

STAMP ACTION PLAN

2018



STATEWIDE ARTERIAL
MANAGEMENT PROGRAM (STAMP)
FLORIDA DEPARTMENT OF TRANSPORTATION



TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
2. FLORIDA'S HIGHWAY SYSTEM BACKGROUND	4
3. STAMP ACTION PLAN	7
4. PERFORMANCE MEASURES AND ASSESSMENT	19
5. CONCLUSION	20
ACRONYMS	21
APPENDIX A	22
APPENDIX B	36

EXECUTIVE SUMMARY

The Statewide Arterial Management Program (STAMP) Action Plan identifies specific, measurable, accountable, relevant, and timely action items for the Central Office (CO) and individual Districts (in coordination with local agencies) to benefit the STAMP program. The Action Plan supports 2017 TSM&O Strategic Plan vision, mission, and priority focus areas. The action items identified in this plan support deployment within the following focus areas: field technologies, traffic control strategies, Traffic Management Center (TMC) technologies, operations, and maintenance, with each focusing on outcomes and performance measures as a basis for tracking the systems performance.

All action items fall within either quick, short-term, mid-term or long-term time frames. The quick action items are ready for immediate activity. Some of these items are identified under detectors, upgrades, communications, and emerging technologies. This Action Plan serves as a basis for planning and selecting projects to add to the ten-year cost feasibility plan, and for deployment to achieve TSM&O Strategic Plan outcomes for system operations, safety, and maintenance.

This Action Plan identified sixty-nine (69) action items under the following categories:

- **Leadership:** The Action Plan ensures FDOT continues to lead the nation in ITS activities. The leadership activities include developing policies and guidance on arterial system safety and mobility; identifying opportunities to collaborate with local, national, and private industry partners; training and resource development; and delivery of STAMP priority focus areas. The associated performance assessment for leadership is **FDOT recognition, locally and nationally.**
- **Safety:** FDOT's vision is to provide fatality-free roadways for all Florida's road users. This Action Plan identifies action items that will help achieve that vision, especially reducing bicycle and pedestrian crashes. The associated performance assessments are improved **traffic and bike-ped safety.**
- **Mobility:** Florida has a high tourism rate and dense urban areas with severe congestion. This action plan identifies action items that will help improve travel time reliability and reduce congestion. The associated performance assessment for mobility are **travel time improvement and increased throughput for all roadway users, regardless of travel mode choice.**
- **Systems Availability:** ITS and advanced traffic signal systems are deployed on portions or all the state highway system (SHS) in addition to the legacy traffic signal system. They are mainly operated and maintained by local partners through an agreement. This Action Plan includes action items to enhance system uptime via monitoring, operations, and proactive maintenance. The performance assessment associated for systems availability is to have **higher system uptime.**
- **Mainstreaming:** Mainstreaming is an integral part of the TSM&O Strategic Plan. This Action Plan targets district-level and regional plans and processes that impact signalized arterial roadways. As part of the TSM&O Strategic Plan, CO will mainstream TSM&O at the CO and state and national levels. The performance assessment associated for arterial mainstreaming is **enhanced regional partnerships and local support.**

1 | INTRODUCTION

» 1.1. INTRODUCTION

The Florida Department of Transportation (FDOT) Statewide Arterial Management Program (STAMP) is part of the State Traffic Engineering and Operations Office (STEOO) Transportation Systems Management and Operations (TSM&O) Division. This action plan is developed to support the *2017 TSM&O Strategic Plan* vision, mission, and priority focus areas. The STAMP Action Plan identifies specific, measurable, accountable, relevant, and timely action items for the Central Office (CO) and Districts/local agencies to support the accomplishment of four of six *2017 TSM&O Strategic Plan* priority focus areas:

1. **TSM&O mainstreaming**
2. Freeway Management (not included)
3. **Arterial Management**
4. Managed Lanes (not included)
5. **Connected Vehicle (CV)**
6. **Information Systems**

Note: The 2017 TSM&O Strategic Plan also identifies Integrated Corridor Management (ICM) within arterial and freeway management priority areas.

Application of emerging technologies for system management and operations is an ongoing process. This Plan, as does the entire TSM&O Strategic Plan, will inherently monitor current and planned deployments, strategies and processes while simultaneously assessing new technologies and opportunities to effectively and efficiently meet our transportation demand. The STAMP Action Plan is a living document and will be updated annually based on District and FDOT Partner input.

Notes:

1. “Arterial” in the STAMP Action Plan refers to all “on-system”, non-freeway, and non-toll roads. The “off-system” roads are referred to as “local” roads that are non-SHS.
2. “Complete” and “finished” refer to a phase of the action item. This plan will outline active monitoring for each task and revisiting action items periodically for updates.
3. “FDOT Partners” refer to cities, counties, private industries, universities; and metropolitan and transportation planning organizations (MPO)/(TPO).



» 1.2. STAMP MISSION

The STAMP mission is to deliver the 2017 TSM&O Strategic Plan vision, mission, and goals specific to arterials. The goals of the STAMP Action Plan are to:

1. Supplement TSM&O Strategic Plan as they relate to arterials.
2. Develop a comprehensive approach to arterial management.
3. Focus on SMART actions items for short to mid-term goals.

» 1.3. GOALS SETTING AND PERFORMANCE MEASURES

The STAMP Action Plan applies the TSM&O program goals and performance measures to arterials. The program goals are:

1. **Goals** – mobility, safety, and network uptime availability.
2. **Performance Enhancement Goals (PEG)** – goals to be accomplished through operations of arterial management systems, for example.
3. **Project-Performance Enhancement Goals (P-PEG)** – performance goals anticipated through implementation of new or expanded arterial management systems, for example.



2 | FLORIDA'S HIGHWAY SYSTEM BACKGROUND

» 2.1. FLORIDA'S HIGHWAY SYSTEM

The Florida highway system is classified under three categories: Strategic Intermodal System (SIS), National Highway System (NHS), and State Highway System (SHS). Figure 1 shows the total center-line miles covered under SHS, NHS, and SIS by interstates, tolls, and arterials.

According to 2015 FDOT Planning Office Data, the SHS "arterial" centerline miles are 52% urban and 48% rural, and lane miles are 64% urban and 36% rural.

Figure 1. Florida's Highway System Miles

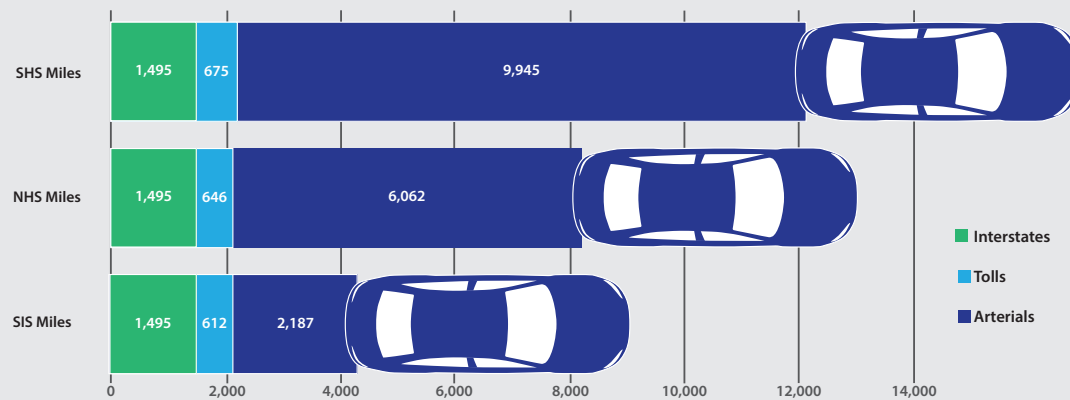


Figure 1 shows that Florida's **arterial system is 82% of the total highway center-line miles** ($9,945/12,115 = .8208$):

- SIS includes 22% of total arterial system miles, ($2,187/9,945 = .2199$)
- NHS includes 61% of total arterial system miles, ($6,062/9,945 = .6095$)

Source: FDOT Planning Office, <http://www.fdot.gov/statistics/hwysys/default.shtm>

» 2.2. DAILY VEHICLE MILES TRAVELED

The Daily Vehicle Miles Traveled (DVMT) on Florida's highway system is the product of an average daily traffic count and the length of the road. DVMT on SIS, NHS, and SHS are an indication of the use of different roadway systems within the State. Figure 2 shows the DVMT (in thousands) on interstates, toll roads, and arterials for the year 2015.

Figure 2. DVMT on Interstates, Toll, and Other Roads (in Thousands)

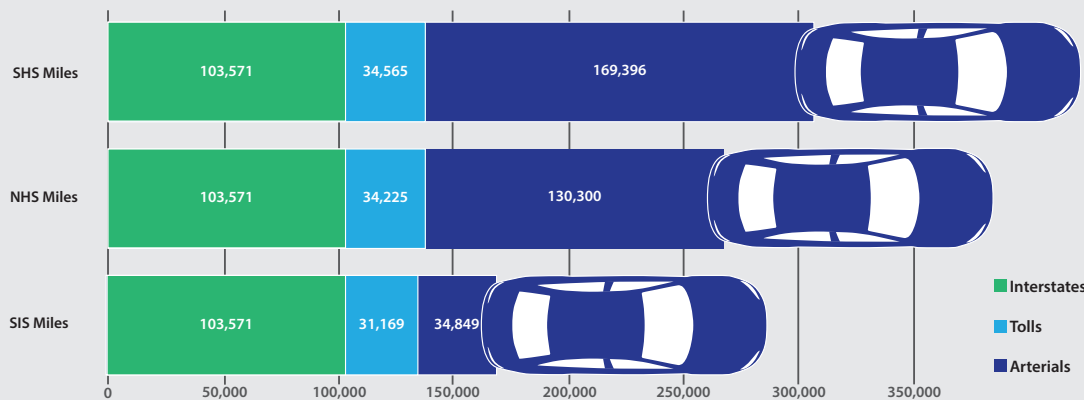


Figure 2 shows that Florida's **arterial system covers 55% of the total highway DVMT** ($169,396/307,532 = .5508$):

- SIS includes 21% of total arterial DVMT, ($34,849/169,396 = .2057$)
- NHS includes 77% of total arterial DVMT, ($130,300/169,396 = .7692$)

Source: FDOT Planning Office, <http://www.fdot.gov/statistics/mileage-rpts/>

Table 1 below shows the density in DVMT (in thousands) divided by center line miles. This shows that NHS has higher density compared to SHS and SIS arterials.

