



TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSMO)

Statewide Strategic Plan Rollout





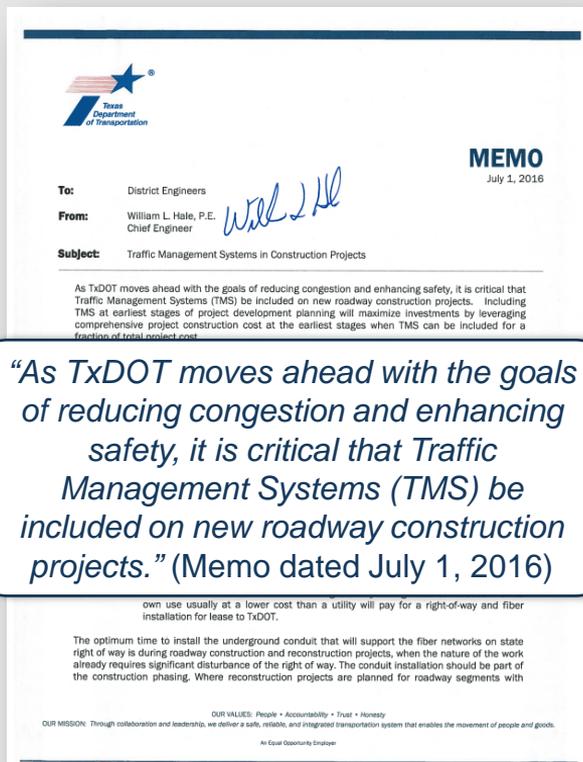
TxDOT Statewide TSMO Highlights

- Mid'15: Traffic Management Systems (TMS) State of the Practice Research
- *early*'16: TRF-Information Management Division (IMD) Partnership: District TMS Support
- *fall*'16: Statewide TSMO program Kick-off, Outreach Events and CMM Workshops
- Apr'17: Chief Engineer's Memo: Statewide TMS Procedures
- Apr'17: TMS Metrics on Engineering Operations Dashboard
- Aug'17: Statewide TSMO Strategic Plan issued
- Aug'17: TSMO Website launched
- *late*'17: Information Technology Pilots in Districts Begin (IMD Support)
- Feb'18: TRF/Districts reach consensus: Consultants to develop remaining TSMO program plans
- Jun'18: Austin District TSMO Program Plan completed; first district-level TSMO program plan.
- *mid*'18: TMS Enterprise Work Group established (TRF, IMD, Districts)
- Oct'18: Statewide TSMO planning contracts executed with 4 consulting firms
- 2019 – '23: TSMO program and tactical plans to be developed for the Metro, Urban and Rural districts
- 2019 – '23: Mainstream TSMO statewide into core agency processes, managed by TRF-TM

Purpose of the Statewide TSMO Planning Initiative

- Develop a strategic plan to provide statewide vision, mission and goals for TSMO.
- Guidelines for TSMO program planning at the district and regional level.
- Mainstream TSMO in project planning, funding and development procedures.

Memos issued by Bill Hale, TxDOT Chief Engineer:



“As TxDOT moves ahead with the goals of reducing congestion and enhancing safety, it is critical that Traffic Management Systems (TMS) be included on new roadway construction projects.” (Memo dated July 1, 2016)



“Each district will be expected to ensure (1) TMS is included in each project’s planning, development, design, construction, maintenance and operation, and (2) provide specific TMS projects where gaps exist between typical road and bridge projects... TRF will also provide Transportation Systems Management and Operations (TSM&O) guidance for the districts” (Memo dated April 7, 2017)

- Traffic Management Systems (TMS) Status Reports
 - Districts report on current status of TMS completion, and identifies projects included in the Unified Transportation Program (UTP).
 - Serve as status update to TSMO Program Plan goals.
 - Reported to TxDOT administration every 6 months beginning October 2017.
 - Initially required for the metro districts and El Paso only.
 - Starting October 2018, required for all 25 districts – metro, urban and rural.

Leadership Objectives

- Four TMS performance metrics implemented in FY 2017, per Chief Engineer's memo.
 - TMS Asset Operational Uptime- measure how Districts maintain their traffic management equipment, is the most critical metric to improve in the short-term
 - Incident Clearance Times- Measure mobility on our system, driven by District incident management processes in collaboration with regional partners
 - Level of Travel Time Reliability- An FHWA MAP-21 recommendation, to measure impact on the public from traffic management strategies applied to on-system roads e.g. work zone management, DMS, etc.
 - TMS System Coverage- Measure and understand what portion of on-system roadways are adequately covered with ITS equipment and communications, or where coverage needs to be expanded

Federal Legislation (“MAP-21”) Definition:

“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.”

Source(s): -1.) MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), Title 23 U.S.C. Sec. 101. Definitions and declaration of policy, (30)



Operations Strategies:

- Work Zone Management
- Traffic Incident Management
- Service Patrols
- Special Event Management
- Road Weather Management
- Transit Management
- Freight Management
- Traffic Signal Coordination
- Traveler Information
- Ramp Management
- Managed Lanes
- Active Traffic Management
- Integrated Corridor Management
- Rural Emergency Response

What is TSMO?

- Aren't we already doing this? Is TSMO just another way of saying operations, Intelligent Transportation Systems (ITS), or work zones, etc.?
 - While agencies may already be using some of these solutions, TSMO is not limited to deploying a single strategy. ITS, for example, is 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. TSMO needs to include planning, design, people, processes, technology, and data.
 - In the past, such strategies were considered an afterthought to be implemented after major construction along a highway was completed. TSMO changes this paradigm to become an investment strategy for long-term and cost-effective performance.

Source(s): -1.) FHWA Office of Operations, "What is TSMO?", Available at: <https://ops.fhwa.dot.gov/tsmo/index.htm#q1>

Minor Operational Enhancements:

- Also known as low-cost enhancements (LCEs)
 - Small, low-cost projects that can be implemented quickly to improve operational safety or reduce congestion on the highway system.
 - LCE projects generally target problem areas and allow traffic engineers to quickly respond to emerging roadway safety issues.
- 
- Channelization
 - Delineation
 - Low-cost safety enhancements
 - Signage
 - Striping
 - Traffic calming

Source(s): -1.) Washington State Department of Transportation, Transportation Systems Management and Operations: Planning and Implementation, Solutions, <http://fratis.trac.washington.edu/TSMO/?loc=StratLowCost.html#MinorChannel>

Who performs TSMO?

State DOTs

- Corridor and freeway management strategies.
- Develop processes and institutional arrangements that optimize TSMO throughout the state.
- At the district level, collaborate with local agencies to plan and optimize traffic management strategies.

