

TSMO PROJECT SELECTION AND PRIORITIZATION PROCESS

By Florida Department of Transportation

IN THIS CASE STUDY YOU WILL LEARN:

- 1 How FDOT's TSMO Strategic Plan ensures TSMO is incorporated into FDOT capital infrastructure process.
- 2 How the plan established guidance for prioritization and selection of TSMO projects and helps make recommendations for development of programmatic funding.
- 3 How the plan also set guidance for performance measurement and reporting to validate TSMO programs and established a statewide TSMO oversight structure to monitor progress.

BACKGROUND

For over 20 years, FDOT implemented intelligent transportation systems (ITS) technologies, communication infrastructure, regional transportation management centers (RTMC), and programs called freeway management systems (FMS), on Interstate and Turnpike highways. In anticipation of FMS completion in 2020, FDOT began to expand Transportation Systems Management and Operations (TSMO) technologies, communication infrastructure, and operational strategies to non-freeway highways and arterial corridors. These improvements were progressing but not consistently or systematically. For example, some

arterial routes through major urban areas are managed by more than one local agency; drivers experience differing levels of safety and travel time reliability, depending in part, on the levels of technology enhancements and management practices of each local agency. To address these transportation problems on non-freeway and arterial corridors, the following needs were identified.

- Statewide, districtwide, and regional direction, coordination, and integration.
- Programmatic funds for TSMO implementation, operations, and infrastructure maintenance to ensure consistent TSMO project and program implementation.
- FDOT District Offices to plan and implement a more active role in setting project priorities and in actively managing priority arterials and integrated corridors.
- FDOT districts to actively monitor and report on impacts of TSMO projects and programs.

TSMO PLANNING, STRATEGIES AND DEPLOYMENT



In 2016 FDOT began development of a new Statewide TSMO Strategic Plan which was adopted in 2017. The Plan identified six TSMO priority focus areas:

- Freeway Management: Statewide FMS completion with sustainable operations and maintenance.
- Arterial Management: Move from ad hoc agency-by-agency management to a regional focus on priority corridors, routes of significance, active arterial management (AAM) and integrated corridor management (ICM).

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- Express lanes: Plan and implement express lane and managed lane networks in Florida's four major metropolitan areas.
- Connected vehicles (CV): Move from research to pilot projects and full implementation.
- Information systems: Continue to develop and improve statewide data collection and information systems such as Florida's advanced traveler information system, called FL511.
- TSMO Mainstreaming: Incorporation of TSMO elements into all transportation projects from planning through design and work zone traffic management.

The Plan generated two other TSMO program plans to address priority focus areas:

- Statewide Arterial Management Plan (STAMP) Action Plan (2018)
- Connected and Automated Vehicle (CAV) Business Plan (2019)

The 2017 TSMO Strategic Plan ensures TSMO is incorporated into FDOT capital infrastructure process and has accomplished the following achievements:

- Established guidance for prioritization and selection of TSMO projects based on outcome-based safety and mobility performance measures.
- Recommended development of programmatic funding for TSMO project implementation, operations, and infrastructure maintenance.
- Set guidance for performance measurement and reporting to validate whether TSMO programs and projects achieve anticipated impacts on safety and mobility.
- Established a statewide TSMO oversight structure to monitor progress, guide technology development, and support programmatic funding sources.

COMMUNICATIONS PLANNING AND EXECUTION

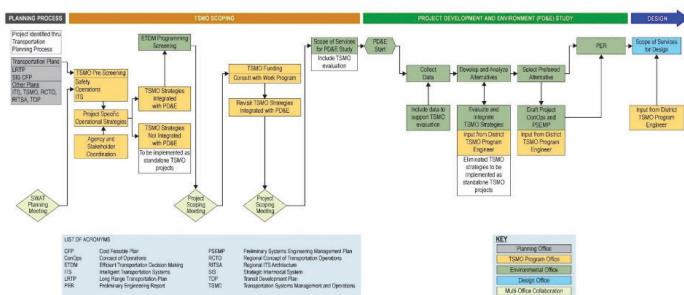
The TSMO, STAMP, and CAV Plans were developed in FDOT's Central Office using an open, collaborative process. Collaboration included regional workshops, capability maturity model assessments, several rounds of reviews within FDOT Central and District Offices, and broader industry reviews. Four standing groups were actively involved with development of the three plans, as follows:

- TSMO Leadership Team: The Leadership Team members includes senior leadership in FDOT's Central Office, including Executive Leadership, Traffic Engineering and Operations (TEO), modal office leaders, e.g. transit and freight, and District Engineers and Operations Managers. The Leadership Team provided guidance, monitored progress, and encouraged completion of all three Plans. This team also reviews and approved pilot projects for implementation of new and emerging technology development and pilot projects.
- Technical Teams: Three technical teams provided input for the respective Plan development and guides and continue to coordinate Plan implementation.
 - TSMO Task Team: Members include Central and District Office TSMO Program Engineers and Central Office functional managers, such as design and maintenance.
 - STAMP Task Team: Members include Central and District Office arterial management program engineers and managers.
 - CAV Working Group: Members include Central and District Office TSMO engineers, arterial managers and engineers, information technology, and data engineers and managers.

The Central Office of TEO Office manages the work of the four teams within the TSMO Division and the Connected Vehicles and Arterial Management Division to ensure work of the groups are well coordinated and synergetic.

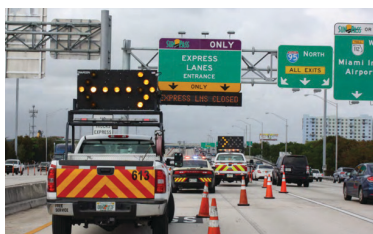
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OUTCOME, LEARNINGS AND PUBLIC BENEFIT



The TSMO, STAMP, and CAV Plans have been widely accepted by stakeholders and has been incredibly successful. A few resulting programmatic accomplishments include:

- Project work programming instructions updates to highlight additional sources of state and federal funds eligible for TSMO improvements.
- Creation of a statewide funding pool for emerging technology and CAV projects was created. Funds are allocated by the TSMO Leadership Team based on the impacts and uniqueness of the projects.



- Programmatic funding programs were established or updated, each with a five-year planning horizon:
 - TSMO Operations: Sustainable statewide formula for FMS, AMS, AAM, and ICM operations funding was created. The formula automatically adjusts operations funding budgets.
 - Signal Maintenance: The Traffic Signal Maintenance and Compensation Agreement (TSMCA) was updated to include signal and detector maintenance performance measures and to provide additional funding to local agencies for maintenance of connected and managed traffic signal systems.
 - Infrastructure Maintenance: The statewide formula for maintenance of FMS infrastructure was updated to cover AMS, AAM, and ICM infrastructure. As more infrastructure is placed into service, the formulas automatically update the maintenance budgets.

- The Preliminary Development and Environmental (PD&E) Manual was updated to ensure TSMO is considered as an element of all major transportation improvement projects, not just as an alternative. The Central and District Offices are systematically progressing with implementation of TSMO beyond FMS, including AAM and ICM using both traditional and emerging traffic technologies.
- Districts and local agencies have adopted TSMO priority corridors.
- AAM and adaptive signal control are implemented in every district.
- At least one multi-agency ICM project is implemented or in development in all major urban areas.
- Multiple districts and local agencies are implementing automated traffic signal performance measures (ATSPM).
- Most districts have operators in their RTMCs who focus on AAM and ICM.
- FDOT and local agencies are implementing CAV Signal Phase and Timing (SPaT) projects, two in response to the AASHTO SPaT Challenge.
- Hybrid ICM projects, called Florida's Regional Advanced Mobility Elements (FRAME), are being implemented using AAM, ICM, and emerging technologies, including SPaT, transit signal priority, emergency vehicle preemption, and freight signal priority.
- Implementation of emerging detection and CAV technologies for pedestrian and bicycle detection and warning systems.
- Updated the "Standard Specifications for Road and Bridge Construction" to ensure all new traffic signal controllers are capable of supporting CAV and high-speed data (such as ATSPM) implementation.
- The FDOT has secured a statewide CAV security credentialing management system (SCMS).
- Districts have each adopted real-time data sources, including ATSPM, detectors, and probe data, to monitor speed and travel-time reliability.
- Districts are monitoring all TSMO corridors and reporting outcomes on a quarterly basis.
- In Florida TSMO is mainstreamed at statewide and local levels with sustainable funding for implementation, operations, and maintenance. The PD&E manual requires consideration of TSMO within build alternatives.