Table 1. Density in DVMT (in thousands)/Center Line Miles

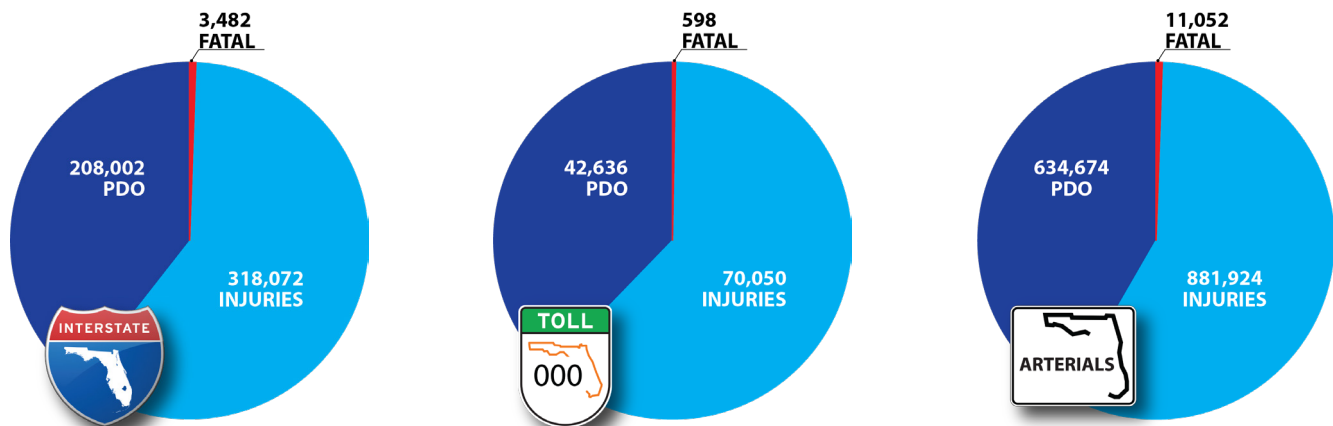
Roads	SIS	NHS	SHS
Interstates	69	69	69
Tolls	51	53	51
Arterials	16	21	17

As the interstate and toll road system's Intelligent Transportation System (ITS) infrastructure deployment is nearing completion and reaching the advanced maturity level, the arterial system should be given priority in management and operations. It is also important to understand that not all arterial systems are regionally significant and a corridor selection criteria should be developed by the Districts by prioritizing regional needs and understanding the traffic density. The information provided in this section establishes the groundwork for understanding the importance of arterial system classification and usage.

» 2.3. STATEWIDE CRASH DATA

Figure 3 shows statewide crash severity by interstates, tolls, and arterials between 2010 and 2014. Arterials experiences the highest number of crashes and majority of them are injury crashes.

Figure 3. 2010-2014 Crash Data Summary



Source: FDOT Safety Office's 2010-2014 safety crash data report.

To understand the extent of crashes, the crash rate is derived using the total number of crashes divided by the DVMT on SHS and is shown below:

- Interstates: 2.08 crash per million vehicle miles traveled per year;

$$((3,482 + 318,072 + 208,002) * 1000) / (103,571 * 5 * 365) = 2.08.$$
- Tolls: 1.80 crash per million vehicle miles traveled per year;

$$((598 + 70,050 + 42,636) * 1000) / (34,565 * 5 * 365) = 1.80$$
- Arterials: 4.94 crash per million vehicle miles traveled per year;

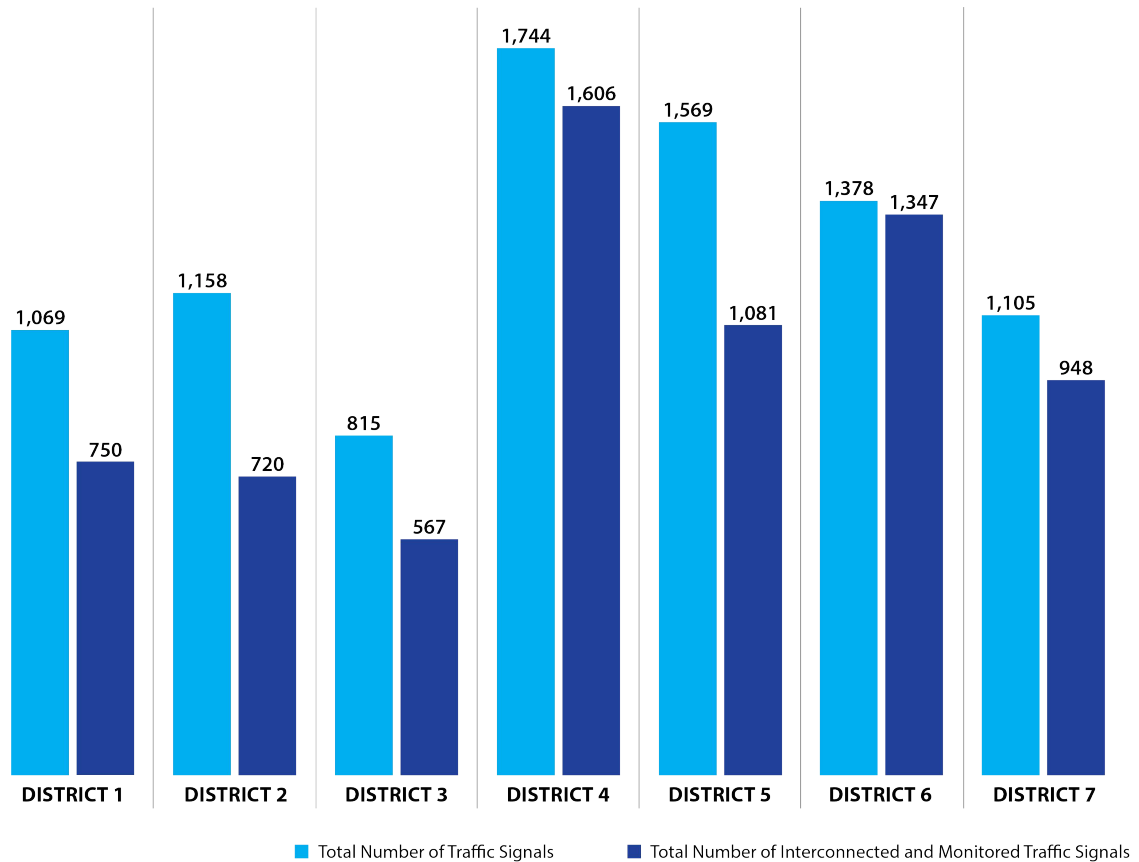
$$((11,052 + 881,924 + 634,674) * 1000) / (169,396 * 5 * 365) = 4.94.$$

The formula used for crash rate calculation is: $\text{Crash Rate} = (\text{Total Crashes} * 1000) / (\text{DVMT} * \text{Number of Years} * 365)$. The crash rate calculation per DVMT shows that arterials experience the highest crash rate. This traffic safety information provides an overview for the state and should be considered for project and corridor prioritization.

» 2.4. FLORIDA'S TRAFFIC SIGNAL SYSTEMS

Figure 4 shows the total SHS traffic signals and interconnected and coordinated signals in the state. Based on this information, there are approximately 7,020 signals that are interconnected and monitored out of approximately 8,838 traffic signals. Thus, approximately **80% of the traffic signals on SHS arterials are interconnected and monitored.**

Figure 4. FY 2016 Traffic Signal Maintenance and Compensation Agreement (TSMCA) Traffic Signals and Interconnected and Monitored Signals



Source: FDOT TSMCA, <http://www.fdot.gov/traffic/its/ArterialManagement.shtm>

Note that FDOT does not operate or maintain the SHS arterial traffic signal systems. FDOT compensates the local maintaining agencies such as cities, counties, and towns through individual Districts to maintain and keep the traffic signal control systems operational on the SHS arterial system on behalf of FDOT via Traffic Signal Maintenance Compensation Agreements (TSMCA). As of August 2017, there are 152 local maintaining agencies combined in all seven Districts. Out of these agencies, **25% of local agencies maintain approximately 90% of the signals on SHS arterials.**

This agency interconnectivity information provides an overview for the state and should be considered for project and corridor prioritization.

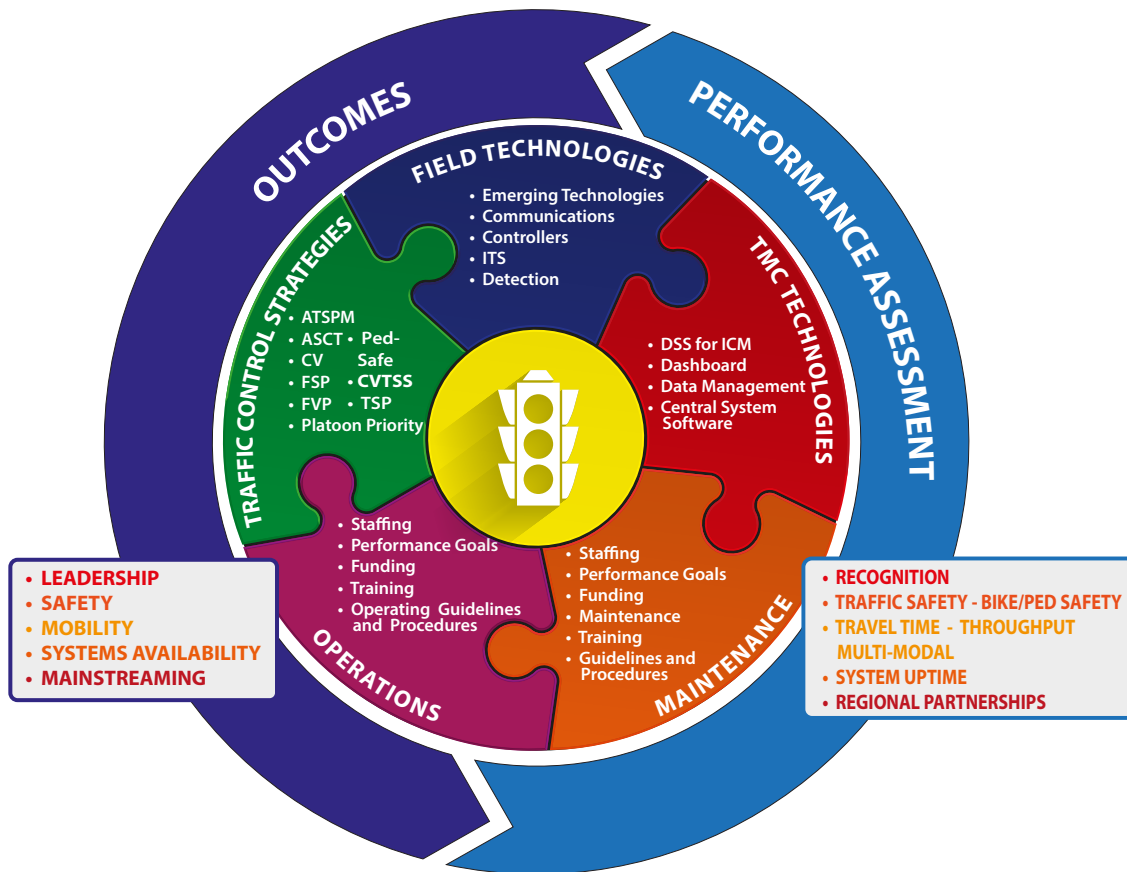
3 | STAMP ACTION PLAN

» 3.1. STAMP PRIORITY FOCUS AREAS

The seven (7) priority focus areas STAMP Action Plan are: outcomes, field technologies, traffic control strategies, Traffic Management Center (TMC) technologies, operations, maintenance, and performance assessment. Outcomes and performance assessments are enabled using the other five priority focus areas as shown in Figure 5 and are continuous processes for any project.

