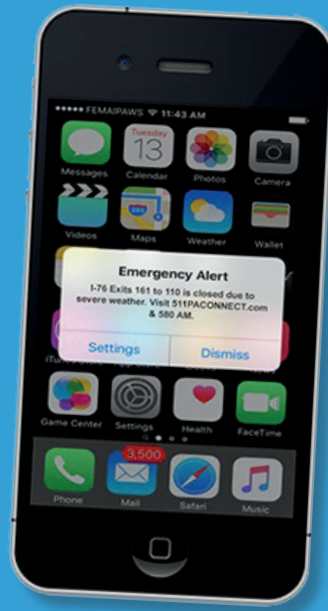


U.S. Department of Transportation
Federal Highway Administration

Why Focus on TSMO?

The transportation world is changing, and doing business the way it was done in the past is no longer effective. Previously, for example, congestion issues were primarily addressed by funding major capital projects (adding lanes or building new interchanges and roads) to address physical constraints, such as bottlenecks. Operational improvements were typically an afterthought and considered after the new infrastructure was already added to the system.

Today, transportation agencies are facing trends that create a growing demand for travel with less funding and space to work with. As a result, we can no longer build our way out of congestion. Trends we see today include:



■ Limited funds

Transportation agencies on the federal, state, and local levels have for years been tasked with doing more with limited resources. State DOTs are always looking for innovative, lower cost ways to get people and goods to their destinations more safely and reliably. TSMO helps do that.

■ Advances in technology

Transportation agencies can leverage technology and data to develop solutions to address congestion issues. However, given the advancement in consumer technologies (smart phones, apps, GPS, etc.), privately owned mobility services (Uber, Lyft, etc.), shared mobility and the availability of more information, the traveling public expects fast, reliable, and “smart” transportation.

■ Changing customer needs and expectations

There is a greater demand for accountability for public officials to ensure that public funds are spent to maximize the performance of the transportation system in the most cost-effective way. This creates a trend toward “performance-based” programs. The traveling public is seeking relief from unexpected delays in their trips.

■ Better Understanding of the Causes of Congestion

Research has shown that while some congestion may be caused by typical morning and evening rush hours, a significant amount comes from non-recurring events, such as crashes, breakdowns, work zones, weather, and special events. There may be opportunities to quickly apply low-cost TSMO improvements that are targeted toward these specific causes to reduce their impacts.

Next Steps

Your agency is likely already implementing some TSMO strategies. A key element in how effective they are is whether they are integrated in a systematic way to accomplish overall system goals and engage all the jurisdictions involved. To do this, leadership is key. State DOT CEO and other senior management support is vital in creating a TSMO-focused culture. That leadership should also empower employees who will inevitably have a hand in getting positive results.

To make sure your organization stays on track, keep asking these questions as they relate to your TSMO program.

- How can we most effectively move people and goods where they need to go?
- What are customer needs, experiences, and expectations?
- What are your current processes for operations?
- How are you tracking and monitoring the performance of your transportation system?
- How can you best utilize the data and metrics you have?
- What are your organizational and staff capabilities?
- Where are you today? Where do you want/need to go? How do you get there?
- How well are you collaborating with external operations partners?
- Do you have processes to evaluate, integrate, and manage emerging technology?

Further Information

To learn more about Transportation Systems Management and Operations, including individual strategies, visit the following websites:

- **FHWA Organizing and Planning for Operations**—
<https://ops.fhwa.dot.gov/plan4ops>
- **National Operations Center of Excellence NOCoE**—
<https://transportationops.org>
- **AASHTO TSMO Guidance**—
<https://transportationops.org/tools/aashto-tsmo-guidance>

For more information, contact **Tracy Scriba**, FHWA Office of Operations, at Tracy.Scriba@dot.gov or AASHTO Associate Program Manager **Pat Zelinski** at PZelinski@aaashto.org

U.S. Department of Transportation
Federal Highway Administrationwww.fhwa.dot.gov

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Addressing the Nation's Transportation Challenges with Transportation Systems Management and Operations

The role of transportation agencies, especially state departments of transportation, has evolved over the past few decades in response to the also changing realities (funding, space/environment, recognition that one-size-fits-all solution of adding lanes is not efficient or effective—some problems call for other solutions). Initially, state department of transportation (DOTs) focused on building and preserving their transportation infrastructure in order to connect regions and states and to provide greater user mobility. And while transportation agencies are still building transportation infrastructure, it is true the nation cannot build its way out of the transportation challenges we face in areas such as safety, reliability, congestion, physical constraints, environmental concerns, and funding limitations. To better combat these issues in a cost-effective way, state DOTs are implementing Transportation Systems Management and Operations (known to many as simply “Operations” or “TSMO”), which can save lives, time, and money while improving quality of life for the traveling public.

TSMO is a set of strategies, services, and programs that focus on operational improvements and overall system management to more efficiently and safely move people and goods. Through use of TSMO, an agency may be able to maintain and even restore the performance of the existing transportation system, thus deferring, or even eliminating, the need for some capacity expansion projects. The goal is to get the most performance out of the transportation facilities a state DOT already has. This requires knowledge, skills, and techniques to administer comprehensive solutions that can be quickly implemented at relatively low cost. This may enable transportation agencies to “stretch” their funding to benefit more areas and customers. These strategies also help agencies balance supply and demand and provide flexible solutions to match changing conditions.

“We’ve come to realize that with our economy and population growth in Washington State, there is just no way we can build ourselves out of the congestion we face. Our practical solutions approach with its operational focus is all about making the right investment at the right time in the right place to better manage our assets.”

