs and local agencies:

1. RoS selection criteria in coordination with their local agencies and MPOs/TPOs
2. Methods used to coordinate with their local agencies and MPOs/TPOs
3. List of routes highlighting their maintaining agencies and corridor limits

Table 1 below shows the list of selection criteria used in this RoS coordination process in no particular order. The Districts chose their routes based on their regional criteria.

Table 1: RoS Selection Criteria

Parameters	Criteria
Roadway Safety	Roadway safety issues include crash rate, crash frequency, etc. Does the route have more than county average crash rate?
Environmental Safety Events	Does this route experience environmental safety events including floods, fog, etc.?
Traffic Volume	Is AADT greater than 50,000 or a range defined by the region?
Congestion	Does this route have recurring or non-recurring congestion?
Economic Productivity	Is this a major economic corridor?
	Is it defined as a route that the overweight/over height permits would allow a vehicle to travel?
	Is this a route requiring CVO permits to travel?
	Is this route with more than 10% of truck AADT? Or define per your requirements.
	Does this route serve major public venue/facility?
Severity and Frequency of Congestion	Does this route experience frequent and severe congestion?
Diversion Route or Evacuation Route/Public Safety	Is this corridor used as diversion or evacuation route?
ITS Infrastructure	Is there ITS infrastructure in these corridors - CCTV, Bluetooth readers, etc.?
	Is there local agency agreement to access CCTVs?
Corridor Connectivity	Does this route connect to major interstates or limited access state highways?
Regional Connectivity	Does this route connect major cities?

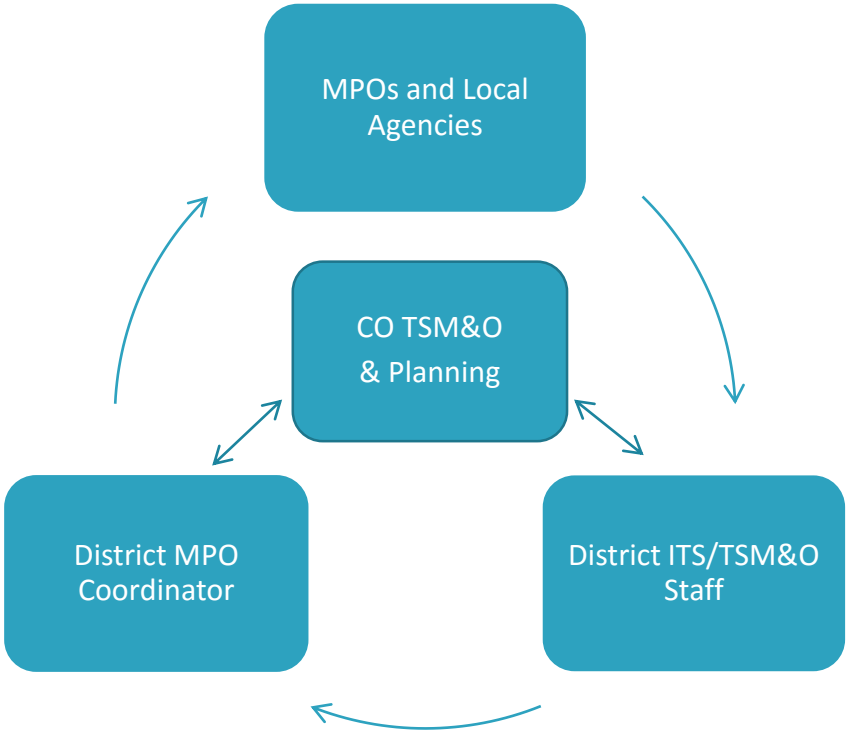
Note: AADT = Average Annual Daily Traffic; CVO = Commercial Vehicle Operations; CCTV = Closed Circuit Television

This coordination between FDOT and the MPOs/TPOs was essential for the State to designate the RoS (23 CFR 511.313(c)). Each District met with their respective MPO/TPO and came to an agreement on the routes that were determined.

The FDOT Districts and MPOs/TPOs and other local agencies typically meet quarterly. Some of these meetings are: Technical Advisory Committee meetings, Citizens Advisory Committee meetings, and Regional Traffic Incident Management meetings. These meetings are conducted separately in each region.

The coordination process for identifying the routes is shown in Figure 2 below:

Figure 2: Existing Collaboration Process



The following list identifies where the MPOs/TPOs met with FDOT in each metropolitan area. Districts participated in the different committee meetings: Citizens Transportation Advisory Committee Meeting, Transportation Planning Council, Transportation Planning Technical Advisory Committee, etc. Through all of the different committee meetings both FDOT and the local agencies have a chance to work together in coordination to accomplish future projects.

Miami/Ft. Lauderdale Metropolitan Area

The Miami/Ft. Lauderdale metropolitan area consists of Broward County MPO[1], Palm Beach MPO[2], and Miami-Dade MPO[3]. In addition to FDOT Districts 4 and 6, the Miami/Ft. Lauderdale metropolitan area partners with various local, state, and regional agencies, including but not limited to, FTE, Miami-Dade Citizens' Independent Transportation Trust, Miami-Dade Expressway Authority (MDX), Southeast Florida Transportation Council, etc. [4] [5] [6] [7]

Tampa Metropolitan Area

The Tampa metropolitan area consists of Hillsborough County MPO[8], Pinellas County MPO[9], and Pasco County MPO[10]. In addition to FDOT District 7, the Tampa metropolitan area partners with various local, state, and regional agencies, including but not limited to, Visit Florida, Florida's Turnpike Enterprise, Tampa Bay Regional Planning Council, City of Tampa, City of Plant City, etc. Different board or committee meetings are scheduled with their respective partners for each board or committee meeting.[11]

Orlando Metropolitan Area

The Orlando metropolitan area consists of METROPLAN Orlando MPO. In addition to FDOT District 5, the METROPLAN Orlando partnered with various local, state, and regional agencies, including, but not limited to, MPO Advisory Council, Central Florida MPO Alliance, Community Traffic Safety Teams, etc.[12] The aforementioned partners serve as committee members on the Community Advisory Committee, TSMO Advisory Committee, and Technical Advisory Committee.

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[1] http://www.browardmpo.org/index.php/our-committees
[2] http://www.palmbeachmpo.org/boards-committees
[3] http://miamidadempo.org/programs.asp
[4] http://miamidadempo.org/transportation-partners.asp
[5] http://www.browardmpo.org/index.php/our-partners
[6] http://www.palmbeachmpo.org/the-mpo/agency-relationships
[7] http://seftc.org/
[8] http://www.planhillsborough.org/links/
[9] http://forwardpinellas.org/about-us/agency-partners/
[10] http://www.pascocountyfl.net/index.aspx?nid=326
[11] http://www.planhillsborough.org/mpo-board/
[12] http://metroplanorlando.com/partnerships/

Jacksonville Metropolitan Area

The Jacksonville's metropolitan area consists of North Florida TPO. North Florida TPO partners with various local, state, and regional agencies[13] including but not limited to, Jacksonville Transportation Authority, City of Jacksonville, North Florida ITS Coalition, etc. The partner agencies attend different committee meetings throughout the year[14].

[13] http://northfloridatpo.com/about/partnerships/

[14] http://northfloridatpo.com/about/board-committee/

3. Metropolitan Area RoS

This section identifies the four metropolitan areas in Florida and the RoS that were determined through the District and MPO/TPO coordination.

3.1. Miami/Ft. Lauderdale Metropolitan Area

The Miami/Ft. Lauderdale Metropolitan Area has a population of approximately 5.7 million and consists of Miami-Dade County, Broward County, and Palm Beach County. Within those counties are the Miami-Dade MPO, the Broward County MPO, and the Palm Beach MPO. FDOT worked closely in coordination with these MPOs, Miami-Dade Expressway Authority (MDX), and FTE to determine their RoS. FDOT has provided correspondence from the coordination (see Appendix B). Table 2 provides a list of RoS within the Miami/Ft. Lauderdale Metropolitan Area.

Table 2: Routes in Miami/Ft. Lauderdale Metropolitan Area

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
US 1/SR 5	Hollywood Boulevard	Miami-Dade County line	Urban Principal Arterial	Broward MPO
US 1/SR 5	SR 816/ Oakland Park Boulevard	Broward Boulevard	Urban Principal Arterial	Broward MPO
US 441/SR 7	Southern Boulevard	Okeechobee Boulevard	Urban Principal Arterial	Palm Beach MPO
US 441/SR 7	Commercial Boulevard	Sterling Road	Urban Principal Arterial	Palm Beach MPO
SR 704	US 441	I-95	Urban Principal Arterial	Palm Beach MPO
SR 704	I-95	South Flagler Drive	Urban Principal Arterial	Palm Beach MPO
US 98/SR 80	Royal Palm Beach Boulevard	Parker Avenue	Urban Principal Arterial	Palm Beach MPO
SR 842	South University Drive	US 1	Urban Principal Arterial	Broward MPO
SR 858	SR 7	Three Islands Boulevard	Urban Principal Arterial	Broward MPO
SR 816	North University Drive	US 1	Urban Principal Arterial	Broward MPO
SR 824	I-95	US 1	Urban Principal Arterial	Broward MPO
SR 820	Florida Turnpike	28th Avenue	Urban Principal Arterial	Broward MPO
SR 820	N. Flamingo Road	Florida Turnpike	Urban Principal Arterial	Broward MPO
SR 838	US 441	US 1	Urban Principal Arterial	Broward MPO
SR 869	Broward County Line	Broward County Line	Urban Principal Arterial	Florida's Turnpike Enterprise
SR 826	SR 5/US 1	Golden Glades Interchange	Urban Other Freeway/Expressway	Miami-Dade MPO
SR 821	SR 5/US 1	Miami-Dade/Broward Line	Urban Other Freeway/Expressway	Florida's Turnpike Enterprise
SR 91	SR 826/Golden Glades Interchange	Miami-Dade/Broward Line	Urban Other Freeway/Expressway	Florida's Turnpike Enterprise
SR 924	SR 826	NW 36th Avenue on ramp	Urban Other Freeway/ Expressway	Miami-Dade Expressway Authority
SR 112	Central Boulevard	NW 11th Avenue SR 9A/I-95	Urban Other Freeway/Expressway	Miami-Dade Expressway Authority