Outcomes are directly linked to the performance measures. For example, outcome for leadership is recognition, outcome for safety is increase in safety for traffic and bicycle and pedestrians, and so on.

Figure 5. STAMP Priority Areas



» 3.1.1. RELATIONSHIP TO THE 2017 TSM&O STRATEGIC PLAN

The STAMP Action Plan follows the 2017 TSM&O Strategic Plan and falls within the four TSM&O priority focus areas, shown in **bold** below:

1. **TSM&O mainstreaming**
2. Freeway Management (not included)
3. **Arterial Management**
4. Managed Lanes (not included)
5. **Connected Vehicle (CV)**
6. **Information Systems**

» 3.1.2. DISTRICT PARTICIPATION

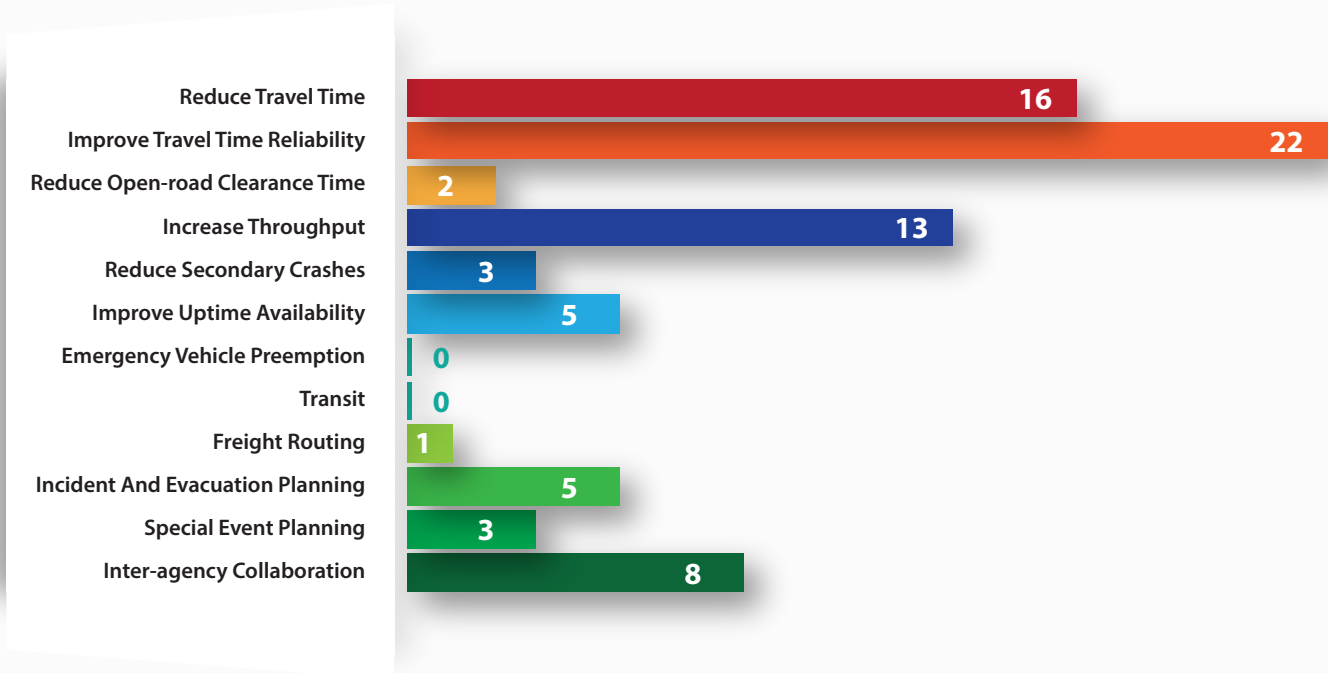
FDOT Districts provided their input during STAMP bi-monthly meetings as well as during STAMP Action Plan focused telephone discussions. Districts provided responses to a paper based questionnaire during a STAMP Action Plan interview process. In addition, input was received from Districts during Capability Maturity Model (CMM) and Strategic Highway Research Program 2 (SHRP2) Business Process workshops with Federal Highway Administration (FHWA) focusing on arterial management in early 2017. Figure 6 shows the high priority areas based on District's responses to the questionnaire, performance measures and O&M are the two important aspects in addition to others as shown. Note font sizes shown in the figure are proportionate to the importance given by the Districts.

Figure 6. District Survey Questionnaire



These workshops and discussions facilitated a platform to help identify several priority focus areas for arterial management and are summarized in this STAMP Action Plan. The Districts have identified several important performance outcomes from the CMM workshop, as shown in Figure 7.

Figure 7. Arterial Performance Measures



Notes from the CMM workshops and questionnaire response summary from the Districts are provided in Appendix A.

» 3.2. STAMP OUTCOMES AND PERFORMANCE ASSESSMENT

The STAMP outcomes and performance assessments are developed based on discussions with the FDOT Districts and to align with the TSM&O Strategic Plan as listed below:

- **Leadership:** The Action Plan ensures FDOT continues to lead the nation in ITS activities. The leadership activities include developing policies and guidance on arterial system for safety and mobility; identifying opportunities to collaborate with local, national and private industry partners; training and resource development; and delivery of STAMP priority focus areas. The associated performance assessment for leadership is ***FDOT recognition locally and nationally.***
- **Safety:** FDOT's vision is to provide fatality-free roadways for all Florida's road users. This Action Plan identifies action items that will help achieve that vision, especially reducing bicycle and pedestrian crashes. The associated performance assessments are improved ***traffic and bike-ped safety.***
- **Mobility:** Florida has a high tourism rate and dense urban areas with severe congestion. This action plan identifies action items that will help improve travel time reliability and reduce congestion. The associated performance assessment for mobility are ***travel time improvement and increased throughput for all roadway users, regardless of travel mode choice.***
- **Systems availability:** ITS and advanced traffic signal systems are deployed on the state highway system (SHS) in addition to the legacy traffic signal system. They are mainly operated and maintained by local partners through an agreement. This Action Plan includes action items to enhance system uptime via monitoring, operations, and proactive maintenance. The performance assessment associated for systems availability is to have ***higher system uptime.***
- **Mainstreaming:** Mainstreaming is an integral part of the TSM&O Strategic Plan. This Action Plan targets district-level and regional plans and processes that impact signalized arterial roadways. As part of the TSM&O Strategic Plan, CO will mainstream TSM&O at the CO and state and national level. The performance assessment associated for arterial mainstreaming is ***enhanced regional partnerships and local support.***



3.3. STAMP ACTION PLAN PARAMETERS

» 3.3.1. TIME-BOUND GOAL SETTINGS

The STAMP action items are classified under the following four time-bound categories depending on where each of the action items stand in terms of the maturity level within each District.

1. Quick-term (up to 6 months)
2. Short-term (6 months to 1.5 years)
3. Mid-term (1.5 years to three years)
4. Long-term (more than three years)

» 3.3.2. ACTION ITEM EFFECTIVENESS

Each STAMP action item is identified with an effectiveness category as **enablers and needle-movers**. Enablers are the action items that enable needle-mover activities to move the needle in the right direction. For example, a ubiquitous communication network enables various active arterial management strategies.

» 3.3.3. ACTION ITEM COST IMPLICATIONS

Each STAMP action item is assigned a varying level of cost commitment as shown in the individual action item tables from low- to high-level costs. For deployment of action items within the District(s), the cost information aids the understanding of the extent of financial commitment required and advanced planning. All projects should perform a systems engineering analysis process to ensure a good return on investment achieved by considering all available options on the table to reduce cost.

» 3.3.4. ACTION ITEM ACCOUNTABILITY

The STAMP action items are classified under two main accountability categories, one for the CO and the other for the Districts. The CO role will be focused mainly on policy, funding, guidance, mainstreaming, and testing emerging technologies via pilot projects. Districts will participate in all CO activities, champion projects, champion local agency relationship building, and mainstream the STAMP Action Plan within various district offices and local partners.

» 3.4. STAMP ACTION ITEMS

The following three action item categories spreads across the seven STAMP focus areas:

1. STAMP objective statements action items
2. Manuals, trainings, and guides action items
3. Funding and procurement action items

The remaining five action item categories belongs to the individual focus areas: field technology implementation, traffic control strategies, TMC technologies, and O&M.

A legend is included to use with the tables in each functional area as shown below.

●	Underway Task	S	Short-Term	CO	Central Office
○	Future Task	M	Mid-Term	D	Districts In Coordination With Local Agency(ies)
✓	Completed Task	L	Long-Term	\$-\$\$	Low-Cost
➔	Recurring Task	E	Enabler	\$\$\$	Medium-Cost
Q	Quick-Term	NM	Needle-Mover	\$\$\$\$-\$\$\$\$\$	High-Cost
				■	Low-Cost Needle-Mover

Legend for TSM&O Strategic Plan Focus Areas

- | | | |
|------------------------|-------------------------|-------------------------|
| i. TSM&O Mainstreaming | ii. Arterial Management | iii. Connected Vehicles |
| iv. Express Lanes | v. Freeway Management | vi. Information Systems |



» 3.4.1. STAMP OBJECTIVE STATEMENTS

The CO TSM&O division along with the Districts identified STAMP objective statements to support all major priority focus areas. This will help align the focus for the state and develop a strong foundation to support new initiatives. The goal of the STAMP objective statements is to set the future direction of the program. There are nine (9) action items identified under the STAMP objective statements as shown below in Table 2.