MPOs

- Facilitate coordination and collaboration among various agencies (state and local), in the areas of planning, funding and traffic management.
- Long-range planning to guide the identification, prioritization, and selection of investments, programs, and strategies for the region.

Local DOTs / Roadway Authorities

- Corridor and arterial management strategies.
- Transit service coordination with corridor management strategies.
- Provide input to traffic management and operations priorities for region.
- Police, Fire, EMS coordination with traffic management strategies.

Road to Zero

The Texas Transportation Commission adopted a formal goal to achieve zero deaths on our roadways by 2050 with a midway goal to cut fatalities in half by 2035.

November 7, 2000 is the last deathless day on Texas roadways.



Why TSMO?

- TSMO strategies have safety benefits:
 - **Safe, quick clearance of traffic incidents** on roadways reduces the occurrence of secondary incidents (incidents caused by the effects of the original incident). One study estimates that the chance of secondary incidents increases by 2.8 percent for each minute the initial incident continues to pose a hazard.
 - **Road weather management** promotes safety by providing timely, accurate, and relevant information about roadway impacts of weather on travelers and transportation agencies, allowing agencies and drivers to make safe decisions during inclement weather.
 - **Traveler information** before and within work zones and in advance of congested slowdowns and queues can alert drivers of upcoming hazards, enable drivers to re-route, and create safer driver behavior.
 - **Active traffic management** strategies such as dynamic speed limits and dynamic lane control on freeways can harmonize vehicle speeds when congestion is building and reduce erratic flow conditions that lead to crashes.

Source: FHWA, “Enhancing Transportation: Connecting TSMO and Safety.” Available at <https://ops.fhwa.dot.gov/publications/fhwahop18091/index.htm>

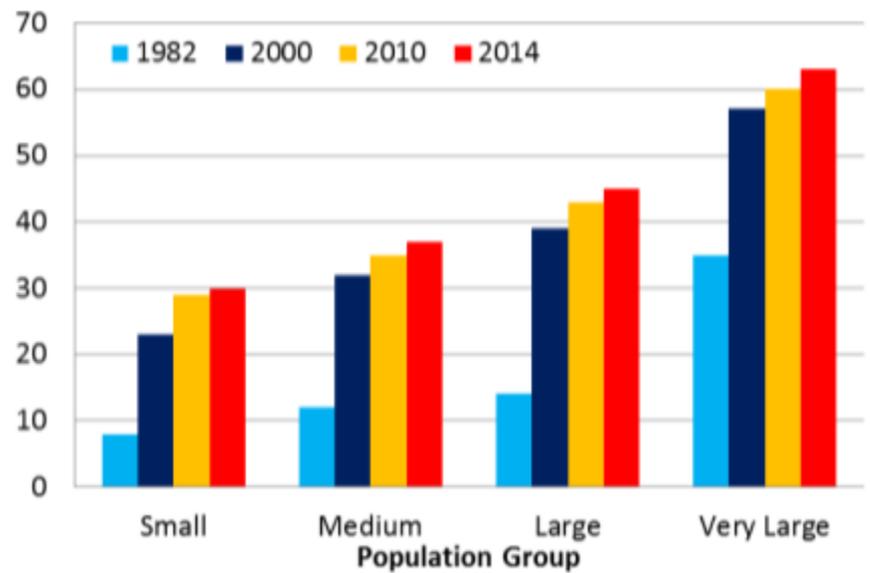
Congestion Problem Continues to Get Worse

- \$160 billion of wasted time and fuel
- Including \$28 billion of extra truck operating time and fuel
- An extra 6.9 billion hours of travel and 3.1 billion gallons of fuel consumed

The average urban commuter in 2014:

- Spent an extra 42 hours of travel time on roads than if the travel was done in low-volume conditions
- Used 19 extra gallons of fuel
- Which amounted to an average of \$960 per commuter

Exhibit 3. Congestion Growth Trend – Hours of Delay per Auto Commuter



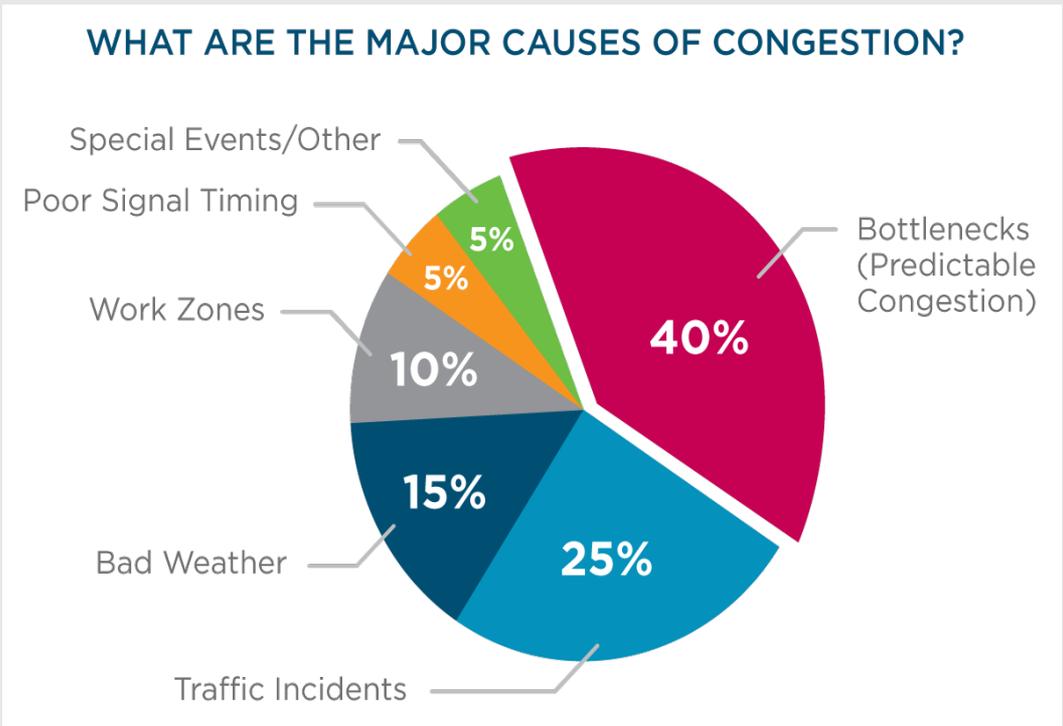
Small = less than 500,000
Medium = 500,000 to 1 million
Large = 1 million to 3 million
Very Large = more than 3 million

National measures of the congestion problem for the 471 urban areas in 2014:

Source: 2015 Urban Mobility Scorecard, by Texas A&M Transportation Institute and INRIX

Why TSMO?