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
SR 836	NW 137 Avenue	SR 821/HEFT	Urban Other Freeway/Expressway	Miami-Dade Expressway Authority
SR 836	SR 821/Homestead Extension Florida Turnpike	I-95	Urban Other Freeway/Expressway	Miami-Dade Expressway Authority
SR 874	SR 821	SR 826	Urban Other Freeway/Expressway	Miami-Dade Expressway Authority
SR 878	SR 874	SR 5/US 1	Urban Other Freeway/Expressway	Miami-Dade Expressway Authority
US 1	Miami-Dade County Line	Monroe County Line	Urban Principal Arterial	Miami-Dade MPO

3.2. Tampa Metropolitan Area

The Tampa Metropolitan Area has a population of approximately 2.6 million and consists of Pasco County, Hillsborough County, and Pinellas County. Within those counties are the Pasco County MPO, Hillsborough County MPO, and Pinellas County MPO. FDOT worked closely in coordination with the MPOs to determine their list of RoS and FDOT has provided letters of support from the MPOs stating their coordination (see Appendix B). They also communicate daily with the City of Tampa via the Arterial Performance Monitoring (APM) Program operators and their Active Traffic Management (ATM) Program operators. Examples of this communication is in Appendix C. Table 4 provides a list of RoS within the Tampa Metropolitan Area.

Table 3: Routes in Tampa Metropolitan Area

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
SR 60	Clearwater Beach	Pinellas/Hillsborough County Line	Urban Principal Arterial	Pinellas County MPO
SR 589	I-275	SR 54	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
SR 568	SR 589	SR 597	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
Selmon Expressway	Gandy Boulevard	Town Center Boulevard	Urban Principal Arterial Expressway	Tampa Hillsborough Expressway Authority
I-4 Connector	Selmon Expressway	I-4		Florida's Turnpike Enterprise

3.3. Orlando Metropolitan Area

The Orlando Metropolitan Area has a population of approximately 1.8 million and consists of Seminole County, Orange County, and Osceola County. Within those counties is METROPLAN Orlando. FDOT worked closely in coordination with the MPO to determine their list of RoS. FDOT has provided a letter of support from the MPO stating the coordination effort. All of the routes below are located within the Orlando Metropolitan Area. Table 5 provides a list of RoS within the Orlando Metropolitan Area.

Table 4: Routes in Orlando Metropolitan Area

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
SR 50	SR 429	Hiawassee Road	Urban Principal Arterial	METROPLAN Orlando
SR 50	Semoran Boulevard	Hastings Street	Urban Principal Arterial	METROPLAN Orlando
SR 50	West of US 17	Between Kirkman Road and SR 423	Urban Principal Arterial	METROPLAN Orlando
SR 50	North Semoran Boulevard	Woodbury Road	Urban Principal Arterial	METROPLAN Orlando
US 441	County Club Drive	Americana Boulevard	Urban Principal Arterial	METROPLAN Orlando
US 441	Landstreet Road	SR 408	Urban Principal Arterial	METROPLAN Orlando
US 441	Doss Avenue	US 192	Urban Principal Arterial	METROPLAN Orlando
US 441	Princeton Street	Jones Avenue	Urban Principal Arterial	METROPLAN Orlando
US 17/92	1st Street	North of Colonial Drive	Urban Principal Arterial	METROPLAN Orlando
US 17/92	Mayo Avenue/ Greenwood Drive	SR 417	Urban Principal Arterial	METROPLAN Orlando
SR 91	Lake/Orange County Line	Orange/Osceola County Line	Urban Other Freeway/Expressway	Florida's Turnpike Enterprise
SR 408	Lake/Orange County Line	Orange County Line	Urban Principal Arterial Expressway	Central Florida Expressway Authority
Osceola Parkway	World Drive	SR 530		Osceola County
SR 429	Seidel Road	US 441	Urban Principal Arterial Expressway	Central Florida Expressway Authority
SR 429	I-4	Seidel Road	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
SR 423	President Drive	US 192	Urban Principal Arterial	METROPLAN Orlando
SR 423	Aldrich Avenue	John Young Parkway at 33rd	Urban Principal Arterial	METROPLAN Orlando
SR 423	US 17/92	North of Colonial Drive	Urban Principal Arterial	METROPLAN Orlando
SR 414	Rose Avenue	Maitland Avenue	Urban Principal Arterial Expressway	METROPLAN Orlando
SR 414	US 17/92	SR 434	Urban Principal Arterial	METROPLAN Orlando
SR 414	SR 429	US 441	Urban Principal Arterial Expressway	Central Florida Expressway
SR 435	Carrier Drive	Colonial Drive	Urban Principal Arterial	METROPLAN Orlando

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
SR 435	SR 408	Florida's Turnpike	Urban Minor Arterial	METROPLAN Orlando
SR 434	Edgewater Drive	SR 50	Urban Principal Arterial	METROPLAN Orlando
US 192	Orange Blossom Trial	SR 429	Urban Principal Arterial	METROPLAN Orlando
SR 536	I-4 (SR 400) EB on Ramp	Greenway (SR 417)	Urban Minor Arterial	METROPLAN Orlando
SR 482	I-4 (SR 400)	Beachline (SR 528)	Urban Major Collector	METROPLAN Orlando
SR 436	US 441	SR 528	Urban Principal Arterial	METROPLAN Orlando
SR 528	I-4	South Conway Road	Rural Other Principal Arterial	Florida's Turnpike Enterprise
SR 528	SR 520	Indian River Drive	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
SR 528	South Conway Road	SR 520	Urban Principal Arterial Expressway	Central Florida Expressway Authority
SR 417	Milepost 6	Milepost 37.5	Urban Principal Arterial Expressway	Central Florida Expressway Authority
SR 417	I-4 (Milepost 1)	Milepost 6	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
SR 417	Seminole County Line	I-4	Urban Principal Arterial Expressway	Florida's Turnpike Enterprise
SR 535	Winter Garden Vineland	SR 536	Urban Minor Arterial	METROPLAN Orlando
SR 451	SR 414	US 441	Urban Principal Arterial Expressway	Central Florida Expressway Authority
SR 520	SR 50	SR 528	Rural Principal Arterial Expressway	METROPLAN Orlando

3.4. Jacksonville Metropolitan Area

The Jacksonville Metropolitan Area has a population of approximately 1.1 million and consists of Nassau County, Duval County, Clay County, and St. Johns County. Within those counties is the North Florida TPO. FDOT worked closely with the North Florida TPO in coordination to determine their list of RoS. FDOT has provided a letter of support from North Florida TPO stating the coordination effort. All of the routes below are located within the Jacksonville Metropolitan Area. Table 6 provides a list of RoS within Jacksonville Metropolitan Area.

Table 5: Routes in Jacksonville Metropolitan Area

Route Number	Limit From	Limit To	Functional Designation	MPO/TPO
SR 10	I-95	San Pablo Road	Urban Principal Arterial	North Florida TPO
US 90	Atlantic Boulevard	San Pablo Road	Urban Other Arterial	North Florida TPO
SR 13	Loretto Road	Emerson Street	Urban Minor Arterial	North Florida TPO
SR 21	College Drive	Lane Avenue	Urban Principal Arterial	North Florida TPO
US 17	McDuff Avenue	County Road 220	Urban Minor Arterial	North Florida TPO
US 17	Bay Street	Martin Luther King Jr. Parkway	Urban Minor Arterial	North Florida TPO
US 1	Old St. Augustine Road	I-95	Urban Principal Arterial	North Florida TPO
SR 202	Phillips Highway	SR A1A	Urban Major Collector	North Florida TPO

4. Existing Means and Methods for Information Collection, Availability, and Dissemination

This section describes how having an Intelligent Transportation Systems (ITS) infrastructure helps this program, MPOs/TPOs, and the local agencies. Then it will explain the existing means and methods for information collection, information availability, and information dissemination. FDOT has multiple means and methods for each of these categories.

4.1. Use of Existing ITS Infrastructure

The ITS infrastructure helps the RTSMIP program by increasing safety and mobility and reducing environmental impacts. Below is a list of how ITS can benefit the program as well as the MPOs/TPOs and other local agencies:

- Support corridor investment decision and prioritization
- Supports transportation planning for Long Range Transportation Plan (LRTP) and define long and short range strategies
- Support needs assessment and define common criteria for considering RoS
- Supports policy planning
- Make corridors eligible for any future federal funding
- Establish and refine transportation performance measures
- Represent local government
- Involve multimodal solutions using transit agency involvement
- Support the implementation of Integrated Corridor Management (ICM)
- Establish regional coordination
- Define system efficiency and reliability factors
- Develop common regional goals
- Helps inform the traveler of real-time information

4.2. Traffic Engineering Research Lab

The ITS infrastructure deployed within the State of Florida go through a rigorous performance and quality testing at FDOT's Traffic Engineering Research Lab (TERL). After the device passes the test for quality and performance, they become approved to be used on the State Highway System and get listed in the FDOT's Approved Products List. The testing is a rigorous process that is described in the TERL Product Certification Handbook[15]. All products on the APL have a minimum 90% reliability for data collection and performance as specified in the FDOT Standard Specifications for Road and Bridge Construction (FDOT Specifications).