Table 2. STAMP Objective Statements

STAMP OBJECTIVE STATEMENTS Goal: Develop definitive objectives for key STAMP priority areas.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Develop STAMP Statement on priority corridors	1		ii	●	Q	E	CO	\$
Develop STAMP Statement on field technologies	2		ii,iii	○	S	E	CO	\$
Develop STAMP Statement on traffic control strategies	3		ii,v	○	S	E	CO	\$
Develop STAMP Statement on Traffic Management Center (TMC) technologies	4		ii	○	S	E	CO	\$
Develop STAMP Statement on Operations	5		ii	○	S	E	CO	\$
Develop STAMP Statement on Maintenance	6		ii	○	S	E	CO	\$
Develop STAMP Statement on outcomes and performance assessment	7		ii,vi	○	S	E	CO	\$
Develop STAMP Statement on multi-modal strategies	8		ii,v	○	S	E	CO	\$
Develop STAMP Statement on Arterial Systems Engineering Process	9		i,ii	●	Q	E	CO	\$

The above statements are identified as quick and short-term duration. The STAMP objective statements will be developed by the CO TSM&O Division. These statements fall under the TSM&O Strategic Plan priority areas and work as enablers and low-cost action items that will help move the needle in the right direction.



» 3.4.2. STAMP MANUALS, TRAININGS, AND GUIDANCE

FDOT CO and Districts identified a strong desire to update standards, develop training, and develop guides. The goal of manuals, training, and guidance is to provide resources for program delivery and staff development. Table 3 below shows 20 action items that are related to manuals and standards, training development, and guides development. Some of the items are recurring and some are ongoing.

Table 3. Manuals, Trainings, and Guidance

MANUALS, TRAINING, AND GUIDANCE Goal: Provide resources for program delivery and staff development.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Modify, Develop, and Update Standards and Manuals								
Traffic Engineering Manual	10		i,ii	➔	S	E	CO	\$\$
Florida Design Manual	11		i,ii	➔	S	E	CO	\$\$
FDOT Standard Plans for Roadway and Bridge Construction	12		i,ii	➔	S	E	CO	\$\$\$
FDOT Standard Specifications for Roadway and Bridge Construction	13		i,ii	➔	S	E	CO	\$\$
Training Development and Updates								
Traffic Signal 102	14		i,ii	●	Q	E	CO	\$\$
Traffic Signal 201	15	14	i,ii	○	S	E	CO	\$\$\$
Traffic Signal and Interconnect Design	16		i,ii	○	S	E	CO	\$\$
Systems Engineering Process for Arterials	17		i,ii	○	S	E	CO	\$\$
Advanced Signal Control Technology (ASCT)	18		i,ii	●	Q	E	CO	\$\$
Incorporated Arterial Fundings into Work Program Instructions	19		i,ii	●	Q	E	CO	\$
Guides Development And Updates								
V2I Communications	20		ii,iii	○	S	E	CO	\$\$
Advanced Traffic Signal Performance Measures (ATSPM) Guide	21		ii	●	Q	E	CO	\$\$
Integrated Corridor Management Guide	22		ii,v	○	M	E	CO	\$\$\$
Ramp Meter Guide	23		ii,v	●	S	E	CO	\$\$
District Traffic Signal Business Progress	24	5,6	i,ii	○	S	E	D	\$\$
District Traffic Signal Management Plan	25	5,6	i,ii	○	S	E	D	\$\$
Maintenance Guidelines	26	6	i,ii	○	S	E	CO	\$\$
District Maintenance Procedures	27	26	i,ii	○	M	E	D	\$\$
Operations Guidelines	28	5	i,ii	○	S	E	CO	\$\$
District Maintenance Procedures	29	28	i,ii	○	M	E	D	\$\$

Outreach effort to universities, private industry, colleges, etc. are part of *TSM&O Strategic Plan* mainstreaming. Please refer to *TSM&O Strategic Plan* for activities related to mainstreaming efforts.

All of these action items are identified as quick, short, or mid-term. Although these efforts are closely coordinated with the District staff, sixteen (16) action items will be led by CO and four (4) action items will be led by the Districts. These action items fall under the TSM&O Strategic Plan priority areas and all work as enablers as low-cost action items that will help move the needle in the right direction for staff and resource development.

» 3.4.3. FUNDING AND PROCUREMENT

FDOT CO TSM&O Division and Districts identified action items related to funding and procuring projects on arterials to ensure that the projects are maintained and kept up-to-date. The goal of the STAMP funding and procurement priority focus area is to identify funding opportunities for implementation and O&M of current and future arterial system deployments. Table 4 shows eleven (11) action items most of which are completed with some that are ongoing and recurring. Refer to Appendix B for the “TSM&O Project Selection Criteria” for the 10-year cost feasible plan development including arterial projects.

Table 4. Funding and Procurement Action Items

FUNDING AND PROCUREMENT Identify funding opportunities for implementation, operations, and maintenance for STAMP priority areas.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Develop 10-year cost feasible plan (capital, operations, and replacements)	30		ii	➔	Q	NM	CO,D	\$
Update work Program Instructions for arterials	31		i,ii	✓	-	NM	CO	\$
Apply for Federal grant programs (ATCMTD, FASTLANE/INFRA, AID, etc.)	32		ii	➔	S	NM	CO,D	\$\$
Develop damage reimbursement process	33		ii	✓	-	E	CO	\$
Standardize retiming scope and estimating process	34		ii	⦿	Q	E	CO	\$
Identify dedicated funding source(s) for emerging technology testing	35		i,ii	⦿	S	NM	CO	\$
Develop traffic signal maintenance contact template	36		ii	✓	-	E	CO	\$
Develop traffic signal maintenance contract oversight template	37		ii	✓	-	E	CO	\$
Develop arterial its operations and maintenance contract templates	38		ii,v	◯	M	E	CO	\$
Update to TSMCA	39		ii	✓	-	E	CO	\$

The above action items are identified as quick, short, or mid-term. Although these efforts are closely coordinated with the District staff, most of these will be led by CO while Districts will work with their work program office to identify funds for the projects. These action items fall under the TSM&O Strategic Plan priority areas as low-cost items that will help move the needle in the right direction for funding and procurement.

The four action items (highlighted in yellow above) are identified as low-cost, quick, short-term, **needle-mover items**. The program will utilize these items on a priority basis. One of the breakthrough tasks completed is the revision of the work program instructions to include funding for arterial projects.

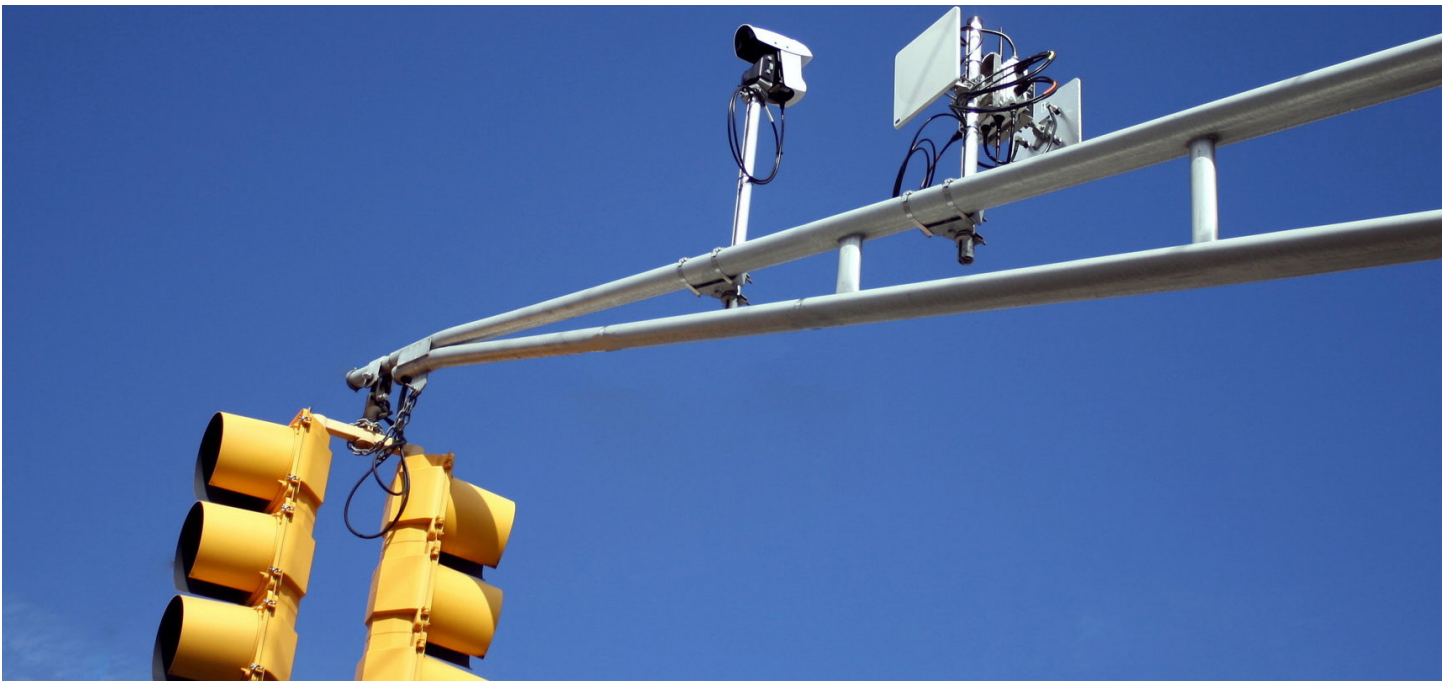
» 3.4.4. FIELD TECHNOLOGY IMPLEMENTATION

FDOT CO TSM&O Division and Districts identified action items related to field technology implementation, as shown in Table 5, to provide signal systems with higher situational awareness. The goal is to make all signals communicate critical information back to a central system for remote operation and monitoring. The following eight (8) action items are identified under this category.

Table 5. Field Technology Implementation Action Items

FIELD TECHNOLOGY IMPLEMENTATION Goal: Provide eyes and EARS ON ALL SIGNALS	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Add communications to all traffic signals	40	2	ii,v	●	L	NM	D	\$\$\$\$\$
Upgrade traffic controllers with high-resolution and CV data capabilities	41	2	ii,v	○	L	NM	D	\$\$\$\$\$
Develop plan for testing and evaluation of emerging technology	42	2, 35	ii,iii	●	S	E	CO	\$\$
Implement pilot projects for testing and evaluation of emerging technologies	43	42	ii,iii	●	S	NM	CO,D	\$\$\$\$
Develop plan for data collection and options	44	2	ii,v	○	M	E	CO	\$\$
Implement data collection plans and options	45	2, 44	ii,vi	○	M	NM	D	\$\$\$\$
Implement ITS/CV on priority corridors	46	1, 2	ii,iii	●	L	NM	D	\$\$\$\$\$
Update regional its architecture for arterials	47	2, 46	i,ii	➔	S	E	D	\$\$\$

These action items are identified as short, mid, or long-term. Although these efforts are closely coordinated with CO, most of the action items will be led by the Districts. These action items fall under the TSM&O Strategic Plan priority areas and five (5) items are identified as short, mid, and long-term, high-cost, needle-mover tasks while three (3) of them are enablers to help move the needle in the right direction for the field technology implementation. The term “high resolution” is used for the controller with a higher number of data enumerations i.e. at 1/10th of a second or higher, as desired by the local agency for their safety and operational needs. ATSPM and CV applications benefits from having 1/10th of a second high-resolution data.