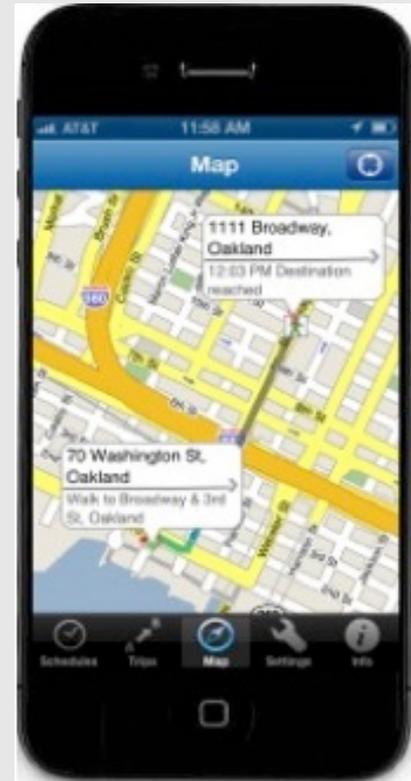
- Historically, DOTs have focused on relieving the causes of recurring congestion, such as bottlenecks and other capacity constraints.
- However, most congestion and delays in large metropolitan areas are the result of “non-recurrent” causes, such as crashes, weather, and construction activities – events that additional capacity does not directly address.



Source: -1.) FHWA Traffic Congestion and Fatality Report: www.tinyurl.com/fhwacongestionreport , -2) I-5 Rose Quarter Improvement Project: <http://i5rosequarter.org/i-5-auxiliary-lanes-shoulders/>, -3.) “Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation”; FHWA; September 2005: http://ops.fhwa.dot.gov/congestion_report/executive_summary.htm#figES_2.

The Transportation Environment is Changing:

- Changes that may redefine the DOT's roles and responsibilities (e.g. MAP-21, Connected Vehicles)
- Increased reliance on information and technology
- Increasing customer needs and expectations
- Growing emphasis on measuring performance
- Reduced financial resources
- Technology offers opportunities to better manage congestion and traffic incidents, thus reducing unexpected delay and improving safety.



From 511SF website

Source: FHWA, SHRP2 Reliability resources

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO)



STATEWIDE STRATEGIC PLAN

July 2018



- Provides statewide vision, mission and goals for TSMO.
- Serves as a guideline and checklist for TSMO program planning at district level.
- Basis for best-practice sharing, common technology solutions, and performance measures.
- Describes how centralized support will be provided to the districts' traffic management systems performance.
- Identifies specific and time-bound actions to mainstream TSMO into project development procedures.

Prepared by:



<http://www.txdot.gov/inside-txdot/division/traffic/tsmo.html>

Traffic Safety Division

Texas Department of Transportation > Inside TxDOT > Divisions

The Traffic Safety Division oversees the design and placement of signs, signals, pavement markings, lighting and intelligent transportation systems. It also develops traffic safety initiatives aimed at reducing fatalities and serious injuries from motor vehicle crashes.

In addition, the division is responsible for the collection and analysis of crash data used to plan highway safety and educational programs to promote safe driving practices, and oversees [driver safety programs and campaigns](#) geared toward teen drivers, child safety, sober driving, hurricane evacuation and many other issues.

[Michael A. Chacon, PE.](#), serves as director. [Contact us](#) with questions or comments.

Safety Information <ul style="list-style-type: none">Driver ResourcesNon-Radioactive Hazardous Materials RoutesHighway Safety EngineeringSolutions for Saving Lives on Texas Roads (Texas Traffic Safety Task Force)	Evacuation <ul style="list-style-type: none">Hurricane Information
Grants <ul style="list-style-type: none">Traffic Safety eGrants	Traffic Information <ul style="list-style-type: none">Railroad PreemptionRoad Construction/ClosuresSpeed LimitsTraffic CamerasTraffic Signals
Law Enforcement <ul style="list-style-type: none">CRASH SystemRed Light Cameras	Traffic Management <ul style="list-style-type: none">Texas Connected Freight CorridorsTransportation Systems Management & Operations (TSMO)Smart Work Zones
Signage <ul style="list-style-type: none">Memorial Sign ProgramTexas Manual on Uniform Traffic Control DevicesStandard Highway Sign Designs for TexasLogo and Directional Signs	Crash Data and Records <ul style="list-style-type: none">Purchase a Crash ReportDownload a Driver's Crash Report (Form CR-2) for Filing (Choose appropriate CR-2 form from the Crash Records Forms page)

Statewide TSMO Vision:

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

Statewide TSMO Mission:

Through innovation, collaboration, and performance-based decision making, transportation facilities are developed, constructed, maintained, and operated cost-effectively, with the end user in mind.

Statewide TSMO Goals and Objectives:

- **Safety** - Reduce crashes and fatalities through continuous improvement of traffic management systems and procedures.
- **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.
- **Efficiency** - Implement projects that optimize existing transportation system capacity and alleviate congestion.
- **Customer Service** - Provide timely and accurate travel information to customers so they can make informed mobility decisions.
- **Collaboration** - Proactively manage and operate an integrated transportation system through multijurisdictional coordination, and cooperation between various transportation disciplines and partner agencies.
- **Integration** - Prioritize TSMO as a core objective in the agency's planning, design, construction, operations and maintenance activities.



TxDOT Statewide TSMO Strategic Plan Development Timeline



TSMO State of the Practice Research

- Gathered an understanding for TSMO capabilities at different state and local agencies
- Helped to identify where TxDOT can improve in TSMO and different strategies for engaging stakeholders
- Provided ideas for alternative ways to structure TxDOT's statewide TSMO program



Outreach Events: TSMO/CMM Workshop

LOCATION	DATE & TIME	NUMBER OF ATTENDEES
EL PASO	Tuesday, October 18 th , 2016 - 8 am to 12 pm	13
DALLAS-FORT WORTH	Wednesday, November 2 nd , 2016 - 1 pm to 5 pm	24
HOUSTON	Thursday, November 3 rd , 2016 - 9 am to 12 pm	22
SAN ANTONIO	Friday, November 4 th , 2016 - 9 am to 12 pm	32
ITS TEXAS (RICHARDSON)	Wednesday, November 9 th , 2016 - 4 pm to 6 pm	33
AUSTIN	Thursday, November 17 th , 2016 - 8 am to 12 pm	22
WEBINAR	Thursday, January 26 th , 2017 - 10 am to 12pm	110*

*It is likely that more than 110 individuals attended the webinar as some attended among a group of individuals from a conference room at their respective locations.

