Transportation Systems Management & Operations

Managing and Operating for an Efficient Transportation System

TSM&O in Florida

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Overview of Activities

- Numerous steps taken in a short span to develop a comprehensive statewide Arterial Mgmt Program.
 - A Statewide Arterial Management Group is created ~ informally titled as STAMP.
 - Developing Vision, Mission and Objectives for STAMP.
 - Advanced Signal Control Technology Project initiated.
 - Signal Re-timing in urban and rural areas (every 3 and 5 years).
 - Current status at Districts including their perspectives on AM.
 - Purdue System for Signal Performance Metrics being explored.
 - Studying the best practices from across the nation.

Arterial Reach

- With **32,000 lane miles (75% of SHS)**, the arterial network carries 56% of total DVMT.
- About **81% of the arterial DVMT occur in UAs** on a network which comprises 61% of all arterial lane miles.
- This Program is due to **FDOT Management's resolve to transition from strategy to implementation.**
- **Efforts are underway to develop a comprehensive and sustainable program.**

Data Source: FDOT's 2013 Highway Mileage Reports: State Highway System

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Integrated program to optimize the performance of existing multimodal infrastructure through implementation of systems, services, and projects to preserve capacity and improve the security, safety and reliability of our transportation system.

1. STAMP – Vision, Mission and Objectives

- **Vision:** To maximize throughput and provide a safe, reliable and efficient arterial transportation system.
- **Mission:** To deploy a Program focused on mobility outcomes through real-time and effective management of the existing transportation system.
- **Objectives:** To apply technology for reducing travel times, improving system reliability, and providing positive benefits in return for system investments.

2. Adaptives Guidance

- Purpose: provide analysis for ASCT to move traffic; consider impacts.
- Provide guidance to FDOT and agencies; improve efficiency, safety.
- Comprehensive lit. review
- Provide 'state of the industry' summary
- Statewide collaborative approach
- Practitioners' experiences from agencies - FL; Other states

Technical Memorandum

Advanced Signal Control Technology

Version 1.1

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Prepared for:

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3. TSP vis-à-vis TSM&O

- Transit Signal Priority Workshops:
 - Comprehensive overview of Transit Signal Priority and Queue Jumps
 - Integral element of the TSM&O Program
 - Sensitize the Traffic Engineers and Transit Operators

4. Outreach ~ District Visits

- Regular visits to our District Offices:
 - Tampa – great discussion with D7
 - Data needs, RITIS, defining TSM&O, CO role; O&M/M&O
 - Ft. Lauderdale – positive discussions with D4
 - Local agency interaction needs, challenges, focus on arterials; O&M/M&O
 - Miami – Discussions with D6 and Miami-Dade
 - Training needs (CEI, RITIS, Signals etc); integrating arterials into TSM&O; O&M/M&O
 - Jacksonville – good technical focus with D2
 - Focus on ITS Maintenance, equipment etc; O&M/M&O
 - Other visits planned – D1, D3, D5, FTE
- Over-arching objectives:
 - Provide TSM&O Leadership, leading from the front
 - Guidance and support with CO Tasks, especially Adaptives, O&M etc

5. Signal Performance Metrics

- Purdue developed data enumeration logs
- UDOT wrote the software
- **Seminole Co and TERL are experimenting**
- Captures event logs from signal controllers
- Automates SPMs in real time

1250 of 1900 Utah Traffic Signals

6. Dashboard – Work in Progress

- CO developing dashboards using RITIS data
- Palm Beach, Broward Counties with Dist 4

Number of Monitored Incidents	Number of Managed Incidents	Number of Signal Timing Changes	Average Incident Duration (Min.)	Benefit-to-Cost (B/C)	Net Benefit Value
42	28	512	40.01	4.62	\$217,309

Estimated Monthly Benefits Summary

Performance Measure	Benefit
Travel Time/Delay Savings	\$169,416
Reduction in Emissions	\$11,700
Reduction in Fuel Consumption	\$26,517
Safety Benefits	\$69,676
Total Benefits	\$277,309

Estimated Monthly O&M Costs \$60,000

Incidents Summary

ITS Device Summary (County Maintained)

Device Type	Number of Devices
Online Traffic Signals (expressed as the percentage of total signals)	78%
Signal System Health	> 95%
Incident Management CCTV Cameras	130
Online Intersections with Video Detection System	66
Sensys Detection (no. of Intersections)	3
BlueTOAD Devices	22
Fiber Optic System (approx. no. of miles)	530
Opticom Devices	1

SR-704 Eastbound between SR809N Military Trl and S Flagler Dr
 AM Peak (7AM-9AM) PM Peak (4PM-6PM)

7. Incident Mgmt Metrics

Performance Measures Summary

Incidents without Road Ranger Response

	1st Quarter	Total
Events Included in Performance Measures	35	35
Notification Duration (min.)	0.4	0.4
Verification Duration (min.)	0.0	0.0
Response Duration (min.)	4.7	4.7
Open Roads Duration (min.)	33.5	33.5
Departure Duration (min.)	23.0	23.0
Roadway Clearance Duration (min.)	38.6	38.6
Incident Clearance Duration (min.)	61.6	61.6

*RFP Data is not available for Notification Duration

Incident Clearance Duration

Reporting Period: January 1, 2012 to December 31, 2012

District 5

3

Percentage of event types for all events in current year

Event Types for all Events

	1st Quarter	Total
Abandoned Vehicle	79	79
Congestion	252	252
Crash	239	239
Debris on Roadway	46	46
Disabled Vehicle	756	756
Emergency Road Work	2	2
Interagency Coord	1	1
Off Ramp Backup	55	55
Other	64	64
Police Activity	10	10
Scheduled Road Work	171	171
Vehicle Alert	13	13
Vehicle Fire	4	4
Total	1,692	1,692

Reporting Period: January 1, 2012 to December 31, 2012

8. FHWA Turner-Fairbank

- Visited FHWA:
 - To understand the direction on CV program
 - To consider potential deployment effort
 - To chart out future strategies
 - We review all efforts vis-à-vis TSM&O
 - Brainstormed on possible deployment efforts

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THANK YOU