» 3.4.5. TRAFFIC CONTROL STRATEGIES

FDOT CO TSM&O Division and Districts identified action items related to traffic control strategies, as shown in Table 6, to actively manage and operate corridors using remote access to all signals. The goal of the STAMP traffic control strategies is to develop stakeholder partnerships and use contractual services to deploy traffic control strategies. The following six (6) action items are identified under this category.

Table 6. Traffic Control Strategies Action Items

TRAFFIC CONTROL STRATEGIES Goal: Actively manage and operate corridors using remote access to all singles.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Identify staffing resources needs and implement plan to fill the gap	48	2, 38	ii,v	🟢	M	E	D	\$\$
Implement AAM for ICM	49	48	ii,v	🟢	L	NM	D	\$\$\$\$\$
Implement ATSPM	50	2, 3	ii	🟢	M	NM	D	\$\$\$
Implement ASCT	51	2	ii	🟢	L	NM	D	\$\$\$\$\$
Develop CV phase-in plan for traffic control	52	43, 61	ii,iii,v	🟢	M	E	CO	\$\$
Implement CV phase-in plan for traffic control	53	52	ii,iii,vi	🟡	L	NM	D	\$\$\$\$

The above action items are identified as mid to long-term. Although these efforts are closely coordinated with CO, most of these action items will be led by the Districts. These action items fall under the TSM&O Strategic Plan priority areas. Note that three (3) action items are identified as **long-term, high-cost, needle-mover** while one (1) action item, ATSPM, is identified as **mid-term, medium-cost, needle-mover**. Two (2) tasks are identified as enablers to help move the needle in the right direction for the traffic control strategies. FDOT is participating in the FHWA's Every Day Counts (EDC) Initiative 4 with a goal of installing ATSPM with at least four (4) agencies.



» 3.4.6. TMC TECHNOLOGIES

FDOT CO TSM&O Division and Districts identified action items related to Traffic Management Center (TMC) or central system software technologies, as shown in Table 7, to actively manage and operate corridors using remote access to all signals. The goal of the STAMP traffic control strategies is to develop stakeholder partnerships and use contractual services to deploy traffic control strategies. The following ten (10) action items are under this category.

Table 7. TMC Technologies Action Items

TMC TECHNOLOGIES Goal: Actively manage and operate freeway and arterial corridors leading to integrated corridor management.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
SunGuide with Arterial System Operation Module	54		ii,vi		M	E	D	\$\$\$\$
Develop Application Program Interface (API) to connect to local systems	55	54	ii,vi		S	NM	CO	\$\$\$
Implement API for Districts	56	55	ii,vi		M	E	D	\$\$\$
Develop dashboard requirement matrix (hierarchical)	57	56	ii,vi		Q	E	CO	\$\$
Implement dashboard application	58	57	ii,v,vi		M	NM	D	\$\$\$
Develop Decision Support System (DSS) for ICM	59		ii,v,vi		Q	E	D	\$\$
Implement DSS for ICM	60	59	ii,v,vi		M	NM	D	\$\$\$
Develop partnership(s) for Security Credential Management (SCMS)	61	43	ii,iii,vi		S	NM	CO	\$\$\$
Develop data management plan including maintenance	62	55	ii,iii,vi		S	E	CO	\$\$\$
Implement data management system	63	62	ii,v,vi		L	NM	CO,D	\$\$\$\$

The above action items are identified as quick, short, mid, or long-term. Although these efforts are closely coordinated between CO and Districts, some of these will be led by CO and some by the Districts. These action items fall under the TSM&O Strategic Plan priority areas. Note that four (4) action items are identified as **short to mid-term, medium-cost, needle-movers** while one (1) action item, Implement Data Management System, is identified as **long-term, high-cost, needle-mover**. Five (5) tasks are identified as enablers to help move the needle in the right direction for TMC technologies.

» 3.4.7. OPERATIONS AND MAINTENANCE

FDOT CO TSM&O Division and Districts identified action items related to TMC or central system software technologies, as shown in Table 8, to actively manage and operate corridors using remote access to signals and other ITS devices. The goal of the STAMP traffic control strategies is to develop stakeholder partnerships and use contractual services to deploy traffic control strategies. The following seven (7) action items under this category.

Table 8. Operations and Maintenance Action Items

OPERATIONS AND MAINTENANCE Goal: Proactive operations and maintenance of all SHS.	Task #	Predecessors	TSM&O Focus #	Status	Q-S-M-L	Mover, Enabler	CO,D	\$
Develop staffing resources plan for operations	64	28	ii	●	S	E	CO	\$\$\$
Develop operations baselines and performance goals	65	64	ii,v	●	S	E	D	\$\$\$
Develop staffing resources plan for maintenance	66	26	ii,v	●	M	E	CO	\$\$\$
Develop maintenance baseline and performances and performance goals	67	66	ii,v	●	S	E	D	\$\$\$
Develop Statewide Enterprise application (SEA) for TSMCA	68		ii,vi	●	M	NM	CO	\$\$\$
Automate TSMCA inspection verification process	69	55	ii,vi	○	M	NM	D	\$\$\$

The above action items are identified as short to mid-term. Although these efforts are closely coordinated between CO and Districts, some of these will be led by CO and some by the Districts. These action items fall under the TSM&O Strategic Plan priority areas. Note that two (2) action items are identified as **mid-term, medium-cost, needle-movers**. Four (4) tasks are identified as enablers to help move the needle in the right direction for O&M.

» 3.4.8. STAMP ACTION PLAN EARLY INITIATIVES

» As a result of the STAMP action items listed in Tables 4 through 8, there are several early initiatives that are identified and categorized under the following four areas to move forward with:

1. Detection – to evaluate and deploy detection devices and/or use probe data for performance measures.
2. Upgrades – to upgrade infrastructure systems for Districts, and local agencies, and fill communication gaps for all signals.
3. Controllers – to upgrade agency controllers to latest version(s) to address ATSPM and CV needs.
4. Emerging Technologies – to evaluate and deploy emerging technologies at the field and TMC level.

These early initiatives are tied to the District’s performance goals and a return on investment analysis should be performed before considering any of the elements for deployment.

4 | PERFORMANCE MEASURES AND ASSESSMENT

» 4.1 PERFORMANCE MEASURES AND GOALS

The 2017 TSM&O Strategic Plan, Section I.C “Path to Goal-Setting” provides direction related to outcome-based performance measures and performance assessment. Districts and the CO TSM&O Division will use the “Path to Goal-Setting” in Section I.C. to establish Goals for mobility, safety, and maintenance outcome-based performance measures. Mobility performance measures applicable to STAMP include travel time reliability, throughput, and delay reduction. These performance measures and goals are intended to apply to all modes of transportation using these arterial roadways. Districts are encouraged to consider and set goals for other outcome-based performance measures for arterials, as well, in collaboration with MPOs and local agencies. District will establish performance-based goals for arterial routes and route segments based on region or context settings by June 30, 2019. Goals will reflect historical performance and traffic volumes. Districts will also establish PEG for routes and route segments by June 30, 2019.

» 4.2 PERFORMANCE ASSESSMENT

Strategic Plan Section V.C. “Performance Metrics, Measurement, Monitoring, and Reporting” provides direction on performance assessment for the next three years. The intent is for Districts to monitor Goals and PEG associated with O&M continually and report to the TSM&O Division quarterly and annually as follows for STAMP:

- FY 17/18: Report accomplishments toward selection of performance measures, selection of arterial routes and segments to monitor, and creation of abilities to report on performance outcomes.
- FY 18/19: Report accomplishment toward selecting Goals and PEG.
- FY 19/20: Report arterial performance outcome results quarterly and annually for arterial network for which the District supports implementation, operation or maintenance of advanced arterial systems.

TSM&O strategies and projects selected for implementation should focus on outcomes to support achieving Goals, PEG, and P-PEG described in Strategic Plan Section I, “TSM&O Vision, Mission, and Goals”. Many STAMP strategies have other potential performance metrics and benefits. As appropriate, Districts may establish Goals, PEG, and P-PEG for these metrics. Districts are encouraged to monitor and report results toward accomplishment of any additional Goals, PEG, and P-PEG, at least annually.

5 | CONCLUSION

The STAMP Action Plan outlined 69 action items that are specific, measurable, accountable, relevant, and timely for CO and Districts to accomplish within the next three to five years. The intent of this document is to provide Districts and FDOT Partners a statewide vision and roadmap under the seven priority focus areas. Once the STAMP Action Plan is adopted, the Districts and CO will be moving towards achieving action item goals in a time bound schedule. In the process, the action items may be modified, added, or removed in full coordination with the Districts and FDOT Partners. The ultimate purpose of the STAMP Action Plan is to achieve the outcome goals while periodically assessing these goals to make sure that the outcomes are met. The Districts should work towards improving arterials operations with all tools available as identified in the STAMP Action Plan and TSM&O Division will provide all support and guidance achieve outcome goals.