4.3. FDOT Specifications

In addition to being on the APL, the products also meet the FDOT Specifications Series 600. For example, Specification 660-2.3 Traffic Data Detection System Performance Requirements states, "*Provide a vehicle detection system capable of meeting the minimum total roadway segment accuracy levels of 95% for*

[15] http://www.fdot.gov/traffic/Traf_Sys/TERL-PCH.shtm

volume, 90% for occupancy, and 90% for speed of all lanes, up to the maximum number of lanes that the device can monitor as specified by the manufacturer."

4.4. Regional ITS and Statewide ITS Architectures

As the regional transportation needs are identified and projects are implemented in each of these metropolitan areas, the FDOT Districts update their respective Regional ITS Architecture (RITSA) and ITS Master Plans. Similarly, the State Traffic Engineering and Operations Office updates the Statewide ITS Architecture (SITSA)[16] which serves as a basis for all regional architectures. The Florida 511 (FL511) system is also incorporated in both the RITSA and the SITSA (see Appendix E). Each District has evaluated their existing RITSA and has determined that real-time highway information needs and methods are explicitly addressed to meet the requirement needs (23 CFR 511.313(c)).

4.5. SunGuide® Software and Other Local Agency Central System Software

The FDOT SunGuide®[17] is the central system software used at each FDOT Regional Transportation Management Centers (RTMC). The SunGuide Software is an Advanced Traffic Management System (ATMS) software that allows FDOT to control and monitor roadside equipment and vehicle resources to:

- Facilitate traffic and incident management
- Disseminate traveler information to the motoring public
- Exchange critical information among agencies
- Collect and report data regarding the operation of Florida's transportation system

Florida's RTMCs require software that enables, 24 hours a day, seven days a week operation of the transportation system. This RTMC software allow operators to multi-task and perform thousands of actions every day.

SunGuide has a built-in process to automatically collect the information from the data sources and disseminate to FL511 and/or to Dynamic Message Signs (DMS) and Arterial Dynamic Message Signs (ADMS). The quality assurance process is built into the system as well, to ensure no outliers or false data is reported to the public. The software is written in an open architecture format platform which is modified by the Districts to suit their needs for incident management and for information availability and dissemination.

The local agencies in Miami/Ft. Lauderdale, Tampa, Orlando, and Jacksonville metropolitan areas also use central system software within their Traffic Signal Operations Centers (TSOCs) similar to SunGuide that helps monitor signals and other detection devices. Both RTMCs and TSOCs in these metropolitan regions are connected with each other using Center to Center (C2C) communications to improve information availability and accuracy for travelers.

[16] http://www.dot.state.fl.us/trafficoperations/ITS/Projects_Arch/SITSA.shtm

[17] http://sunguidesoftware.com/

4.6. Florida 511

FDOT's focus is on providing accurate, reliable, real-time travel information to its road users in a very timely manner. Since the early 2000s, FDOT has been moving forward with installing an ITS infrastructure to collect and disseminate travel information. In the early days of the ITS Program, each District had developed its own 511 system to disseminate the collect information. In June 2009, FDOT combined all of these individual 511 systems into a single statewide 511 system- the Florida 511 System (FL511).

Since the implementation of the FL511 system, FDOT has expanded this system to include a third-party data feed, which is available to FDOT's partner agencies and media who wish to receive FDOT traffic data. FDOT has also developed the My Florida 511 website[18], 13 Twitter accounts that cover all interstates and the major metropolitan areas within the state, two mobile apps, and personalized phone/text/email alerts. FDOT has an agreement with Waze[19] and HERE[20] for data sharing. Waze is the world's largest community-based traffic and navigation app that travelers use to share real-time and road information. HERE is a source of probe-based speed data into real-time location services.

The FL511 system is connected to SunGuide to help automate the information gathering, availability, and dissemination process. SunGuide and FL511 are used statewide within metropolitan and non-metropolitan areas to disseminate the construction activities, roadway or lane blocking incidents, road weather observations, and travel time information to the public. Some of the RoS also have DMS and ADMS deployed and the traveler information mentioned above is displayed on these signs as well.

4.7. Network Management System

Districts use a network management system to monitor connectivity and generate alerts whenever a change in communication network or device status is detected. This system notifies ITS Operations staff of any network failures and reports its location to allow for quick response.

4.8. RTMC Standard Operating Guidelines

All of the FDOT Districts have RTMC Standard Operating Guidelines (SOGs). The SOGs describe the established program and process for which the State gathers, verifies, makes available, and disseminates the traveler information to the public. The sections of the SOGs that show the timeliness requirement for making the information available to the public are listed in Table 6.

Table 6: SOG References

Metropolitan Area	SOG Title	SOG Section
Miami/Ft. Lauderdale	Arterial Management Program Traffic Management Center Standard Operating Guidelines Version 1.0	1. Control Room Management
	Standard Operating Guidelines Volume 6.0	6.1.8. Quality Control
Tampa	RTMC Arterial Management Program Operator SOG	Operator Responsibilities

[18] https://fl511.com

[19]https://www.waze.com/

[20] https://here.com/en

Metropolitan Area	SOG Title	SOG Section
Orlando	Active Arterial Management Traffic Management Center Standard Operating Guidelines Version 1.1	8. Quality Control
Jacksonville	Regional Arterial Management Program Standard Operating Guidelines (DRAFT)	Event Management
Florida's Turnpike Enterprise	Traffic Operations Traffic Management Center Standard Operating Guidelines July 2016	1.3 Performance Measures

Note: Throughout the report when a SOG is referenced in general, it is referring to these specific sections for that metropolitan area. The FTE runs through the Miami/Ft. Lauderdale, Tampa, and Orlando metropolitan areas.

4.9. Asset Maintenance Contracts

Each District has asset maintenance contracts and systems that are used to automate, centralize, and streamline the maintenance of ITS devices and respective SunGuide subsystems. The asset maintenance systems are designed to support system uptime and ties together operations and maintenance staff. The asset maintenance system automates the dispatch of technicians for preventive and responsive maintenance activities, track maintenance activities and parts inventory in near real-time and, provide representative reports for maintenance activities and inventory management. The asset maintenance system is compliant with SunGuide software. The asset maintenance system in some Districts includes the Maintenance and Inventory Mobile Application (MIMA). The MIMA allows technicians to remotely communicate with SunGuide in near real-time allowing the exchange of data related to trouble tickets, preventive maintenance tickets, Global Positioning System (GPS) receiver position data (from the Technician's laptop) and parts inventory. This system allows for real-time tracking and providing accurate information at 90% or higher.

4.10. Open Roads Policy

FDOT has the Open Roads Policy[21] is in place to work in conjunction with Florida Highway Patrol (FHP) to keep the State Highway System open to the traveling public at all times. According to the Open Roads Policy Agreement, "*This Open Roads Policy Agreement (Agreement) is entered into between the Florida Highway Patrol (FHP) and Florida Department of Transportation (FDOT) and establishes a policy for FHP and FDOT personnel to expedite the removal of vehicles, cargo, and debris from roadways on the State Highway System to restore, in an URGENT MANNER, the safe and the orderly flow of traffic following a motor vehicle crash or other traffic incident on Florida's roadways."* FHP covers the State Highway System and has a historical understanding and working relationships with local LEOs for working within each other's jurisdiction of roadways[22].

[21] http://www.fdot.gov/traffic/Traf_Incident/pdf/Open_Roads_Policy_FDOT_FHP.pdf

[22] http://flhsmv.gov/LECTaskForce/JurisdictionoftheFloridaHighwayPatrol.pdf

5. Traffic Information Data Sources

5.1. ITS Infrastructure

FDOT has deployed ITS infrastructure on selected RoS for information collection, verification, and validation. These infrastructure elements include, but are not limited to:

- Microwave Vehicle Detection System (MVDS)
- Closed Circuit Television (CCTV) Cameras
- Road Weather Information System (RWIS) sensors
- Bluetooth devices

These elements are used to monitor the roadway condition and the information can be collected at any granular level as desired by the agencies. The level of specificity is granular; meaning the exact location and nature of the event can be determined by the RTMC operators.

5.2. RWIS and National Weather Service

The RWIS sensors used by the Districts on some of the RoS are high speed wind sensors, pavement sensors, precipitation, and visibility sensors. For the corridors that do not have RWIS deployed along RoS the weather information is collected from the National Weather Service (NWS) website by the RTMC or via NWS TV channel displayed 24x7 in the RTMCs or TSOCs. All RTMCs in these metropolitan areas are operational 24x7. Where the RWIS information is available, the NWS data is used as a confirming source of data.

5.3. Probe and Third Party Data

FDOT has an existing agreement with third party probe data providers such as HERE and Waze. In addition to the HERE and Waze data, FDOT has Automatic Vehicle Identification (AVI), Bluetooth, and Travel Time System (TTS) probe data as a source of data for the RoS where ITS is not implemented. FDOT recognizes that probe data has limited reliability; therefore, hence the RTMC and TSOC operators have a verification process in place to check the data against trusted sources such as Law Enforcement Offices, local agencies, etc.

The third party source of information includes calls from LEO, traveling public, and local agency calls (for example, construction activities causing a lane to be blocked, incident on a roadway, etc.). Calls from LEO are considered to be a reliable and trusted information source to FDOT. When other third party data is received, the RTMC or TSOC personnel verifies the information by using probe data and/or ITS devices nearby to ensure quality information is available to the traveling public.

5.4. Construction Office and Maintenance Office Coordination

The District Transportation Systems Management and Operations (TSM&O)/ITS Offices have a working relationship with both the Construction Office and Maintenance Office. The RTMC operators receive notifications prior to any roadway or lane closures due to construction or maintenance activities. To help automate this process, FDOT has developed the Lane Closure Information System (LCIS). The LCIS is in the process of being deployed across the state; some Districts are currently using the system. The LCIS online tool is used by the District construction and maintenance offices to coordinate and request approval from

the District TSM&O offices on scheduled construction activities. Any information received from a non-trusted third party source is verified against LCIS and vice-versa.