The attendees at each outreach event were generally a collection of personnel from the various TxDOT districts' Operations and Planning sections, Metropolitan Planning Organizations (MPO), and local transportation agencies.

Capability Maturity Model (CMM)

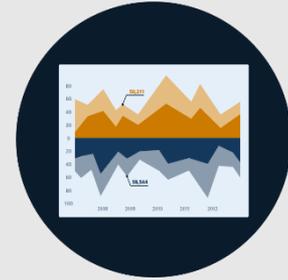
- Widely used in the Information Technology industry
- When applied to TSMO, it helps agencies identify strengths, weaknesses, and next steps to improvement
- 6 Capability Dimensions:
 - Business Processes, Culture, Systems & Technology, Organization & Staffing, Collaboration, and Performance Measurement



Business Processes



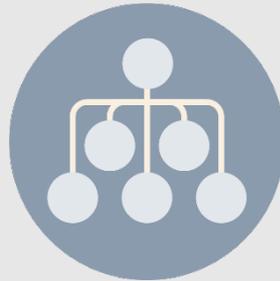
Systems & Technology



Performance Measures



Culture



Organization & Workforce



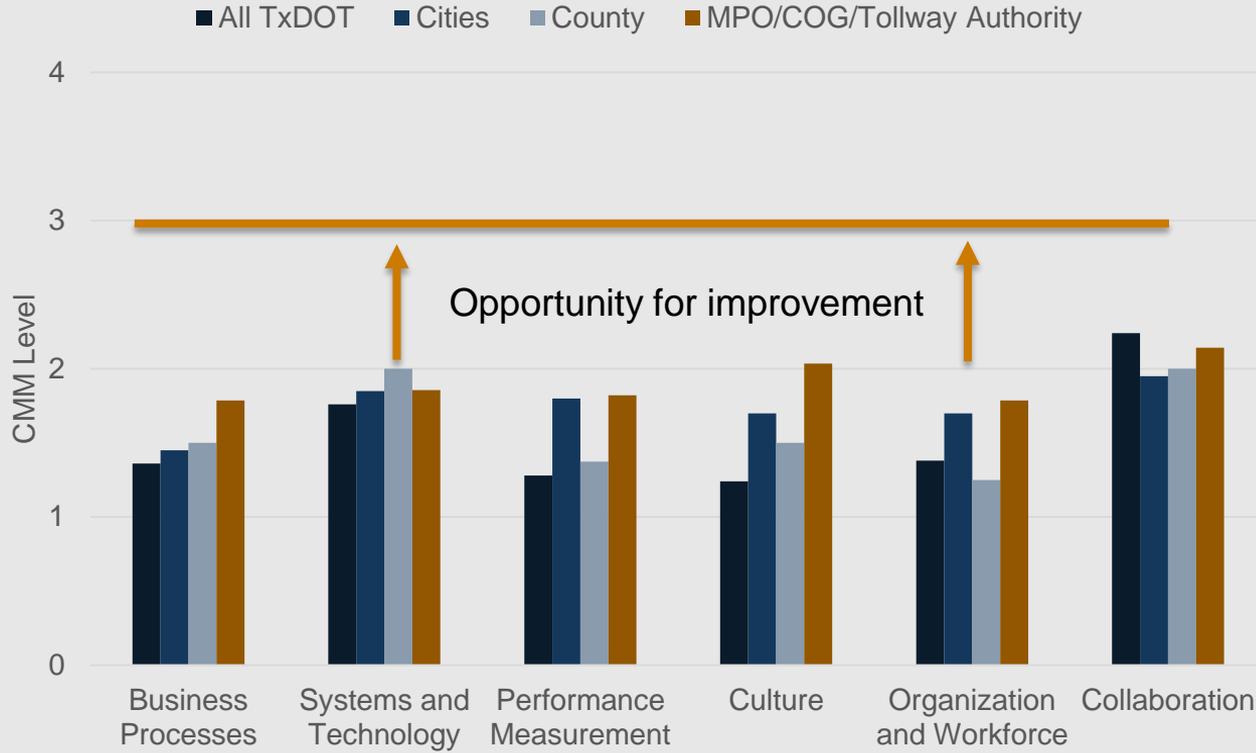
Collaboration

Capability Maturity Model (CMM)



Source: *Creating an Effective Program to Advance Transportation System Management and Operations*, FHWA Jan 2012

Texas CMM Results, 2016 - 2017



Capability Maturity Model (CMM) - Framework for Effective TSMO



Sources(s): -1.) US DOT, FHWA, -2.) AASHTO, -3) SHRP2 Solutions

Rollout Events: Statewide TSMO Strategic Plan

LOCATION	DATE & TIME	NUMBER OF ATTENDEES
TEXITE MEETING (SAN MARCOS)	Friday, September 8 th , 2017 – 8:30 am to 9 am	20
AUSTIN	Monday, September 18 th , 2017 – 9:30 am to 12 pm	21
DALLAS-FORT WORTH	Wednesday, November 1 st , 2017 - 2 pm to 4:30 pm	15
WEBINAR	Thursday, October 5 th , 2017 - 10 am to 10:30 am	*70
ITS TEXAS (HOUSTON)	Wednesday, November 8 th , 2017 - 4 pm to 6 pm	14
EL PASO	Monday, December 11 th , 2017 – 2:30 pm to 4:30 pm	21
WEBINAR	Wednesday, December 6 th , 2017 - 10 am to 12pm	*60
HOUSTON	Friday, January 26 th , 2018 – 9 am to 11 am	34

*It is likely that more than 130 individuals attended the two webinars as some attended among a group of individuals from a conference room at their respective locations.