LIST OF ACRONYMS

AAM	Active Arterial Management	PD&E	Project Development and Environmental
ASCT	Adaptive Signal Control Technology	PDO	Property Damage Only
ATSPM	Automated Traffic Signal Performance Measures	Ped-Safe	Pedestrian Safety
CMM	Capability Maturity Model	PEG	Performance Enhancement Goals
CO	Central Office	P-PEG	Project-Performance Enhancement Goals
CV	Connected Vehicle	RoS	Routes of Significance
CVTSS	Connected Vehicle Traffic Signal System	SCMS	Security Credential Management System
DMP	District Managed Programs	SEA	Statewide Enterprise Application
DSS	Decision Support System	SHRP2	Strategic Highway Research Program
DVMT	Daily Vehicle Miles Traveled (in thousands)	SHS	State Highway System
FDOT	Florida Department of Transportation	SMP	Statewide Managed Programs
FHWA	Federal Highway Administration	SIS	Strategic Intermodal System
FSP	Freight Signal Priority	STAMP	Statewide Arterial Management Program
ICM	Integrated Corridor Management	STEOO	State Traffic Engineering and Operations Office
ITS	Intelligent Transportation System	TMC	Traffic Management Center
M&O	Management & Operations	TPO	Transportation Planning Organizations
MAP-21	Moving Ahead for Progress in 21st Century	TSM&O	Transportation Systems Management and Operations
MMICM	Multimodal Integrated Corridor Management	TSMCA	Traffic Signal Maintenance and Compensation Agreement
MPO	Metropolitan Planning Organizations	TSP	Transit Signal Priority
MVM	Million Vehicle Miles		
NHS	National Highway System		
O&M	Operations and Maintenance		

APPENDIX A

CMM WORKSHOP	23
TSMCA WORKSHOP NOTES	29
DISTRICT INTERVIEW QUESTIONS	34
DISTRICT INTERVIEW QUESTIONS ANALYSIS	35

APPENDIX A CMM WORKSHOP



225 E ROBINSON STREET, SUITE 450
ORLANDO, FL 32801
P 407.540.0555 F 407.540.0550

WORKSHOP NOTES

Date: May 2017
Project: FDOT Central Office TSM&O
Subject: ATSPM CMM Workshop

Project #: 19408

Meeting Attendance

[will update with sign-in sheets]

Raj Ponnaluri, FDOT Central Office
Eddie Curtis, FHWA
Kevin Lee, Kittelison & Associates, Inc.
Jennifer Musselman, Kittelison & Associates, Inc.
Alison Tanaka, Kittelison & Associates, Inc.

Key Findings

- Strong collaboration and ongoing communications between FDOT Central, FDOT District, and local agencies for traffic signal management
- Strong willingness to try new technologies and maximize current capabilities
- Desire among districts to integrate freeway and arterial management, particularly related to travel time reliability
- There are varying levels of needs related to infrastructure, operations, advanced training, and staffing

APPENDIX A CMM WORKSHOP

Recommendations

Recommendation	Timeframe	Purpose	Deliverable	Business Processes	Systems and Technology	Performance Measurement	Organization & Workforce	Culture	Collaboration
Conduct follow-up survey with district staff to assess CMM level.	Next six weeks	Evaluate existing conditions to provide a basis for development of a Statewide Arterial Management Action Plan.	CMM survey	X	X	X	X	X	X
Conduct ITE Traffic Signal Benchmarking survey (supplement to Capability Maturity Assessment)	Next six months (pending ITE completion in Summer 2017)	Conduct benchmarking survey for each District and local agency to assess infrastructure, institutional, operational, and funding levels. The assessment will serve as a baseline of comparison across the State and the nation.	ITE Traffic Signal Benchmarking Survey	X	X	X	X	X	X
Conduct individual Traffic Signal Management workshops with each District.	Next six to nine months/ After the survey	Assess traffic signal management and operational goals within each District. Determine localized needs, priorities, and opportunities for improving traffic signal operations. The information provided during these work sessions can lead to prioritized action items.	District CMM Assessment	X	X	X	X	X	X
Develop Capability Building oversight framework	Next three to six months	Develop a framework for FDOT to provide oversight on priority projects to guide, assess, and review agency capability learning opportunities during a project life. Learning opportunities will target activities for agencies to build and strengthen Capability Maturity areas.	Capability Building framework	X	X	X	X	X	X
Develop Statewide Arterial management Action Plan framework	Next three months	Develop a statewide vision and set of objectives for arterial management so all districts and local governments are working toward the same vision. Provide guidance to evolve existing practices into managed programs that are catered to local environments.	Action Plan Framework	X	X	X	X	X	X
Finalize Statewide Arterial (Traffic Signal) Action and Management Plan	Next six to nine months	Develop priority activities/tasks to integrate active management and operations into statewide, district, and local work flow. Integrate District and local level priorities as part of Statewide goals and objectives.	Action Plan Framework	X	X	X	X	X	X

Recommendation	Timeframe	Purpose	Deliverable	Business Processes	Systems and Technology	Performance Measurement	Organization & Workforce	Culture	Collaboration
Document Arterial Management Standard Operating Procedures	Next nine to twelve months	Develop and document guidance for arterial management including roles and responsibilities for signal timing practices, operations, and maintenance. Document work flow needs to maintain basic traffic signal service.	Arterial Management SOP	X			X		X
Identify past projects to highlight best practices.	Next six months	Encourage information sharing among the districts, between groups in the districts (construction, planning, design, etc.), and with the public.	FDOT Newsletter					X	X
Identify upcoming projects in the work program where arterial management strategies can be incorporated.	Next six to nine months	Leverage advanced signal operation technologies for pilot projects to expand knowledge. This will help FDOT start implementing arterial management strategies in the near term while they develop internal business processes.	Pilot Projects		X	X			
Conduct maintenance training for district staff and local governments.	Over the next year	Improve technical knowledge of new signal equipment so districts and local governments can better maintain their systems. Provide minimum levels of traffic engineering and traffic signal operations fundamentals.	Maintenance Training Program		X		X		X
Develop a traffic signals operations training program.	Over the next year	Develop and expand training programs to support the Districts and local agencies build minimum levels of technical knowledge for traffic signal timing, coordination, and equipment maintenance before moving forward with advanced technology implementation. Coordinate with State Universities (University of Florida, Florida Atlantic, Central Florida) and professional organization chapters (ITE, IMSA)	Operations Training Program				X		X
Create traffic signal equipment asset management database.	Over the next year	Build a consistent database platform for all Florida agencies to document and geocode their signal equipment to help assess existing assets and improve statewide collaboration for future investments	Statewide Asset Database				X		X
Provide guidance for districts to set goals, targets, and performance measures related to key objectives.	One to two years	Each district may address objectives differently, and priorities will vary. Central Office should provide guidance to get the districts heading the right direction, and allow for enough flexibility so the districts can work toward their goals in the way that works best for them.	District-specific goals, targets, and performance measures	X		X	X	X	X

APPENDIX A CMM WORKSHOP

Workshop Notes

FDOT Landscape

1. FDOT released a draft TSM&O Strategic Plan in January 2017. The final plan is expected to be released in April/May 2017.
 - a. **Strategic Plan Vision:** to increase the delivery rate of fatality-free and congestion-free transportation systems supporting the FDOT vision.
 - b. **Strategic Plan Mission:** to identify, prioritize, develop, implement, operate, maintain, and update TSM&O strategies and measure their effectiveness for improved safety and mobility.
 - c. Outlines path to target setting for outcome-based performance measures: mobility, safety, and systems maintenance.
2. TSM&O mainstreaming underway
 - a. Planning and PD&E processes covered in January task team meeting.
 - b. Increasing interoffice coordination and collaboration.
 - c. Adding TSM&O content to other functional guides.
3. Previous Capability Maturity Model (CMM) Efforts – FDOT conducted a CMM self-evaluation in March 2016.
 - a. Freeway management, incident management, and operations & maintenance (O&M) received the highest scores.
 - b. Arterial management scored lower. Arterial management funding is evolving from project-by-project funding to programmatic funding.

National Perspective

1. Identifying and documenting business practices can help an agency:
 - a. Better understand current business processes.
 - b. Identify missing stakeholders.
 - c. Identify gaps in communications or data flows.
 - d. Formalize roles and responsibilities to ensure continuity and retaining institutional knowledge.
2. Key observations from around the nation:
 - a. Most traffic signal programs are underfunded, but more resources has not proven to be a significant predictor of success.
 - b. Few traffic signal system projects effectively navigate and obtain funding through the traditional planning process.
 - c. Signalized intersections are complex; clear objectives support selection of appropriate design, operations, and maintenance strategies.
 - d. Workforce capability to support traffic signal design, operations, and maintenance is limited.
 - e. Technology is advancing rapidly; we must keep up to remain relevant.
3. FHWA has found that most issues are not technical but, instead, program-based.
4. The good-basic-service concept is doing what is most important with a given set of resources.

5. Automated Traffic Signal Performance Measures (ATSPMs) can support an objectives and performance-based approach to managing traffic signal programs.
 - a. ATSPMs provide a sustainable method to continuously monitor signalized intersections.
 - b. Proactive monitoring of a signal system will lead to quicker problem solving and fewer public service requests.
 - c. ATSPMs can be implemented without full detection (or even communication).
 - d. Performance-based programs allow agencies to tell better stories about their signal systems.

Envisioning Purpose

1. Participants were asked to describe their role in operating and maintaining a signal system, what motivates them to fulfill their role, and how they could work together with local agencies to get better.
2. Key takeaways included:
 - a. Motivators included: public service requests, ability to work with new technology to address congestion, improving mobility and safety, and active problem solving.
 - b. There is strong collaboration between agencies related to traffic signals, but could use more coordination between traffic signals and other transportation departments (i.e. construction, planning, design).
 - c. Strong desire to integrate freeway and arterial management, particularly related to travel time reliability.
 - d. Local agencies operate most signals on the state highway system. There are varying levels of knowledge and expertise among maintaining agencies.
 - e. Some districts are taking a more proactive role in operations to alleviate issues of jurisdictional boundaries and on certain pilot projects.
 - f. Desire to improve data sharing among agencies.

Focusing on Successes

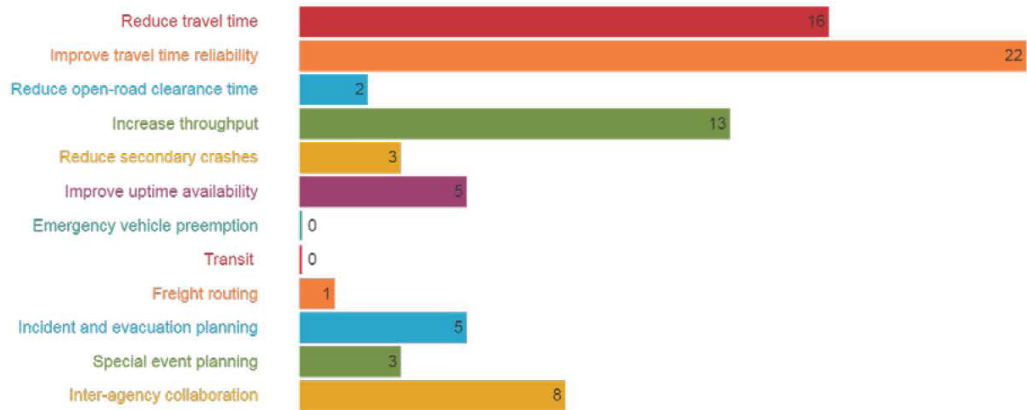
1. Participants were asking to share their successes and what makes them proud.
2. Strengths included:
 - a. Collaboration across jurisdictions (e.g., active arterial management, integrated corridor management).
 - b. Strong start to signal performance measures with pilot projects and dashboards.
 - c. Strong willingness to try new technologies and desire to maximize all current capabilities and develop processes for sharing data.
 - d. Use of CMM assessment to improve business processes.