5.5. Road Rangers/Safety Patrol

The FDOT Road Ranger Mission is to provide **free** highway assistance services during incidents to reduce delay and improve safety for the motoring public and responders. Since the program's inception in the year 2000, the Road Rangers have made over 4.3 million service assists with more occurring daily.

Not all RoS are serviced by Road Ranger, however, where they serve it is considered as a trusted source of information by FDOT. Road Ranger service is available on the interstates and some of the other limited access RoS.[23] The Road Rangers provide a direct service to motorists by quickly clearing travel lanes of minor incidents and assisting motorists. Services can include: providing a limited amount of fuel, assisting with tire changes and other types of minor emergency repairs. Road Rangers are typically assigned to work along major interstate corridors and within construction areas on these interstates. Specific Road Ranger patrol locations can be found in the district descriptions below.

The Department began funding the statewide service patrol in December 1999. The benefits of the program have been as follows:

- Reduction of accidents
- Reduction of incident duration by assisting the Florida Highway Patrol
- Assistance to disabled or stranded motorists
- Removal of road debris
- Reduction of congestion produced air pollutants
- Increased safety at incident scenes

[23] http://www.fdot.gov/traffic/traf_incident/rrangers/rranger2.shtm

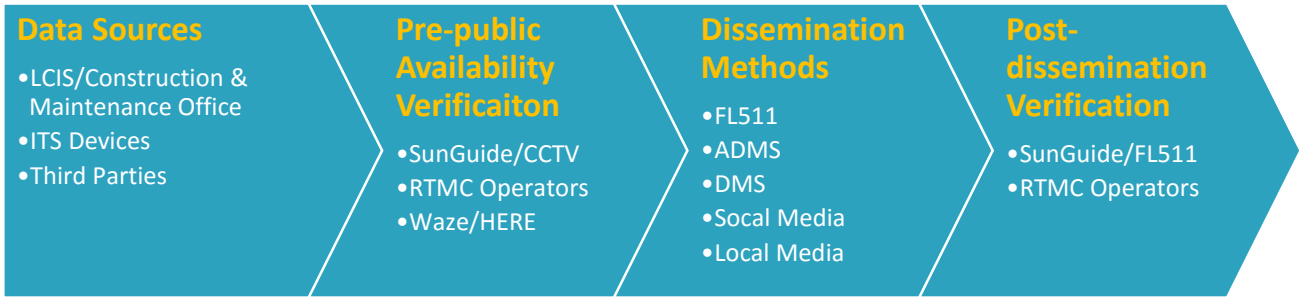
6. Process and Procedures for Timeliness of Information Availability

6.1. Construction Activities

The FHWA Rule requires the timeliness of construction information availability to the public to be within 10 minutes from the time the lane or roadway is closed (23CFR 511.309(a)(1)). Construction activity is defined as full construction activities that close or reopen roadways or lanes. The information that the RTMC operators need before verifying any traveler information has to be complete. Complete information is to report detailed information to the RTMC. An example of complete information for construction activities include: lane information, duration, location, and type of construction. The lane information refers to the number of lanes blocked and the direction of those lanes. Duration refers to the timeframe of the planned construction project (i.e. hours of day the lane(s) is blocked). Location refers to the exact location of the lane(s) that is blocked-give the street and cross street reference as well as mile length of the lane that is blocked. The project plans should specify this information.

As shown in Table 6: SOG References, each District SOG has the timeliness requirement of making the information available to the public. This regulation does not require information dissemination; however, FL511, DMS, and ADMS are the main methods for disseminating information to the traveling public within FDOT. The construction activity information is collected from the LCIS or direct notifications from the Construction/Maintenance Office, third parties (local agencies, LEO, etc.), and RTMC operators monitoring traffic conditions using ITS devices. Once the construction activity is confirmed via CCTV, probe data, or trusted third parties' data (LEO, Construction, etc.) the operators immediately process the information into SunGuide; which is then disseminated using FL511. If a DMS or ADMS is available, the information will also be posted on that device for the motoring public. This process is shown below in Figure 3.

Figure 3: Information Gathering, Availability, and Dissemination for Construction Activities Process



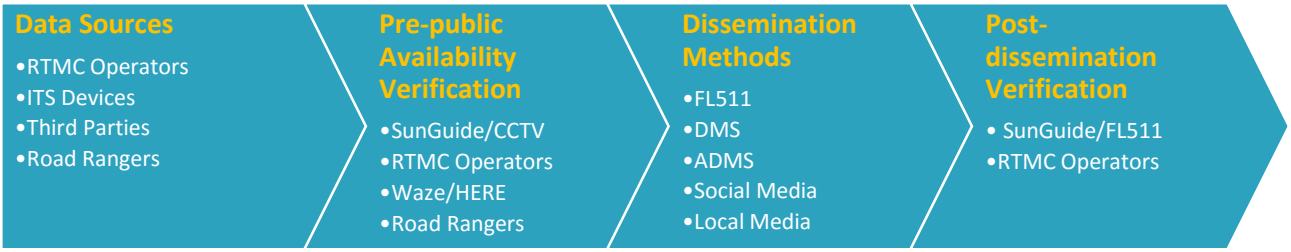
6.2. Roadway or Lane Blocking Incidents

The FHWA Rule requires the timeliness of roadway or lane blocking incident information to become available to the public within 10 minutes from the time the incident is verified in the metropolitan areas (23 CFR 511.309(a)(2)). The timeliness requirements for each RTMC for gathering, verifying, making the data available, and disseminating the information was previously referenced in Table 6: SOG References. The information the RTMC operator needs must be complete. An example of complete information for incidents would be the location, lane information, and the nature of the incident. The location information should include specific address or section of roadway using the street name and cross street as a

reference. The lane information needed is to indicate how many lanes are blocked and the direction of those lanes. The nature of the incident is important because it will give the RTMC operators an indication of how long the lane(s) will be blocked. Nature of the incident can also show which emergency responders were notified. Depending on the nature of the incident, the RTMC operators will disseminate an initial unconfirmed message via FL511 to the traveling public warning them of the incident. The main methods for information dissemination are FL511, DMS, and ADMS.

The operators monitor the roadways to see if there are any lane blocking incidents and check the ITS devices for any abnormalities of traffic flow. The operators may also be notified by local LEO, local agencies, road rangers, and the traveling public of any incidents. Once the roadway or lane blocking activity is verified via CCTV or third party data, the operators immediately process the information into SunGuide which is then automatically disseminated to FL511. If a DMS or an ADMS is available, the information will also be posted to that device for the motoring public. This process is shown below in Figure 4.

Figure 4: Gathering, Availability, and Dissemination of Incident Information

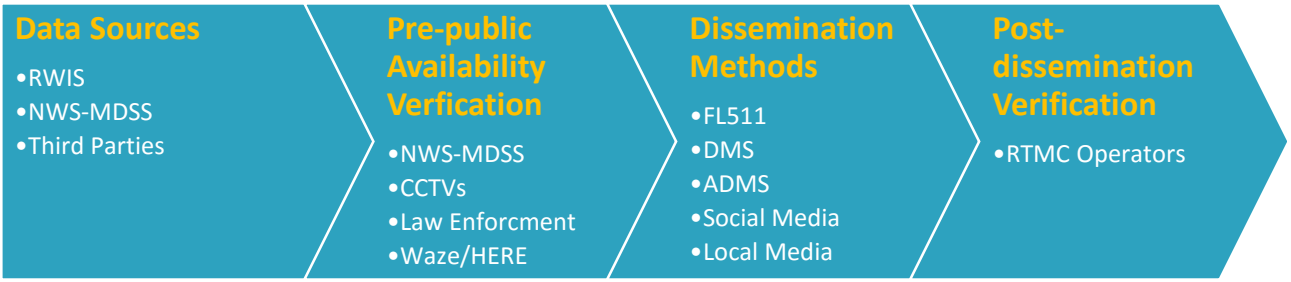


6.3. Road Weather Observations

The FHWA Rule requires that all road weather information be available to the public within 20 minutes from the time of the hazardous conditions, blockage, or closure is observed (23 CFR 511.309(a)(3)). FDOT defines hazardous conditions as limited visibility due to fog, smoke, smog, or heavy rain, wind speed, flooding, bridge water level, and pavement icing. The RTMC operator requires complete information about the road weather conditions observed. An example of complete information reported for road weather observation is: lane information, location, and type of condition. Lane information is the number of lane(s) that is blocked and the direction of the blocked lanes. The location information that should be given is the specific address or road name and cross street as a reference. The type of the condition should identify if the condition is hazardous or not. The condition type should also give an indication of the amount of time the lane would be blocked.

FL511 messages are posted based on information obtained from weather alerts provided by the National Weather Service's Mobile Decision Support Services (NWS-MDSS) and the RWIS devices located throughout the Districts. Third parties such as LEO, local agencies, traveling public, etc. also report severe weather observations. The weather is confirmed by the RTMC operator using CCTV and NWS. LEOs that are in the area are also sent to verify the weather conditions. All information is confirmed by the RTMC operators before it is posted to the FL511 system. This process is shown below in Figure 5.

