TSMO and Metropolitan Planning Organizations

ROLE OF PLANNING ORGANIZATIONS IN ENHANCING TSMO

Consider TSMO strategies in transportation planning (both the long-term metropolitan transportation plan and short-term transportation improvement program) to improve safety and mobility. Include TSMO in alternatives analyses. Identify TSMO objectives, strategies, and benefits.

- TSMO solutions can address many identified transportation needs—e.g., safety, reliability, sustainability, livability.
- TSMO elements can enhance the feasibility of complete street design principles as shown in Table 1.
- TSMO can provide input into the congestion management process. The Puget Sound Regional Council (Seattle) facilitated the development of a regional ITS inventory, used to support determining where to implement ITS features.

Facilitate the development of common goals and objectives among multiple regional entities, beginning at the planning stage, which are important for successful regional operational outcomes.

Allocate funding (federal and local) to TSMO projects and services

- Coordinate and manage a "call for projects" process. As an example, Oregon Metro, the Portland region's MPO, puts out an annual call for TSMO projects. Regional funding is available for the highest priority projects.
- Federal funding eligibility for TSMO is provided in the memo, "TSMO: Operating Cost Eligibility Under the Federal-Aid Highway Program."

TSMO DEFINITION

Actions, activities, systems, and projects focused on optimizing the performance of the transportation system.

Title 23 Section 101 of the United States Code defines TSMO as, "integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system."

TSMO allows "agencies to target the underlying operational causes of congestion and unreliable travel through innovative solutions that typically cost less and are quicker to implement than adding capacity. TSMO expands the range of mobility choices available to system users, including shared mobility and nonmotorized options."[1]

[1] FHWA, *Enhancing Transportation: Connecting TSMO and Planning* (2018)

Coordinate TSMO actions across regional agencies. Provide leadership in regional decision-making. Solicit input on operations issues that need to be addressed in plans.

- Consider convening an Operations (or TSMO) subcommittee for multi-agency collaboration. (An example might be a multi-agency traffic signal coordination working group or subcommittee.) For example, the Puget Sound Regional Council (Seattle) convenes the Regional Traffic Operations Committee to promote a collaborative and coordinated approach to regional traffic operations investments and practices.
- The Lexington Area MPO hosts a Congestion Management Air Quality (CMAQ) Committee to set a regional strategy to managing congestion, including tracking and reporting on data, setting performance targets, and identifying strategies and funding.
- Coordinate TSMO-related training among regional agencies.

Develop performance measures. In addition to the federally required performance measures for travel time reliability and the CMAQ Program, the Metropolitan Planning Organizations can play an important role in identifying additional performance measures that consider the desires and expectations of transportation users, can be adopted by agencies throughout the region, and can be used in project prioritization. For example, the Regional Planning Commission of Greater Birmingham brings stakeholders together on large projects to consider TSMO solutions, leveraging the existing (DOT) TSMO plan.

EXAMPLE TSMO SYSTEMS, ACTIONS, ACTIVITIES

TSMO Foundation

- Traffic monitoring and detection devices. These include traffic cameras and a variety of sensors, such as loop detectors, radar detectors, video detection and video analytics platforms.
- Traveler Information is used in many TSMO strategies. It is geared toward providing travelers with current information about travel conditions and causes of congestion or disruption.
- Traffic management centers may be appropriate in some regions or statewide. TSMO strategies are often monitored and coordinated from traffic management centers.

Traffic Management

- Arterial management includes traffic signal coordination, adaptive control, or automatic traffic signal performance measures that provide significant benefits in reducing delay, fuel consumption, and emissions. Arterial management can also include transit signal priority, traffic cameras and dynamic message signs to allow agencies to respond more to current or anticipated conditions before they significantly impact system performance.
- Freeway management includes TSMO strategies like ramp metering, queue warning, and dynamic speed advisories or limits. Freeway management usually incorporates dynamic message signs to inform drivers of conditions on the freeway.
- Integrated freeway and arterial corridor management allows agencies to operate the entire surface transportation network more like a single system. Conditions on arterials can affect the operational controls on the freeway and vice versa. Transit, micro-mobility, and pedestrian and bicycle strategies can also integrate into the operation of the corridor.

MPO Example to Enhance Traffic Management

The Maricopa Association of Governments (MAG) (Phoenix, Arizona region) conducted regional strategic TSMO planning around four investment priorities so that funding sources and timing are identified for prioritized strategies. The four investment priorities are:

- Integrated Corridor Management – e.g., ramp metering, CCTV at intersections with arterials
- Regional Priority Arterials – e.g., remote management of traffic operations at intersections
- Local Priority Corridors – e.g., local priority ITS projects
- Regional Operations Priorities – e.g., traffic signal optimization, freeway service patrol

Sources:

FHWA Organizing for TSMO Case Study 11: MPO Examples

MAG 2018 Systems Management and Operations Plan

- Multimodal
- Transit management and preferential treatment for transit and ridesharing make transit and ridesharing more efficient. These strategies encourage travelers to use more efficient means of travel than driving alone.