Identifying Priorities

1. The participants were asked to choose their top three arterial management priorities. Figure 1 below summarizes the results of this exercise.
2. The top three priorities were: improve travel time reliability, reduce travel time, and increase throughput.
3. Participants noted that reducing delay and balancing across all modes are also top priorities.

APPENDIX A CMM WORKSHOP

Figure 1: Results of Identifying Priorities Exercise



*25 attendees participated in the poll

APPENDIX A

TSMCA WORKSHOP NOTES

Florida Department of Transportation
Traffic Engineering and Operations Office



MEETING NAME

Signal Operations and Maintenance
Needs and Objectives Workshop

DATE

7/25/2017

TIME

10:00 AM-12:00 PM

LOCATION

Rhyne, Room 330

PARTICIPANTS

Steve Benak	Mark Mathes	Rick Napora
Mikayla Chunn	Steve Miller	Raj Ponnaluri
Jeremy Dilmore	Adam Moser	Rory Santana
Fred Heery	Alan Mrvica	Rakesh Sharma
Cliff Johnson		

MEETING MINUTES: The following meeting minutes were generated from the Signal Operations and Maintenance Needs and Objectives Workshop meeting:

C2S: Basis of the workshop is to use the business process tool from the SHRP2 workshop to reach consistency throughout the state and to understand the purpose of Traffic Signal Maintenance and Compensation Agreement (TSMCA), the reasoning behind it, establish goals and break down the TSMCA covenants.

CO: Program planning expectations is that the Districts do what it takes to ensure everything is done under the TSMCA. It was relayed that this workshop was an information gathering workshop only and that getting with each District one on one will come at a later time.

C2S: It is recommended that there be consistency among Districts for monitoring and reporting of all TSMCA covenants.

D3: Made a general comment/conversation regarding the TSMCA reporting process that the deadlines that are given in the agreement should be spread out or adjusted over the course of the work program cycle year instead of required to be submitted all at once on June 30. It makes it difficult for the District to go through all of them in the required timeframe for review and compensation.

CO: Workshop will go over influences for the TSMCA, general reliability goal or goals of the TSMCA, and current business process for reporting the TSMCA covenant requirements. What are the thoughts of a need statement? The need is currently an agreeable, standardized monitoring and reporting process for submitting Exhibit A and necessary reporting/supporting items. This process should be established along with identifying a reliability goal. Additionally, it was stated that the workshop would be a good forum for further vetting of those concerns expressed by District Three.

Influences to TSMCA: It was asked by each District to reflect on the process influences for the TSMCA. Big Directive (Top Down), Event Driven or Needs Based.

C2S: As you walk through the TSMCA, what are the influencing factors of the agreement?

- **D1:** The TSMCA is a top-down approach and needs based. Needs are derived from agreements not being maintained properly (public and liability issues).
- **D2:** There is likely two tiers – Needs based for larger municipalities that need to up keep their signal system and receive funds to do so and the second level is Top Down for smaller agencies

APPENDIX A

TSMCA WORKSHOP NOTES

Page 2 of 5

where operation and maintenance of signals is required by the TSMCA that they sign. Those smaller agencies may not see much benefit.

- D3: Agree with D2, most agencies with less than 20 signals should opt-out, small agencies will have a directive top-down approach and large agencies will be needs based.
- D4: Agree with D2 and D3.
- D5: Agree with D2 and D3, the driving factor depends on the agency.
- D6: Both needs and top-down, there is not consistent operations. Likely need performance measures better defined.
- D7: Note that all money paid goes into a general fund that does not allow money to be redirected. Can't tell the agencies how to spend the money but required to maintain the signals by agreement – so likely a bit more top down approach. There has been conversation that the problem agencies have is with other, additional devices they are asked to maintain and that creates a burden.

Covenant 5 (Traffic Signal Maintenance Log) – what is currently submitted/provided:

D7: For reporting, keep in mind there is not a standard for how the locals should submit the documents, they do it however it is easiest for them (i.e. different documents and different mediums). Sometimes provided digitally, some might submit manually written logs or even use whatever software they have available.

D6: Not sure of report supplied – They are working to define what can be provided by County. Since Miami-Dade is the largest agency, they pretty much go by what they can provide.

D5: We have a standard “high level self-assessment” we send to the agencies and they update and send it back to us for a standard.

D4: Not sure on how logs are submitted – will advise later

D3: Logs are kept in the cabinet for the most part. It is not defined in the TSMCA how they should look or how they should be submitted on purpose - to keep it flexible for the MAs. There are 55 or so MAs, so they all have various formats. If they are asked for a sample, they will give them one. Of note, there were about 4-5 damage reimbursements last year.

D2: Get logs in different formats. Note - Contractors do not do a good job of keeping logs if they're doing the maintenance. D2 spot checks currently around 10% or so of state signals. It was also noted that as far as locates go, the agencies only mark around the signalized intersection, not any interconnect and don't think that's part of the requirement, so it goes unmarked many times.

D1: Should agencies seeking reimbursement provide proof that all parts of the TSMCA have been completed? We do not have a standard. Use a log for self-reporting – possibly the one Central Office sent out. We take what the MAs give, but think there should be a standardized type of form for this.

Covenant 7: (Mast Arm Inspection/PM) – what is the level of coordination with District Maintenance?

C2S: Is there currently a process in place for mast arm structure inspection?

D1: There is no coordination between Traffic Operations and the District Maintenance. They will send their schedule of inspection in advance, but do not get notified if contacting maintaining agencies. Would like to know in advance and then coordinate with locals.

D2: Traffic Operations receives a report from Structures Maintenance on inspections. It should be noted - Maintaining Agencies have issues with acceptance of contracted projects and having to go back and fix issues. MAs find themselves having to go back to structures and fix issues that should have been fixed before FDOT final acceptance of a project. The issues are identified during the FDOT Maintenance inspections and MAs are told to fix them.

D3: Traffic Ops gets copied of work orders and sorts through ones that should be sent to MAs. Some items that are identified during the Structures Maintenance inspections are sent elsewhere to fix. It is difficult to get them to replace bolts, etc. We are now attempting to go through maintenance contracts.

- C2S: Do you vet the inspection work orders?

- D3: Yes, case by case.

D4: District maintenance office handles maintenance, not sure the level of interaction.

D5: Believe they are copied on the Structures Maintenance inspection reports, but Maintenance usually goes right to MAs. There can be disagreement in what the MAs are responsible for fixing. It would be nice if the Structures Maintenance inspectors carried some items that could be fixed right when they are doing inspections (tightening caps, covers, etc.). Also, would be nice to get a structures maintenance checklist that both the MA and Maintenance personnel agree to, to avoid disagreements?

- CO: There is a need for inspectors to know what is in the agreement.

D6: There is good coordination between Structures Maintenance and Traffic Ops. Currently, a Structures Inspection flow diagram is being created and shared, as well as meetings between Traffic Ops, Structures Maintenance and Miami-Dade. There is inspection review and determination whether issues are sent to MAs or not. MAs usually have a contractor do the structure work, unless damage. Contractors are covered under the agreement unless there is damage.

D7: We do not get reports, go to local maintenance agency, need to have it defined (what is required of agency). Question was raised how to know if it is a FDOT issue or an MA issue to take care of? The issues are sent directly to MA from Structures Maintenance then can be brought up in bi-monthly meeting with Traffic Ops to further address what to do (or disagreement).

D5: Can minor issues be addressed during an inspection?

- CO: If other contracts cover what is found during the inspection, then they should take on more.

D6: Need to decide what contract covers what (i.e. structure contractors to do what exactly, where are the lines?).

- CO: In-house or contractors for inspectors?
- D6: Contractors.
- CO: It would be good to get with Maintenance office and discuss the process for this. Collaboration on what is passed to MA versus FDOT responsibility between Structures Maintenance and Traffic Ops

Covenant 10/11: (Signal Phasing and Timing) – Is the process outlined in the TSMCA being followed? How often is there coordination between MA and FDOT on signal timing and retiming projects?

D1: There is Evaluation and Coordination. District supports MA with timing priorities and retiming projects. FDOT manages retiming projects. MAs maintain timing reports and coordinate with FDOT

- C2S: Do you have actual access to their timing?
- D1: Through their reports.

D2: Same as D1. Question was asked – Does email approval suffice for written approval in the TSMCA? It was agreed that email is an acceptable verification/approval method.

D3: Phasing changes are rare, need to be approved by the Department. Timing changes, for larger agencies are approved. Timing is made available upon request.

D4: Most requests come from citizens; It is looked at by the consultants and recommendations are made. Then given back to MA to implement. There is currently no real-time access to the timing database held by the MAs, but we can request it and they will email it.

D5: Changing of phasing coordinated through the office, we have a form for them to sign off from. Small agencies will go through the District. We have read-only access to some systems, but can request the information if needed.

D6: Same as D5, District Traffic Operations Engineer (DTOE) approves changes, we can put in a request. We like the idea of a maintenance log and Signal Phase and Timing log.

D7: Phasing: District approved, get emailed PDFs, don't want them to make changes on arterials that were just retimed or that have active arterial management.

APPENDIX A

TSMCA WORKSHOP NOTES

Page 4 of 5

Covenant 30: (Signal Inspection) – Does the District currently conduct signal inspections to ensure TSMCA covenants and preventative maintenance is being done?

D7: No spot inspections are performed and not planning on doing it in the future. Do not have personnel or time to do this.

D6: There is currently a plan being developed for signal inspections on about 10% of the District state signals. It is currently being coordinated with MAs.

D5: Not currently doing inspections

D4: Started spot checking 10 signals a year with a certified electrician using the SWAT checklist (also monthly visual inspections). We do run into problems with the MAs since some of the inspectors don't have all the qualifications that the MA is looking for (electric journeyman, IMSA, etc.), so it can be complicated. The checklist they use is quite short. Mostly just visual inspection (detection tested to see if it works, etc.).

D3: Signal inspections are done by a Districtwide consultant. They make the rounds (set route) every year as well as checking synchronization of time clocks for timing coordination. Many inspections initiated by complaints, such as detection not working. MAs address any issues found. The District feels that many of the small agencies should be required to opt out as they find it hard to keep up with the maintenance, let alone operation of the signals they are responsible for.