Figure 5: Gathering, Availability, and Dissemination of Road Weather Observations



6.4. Travel Time Information

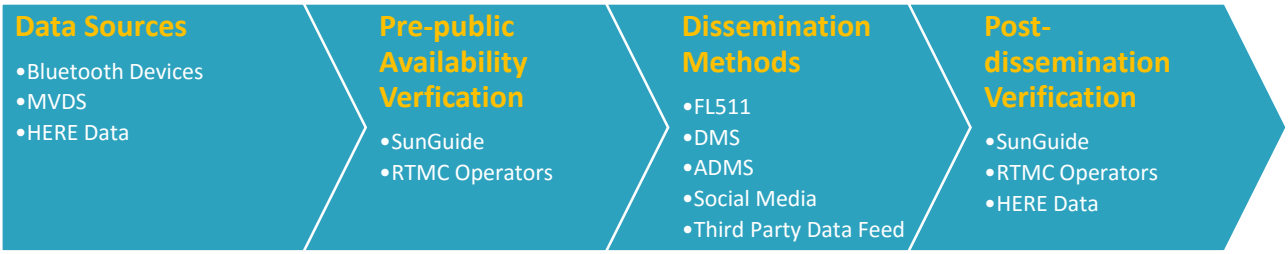
The FHWA Rule requires travel time along limited access roadways within metropolitan areas to be available within 10 minutes from the time that the travel time calculation is completed (23 CFR 511.309(a)(4)).

SunGuide determines traffic conditions using point and probe data collected from devices that it controls, as well as possibly blended data collected from third-party data providers. These traffic conditions (speed, volume, and occupancy) are associated with segments of roadway. SunGuide allows the user to define combinations of one or more of these segments into a combined set of segments, and then periodically calculates the travel time for this combination of segments. This is the travel time that is disseminated to the public. This process is shown in Figure 6.

The specific algorithm for calculating the travel time across a combination of traffic segments is documented on the SunGuide website. Some features of this algorithm are:

1. If the calculated travel time is greater than some configurable threshold, then the actual travel time will not be reported. Multiple mechanisms for mitigating this situation are available. For example, the sign can be allowed to be blank, or a text message indicating delays can be substituted.
2. If the speed measured on an individual segment is greater than the actual speed limit, then the speed limit is used in the travel time calculation instead of the actual speed.
3. If not enough data is available to reliably calculate the travel time, or if the available data is not up-to-date, then no travel time is reported.

Figure 6: Gathering, Availability, and Dissemination of Travel Time Information



7. Methods to Ensure Data Quality

This section covers the methods FDOT has in place to ensure data quality of the information that is made available to the public. Data quality is a combination of data accuracy and data availability. FDOT ensures the data quality through testing devices at the TERL and making sure the FDOT Specifications are followed.

7.1. Data Accuracy

SunGuide software receives information from the FHP Computer-Aided Dispatch (CAD) and third-party vendors, such as HERE and Waze. These third party vendors provide information on incidents, road closures, travel times, and congestion events. FHP provides data related to traffic events, weather events, such as hurricanes and flooding, and special alerts. Data from FHP, HERE, and Waze are all ingested into SunGuide software and processed by the RTMC operators. The RTMC operators perform quality assurance checks by verifying the third party information received against CCTVs, NWS, and probe data to ensure the accuracy of the information received. Once the data is ingested into SunGuide, an automated process is in place to have the information submitted into FL511. The disseminated information is then processed back into SunGuide where the RTMC operators verify that the information disseminated is consistent with the information originally received. The data integrity of the information that is disseminated to the public is a key factor and high priority for all of the RTMCs across Florida. This process is shown in Figure 7.

Travel Time

The FHWA Rule requires the designed accuracy for travel time information shall be 85% accurate at a minimum (23 CFR 511.309(a)(5)). The travel time algorithm built into SunGuide was designed to be 95% accurate within a 5% margin of error for the reported range of calculated travel time, which exceeds the minimum requirement.

Construction Activity

The FHWA Rule requires the designed accuracy for a real-time program information shall be 85% accurate at a minimum (23 CFR 511.309(a)(5)). Through the use of the FDOT Specifications, APL, and procedures set in place FDOT can guarantee that the information is expected to be fully accurate. FDOT Official field personnel are required to report full construction activities that close or reopen roadways or lanes. The field personnel is defined as FDOT or FDOT contractors. When FDOT manages the construction activity, the construction and maintenance offices work together with the RTMC operator to notify them prior to any roadway closures. On the routes that are maintained by local agencies, the RTMC follows up with the construction/maintenance contact for planned activities. Working off the scheduled plans the RTMC operator will also follow up with the local agency prior to the scheduled closure.

Incidents

The FHWA Rule requires the designed accuracy for a real-time information program shall be 85% accurate at a minimum (23 CFR 511.309(a)(5)). Through the use of the FDOT Specifications, APL, and procedures set in place FDOT can guarantee that the information is expected to be fully accurate.

Incidents are officially reported by FHP/LEO on the RoS. By design the information gathered from FHP/LEO is intended to be fully accurate from the time it is verified.

Incident information that is reported by devices, or third party sources (excluding FHP/LEO) will be verified by the RTMC operators using CCTVs, probe data, and by contacting FHP/LEO.

Road Weather Observation

The FHWA Rule requires the designed accuracy for a real-time information program shall be 85% accurate at a minimum (23 CFR 511.309(a)(5)). Through the use of the FDOT Specifications, APL, and procedures set in place FDOT can guarantee that the information is expected to be fully accurate.

When the road weather conditions are observed, the information is designed to be fully accurate. FHP/LEO conduct all roadway closures after being notified by FDOT. The roadway conditions that would cause a roadway to be closed are considered to be hazardous conditions that block the roadway or lane. If the weather condition is observed by FHP/LEO, they contact the RTMC and provide information about the condition observed and close the roadway. The RTMC operators will disseminate that information to the public using FL511, DMS, and ADMS.

If the weather is observed by RTMC operators or FDOT devices then the observation is verified using CCTVs, FHP, and NWS before the information is made available to the public.

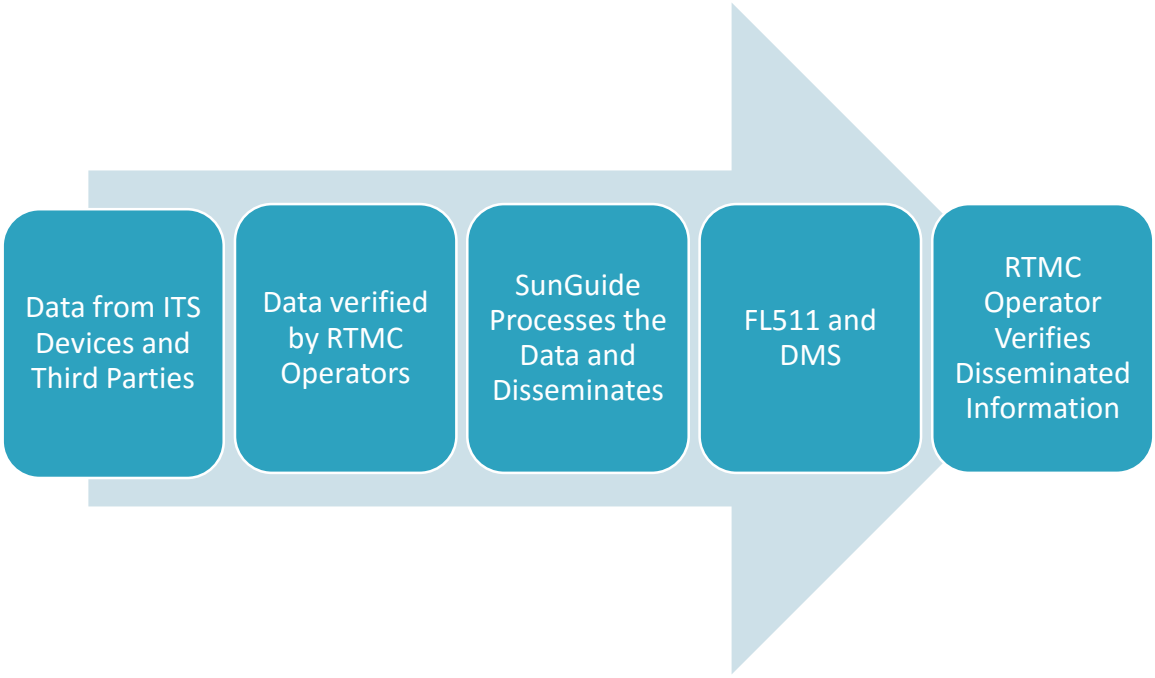
Additional District Specific Processes

The following list outlines the District specific data accuracy processes.

- District 6 RTMC has developed a travel time validation procedure that is included in their RTMC SOG.
- District 4 has developed an auditing process for verifying data accuracy and data integrity. The audit occurs every six months to maintain the accuracy of the devices.

The accuracy verification process for disseminated information is shown below in Figure 7.

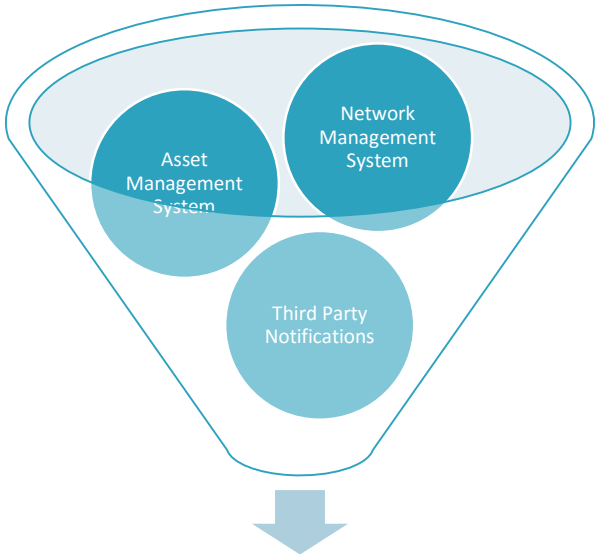
Figure 7: Accuracy Verification Process for Dissemination of Information



7.2. Data Availability

All of the Districts have redundancies built into the system to ensure that the traveler information is available. Through the use of network management systems and asset management software, the RTMC operators can track the ITS network availability and locate any device that is down. As a back up to these systems, the RTMC operators can also rely on the third party notifications that are received. These redundancies ensure information availability at all times. This process is shown in Figure 8.