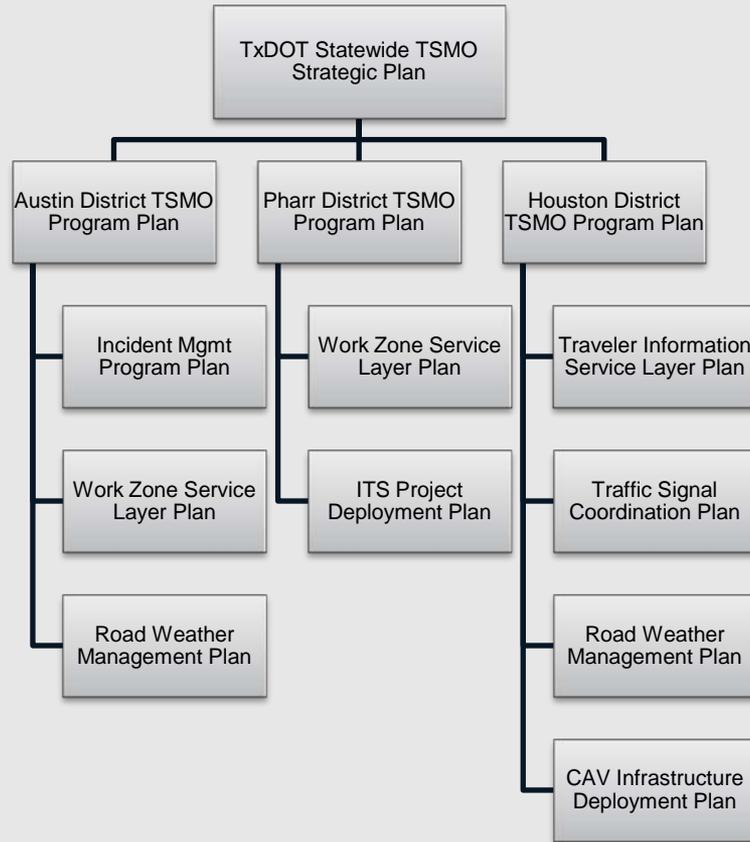
The attendees at each rollout event were generally a collection of personnel from the various TxDOT districts' Operations and Planning sections, Metropolitan Planning Organizations (MPO), and local transportation agencies.

TxDOT Statewide TSMO Planning Structure

Statewide Strategic Plan {

District Program Plans {

Tactical Plans examples {



TxDOT Statewide TSMO Planning Structure

The planning structure defined for TxDOT is organized in three (3) levels. The planning defined at the first level is statewide in scope. The second and third level planning is district/regional in scope. Thus, the higher level planning is relatively broad and is meant to guide the lower level planning which is relatively more specific and narrow in scope. In comparison with other states, Texas is largely decentralized. This means that some of the governing policy and regional needs vary throughout the state. Based on research done regarding the state of the practice for TSMO around the country, it has been found that state DOT TSMO planning includes these three essential component levels, which are interrelated.

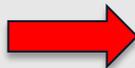
1. **Statewide TSMO Strategic Plan**—provides statewide vision, mission and goals for TSMO, and provide guidelines for TSMO program planning at the district and regional level.
2. **District TSMO Program Plan**—A more customized district/region-level plan that defines the district-level strategy, goals, resources, performance measures, processes, and institutional arrangements that will enhance TSMO in the respective district/region (i.e. defines how the program operates, including the organizational structure and business processes). Includes an assessment of existing programs (i.e. safety and mobility strategies); recommends and prioritize actions, such as the tactical planning needed to commit resources and improve program areas.
3. **District Tactical Plans**— These plans step down from broad institutional and organizational issues that are defined in the District TSMO Program Plan, to address specific services, safety and mobility issues, programs, and priorities (e.g., Work Zone Management, Traffic Incident Management (TIM), Road Weather Management, etc.). Furthermore these plans can serve as deployment plans as they typically use some type of data-driven decision making on where to locate traffic management devices (e.g., dynamic message signs, cameras, traffic detectors, etc.) and provide the details on cost estimates, roles and responsibilities, and operation & maintenance.



Transportation Planning Process

Traditional Focus:

- Long term
- Capital investment
- Project orientation
- Capacity deficiencies
- Link improvements
- Environmental impacts
- Recurring congestion (from forecasts)



Needed (In Addition):

- Significant collaboration
- Consideration on non-recurring congestion & operations
- An objectives-driven approach
- Performance based focus on outcomes
- Network and region-wide applications
- Include on-going costs for operations & maintenance

Source: FHWA, SHRP2 Reliability resources



Why develop a TSMO Program Plan? *TSMO Mainstreaming*

Traditional Focus:

- Building the necessary infrastructure
- Keeping in a state of good repair (maintenance & reconstruction)



Core attributes of planning process (LRTP, TIP); has been for decades

Needed in Addition:

- Operating and managing the infrastructure on a day-to-day basis



Operations should be integrated into the traditional planning & programming processes

“Mainstreaming”

**New construction will continue to be important.
But we can't build our way out of congestion!**

Source: FHWA, SHRP2 Reliability resources



Why develop a TSMO Program Plan? *TSMO Mainstreaming*

“Planning for Operations” – a joint effort between planners & operators to merge operations into traditional planning and programming

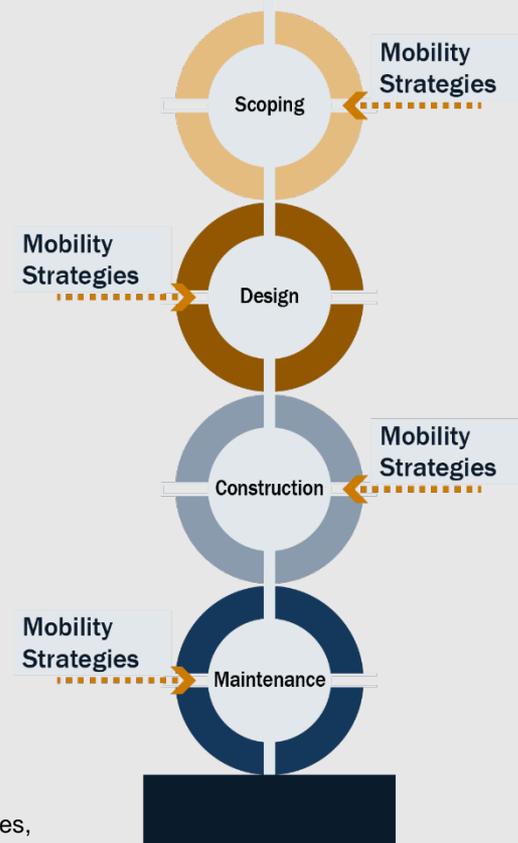
- Develop and program operations strategies based on regional goals, objectives & performance measures
- Enhance the process so that operations investments are on par with construction & preservation funding.
- Help meet requirements of MAP 21 (i.e., “promote efficient operations”)



Source: FHWA, SHRP2 Reliability resources

Why develop a TSMO Program Plan? *TSMO Mainstreaming*

- **Institutional** – actions focused on growing an agency culture that values TSMO; establishing TSMO as a core agency program.
- **Organizational** – actions that adjust structure of responsibilities to better support TSMO functions, including staffing and workforce development.
- **Procedural** – actions that improve business processes to better incorporate TSMO, including adjustments in planning, programming and budgeting, systems engineering, and performance measurement.