D2: Use consultant to perform inspections (spot inspections). Then notify MA and they take care of the issues identified. All this work is done on District money since no program is in place for this.

D1: Haven't officially done inspections, but if we notice something then we will contact the maintaining agency.

Covenant 31 parts a), b), c): Critical Detection (ped and vehicle), preventative maintenance and interconnect person responsible

CO: We will combine this one since we talked about preventative maintenance and inspection already in the logs and inspection portion.

D1: Critical Detection: we are receiving from annual reports. We rely heavily on complaints. For Part C) We do get reporting of staffing and any changes (usually via email).

- C2S: Do you start the "monitoring clock" on detection issues if it is a complaint?
- D1: Yes, and usually keep track via email.

D2: It is hard to track critical detection. Usually not involved in the process that MAs have. District can monitor some systems such as ATMS now used by many larger MAs. One thing of note, some detection issues identified are taken care of by contractors who may wait until a larger number of detectors have gone bad before sending out crews to fix them all at once, so may not meet deadlines as outlined in the TSMCA. We do have interconnect contacts for Gainesville and Jacksonville and some surrounding counties that have those capabilities.

D3: Do not proactively identify bad loops or track time. If we do see a bad loop, maintenance takes care of it immediately, PM cycles we get from an annual report (which also includes names of personnel)

D4: Detection complaints go to MA to fix, whether District reports it or citizen. District doesn't keep track of time. Find response time is very good. These are not usually track because they don't usually exceed 72 hours (or the 90-day period). The District has the interconnect contacts as required

D5: MAs self-report critical detection issues/fixes on annual report. District 5 also doesn't keep track of time to fix the detection issues. Like District 2, they likely bundle a bunch of them together and fix them. For monitoring – usually use consultants if there is access to the system to verify issues and that interconnect is working.

D6: Same as above Districts, do not monitor time of repairs.

D7: Timing concerns, some can cut new loops, others have to wait until they can execute a contract to get a bunch of them fixed. There is a contact list for any noticed problems.

CO: The last slide is summarizing the next steps of this process. Districts will be visited one on one to review a stated objective for each covenant and options/comments will be discussed. The comments from this meeting on the existing process will help shape the objectives. It was also noted that this may lead to a new process, such as a uniform reporting format or tool, such as the one District 2 set out to create.

D2: Briefly summarized their effort and a few lessons learned such as Access Database to a SQL database and other details that may need to be modified

Action Items:

- CO: Set-up a call with the District signal individuals for September to discuss the TSMCA covenants.
- D3: Send the standard format for the maintenance log/annual report to CO.
- D5: Send standard excel document that is sent to the agencies for updates.
- C2S: Work on objectives for each covenant and discuss in the District one on one calls.

This is our understanding of items discussed and decisions reached during this meeting. For modifications to this meeting minutes, please contact Raj Ponnaluri at raj.ponnaluri@dot.state.fl.us.

[End of Meeting Minutes]

APPENDIX A

DISTRICT INTERVIEW QUESTIONS

Questions for STAMP Action Plan interviews with Districts:

1. What are your District's hot-button issues with regards to arterials? What are your priority focus areas?
2. How do you expect the STAMP Action Plan to help with District's regional goal achievement?
3. Would you be interested participating in the development of the Action Plan? How?
4. How do you want to define the action items? Is there an expectation to set up a baseline and make the Action Plan schedule driven?
5. How do you see it related to the TSM&O strategic plan? What components would you like to bring in to the Action Plan?
6. What are the major outcomes you expect from the Action Plan? (Outcomes)
7. What type of outcome based performance measures you would like to see with the Action Plan?(Performance Assessment)
8. What field technologies we should pursue under the Action Plan? (Field Technologies)
9. What traffic control strategies we should pursue under the Action Plan? (Traffic Control/Arterial TSM&O Strategies)
10. What are the traffic incident management existing practice in your region for arterials? How can we improve upon the existing practice to extend to arterials?
11. What TMC technologies we should pursue under the Action Plan? (TMC Technologies)
12. What are your operations goals and how can we improve on the existing practices with regards to arterials? (Operations)
13. What are your maintenance goals and how can we improve on the existing practices with regards to arterials? (Maintenance)
14. What is needed before meaningful outcome-based performance assessments for arterials can occur
15. What are some needle-movers in STAMP that can help FDOT maintain and establish the national leader status, mobility goals and safety goals on arterial management?

APPENDIX A DISTRICT INTERVIEW QUESTIONS ANALYSIS

Districts' Survey Responses

Performance Measures	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	3.0								
Travel Time Reliability	1	1	1	1	1	1	1	1	8
Reduced Delay/Increased Mobility	1	1		1	1	1		1	6
Device Availability/Uptime		1		1	1			1	4
Improved Safety	1							1	2
Bike/Ped Safety	1				1				2
Wrong-way Driving Safety								1	1
Pilot Project Evaluation						1			1
Modal Choice					1				1
Response time for Signal Maintenance		1	1						2

Operations	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	1.8								
Active Arterial Management		1				1	1	1	4
Integrated Corridor Management		1							1
Traffic Control Strategies			1						1
Origin Destination Data Collection		1							1
Adaptive Signal Deployment		1				1			2
Traffic Signal Data Access	1			1					2
Facilitator for AAM (FDOT vs. LA)				1		1			2
Diversion Routes							1		1
Operational Resources				1					1
Arterial TIM/Special Events				1	1		1		3

Maintenance	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	1.6								
Device Maintenance			1	1		1			3
Maintenance Agreements for Smaller LA		1							1
TSMCA Oversight				1		1			2
Maintenance Agreements for Opt Outs						1			1
Local Agency Partnership					1	1			2
Statewide Signals Inventory		1							1
Signal System Life Cycle						1			1

Infrastructure Upgrades	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	1.5								
Fiber upgrade to SM		1							1
Existing Infrastructure Plan						1	1		2
Cellular vs. Fiber					1				1
Emerging Technologies				1		1			2

Resource Development	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	1.7								
Resource Development		1				1			2
Statewide Training Plan						1			1
Policy and Guidance				1				1	2

Funding	D1	D2	D3	D4	D5	D6	D7	FTE	Average Score
	1.7								
Local participation in O&M				1		1			2
Traffic Signal Retiming						1	1		2
10-year Cost Feasible Plan					1				1

Travel Time Reliability	8
Reduced Delay/Increased Mobility	6
Device Availability/Uptime	4
Improved Safety	2
Bike/Ped Safety	2
Wrong-way Driving Safety	1
Pilot Project Evaluation	1
Modal Choice	1
Response time for Signal Maintenance	2
Active Arterial Management	4
Integrated Corridor Management	1
Traffic Control Strategies	1
Origin Destination Data Collection	1
Adaptive Signal Deployment	2
Traffic Signal Data Access	2
Facilitator for AAM (FDOT vs. LA)	2
Diversion Routes	1
Operational Resources	1
Arterial TIM/Special Events	3
Device Maintenance	3
Maintenance Agreements for Smaller LA	1
TSMCA Oversight	2
Maintenance Agreements for Opt Outs	1
Local Agency Partnership	1
Statewide Signals Inventory	1
Signal System Life Cycle	1
Fiber upgrade to SM	1
Existing Infrastructure Plan	2
Cellular vs. Fiber	1
Emerging Technologies	1
Resource Development	2
Statewide Training Plan	1
Policy and Guidance	2
Local participation in O&M	2
Traffic Signal Retiming	2
10-year Cost Feasible Plan	1

APPENDIX B

STAMP PROJECT SELECTION CRITERIA

APPENDIX B

STAMP PROJECT SELECTION CRITERIA

Background

With Intelligent Transportation Systems (ITS) on the State Interstate Highway System and Turnpike routes nearing completion throughout Florida, the 10-Year ITS Cost Feasible Plan (CFP) will now also focus on arterials. All Statewide Arterials Management Program (STAMP) projects on any State Highway System (SHS) route may now be added to the 10-Year CFP. The purpose of this STAMP Project Selection Criteria (SPSC) is to provide objective criteria to select District projects. The criteria will assist with project prioritization and support requests for additional annual funding allocations at the annual program planning workshops.

Project Selection Criteria (PSC)

1. The project falls within one of the Priority Focus Areas (PFA) in the **2017 TSM&O Strategic Plan**.
2. The project is supported by the District's TSM&O Master Plan or other applicable regional plan.
 - a. The project falls on one of the District's identified priority corridors.
 - b. The project is consistent with the District's Regional ITS Architecture.
 - c. The project has support from the applicable Metropolitan/Transportation Planning Organization (MPO/TPO).
 - d. The project has support from the applicable local maintaining agency(ies).
3. Mobility and/or safety needs are documented within the project route or route segment.
 - a. Proposed TSM&O project will address documented mobility and safety needs or enables a future project that will impact mobility and safety (e.g., a fiber-optic communication project in advance of installation of advanced technologies on a signalized arterial SHS route).
 - b. Safety and/or mobility Project Performance Enhancement Goal(s) (P-PEG) is/are established for the project. At least one of the outcome-based performance measures identified in the **2017 TSM&O Strategic Plan** is addressed by P-PEG.
 - c. The District is prepared to assess outcome-based performance results of the project within six months of the project becoming fully operational.
4. The District has identified a plan for on-going operations and maintenance of the proposed improvements, including estimated costs for future year operations and maintenance.

Project Eligibility

See the Work Program Instructions for DITS funding eligibility requirement. In general, eligible projects include transportation technologies, operations, and life-cycle equipment replacement. Equipment maintenance is funded through the Office of Maintenance and not eligible for DITS funding. DITS funding can only be used to support technology infrastructure capital cost and operations. Roadway alterations required for TSM&O projects such as rebuilding shoulders for a shoulder use project are not eligible for DITS funding.

Project Funding Submittal and Selection

The District TSM&O Division will prioritize these projects based on the PSC. If projects meet and exceed PSC and the DITS funding allocations (targets), the District TSM&O Division will look at the magnitude of the P-PEG (PSC, Item 4) to prioritize funding.

The District TSM&O Division will also work with the Work Program Office to identify other types of funding resources to maximize the impact of TSM&O to improving mobility and safety. The following four step process should be followed for project submission:

1. Identify Projects and corresponding system (SIS, NHS, SHS, or off-system).
2. Develop engineer's estimates of planning, design, implementation, operations and maintenance.
3. Develop project schedule.
4. Create candidate project files with District work program staff.
5. Submit to Central Office information to support project selection criteria for review and consideration for securing funds.
6. If approved, projects ID will be created and added to the TSM&O 10 Year CFP.

2 0 1 8
S T A M P

A C T I O N
P L A N