Figure 8: Information Availability



Travel Time

The FHWA Rule requires the designed availability for a real-time information program shall be 90% available at a minimum (23 CFR 511.309(a)(6)). By design the travel time information is always made available (on limited access roadways) as described in 6.4. Travel Time Information. All of the limited access roads are monitored by the RTMC and instrumented with ITS devices and falls under the system availability of the SunGuide system. The SunGuide system uptime has an average uptime of 95%.

Construction Activity

The FHWA Rule requires the designed availability for a real-time information program shall be 90% available at a minimum (23 CFR 511.309(a)(6)). The working relationship with the Construction and Maintenance Offices throughout the state as well as the LCIS creates redundant sources of notifications for construction activities. With those redundancies, the real-time information program is designed to be fully available whether it is FDOT construction activity or construction activities from the local agencies. The results of the construction activities are posted on ADMS and the FL511 system.

Incidents

The FHWA Rule requires the designed availability for a real-time information program shall be 90% available at a minimum (23 CFR 511.309(a)(6)). Through receiving incident data from ITS devices, third parties, and RTMC operators there are redundancies built into the system for the roads monitored by FDOT. Where there is instrumentation, the system availability is designed to be 95% available. If one data source goes down, there are still other data sources sending notifications of incidents. The RTMC operators verify the incident information before it is made available to the public.

Until the time that the designated RoS are instrumented with devices for detection and verification, the RTMC operator and local agencies are in communication to ensure the information is always available.

Road Weather Observations

The FHWA Rule requires the designed availability for a real-time information program shall be 90% available at a minimum (23 CFR 511.309(a)(6)). The FDOT has sensors for some of the weather activities that alert the RTMC operators when the weather condition goes beyond the certain pre-established threshold. The RTMC operators also monitor conditions via CCTV cameras and/or via the NWS channel that is up 24x7 in the RTMC for all RoS. If weather-related hazardous conditions are observed by LEO, then they always notify RTMC. All of the weather conditions are verified by the RTMC before the road is closed by LEO.

7.3. FHWA Demonstration

The methods for ensuring data quality were demonstrated to FHWA on October 12, 2016. The demonstration went over the processes an RTMC operator would use to log an event in SunGuide both on and off limited access roads. The demonstration covered each type of traveler information required in the program. Some of the activities in this demonstration included:

- Creating events in SunGuide
- Recording the event location accurately, using pre-defined locations and arbitrary offsets from these locations
- Recording condition of individual lanes at the event location
- Managing the event status in order to track the event verification process
- Recorded additional information, such as the current weather conditions at the time of the event, and the vehicles involved
- Generating and modifying Response Plans, which publish event information to DMSs and to the FL511 system
- Viewing the event chronology in order to verify timeliness of the various steps in the event management process

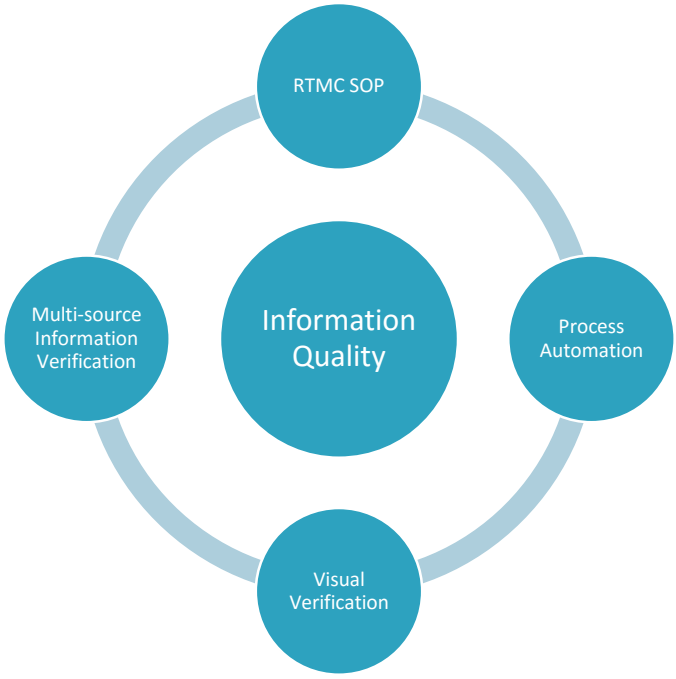
For reporting purposes, metrics can be programmatically extracted from SunGuide, either via the API or by directly querying the database. FDOT demonstrated the results of an investigation into data collected in 2015 by the District 6 SunGuide deployment, which showed that out of 441 events in District 6 on US 41 only two events weren't published within the 10-minute requirement.

As part of the demonstration we also discussed:

- Methods used by the districts to validate the accuracy and availability of the real-time information generated by SunGuide by comparing the data currently being reported by SunGuide with what is being displayed on signs, by visually confirming via CCTV camera, and with what is currently being reported by the FL511 system, either via automated systems or by visually monitoring the FL511 website.
- Methods used by the districts to address problems with information quality, such as the steps taken to correct invalid data being published to the FL511 site.

FDOT has demonstrated to the FHWA Division Representative that the SunGuide system is functioning beyond the FHWA requirements. This process is shown in Figure 9.

Figure 9: Information Quality



8. Non-Metropolitan RoS

Due to the rural nature of Districts 1 and 3, the FHWA criteria for designating a route of significance do not apply. However, there are routes on the state highway system in Districts 1 and 3 that are crucial to the movement of motorists to and from our freeways, tourist destinations, military installations, and diversion routes.

District 2 also has two rural routes defined as RoS. They are located in the Gainesville Metropolitan Transportation Planning Organization (MTPO) which does not have over one million inhabitants; therefore, it is not included in the Jacksonville Metropolitan Area.

Figure 10: Florida's Non-Metropolitan Areas for RoS

The criteria and best practices used for the metropolitan routes are the same for the rural non-metropolitan routes.

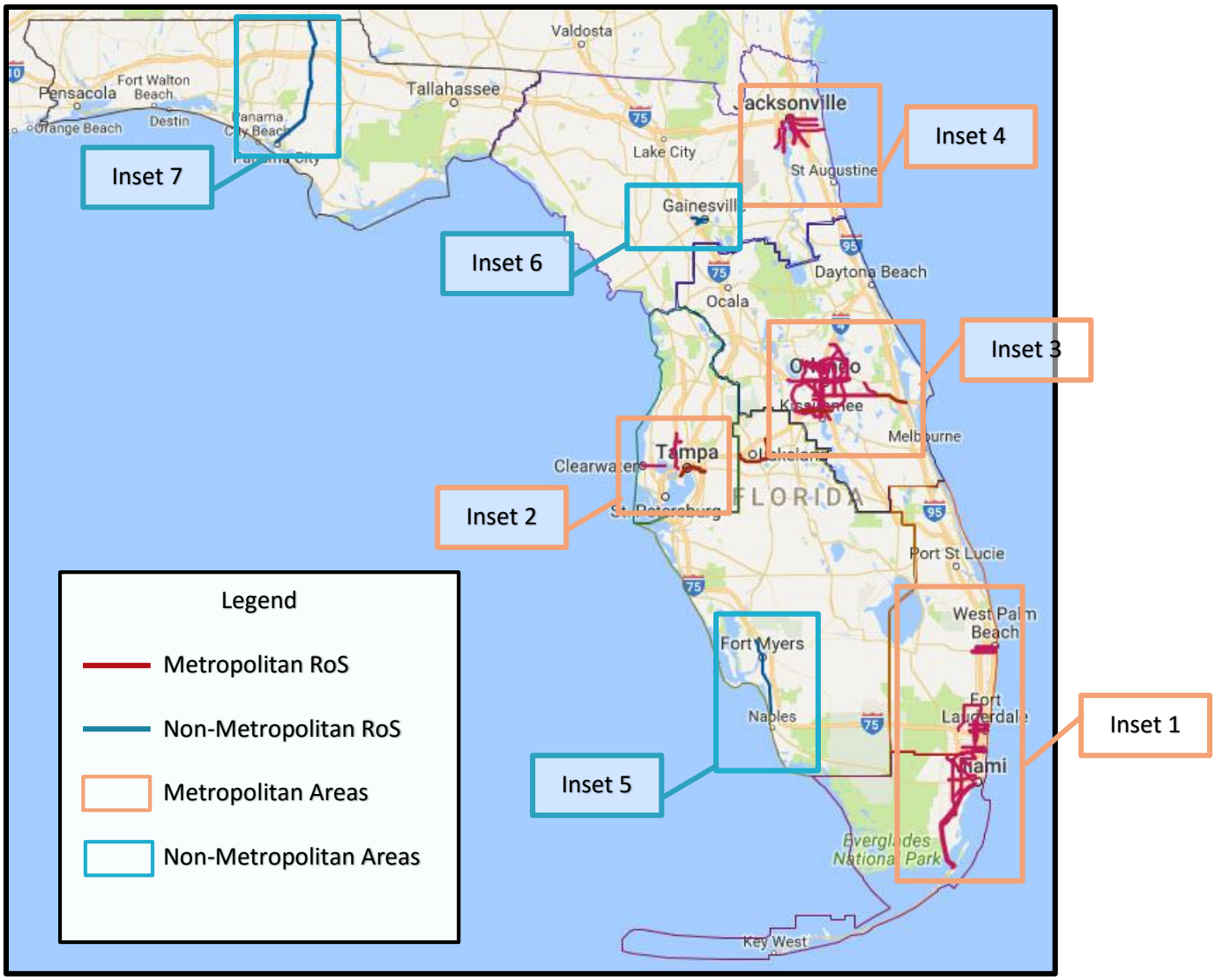
Table 7: Routes in Florida's Non-Metropolitan Areas

