



U.S. Department of Transportation
Federal Highway Administration



Georgia DOT's Coordinated Highway Assistance & Maintenance Program enhances safety for the traveling public and supports emergency responders.

What is Transportation Systems Management and Operations?

Commonly referred to as “Operations” or “TSMO” (among other names), Transportation Systems Management and Operations is the integration of strategies to optimize the safety, mobility, and reliability of existing infrastructure through the implementation of multimodal cross jurisdictional systems, services, projects, and programs.

TSMO allows transportation agencies to get the most out of the transportation assets they already have, improving user mobility and efficiency.

Why should my agency focus on TSMO?

The transportation world is changing, and doing business the way it was done in the past is no longer effective. By using TSMO strategies, transportation agencies can make improvements for customers immediately. TSMO enhances business productivity by providing better access to employees and more reliable goods movement. Traditionally, congestion issues were primarily addressed by funding major capital projects, such as adding lanes or building new interchanges and roads to address physical constraints such as bottlenecks. These expansion projects were based primarily on traffic volumes predicted far out into the future. 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. Some of those trends—posing both challenges and opportunities—include limited transportation funding, technology advances, changing customer needs and expectations for reliable travel options, stronger performance metrics than ever before, and a better understanding of the causes of congestion. Transportation agencies must get creative to respond to these trends, and simply building out of transportation challenges will no longer work in all cases. TSMO allows agencies

to recover expensive infrastructure capacity lost due to crashes, bad weather, work zones and other disruptions at a fraction of the cost from traditional projects that expand transportation infrastructure.

What are some examples of TSMO?

Transportation agencies across the country are using a variety of TSMO strategies, often in combination, to more effectively and efficiently operate their transportation infrastructure. These strategies include:

Work zone management	Managed lanes
Traffic incident management	Freight management
Traveler information	Transit coordination
Special event coordination	Part-time shoulder use
Road weather management	Integrated corridor management
Traffic signal improvements	Connected and automated transportation readiness
Ramp metering	Personal mobility options

When should TSMO be considered?

A focus on TSMO should be considered wherever congestion (recurring or non-recurring), safety, and enhanced travel information and options are needed. TSMO solutions can be used in a variety of settings and locations, both urban and rural. TSMO should be considered as early as possible, in both the project planning process and the agency's overall strategic planning. This approach should be considered at every stage, such as planning, project development, construction, and maintenance. Even in situations where adding capacity is the best alternative, there likely will be opportunities to include TSMO solutions in the capital project that extend the performance life.

How do I fund TSMO in my state?

States often use a combination of funding sources for TSMO. The funding that states may use for TSMO varies by state, largely due to internal rules within a state. For example, states could be restricted from--or enabled by--state legislation or the structure of transportation entities. TSMO is eligible for several sources of federal funding. The best thing to do if unsure about funding TSMO is to talk to your FHWA division office. Getting guidance on how to proceed financially would be helpful to you and your team.

Do we need to use the term “TSMO?”

While the term TSMO is in national legislation, each state and region can use whatever terminology they deem necessary to communicate to their audience. Ask five state DOTs for a term to encompass their operations efforts and there could be five different answers. Success in TSMO requires support from stakeholders who may not be deeply involved in TSMO. Given the variety of stakeholders and different dynamics in various parts of the country, each group may find different ways to communicate the TSMO philosophy. While it would be beneficial for everyone to adopt the same term, the higher priority is that everyone understands what we all are trying to accomplish with TSMO and understand its benefits.

Does TSMO only apply to urban regions?

No. While TSMO can be very beneficial to urban areas, there is also a need for it in suburban and rural areas. These areas are also prone to crashes, seasonal travel, special events, bad weather, and road construction. This means there is a level of coordination needed to manage such events.

In suburban areas, normal daily travel may not experience as much congestion as in urban areas, but in some cases, suburban delays may be worse due to limited travel alternatives or crashes that cause significant delays. The benefit of TSMO may be best realized in suburban areas before congestion begins. When proactively applied, traffic can be actively managed and capacity preserved regardless of the level of operation of a facility.

Rural regions may also not encounter the daily commuter congestion common in urban areas, but likely can encounter severe congestion by incidents or work zones, especially problematic for freight movement. Recreational and seasonal travel and occasional special events, such as festivals, can generate a significant amount of traffic as well. In many cases, there are limited detour routes and alternative means for travel.

Does TSMO replace capacity building projects?

In some (but not all) cases, TSMO can serve as an alternative to adding capacity for some areas by increasing the mobility and reliability of the existing system enough to meet current and projected needs, and do so more quickly. Other times TSMO may improve conditions enough to delay when a road expansion project is needed, enabling the agency to stretch their limited funding to more areas and provide relief to customers sooner. TSMO may not be able to solve all mobility needs. In some cases, other solutions such as expanding facilities, may be needed. TSMO strategies can be added to these expansion projects and serve as a complement to extend the performance life of the facility. TSMO offers the ability to start with considering lower cost, less intensive solutions and then move to using more intensive solutions where needed.

When looking at the most efficient and cost-effective ways to improve performance, TSMO should not be viewed as competing with other infrastructure investments, but as a viable option to support an agency's overall mission to manage and operate the transportation system.

Aren't we already doing this?

While most transportation agencies are already using some of these solutions, TSMO is not limited to deploying a single strategy. Intelligent transportation systems (ITS), for example, are just one tool for managing and operating the transportation system. TSMO does leverage technology, a toolbox of strategies, and engineering solutions to maximize the performance of the system. However, TSMO ultimately involves a mindset to determine the best way to optimize the mobility and reliability of the existing system with limited resources. A TSMO approach offers the ability to start with considering lower cost, less intensive solutions and then move to using more intensive solutions such as facility expansions where needed. This approach also integrates TSMO throughout agency processes, rather than after major construction has been completed, and needs to include planning, design, people, processes, technology, and data.

Does TSMO only include technology-based strategies?

No. While many TSMO strategies do have a significant technology component, the TSMO toolbox is not limited to them. Operational enhancements and design treatments can also be used to improve the performance of the transportation system. Accessible shoulders, restriping, emergency access, and snow fences, for example, are also relevant TSMO strategies.

Where Can I Learn More?

To learn more about TSMO, 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>

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