—Secretary Roger Millar,
Washington State Department of Transportation

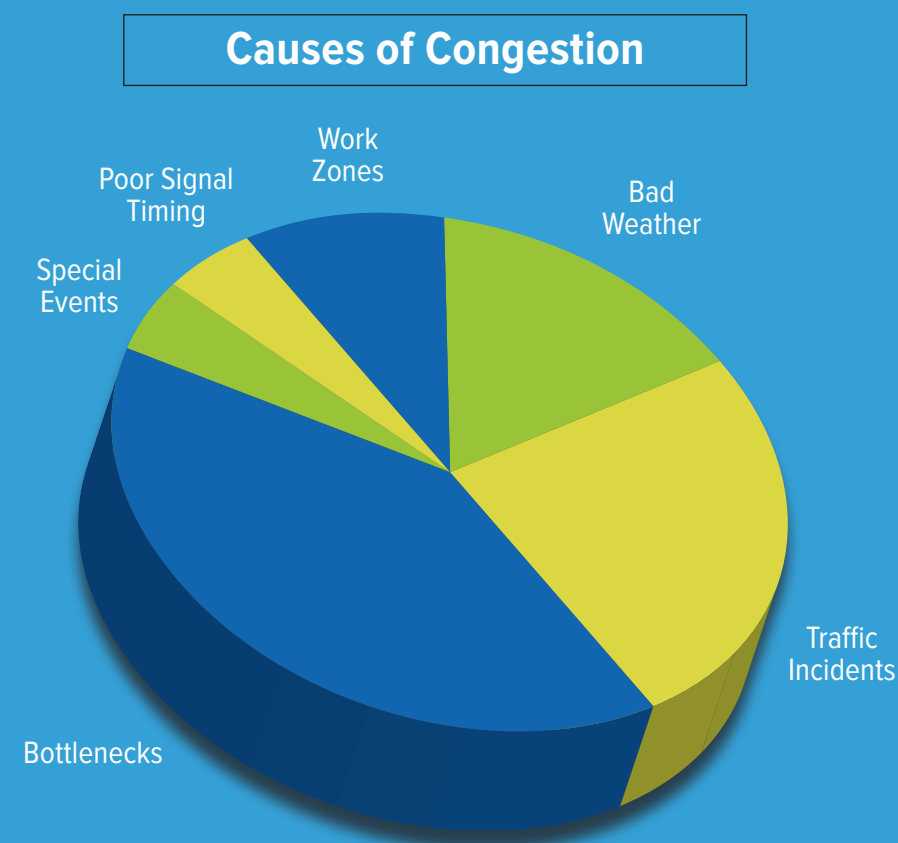
An “Integrated Set of Strategies”

Transportation Systems Management and Operations looks at performance from a systems perspective, not just one strategy, project, or corridor. This means that these strategies are coordinated with others across jurisdictions, agencies, and modes. Integration allows us to see the surface transportation network as a unified whole, moving people and goods safely, efficiently, and reliably, making the various transportation modes and facilities work together and ultimately perform better. TSMO not only provides public agencies with a growing toolbox of individual solutions, but also encourages combining them to achieve greater performance on the entire system.

There are various types of TSMO integration, such as data integration, operational integration, technical integration, procedural integration, and others.

Effectively delivering a TSMO program relies on a strong foundation for operations, as outlined in a capability maturity model:

- **Business Process**—Plans, programs, procedures, and budgets
- **Systems and Technology**—Approach to building systems and using technology
- **Performance Measurement**—Using data and measures to guide decisions
- **Workforce**—Improving workforce capability
- **Culture**—Changing culture and building champions
- **Collaboration**—Improving working relationships



“If you look at TSMO as asset management —using what you’ve already purchased more effectively and efficiently—it’s part of the conversation, and it has to be. That’s why I think it’s so important to the future of transportation.”

—*Monica Harwood Duncan, Statewide Traffic Operations Engineer, Washington State Department of Transportation*

“TSMO is where we’re at. It’s the future. If you think about safety or mobility—connected and automated vehicle technology is such an opportunity. To be fearful of it is one thing, but to stand in the way of it is another. I’ve been trying to have those types of conversations. I also like to hold up my phone and say “Uncle Google knows where you are at all times,” so why not use that info to get you from Point A to Point B faster?”

—*Secretary Jennifer Cohan, Delaware Department of Transportation*



Michigan’s US-23 Flex Route, opened in 2017 north of Ann Arbor, utilizes active traffic management to address traffic, incident management, and motorist safety. Photo courtesy Michigan DOT

Examples of TSMO Strategies

Work Zone Management	Strategies used during roadwork to minimize traffic delays, maintain motorist and worker safety, complete roadwork in a timely manner, and maintain access for businesses and residents.
Traffic Incident Management	Planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible.
Traveler Information	Information on current roadway conditions such as delays, incidents, weather-related impacts, travel times, emergency alerts, and alternate routes. Providing this information to motorists before and during trips allows them to make more effective travel decisions about routes, modes, departure times, or even destinations.
Road Weather Management	Use of timely, accurate, and relevant information about weather-related impacts through various sources, strategies, and tools to enable transportation managers and travelers to make more effective decisions and mitigate roadway impacts.
Connected and Automated Transportation Readiness	Preparations for connected and automated transportation, including policy, field testing, and the operations and management of the infrastructure along corridors and intersections equipped to support specific connected and automated vehicles (CAV) applications.

“TSMO is not just helping us for today, but it’s preparing for tomorrow. When we go to the legislature, when we go to our transportation commission, when we’re able to offer this next piece that shows this is how we get the highest return on your investment, there’s an enormously positive response to that. We are returning results that really matter to people. So this is one of those opportunities you can’t turn down.”

—*Mark Lowe, former Director, Iowa DOT*