Maryland Transportation Systems Management and Operations

Presentation to the BRTB
Baltimore Metropolitan Council

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Maryland DOT-State Highway Administration
The Maryland TSM&O Strategic Implementation Plan

- Summarizes a business case for TSM&O
- Establishes mission, vision, goals, objectives and performance measures for TSM&O at MDOT SHA
- Identifies strategies and projects required to implement TSM&O
- Recommends resource needs to carry out plan

SHA recognizes that a successful TSM&O program has to be cross jurisdictional & multi-modal. Local, regional & state partnerships is critical…Current TSM&O plan is a step in that direction…
Leading up to the TSM&O Plan

CMM Workshop at MD SHA
March 2014

FHWA CMM Implementation Plan Meeting
August 2014

TSM&O Steering Committee Workshop
July 2015

TSM&O Executive Committee Briefing
December 2015

TSM&O Plan Approval and Ready for Implementation
May 2016

Apr - Jul 2014
CMM Implementation Plan Development

Sept 2014 - Jun 2015
SHRP2 L06 Initiation/Foundational Work

Aug - Dec 2015
TSM&O High-level Plan Development

Jan - Apr 2016
TSM&O Plan Approval and Ready for Implementation
Strong Foundations for TSM&O

Introduction
An integrated approach to programmatic optimization of planning, operations, and maintenance in implementing new and existing multi-modal systems, services, and projects to preserve capacity and improve the security, safety, and reliability of our transportation system.
TSM&O Plan Structure

Vision: Maximize mobility and reliable travel for people and goods within Maryland by efficient use of management and operations of transportation systems.

Mission: To establish and maintain a TSM&O program and implement supporting projects within Maryland SHA improving mobility and reliability for all people and goods through planned operations of transportation facilities.

Goal 1. Develop and implement a sustainable TSM&O program at SHA.

Objective 1.1: Incorporate TSM&O oriented practices into core planning and programming best-practices by 2016.

Objective 1.2: Promote culture supporting TSM&O both inside and outside of SHA and across agencies TSM&O initiatives.

Objective 1.3: Develop fryasory and capital master plans by April 2016.

Goal 2. Improve travel time reliability for both people and freight.

Objective 2.1: Implement a comprehensive system level performance measurement program to monitor mobility and reliability targets by June 2017.

Objective 2.2: Develop a TSM&O Performance Monitoring System.

Goal 3. Develop data- and performance-driven approaches to support TSM&O planning, programming, implementation and evaluation decisions.

Objective 3.1: Develop TSM&O planning, programming, implementation and evaluation decisions.

Objective 3.2: Develop a TSM&O Program Performance Monitoring System.

Objective 3.3: Coordinate and ensure TSM&O is considered in SHA's Asset Management Program.

Objective 3.4: Include reliability in existing traffic analysis and travel forecasting methodologies.

Goal 4. Improve the travelling public’s experience on Maryland highways.

Objective 4.1: Achieve a user cost savings of at least $1 billion annually by effective congestion management and TSM&O.

Objective 4.2: Enhance travelling public’s knowledge and understanding of TSM&O operational strategies and their respective benefits.
**Vision:** Maximize mobility and reliable travel for people and goods within Maryland by efficient use of management and operations of transportation systems

**Mission:** To establish and maintain a TSM&O program and implement supporting projects within Maryland SHA improving mobility and reliability for all people and goods through planned operations of transportation facilities

**GOAL 1.** Develop and implement a sustainable TSM&O program at SHA

**GOAL 2.** Improve travel time reliability for both people and freight on both arterials and freeways

**GOAL 3.** Develop data and performance driven approaches to support TSM&O planning, programming, implementation and evaluation decisions

**GOAL 4.** Improve the travelling public’s experience on Maryland highways by enabling customers with information & choices
Goal 1 - Develop and implement sustainable TSM&O program within SHA to implement TSM&O

Objective 1.1 - Incorporate TSM&O oriented practices in routine planning and programming business processes by 2018

Strategy 1.1a - Identify and implement means of incorporating TSM&O into relevant agency policies

Action Items:
- 1.1a.i. Evaluate the inclusion of reliability in MDOT mission, vision, and strategic plans.
- 1.1a.ii. Develop a policy and procedure for TSM&O - Draft policy statement needs to address establishing TSM&O structure (office/functional area responsibilities). The procedure will include an institutional framework for TSM&O - including roles for steering and executive committees.
- 1.1a.iii. Incorporate planning for operations in all processes within SHA - Maryland Transportation Plan 2035 and SHA Business Plan.
- 1.1a.iv. Identify methods for evaluating capacity vs. TSM&O options considering: service issues, network scale, time to implement, incremental improvement options capital operating and maintenance costs, cost-effectiveness related to relevant performance measures.

Deliverables:
- 1a. Policy and Procedure to establish TSM&O structure for evaluating the benefits operational projects, side-by-side, with capacity projects.
- 1b. Inclusion of reliability in appropriate plans.
- 1c. Incorporation of TSM&O in SHA business processes.
- 1d. Report documenting quantitative improvements in travel times/speeds for Maryland based on identified TSM&O improvements. Comparison of existing eligible improvements to assess if mobility needs are met through new TSM&O projects.