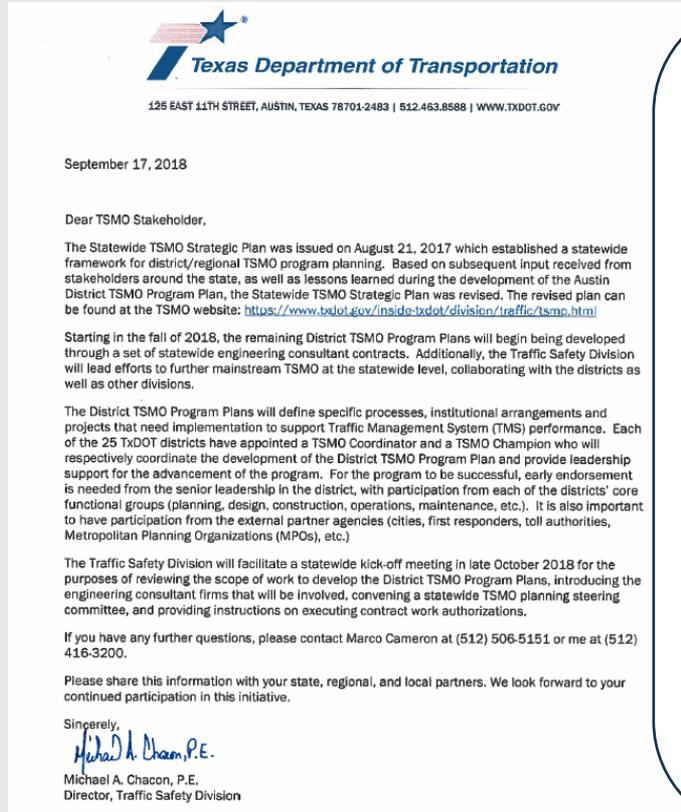
Source(s): -1.) Advancing TSMO: Making the Business Case for Institutional, Organizational, and Procedural Changes, Available at: <https://ops.fhwa.dot.gov/publications/fhwahop19017/index.htm>

- **Operations is a critical component for managing the transportation network on a daily basis.**
 - Enhance mobility, reliability, safety, and environment
 - Provide a sustainable transportation network
 - Support a performance-based approach, focusing on outcomes
 - Achieve quick and cost-effective implementation

- **To be successful, operations need to be “mainstreamed” into the regional planning and programming processes and documentation**

Next Steps for TSMO Mainstreaming

Memo issued by Michael Chacon - Director, Traffic Safety Division

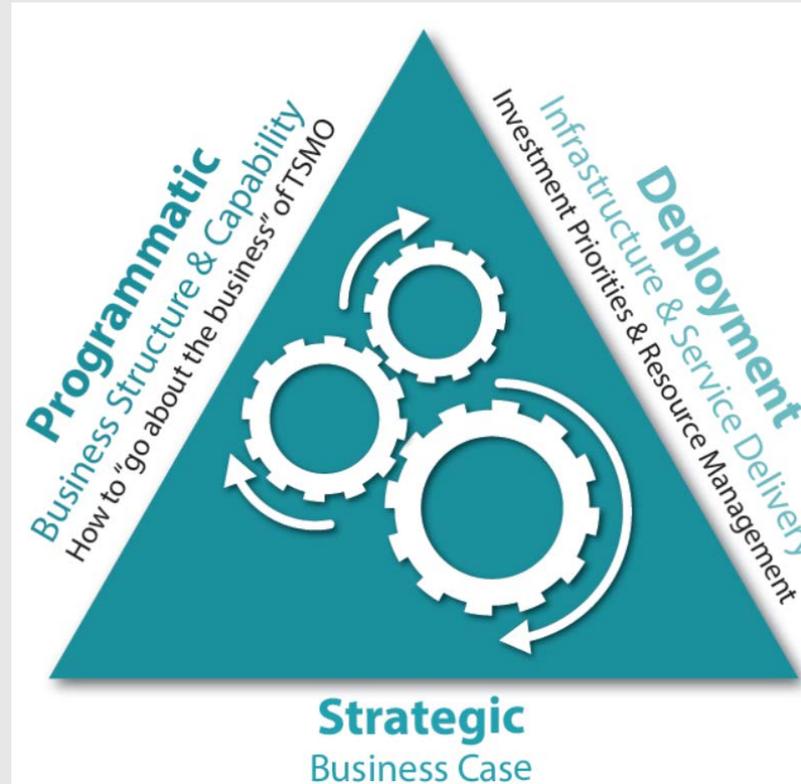


“...the Traffic Safety Division will lead efforts to further mainstream TSMO at the statewide level, collaborating with the districts as well as other divisions...”

District TSMO Program Plans will define specific processes, institutional arrangements and projects that need implementation to support Traffic Management System (TMS) performance... early endorsement is needed from the senior leadership in the district, with participation from each of the districts' core functional groups (planning, design, construction, operations, maintenance, etc.). It is also important to have participation from the external partner agencies (cities, first responders, toll authorities, Metropolitan Planning Organizations (MPOs), etc.)”

(Memo dated September 17, 2018)

What's included in a TSMO program plan?



Source(s):

-1.) Organizational Context to TSMO Planning (FHWA Resource Center)



Things to consider when developing a TSMO program plan?

- TSMO is not new. Districts are already applying certain TSMO strategies and engage in certain aspects of TSMO planning.
- But the processes, performance measures, staffing and funding that sustain TSMO need to be better defined, and mainstreamed statewide.
- Rural areas also benefit from TSMO planning. While congestion is generally a minor concern, traffic safety, special events, and weather are often significant concerns.
- Interstate corridors running through rural districts connect major freight and urban population centers.



Things to consider when developing a TSMO program plan?

- Some states have targeted their TSMO planning efforts toward strategic corridors instead of entire districts or regions.
- Separate regions will have a slightly different approach to TSMO planning, based on size, staffing and transportation challenges being faced.
- Local agencies, MPOs, and TxDOT should work together to determine the best approach for their respective regions. Collaboration is essential.
- Facilitate a CMM self-assessment workshop to establish priority actions for the district/region to consider as part of its future TSMO program plan.



Things to consider when developing a TSMO program plan?

- Appoint a TSMO Coordinator and TSMO Champion to coordinate the effort and provide senior leadership support.
- Which local or regional agencies should be involved???
- Which existing plans or initiatives should be referenced in or combined with the TSMO Program Plan???... No need to “*reinvent the wheel.*”
- To be successful, early endorsement needed from senior leadership, with full participation from each of the core disciplines of the organization [e.g. planning, design, construction, operations and maintenance].