- Active transportation is an essential tool in enhancing mobility options and the overall operation of the transportation network. While working to reduce dependency on motor vehicles, active transportation modes also promote a healthy lifestyle.
- Complete streets make areas more livable and provide a scale that makes walking and bicycling more comfortable. (See the KYTC Complete Streets, Roads, and Highways Manual and KYTC's Complete Streets Policy at https://transportation.ky.gov/BikeWalk/Pages/Complete-Streets.aspx. Many MPOs and cities also have their own complete street policies or manuals.) TSMO can support complete street implementation:

TABLE 1 **TSMO Strategies to Enhance Complete Streets**

OPERATIONAL OBJECTIVE	GEOMETRIC TSMO STRATEGIES	CONTROL TSMO STRATEGIES	OTHER TSMO STRATEGIES
Lower Traffic Speed to Improve Safety	▪ Pavement surface treatments ▪ Speed Humps	▪ Lower Speed Limit ▪ Lower Signal Progression Speed	▪ Radar Speed Advisory Signs ▪ Automated Speed Enforcement
Reduce Crashes	▪ Access Management ▪ Consolidated driveways	▪ Review traffic and ped clearance intervals ▪ Improve signal head visibility ▪ Review mid-block ped crossings	▪ Automated red light enforcement ▪ Ped HAWK beacon. ▪ Higher intensity street lighting ▪ Bicycle boxes
Preserve Traffic Capacity to maintain bus, truck, and auto speeds	▪ Turn pockets at signals	▪ Change signal timing ▪ Adaptive signal timing ▪ Bus Signal Priority ▪ Bus/bike queue jumps	▪ Weather management and response (snow removal)

Source: FHWA, Applying Performance Based Practical Design (PBPD) Methods to Complete Streets - A Primer on Employing PBPD and TSMO to Enhance the Design of Complete Streets (2016)

- Commercial vehicle programs are aimed at making freight movement more efficient. Strategies include weigh-in-motion systems, truck parking systems, and expedited permitting (e.g., electronic inspections).

MPO Example to Enhance Multimodal within TSMO

The North Central Texas Council of Governments (NCTCOG) (Dallas-Fort Worth, Texas region) uses the congestion management process (CMP) among its partners to identify TSMO and transportation demand management strategies designed to address system deficiencies on a corridor basis, informed by performance measures (crash rate, travel time index, level of travel time reliability, pavement conditions and bridge conditions)

and available assets. Outside the plan, identified strategies are analyzed further for the potential to improve corridor performance, and then scoped and included in the Transportation Improvement Program for funding. Some CMP strategies (e.g., single-occupant vehicle trip reduction program) would be implemented by NCTCOG, while others (e.g., traffic signal updates) would be implemented by regional partners.

Sources:

FHWA Organizing for TSMO Case Study 11: MPO Examples

NCTCOG CMP 2021 Update

Event Management

- Traffic incident management programs coordinate activities of multiple response agencies and use freeway and arterial management devices to reduce the time it takes to identify, respond to, and clear incidents. Traffic incident management also makes the incident scene safer for travelers and responders.
- Emergency management strategies are built on some of the same principles as traffic incident management. These strategies are focused on response to and recovery from emergencies, such as flooding and other weather events, wildfires, and large-scale hazardous waste spills. The focus is on safety of those affected, sustaining transportation, and speeding emergency response and recovery.
- Road weather management consists of roadway environmental sensing, weather information, and treatment and clearance strategies, along with weather information dissemination to mitigate the effects of unsafe and restricted travel due to severe weather (snow/ice, fog, rain, or other weather events).
- Work zone traffic management uses a variety of techniques and strategies, including technology, to manage traffic approaching a work zone to improve safety and reduce delays. Work zone traffic management also informs travelers about disruptions caused by work zones so travelers can make informed decisions on their travel route, time of travel, and travel mode.
- Special event traffic management uses traffic management strategies to improve traffic conditions in the vicinity of recurring or one-time special events, like major sporting or entertainment events. Techniques include methods to improve traffic flow and to inform travelers about conditions around the special event and the preferred ways to get to or around the event.

MPO Example to Enhance Event Management

The Genesee Transportation Council (GTC) (Rochester, New York region) plans for and funds TSMO projects. It developed the Genesee-Finger Lakes Regional TSMO Plan in 2018 that includes: regional TSMO objectives, priority corridors for TSMO investment and ongoing operations, and regional implementation priorities. GTC dedicates funding to a regional emergency roadside service (Highway Emergency Local Patrol [HELP]) and to

ongoing staffing of the Regional Transportation Operations Center run by New York State DOT. Other competitive funding is allocated based on criteria that tie directly to goals and performance measures in the long-range transportation plan and make TSMO highly competitive with highway projects, especially expansion.

Sources:

FHWA Programming for Operations: MPO Examples of Prioritizing and Funding Transportation System Management & Operations Strategies

Genesee-Finger Lakes Regional TSMO Plan