Outcome:
- TSM&O processes become institutionalized in the State Highway Administration.
SHA has developed a Freeway/Arterial Congestion Management program that looks at low cost improvements for highly congested/unreliable hotspots/segments.

With Practical Design Policy, SHA identifies TSM&O Strategies/Active Traffic Management (ATM) alternatives as mid term solutions.

TSM&O alternatives are either part of Build Alternatives or, an alternative by itself in ongoing project planning/feasibility studies.

Ongoing projects on I-270 and I-95 provides opportunity to review NEPA aspects for TSM&O elements.
TSM&O Data/ Analytics

Travel Modeling and Traffic Analysis Applications

LEVEL I (Planning) TRAVEL DEMAND MODELS (MSTM, MPO Models)

LEVEL II (Planning and Operations) MESOSCOPIC MODELS

LEVEL III (Operations) TRAFFIC SIMULATION MODELS

• Corridor Studies
• Long Range Planning
• Freight Movement
• System Performance
• Scenario Analysis

• ICM / ATM / ATDM
• Cumulative Impact Assessment
• Incident Management
• Work Zone / Special Events
• Emergency Response

• Site Analysis
  ✓ accessibility / traffic impacts
  ✓ mitigation plans assessment
• Design/Operations Projects
• Intersection/Roadway Operations

TSM&O Implementation
Priority Strategies and Actions

1.1c - Develop modifications to the SHA Project Development Process (PDP) to accommodate TSM&O

2.1b, c – Develop Arterial and Freeway System Master Plan

2.1d - Work with MdTA, MDOT, and the private sector to develop and implement a connected/automated vehicle program in Maryland

2.1e - Establish a framework for an institutionalized approach to support funding and deployment of operational improvements on freeways and arterials

2.2a - Focus on integrated freeway and arterial management and operations
Organizational Setup

- SHA Administrator
  - Dep. Admin Planning
    - OPPE: TSM&O Rep
    - OOTS: TSM&O Rep
  - CHART: TSM&O Rep
  - OOM: TSM&O Rep
  - OOC: TSM&O Rep

TSM&O Program Manager
Strategic Plan Implementation
Near Term Priority Actions

- Developing an Integrated Freeway & Arterial Master Plan
- Developing a Performance Based Decision Support Approach along with Data & Analysis infrastructure
- Advance TSM&O policies, programs and projects thru’ implementation pilot
- Streamline processes with ongoing initiatives such as practical design, CV/AV work etc.
- Continue internal and external TSM&O communication and outreach
Maryland regularly has special events; the Star Spangled Spectacular, Washington Metro maintenance surges, Inaugurations, Port of Baltimore "Fleet Week".

The key to success is **communication & coordination with stakeholders**.

Many of the tools we currently use, Dynamic Message Signs, web sites, media broadcasts, are quite successful in preparing the public.

MD has implemented a statewide Lane Closure Permit (LCP) system, which enables SHA to manage lane closure permit applications, and then activates lane closures for management in real-time.

*Communication and Coordination for Signal System Operations identified as an effective TSM&O Strategy*
Develop Concept of Operations (ConOps), ICM Analysis, Modeling and Simulation Plan, and ICM Deployment Approach Plan.

Build a foundation for systematic ICM expansion throughout the Baltimore-Washington region and state

Joint SHA/BMC project supported by UMD CATT
## Internal & External Stakeholders/Partners

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<thead>
<tr>
<th>Category</th>
<th>Examples</th>
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<tbody>
<tr>
<td>State, Regional, County, and Local</td>
<td>USDOT units addressing TSM&amp;O, Special Event Venues, Partner Disciplines and Organizations, National Weather Service</td>
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<td>Traveling Public and representative advocacy groups</td>
<td>MTA Maryland, MVA, Maryland Transportation Authority (MdTA), Maryland Aviation Administration, Maryland Port Administration</td>
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<td>Professional Organizations</td>
<td>SHA Executive Level: State Highway Administrator; Deputy Administrator/Chief Engineer for Planning, Engineering, Real Estate, and Environment. MVA Management: Administrator and Chair of MDOT Connected/Automated Vehicle Task Force. Maryland Transit Administration: Core Operations; Operations Control Center; Maryland Rail Commuter (MARC) and Commuter Bus Operations; Office of Planning. Maryland Transportation Authority (MdTA): Deputy Executive Director; Division of Operations. Maryland Aviation Administration: Operations and Maintenance. Maryland Port Administration: Operations.</td>
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Some of the identified expected impacts and/or concerns of key external partners could include:

- Need for awareness of TSM&O
- skepticism as to its value
- Will TSM&O meet capacity needs?
- How will the TSM&O Program blend in with the TIP process?
- Will TSM&O have unanticipated adverse impacts that might lead to speeding, cut-through traffic, or other unsafe conditions?
- What about bicyclists?
- What about pedestrians?
The Road Ahead …
Contact Information

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