TSMO

Transportation Systems Management & Operations

Connecting you with Texas

What is TSMO:

Transportation Systems Management and Operations (TSMO) consists of integrated strategies that focus on operational improvements to maintain and even restore the performance of existing transportation systems before extra capacity is needed.

What Can TSMO Do?

Grow Investments

Highway funding is limited
The federal gas tax has not increased since 1993 (limited funds to build more capacity). Inflation and fuel efficiency also have drained the Highway Trust Fund (HTF).

Reduced Fuel Costs
Connected truck platooning

Maximize the System

Build on What We Have
Leverage existing tech, systems, people, and organizations to maximize system capacity and enhance safety for the traveling public. Spend less money in the long-run than would spend on capacity improvements.

Reduce Delay
Traffic Incident Management strategies reduce annual delay by 129.5 million hours across the U.S. and reduce secondary crashes by 69%

Advance Technology

Advanced Technology
Current and future technologies, such as vehicle to infrastructure (V2I) systems can be implemented for applications such as warning drivers of upcoming red lights, wrong-way driving warnings, and automatic merging guidance.

Improve Safety

Driver Error
TSMO systems can help mitigate driver error – contributor to most crashes.

Weather Related Crashes
Road weather information systems lower crash rates by up to 83%.

Construction Related Crashes
Active work zone management reduces crashes by 18-45%.

Why TSMO?

Much of modern traffic congestion does not come from just having too many drivers on the road, it comes from events such as incidents, construction zones, bad weather, and special events [such as] football games. (MDOT)

Managing Impacts

Texas roads are busier, drivers are more distracted, and the population is growing. Traffic management will become a priority. The culture will shift from a "build-first" mindset to an "operate the system" mindset. TSMO strategies aim to manage up to 60% of causes of congestion. The existing transportation planning process needs to be enhanced to include more collaboration between planners and operators, performance-based planning, and an inclusion of on-going costs for operations & maintenance.

Reduce crashes

Reduce travel delay - traffic incident management is responsible for a 129.5 million hour reduction across the country annually

TSMO strategies can be implemented in two to three years, and they offer a benefit-cost ratio of 10:1

Statewide TSMO Vision

Improve safety & mobility for all modes of transportation by integrating planning, design, operations, construction, and maintenance activities and acknowledging all opportunities for innovation.

Meeting Our Goal

TxDOT leadership has directed the development of TSMO Program Plans at the district and regional levels. This includes the mainstreaming of TSMO as a core function of TxDOT.

The future development of district and regional TSMO Program Plans will support the directives of Bill Hale, TxDOT Chief Engineer.

Texas had 3,639 roadway deaths in 2018.

There has not been a deathless day on TX roadways since November 7, 2000.

TxDOT has a budget gap between needs and the annual budget of $8 billion a year for pavement, bridge, and congestion management.

TSMO Components

Examples of TSMO Strategies

How do we manage and operate roadways?

Road Weather Management

- Provides drivers with road closure warnings, ice warnings, etc. on Dynamic Messaging Signs (DMS) or through Vehicle-to-infrastructure (V2I) infrastructure
- Evacuation planning and evacuation ops – using DMS, V2I, and monitoring from local Traffic Management Center (TMC) to direct vehicular traffic in emergency weather evacuation

Performance Measures

- TxDOT is already tracking asset uptime, incident clearance times, level of travel time reliability, and Traffic Management System (TMS) system coverage in Dallas, Fort Worth, Houston, Austin, and San Antonio. These metrics will be developed and tracked for other districts of TxDOT as a key function of district TSMO Program Plans.

Connected and Autonomous Vehicles

- Provides messages and warnings to drivers can apply this technology to all other strategies to enhance and improve.

Work Zone Management

- Utilizes camera (Closed-circuit television (CCTV), thermal, etc.) to warn drivers of lane closures and upcoming construction

Special Event Management

- Can plan for and adapt to unforeseen traffic patterns resulting from higher demand for events such as, football games, state fair, and others

Traffic Incident Management

- Integrates response to incidents from a centralized location, involves coordination with law enforcement and the deployment of Highway Emergency Response Operator (HERO) programs

Signal Timing Improvements

- Adaptive signalization in key corridors - automated signal coordination and cycle length updating to meet current traffic demand

TxDOT's Goals for TSMO

Safety:

Reduce crashes and fatalities through continuous improvement of traffic management systems and procedures.

TxDOT has already implemented a campaign called #EndTheStreakTX to provide public awareness about the fact that there has been a roadway death every day in Texas since November 7, 2000. In addition to the public awareness campaign, TxDOT will dedicate an additional $600 million over the next two years to safety improvements on Texas roadways.

Customer Service:-

Provide timely and accurate travel information to customers so they can make informed mobility decisions.

Dynamic Messaging Signs can update drivers with route information so they may adjust their routes and/or behavior to avoid peak times. These vary in implementation but are common along many freeway corridors in the state, including I-35 through Austin.

Reliability:

Optimize travel times on transportation systems in critical corridors to ensure travelers are reaching their destinations in the amount of time they expected for the journey.

TxDOT is actively tracking system reliability in the performance dashboard: http://www.dot.state.tx.us/dashboard/optimize-system-performance.htm. This is used to monitor and predict travel statistics such as the urban congestion index, vehicular miles traveled for all vehicles statewide, and annual delay per person.

Collaboration:

Proactively manage and operate an integrated transportation system through multijurisdictional coordination, and cooperation between various transportation disciplines and partner agencies.

The Texas Connected Freight Corridors project is deploying connected vehicle technology on over 1,000 vehicles throughout the state. This is an effort through partnerships between TxDOT, public, and private stakeholders.

Efficiency:

Implement projects that optimize existing transportation system capacity and alleviate congestion.

One example of efficient use of infrastructure already occurring is Integrated Corridor Management (ICM). For example, the ICM along the I-10 Corridor in El Paso integrates freeway, arterial, transit, and parking management systems into a single system. This allows for more efficient data sharing among agencies and to the traveling public. In real time, travelers have access to enhanced traffic information so they may shift departure times, routes and modes.

Integration:-

Prioritize TSMO as a core objective in the agency's planning, design, construction, operations and maintenance activities.

The Austin TSMO Program Plan has integration as one of the key goals, to be accomplished by finding opportunities to fund TSMO activities, introduce TSMO training throughout the district, and implementing TSMO in day-to-day activities.