Route Numbers	Limit From	Limit To	Functional Class	MPO/TPO
US 231	US 98	Jackson County Line	Urban Principal Arterial	Bay County TPO
US 231	Bay County Line	Alabama State Line	Urban Principal Arterial	Bay County TPO
US 41	Woods Edge Parkway	Tara Boulevard	Urban Principal Arterial	Lee County MPO
SR 26	I-75	County Road 331	Urban Minor Arterial	Gainesville MTPO
SR 24	I-75	US 441	Urban Principal Arterial	Gainesville MTPO

9. Florida's RoS Map

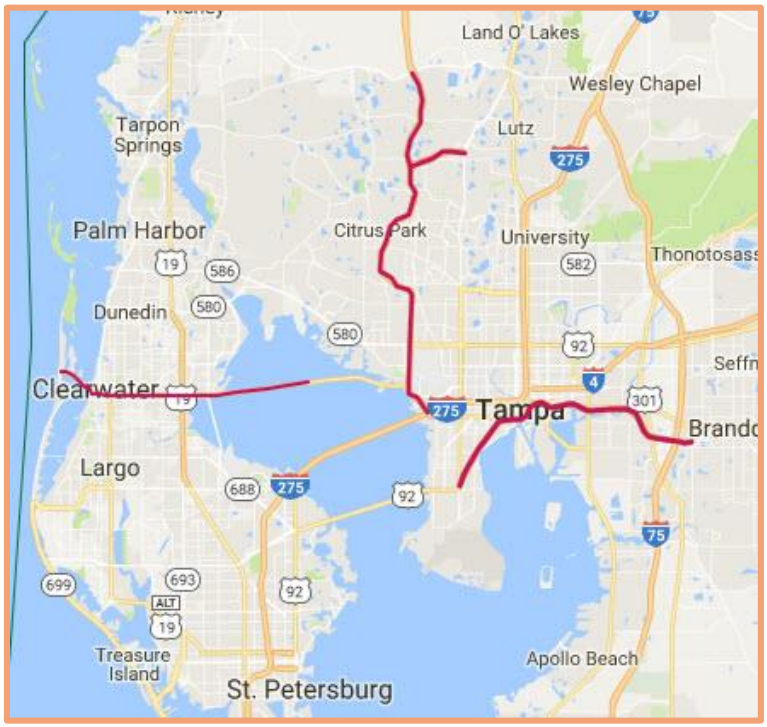
Through the District and local agency coordination, 53 metropolitan area RoS and four rural non-metropolitan area RoS have been determined. The Florida's RoS are shown in Figure 11.

Figure 11: Florida's RoS Map

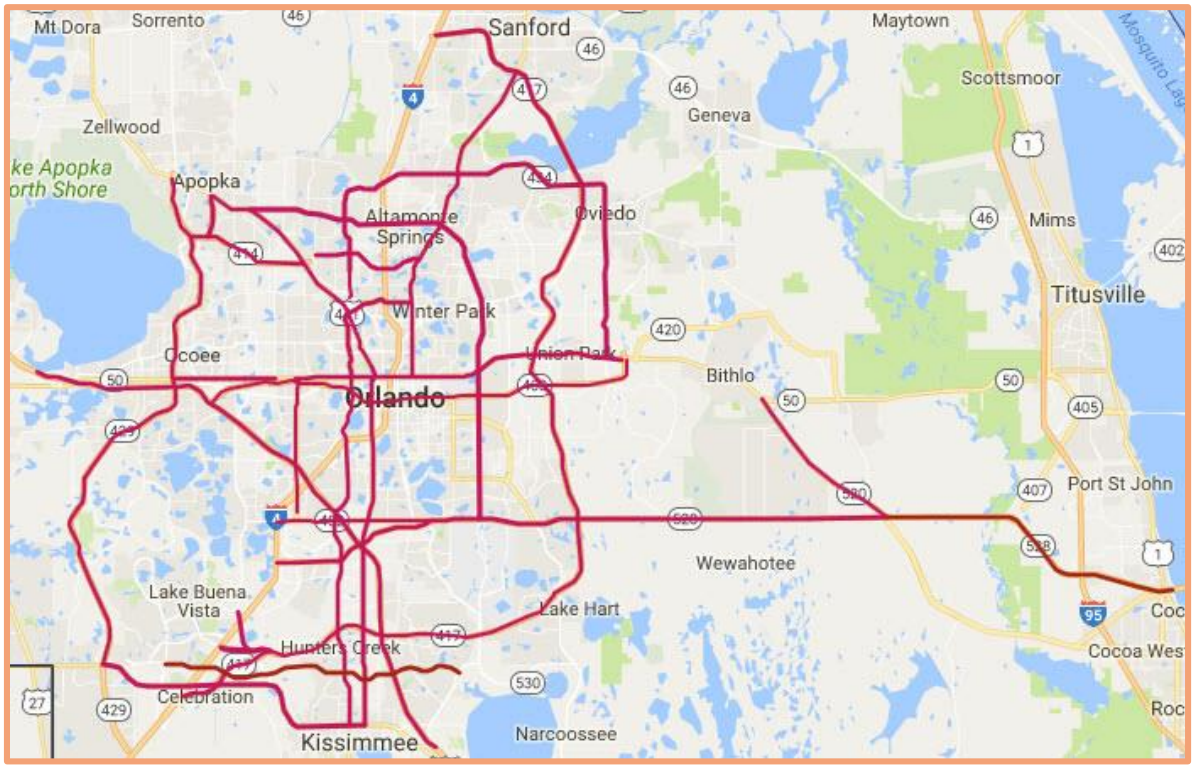


Inset 1: Miami/Ft. Lauderdale Metropolitan Area

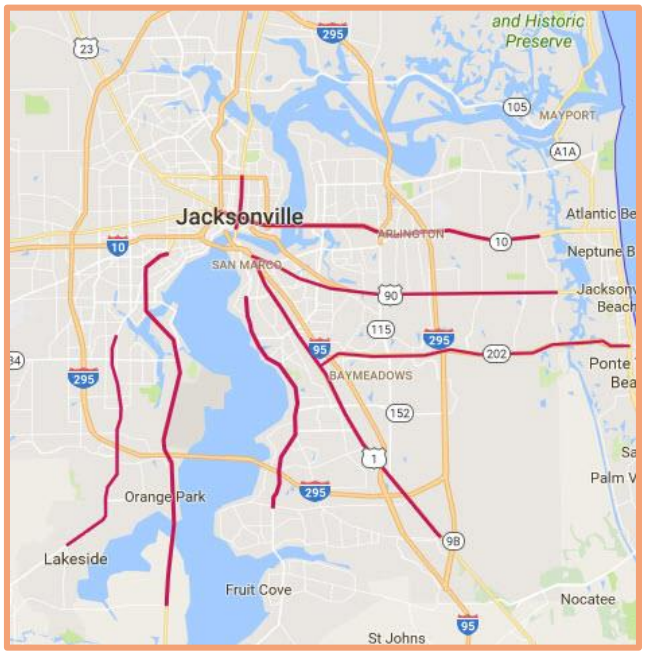
Inset 2: Tampa Metropolitan Area



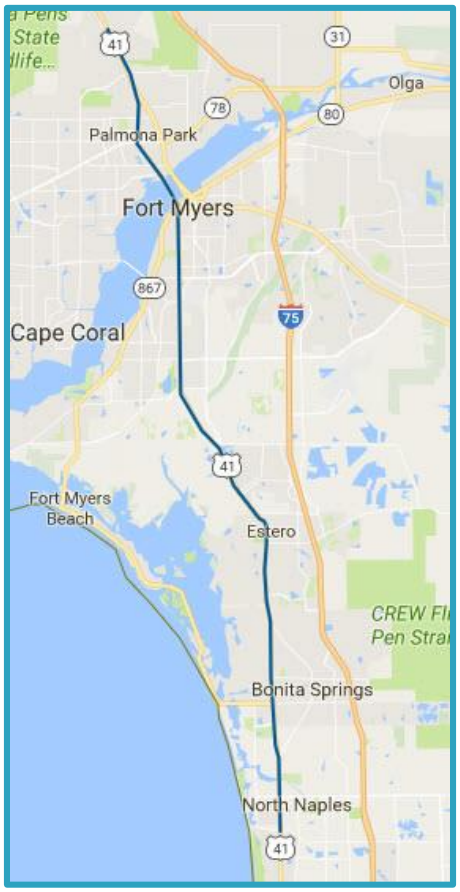
Inset 3: Orlando Metropolitan Area



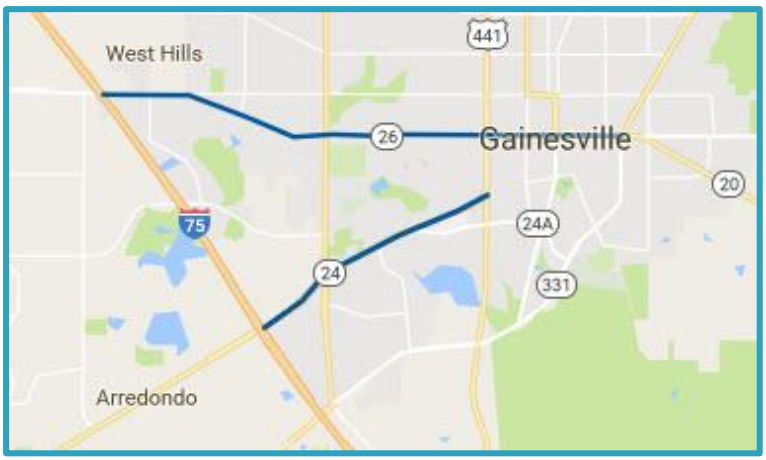
Inset 4: Jacksonville Metropolitan Area



Inset 5: Fort Myers



Inset 6: Gainesville



Inset 7: Panama City

10. RoS for Program Enhancement

The Districts and their respective MPOs/TPOs have come up with the following routes as "planned" routes for the RTSMIP. Due to resource and funding constraints, the routes below are to be for the future expansion of FDOT's RTSMIP. Note that Florida is going beyond the requirements of RoS by FHWA Rule, and by listing the routes below, Florida is highlighting the need for extra operations and maintenance funds to cover these routes and expand Florida's RoS. Table 8 lists Florida's RoS for program enhancement. Also, note that the list below is not final and will be adjusted in the future depending on changing needs of the region.

