

PERFORMANCE MANAGEMENT



U.S. Department of Transportation
Federal Highway Administration

ENHANCING TRANSPORTATION: CONNECTING TSMO AND PERFORMANCE MANAGEMENT



Photo Source: Getty Images

TSMO strategies offer effective ways to improve transportation system performance more quickly and at much lower cost than major investments in new capacity. TSMO strategies can improve traffic flow and safety through enhanced business processes, collaboration among multiple agencies and jurisdictions, and deployment of enabling technologies—and all without adding new infrastructure or capacity. TSMO also complements projects that help to extend the performance life of new facilities and supports the agency’s overall mission to manage and operate the transportation system.

Realizing these improvements requires measuring performance on a regular basis, tracking performance changes over time, and managing the transportation system to achieve desired outcomes. TSMO strategies enable agencies to monitor performance in real time and actively manage the system by adjusting signal timing, updating traveler information, opening shoulders for travel, and using other operational tactics to improve system performance. With relatively high benefit-cost ratios, TSMO strategies are cost-effective solutions that stretch transportation dollars for a higher return on investment.

The Moving Ahead for Progress in the 21st Century (MAP-21) Act, and the subsequent Fixing America’s Surface Transportation (FAST) Act, refocused the national Surface Transportation Program on performance-based improvements. National performance measures address areas such as safety and congestion and encourage efficient investment of Federal transportation dollars.²

The Federal Highway Administration (FHWA) defines transportation performance management (TPM) as “a strategic approach that uses system information to make investment and policy decisions to achieve National performance goals.”¹ Due to its data-driven approach, TPM enables transportation managers to set targets, report on progress toward those targets, and make informed investment decisions. This is the same objectives-driven, performance-based approach for improving the operational performance of the transportation system through TSMO.

■ WHAT IS TSMO?

Transportation systems management and operations (TSMO) is the use of strategies, technologies, mobility services, and programs to optimize the safety, mobility, and reliability of the existing and planned transportation system. A significant cause of congestion and unreliable travel is non-recurring events, such as crashes and transportation network disruptions, bad weather, and special events. TSMO enables agencies to target the underlying operational causes of congestion and unreliable travel through targeted solutions that typically cost much less and are quicker to implement than adding capacity. TSMO expands the range of mobility choices available to system users, including shared mobility and non-motorized options.

.....
This Fact Sheet is part of a series that explains how TSMO relates to other State and local transportation agency functions and offices. Other Fact Sheets focus on how TSMO relates to: asset management, maintenance, design, safety, environment, planning, human resources, and construction.
.....

1 Federal Highway Administration, "What is TPM?" Web page. Available at <https://www.fhwa.dot.gov/tpm/about/tpm.cfm>.

2 23 U.S.C. 150.

Many performance management efforts at departments of transportation (DOTs) and Metropolitan Planning Organizations (MPOs) benefit from the use of TSMO because it offers lower cost strategies to improve the efficient, reliable operation of the transportation system in the near term. TSMO strategies help regions and States reach performance targets, most notably travel time reliability and congestion targets. For example, traffic incident management targets one of the root causes of unreliable travel.

Data and tools used to support TSMO can also be applied to performance management. Travel data collected from probes and traffic management centers can identify unreliable highway segments that can be targeted for improvement. Analysis tools and models developed for operations can be part of a performance management process to estimate the effects of investments on mobility. Additionally, operations data is important to setting realistic and meaningful targets for travel time reliability and delay performance measures.

HOW HAS THIS WORKED IN PRACTICE?

- The **Ohio DOT** has created TOAST—the Traffic Operations Assessment Systems Tool—to identify operationally sensitive roads where TSMO strategies may have a significant impact.³
- Transportation planners at the **New Jersey DOT** identify the top congested locations and sources of congestion using archived operations data: volume, probe speed, event, and weather data. They then calculate user delay costs for bottlenecks and use performance visualizations to communicate to decisionmakers and the public about where improvements are most needed.⁴
- The **City of Lincoln, Nebraska** is conducting an intensive traffic signal system initiative called Green Light Lincoln to improve on several performance measures including the number and severity of crashes, travel time delay, and emissions. The estimated benefit-cost ratio for the first phase of the program is 19 to 1.⁵
- The **Michigan DOT's** Statewide Transportation Operations Center produces a monthly and annual performance measures report that tracks several indicators including events on the roadway, average freeway courtesy patrol assist times, and incident durations.⁶
- **FHWA's** Low-Cost Solutions to Traffic Bottlenecks focuses on performance-based practical design, one aspect of performance management.⁷

3 Traffic Operations Assessment Systems Tool, Ohio Department of Transportation, 2018. Available at: <http://www.dot.state.oh.us/Divisions/Operations/Traffic-Management/Documents/TOAST%20One-Pager.pdf>.

4 Federal Highway Administration, Applying Archived Operations Data in Transportation Planning: A Primer, December 2016. Available at: <https://ops.fhwa.dot.gov/publications/fhwahop16082/index.htm>.

5 City of Lincoln, Nebraska, About Green Light Lincoln, Web page. Available at: <http://lincoln.ne.gov/city/pworks/engine/traffic/green-light-lincoln/>.

6 Michigan Department of Transportation, Statewide Transportation Operations Center (STOC), Webpage. Available at: https://www.michigan.gov/mdot/0,4616,7-151-52247_70181-479024--F,00.html.

7 Federal Highway Administration, Performance-Based Practical Design Website. Available at: https://www.fhwa.dot.gov/design/pbpd/case_studies.cfm.



FOR MORE INFORMATION

Joseph Gregory, Federal Highway Administration
(202) 366-0610 | Joseph.Gregory@dot.gov

FHWA-HOP-18-095
December 2018



U.S. Department of Transportation
Federal Highway Administration