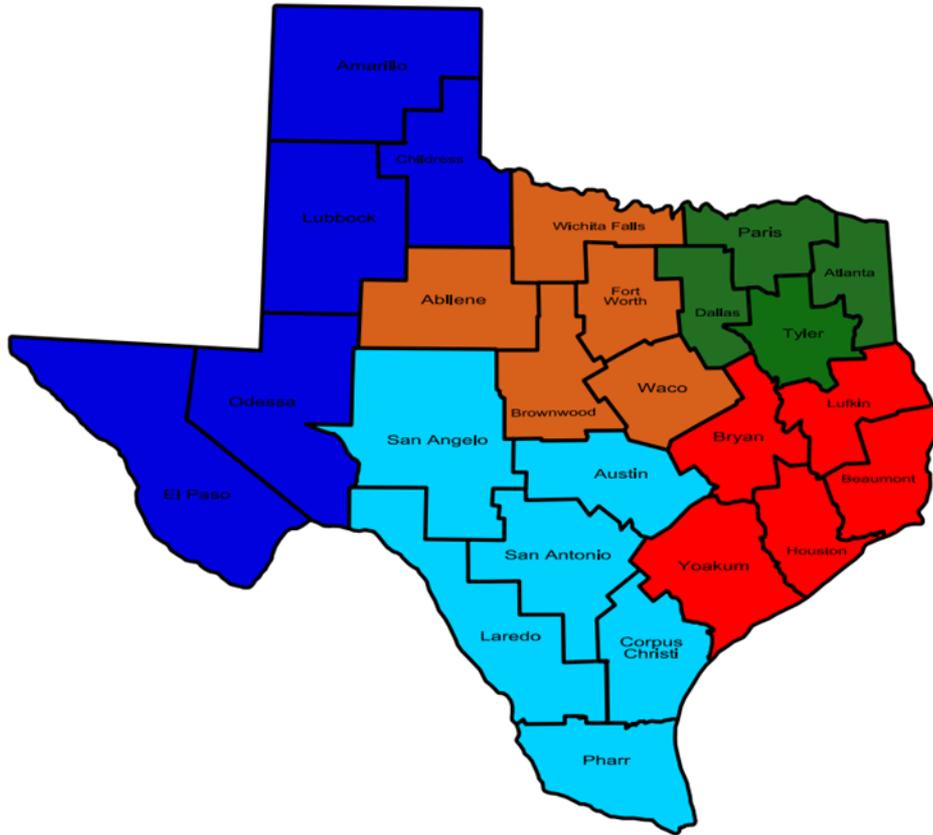
Statewide-use TSMO Planning Contracts

- Engineering consultant contracts to be used for TSMO planning.
- Four (4) consultants selected, each for 5 yr./\$5M indefinite deliverable contracts; executed in early Oct'18.
- Statewide project management of the contracts to be done by Traffic Safety Division (TRF).
- Work authorization (WA) agreements executed through these contracts will be managed and funded by the district / division that requested the WA.

Statewide-use TSMO Planning Contracts

- TRF led the procurement of the statewide TSMO planning contracts in order to establish consistency among the contracts statewide, and to centralize the procurement effort which was thought to be more cost efficient than each district separately taking on that effort.
- The consultants were assigned multi-district regions, and can to some extent leverage the cost and effort for some district-level task such that those can be applied to multiple districts at a relatively lower overall cost to the state.

TSMO Consultants - District Assignments



Kimley»Horn	WFS, ABL, WAC, FTW, BWD
Kimley»Horn	DAL, PAR, TYL, ATL
ARCADIS	SAT, PHR, LRD, AUS, CRP, SJT
DKS	BRY, YKM, LFK, HOU, BMT
AECOM	ELP, ODA, LBB, AMA, CHS
AECOM	Traffic Safety Division (TRF)

Contract - Scope of Work

- **Program Planning**
 - Develop business case, vision, mission and goals for TSMO, taking input from internal and external stakeholders.
 - Analysis of business processes, institutional arrangements, as well as mobility and safety challenges.
 - Recommend process improvements, institutional arrangements, projects and services that will improve TSMO capabilities and achieve TSMO goals and objectives.
- **Tactical Planning**
 - Identification of funding, staffing and equipment needed to deploy projects and services (e.g. Traffic Incident Management, Integrated Corridor Management, Traveler Information, Safety Service Patrol, etc.).
 - Concept of operations (ConOps) for operations strategies, ITS architectures, ITS Master Plans, etc.
- **Program Development and Implementation**
 - Analysis, reporting, meetings, workshops and other actions to integrate (“mainstream”) TSMO into core functions of the agency, such as planning, design, construction, maintenance and traffic operations.
 - Implement processes and institutional arrangements that will improve TSMO capabilities and achieve TSMO goals and objectives.
- **Preliminary Design**
 - Benefit-cost analysis, system requirements, schematics, device layout, cost of equipment, installation, and maintenance (i.e. detailed design framework).
- **Public Involvement**
 - Professional outreach, marketing, promotional materials as needed.
- **Project Management**
 - Project coordination, invoicing, status reports.

When and How to Execute WA Agreement for TSMO Program Plan?

- **The plan previously-** Prior to procuring the TSMO contracts, it was envisioned that starting in the Fall 2018, the metro district(s) in each region would be the first district(s) to execute a TSMO program plan work authorization (WA), and the urban districts and the rural districts would follow suit at a later point in time, applying the lessons learned established by the metro district.
 - During the Statewide ITS Leadership and Regional meetings of 2017, this approach emerged as the consensus among the Districts' traffic operations leadership and TRF. [It was noted that relative to the rural and urban districts, the metro districts generally deal with a broader variety traffic operations & management (O&M) issues, and have gone further in ITS deployment.]
- **The plan moving forward-** Because of the longer than expected delay in executing the TSMO program plan WA agreements in the metro districts, in June 2019, the urban and rural districts were advised by TRF-TM to no longer delay the execution of their respective WA agreements based on the status of the metro district(s) in their region. The goal here is to have all TSMO program plan WA agreements for all 25 districts executed by the end of March 2020.

When and How to Execute WA Agreement for TSMO Program Plan?