Table 8: RoS for Program Enhancement

Route	Limit From	Limit to	MPO/TPO
SR 37	SR 62	Main Street	Polk TPO
SR 60	Old Hopewell Road	Doherty Drive	Polk TPO
SR 64	I-75 West	75th Street	Sarasota/Manatee MPO
SR 70	US 41	SE 128th Avenue	Sarasota/Manatee MPO/ Heartland Regional MPO
SR 80	US 41	John Stretch Memorial Park	Lee County MPO/ Heartland Regional MPO
SR 82	SR 29	US 41	Lee County MPO
US 17	US 92	I-75	Charlotte County-Punta Gorda MPO/ Heartland Regional TPO
US 27	North District Boundary	South District Boundary	Polk TPO/Heartland Regional TPO
US 301	US 41	38th Avenue E.	Sarasota/Manatee MPO
US 98	SR 60	US 92	Polk TPO
20th St/ US 1 Alt	I-95	Arlington Expressway	North Florida TPO
CR 210	US 1	Solano Road	North Florida TPO
SR 102	I-95	Pecan Park Road	North Florida TPO
SR 105	I-95	I-295	North Florida TPO
SR 109	San Jose Boulevard	Atlantic Boulevard	North Florida TPO
SR 115	Philips Highway	Atlantic Boulevard	North Florida TPO
SR 115	Atlantic Bouelvard	Liberty Street	North Florida TPO
SR 120	US 441	SR 24	Gainesville MTPO
SR 134	US 17	Old Middleburg Road	North Florida TPO
SR 152	San Jose Boulevard	I-295	North Florida TPO
SR 200	I-95	Amelia Road	North Florida TPO
SR 222	I-75	SR 24	Gainesville MTPO

Route	Limit From	Limit to	MPO/TPO
SR 228	SR 23	Cassatt Avenue	North Florida TPO
SR 23	Blanding Boulevard	I-10	North Florida TPO
SR 331	I-75	SR 26	Gainesville MTPO
SR 9B	I-95	I-295	North Florida TPO
SR A1A	County Road 210	Wonderwood Drive	North Florida TPO
SR A1A	Bridge of Lions	SR 312	North Florida TPO
US 1	Beach Boulevard	Liberty Street	North Florida TPO
US 1	MLK Expressway	I-295	North Florida TPO
US 1/SR 5	SR 312	SR 16	North Florida TPO
US 23/ SR17	Arlington Expressway	I-95	North Florida TPO
US 23/SR 17	Arlington Expressway	I-95	North Florida TPO
US 301	State Road 228	US 90	North Florida TPO
US 441	County Road 331	State Road 222	Gainesville MTPO
US 90	Stockton Street	Main Street	North Florida TPO
	Bay Street	State Street	North Florida TPO
SR 173, SR 297	NAS Pensacola	I-10	Florida-Alabama TPO
SR 77	US 98	Washington County Line	Bay County TPO
SR 77	Bay County Line	I-10	Bay County TPO
SR 79	US 98	Washington County Line	Bay County TPO
SR 79	Bay County Line	Holmes County Line	Bay County TPO
SR 79	Holmes County Line	I-10	Bay County TPO
US 27	US 319	Georgia State Line	Capital Region TPA
US 29/SR 94	I-10	Alabama State Line	Florida-Alabama TPO
US 319/SR 263	US 27	US 319	Capital Region TPA
US 331	US 98	Alabama State Line	Okaloosa-Walton TPO
US 90/SR 9	US 28	Santa Rosa County Line	Florida-Alabama TPO
US 90/SR 9	Escambia County Line	SR 87 South	Florida-Alabama TPO
US 98	Okaloosa County Line	Bay County Line	Okaloosa-Walton TPO
US 98	Escambia County Line	Okaloosa County Line	Florida-Alabama TPO
US 98, SR 85, SR 397 & SR 123	Hurlburt/Eglin Entrances	I-10	Okaloosa-Walton TPO
US 98, Transmitter Road, (CR 2327), US 230	Tyndall Air Force Base Entrance	I-10	Bay County TPO
US 98/SR 30	Alabama State Line	Santa Rosa County	Florida-Alabama TPO
US98/SR 30	Santa Rosa County Line	Walton County Line	Okaloosa-Walton TPO
SR 200	US 41	Marion County	Hernando/Citrus MPO

Route	Limit From	Limit to	MPO/TPO
SR 44	US 19	Sumter County Line	Hernando/Citrus MPO
SR 50	US 19	Hernando/Citrus County Line	Hernando/Citrus MPO
SR 54	US 19	US 301	Pasco County MPO
SR 570	I-4	I-4	Polk TPO
SR 580/SR 600	Sheldon Road	Polk County Line	Hillsborough County MPO
US 19/SR 55	Pinellas/Pasco County Line	Pasco Hernando County Line	Pasco County MPO
US 19/SR 55	Pasco/Hernando County Line	Hernando/Citrus County Line	Hernando/Citrus MPO
US 19/SR 55	Hernando/Citrus County	Citrus/Levy County	Hernando/Citrus MPO
US 19/SR 55	54th Ave	Pinellas/Pasco County Line	Pinellas County MPO
US 41/SR 45	Hillsborough/Pasco County Line	Hernando/Citrus County Line	Pasco County MPO/Hernando/Citrus MPO
US 41/SR 45	Pasco/Hernando County Line	Hernando/Citrus County Line	Hernando/Citrus MPO
US 41/SR 45	Hernando/Citrus County	Citrus/Marion County	Hernando/Citrus MPO
US 41/SR 45	Manatee/Hillsborough County Line	Hillsborough/Pasco County line	Hillsborough County MPO
SR 589	I-275	US 98	Hillsborough County MPO/Pasco County MPO/Hernando/Citrus MPO
US 1/SR 5	Monroe/Miami-Dade County Line	SR 9A/ I-95	Miami-Dade MPO
SR A1A	MacArthur Causeway Bridge	SR 907/ Alton Road	Miami-Dade MPO
SR 886	US 1/ SR 5	Caribbean Way	Miami-Dade MPO

Note: The list above is subject to change and will be updated as the needs of the regions change. When new or planned RoS are added to the RoS network, updates to these RoS networks will be implemented to reflect the need for additional deployment of ITS infrastructure on any segments that are not currently covered.

11. Eligibility for Funding

The FHWA Rule called out for funding availability to the existing RoS and RoS expansion. It is also FDOT's plan to seek any future federal funding to become available for the existing RoS as well as RoS expansion for ITS deployment, operation, and maintenance of the routes.

The FHWA Rule (23 CFR 511.307(a)) states that, "*subject to project approval by the Secretary, a State may obligate funds apportioned to the State under:*

- *104(b)(1), also known as National Highway System funds*
- *104(b)(2), also known as CMAQ Improvement funds*
- *104(b)(3), also known as STP funds*

…for activities relating to the planning, deployment and operation, including preventative maintenance, of real-time monitoring elements that advance the goals and purposes of the Real-Time System Management Information Program.

The SPC funds, apportioned according to 23 U.S.C. 505(a), may be applied to the development and implementation of a real-time information program.
Those project applications to establish a real-time information program:

- *For interstate System highways are entitled to a Federal share of 90%*
- *Non-interstate highways are entitled to a Federal share of 80% (23 CFR 511.307(b)."*

12. Conclusion

The RTSMIP program is a requirement for local agencies and FDOT to work together to determine RoS by November 8, 2016. RTSMIP has six areas: construction activities, incidents, weather events, travel time, ITS architecture, and RoS. FDOT has a mature advanced traffic management system (ATMS), known as SunGuide software, and a robust advanced traveler information system (ATIS), FL511. Both of these assets support FDOT's initiative to comply with the RTSMIP requirements for providing real-time traffic and travel information to the motoring public. FDOT recognizes the value of providing timely, accurate, and reliable information to the motoring public within Florida.

FDOT will be supportive of planning efforts in the future to potentially expand this RoS list to include additional roadways based on commitments that facilitate compliance with the Rule's information provision requirements.

The FHWA Rule has brought value to FDOT's RTSMIP by expanding the roles and responsibilities of the RTMC, which is the key instrument for making this information available to the public. Through expanding its areas of coverage beyond Florida's Interstate Highway System to include these other collaboratively designated Routes of Significance (that were not previously covered) FDOT has been able to provide travel information for construction activities, roadway or lane blocking incidents, road weather conditions, and travel time to the public on these RoS.

Although the program was limited to making information available for dissemination, FDOT utilized this opportunity to expand the program further and actually disseminates the real-time information to the public via FL511, DMS, ADMS, and social media. FDOT also makes this information available to the mainstream media such as radio and television.

FDOT is also interested in taking the RTSMIP RoS program further and expanding regional coverage by adding other routes in coming years. As the funding source is identified, in coordination with FHWA, those RoS will also be covered in the future.

Appendix A: 2014 Letter of Compliance RTSMIP Phase I: Interstates

Appendix B: MPO/TPO Coordination

Appendix C: Tampa Arterial Performance Monitoring Example

Appendix D: SunGuide System Uptime Report

Appendix E: RITSA & SITSA