- Each TSMO program plan work authorization will have an estimated 9 – 15 month work schedule, depending on the required level of effort for each.
- Urban and rural districts will be invited to participate in certain phases of developing the TSMO program plan for the metro district in the same region, and vice versa. This is meant to take into consideration the operational/technical dependencies between the districts.
- The Traffic Safety Division's Traffic Management Section (TRF-TM) has provided instructions on the steps the districts should take in order to request and execute a work authorization agreement.

When and How to Execute WA Agreement for TSMO Program Plan?

Schedule to Execute WA Agreements to develop District TSMO Program Plan

May'19	Aug'19	Sep'19	Jan'20	Mar'20
El Paso	Dallas & Fort Worth	Amarillo	Atlanta	Abilene
San Antonio	Houston	Beaumont	Laredo	Brownwood
		Bryan	Lufkin	Wichita Falls
		Childress	Paris	
		Corpus Christi	San Angelo	
		Lubbock	Tyler	
		Odessa		
		Pharr		
		Waco		
		Yoakum		

District TSMO Coordinators, and Champions

- Starting in late 2017, each of the 25 TxDOT districts identified a TSMO Coordinator and a TSMO Champion who will respectively coordinate the development of the District TSMO Program Plan and provide leadership support for the advancement of the program.
- It is strongly recommended that the role of TSMO Champion be fulfilled by someone in an administration level position within the district (e.g. District Engineer, Deputy District Engineer, Director, etc.).
- The districts are asked to notify TRF-TM of any personnel changes that affect who is assigned as the District TSMO Coordinator or Champion.

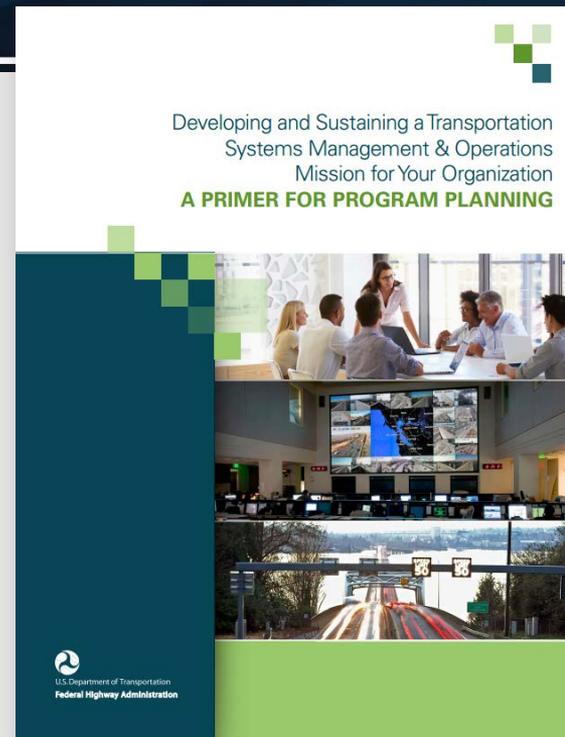
National Operations Center of Excellence



- transportationops.org
- Partnership of AASHTO, ITE, and ITS America with support from the FHWA
- Offers a document library, peer exchanges, webinars, on-call assistance, assessments, and other TSMO support via the Operations Technical Services Program.

National Operations Center for Rural Road Safety

- ruralsafetycenter.org



FHWA Resource: *What is TSMO?*

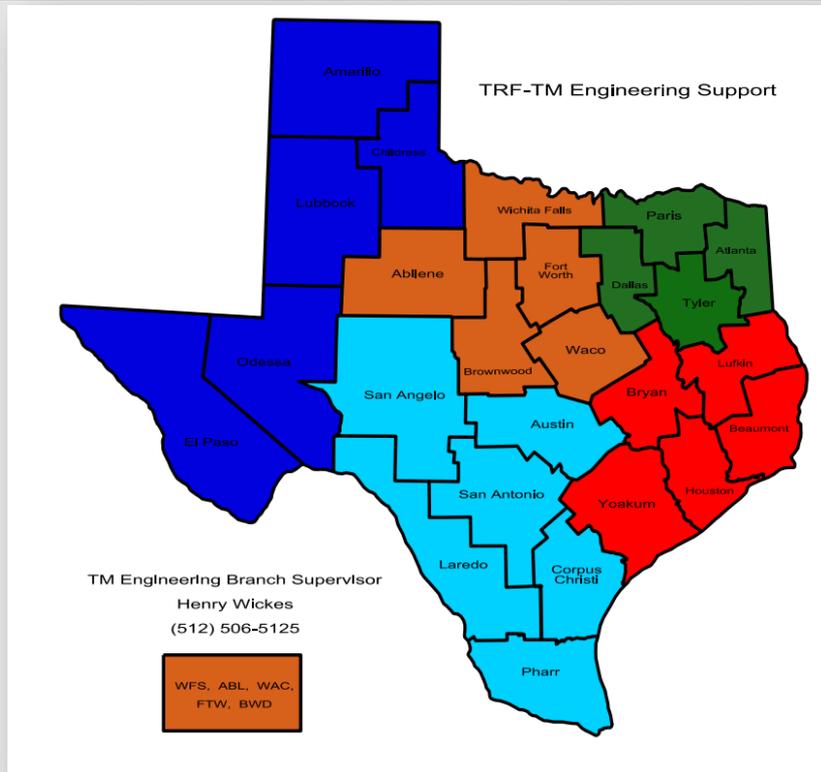
<https://ops.fhwa.dot.gov/tsmo/index.htm>



Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.

Source(s): -1.) Texas Department of Transportation, Values, Vision, Mission and Goals, <http://www.txdot.gov/inside-txdot/contact-us/mission.html>

TRF-TM Engineering Support - Points of Contact for the Districts



Michael Chacon, PE, Director, Traffic Safety Division (TRF)
George Villarreal, PE, Deputy Director, TRF
Joseph Hunt, Director, TRF Traffic Management Section

Marco Cameron, PE, Transportation Engineer	WFS, ABL, WAC, FTW, BWD
Barbara Russell, PE TM Engineering Branch Supervisor	SAT, PHR, LRD, AUS, CRP, SJT
Barbara Russell, PE TM Engineering Branch Supervisor	ELP, ODA, LBB, AMA, CHS
Marco Cameron, PE, Transportation Engineer	DAL, PAR, TYL, ATL
Jianming Ma, PE, Transportation Engineer	BRY, YKM, LFK, HOU, BMT
David McDonald, Traffic Incident Management (TIM) Coordinator	Statewide

Contact:

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TxDOT TSMO Webpage:

<https://www.txdot.gov/inside-txdot/division/traffic/tsmo.html>

Districts Webpage:

<http://www.txdot.gov/inside-txdot/district.html>