



Peer Exchange Report

National Operations Center of Excellence Planning for TSMO Peer Exchange

Purpose And Overview

Planning for Transportation Systems Management and Operations (TSMO) integrates management and operations strategies into the planning process for the purpose of improving transportation system safety, effectiveness, reliability, and travel options. TSMO strategies aim to maximize the performance of existing and planning infrastructure through multi-modal, multiagency, and inter-modal systems, services, and projects.

Planning for TSMO starts at the regional level; ensuring management and operations strategies are included in the metropolitan transportation plan is key to meet the needs of all users of the transportation system. Further, linking planning for operations together at the state level is fundamental to producing better investment decisions. Most importantly, the collaboration between local, regional, and state agencies, as well as other partners, is essential to improve transportation system performance at all levels – statewide, regional, corridor, and project.

NOCoe's Planning for TSMO Peer Exchange hosted transportation professionals from city/county, regional, and state agencies with experience and interest in creating proactive and collaborative solutions for planning for transportation system management and operations.

The peer exchange was in-person at the Institute of Transportation Engineers office in Washington, DC, developed as a two-day exposure to the topic. This was an opportunity for experts from specific programs with experience in the topic as well as agencies that encounter challenges advancing planning for TSMO to be in the same room and learn from each other. This peer exchange allowed:

- Thought leaders in the field to share their success stories, learnings, and advice.
- Peers that are encountering challenges to establish a shared understanding of problems that need to be solved.
- The creation of a set of priorities and action items that can help the TSMO community integrate management and operations strategies into the planning process.

Agenda

WEDNESDAY, DECEMBER 6, 2023

Time	Topic	Speakers
8:30 am – 9:00 am (30 min.)	Continental Breakfast / Coffee	
9:00 am – 9:30 am (30 min.)	<u>Welcome and Introduction</u> 1. Welcome 2. Initial Remarks 3. Agenda Review and Introductions	Adam Hopps, NOCoE Steve Kuciemba, ITE Eric Hill, NOCoE TAC Luana Broshears, ITE
	<u>Module 1 – Statewide Opportunities for Linking Planning and Operations</u>	
9:30 am – 10:30 am (60 min.)	1. Justin Yoh, Ohio DOT 2. Debra Nelson and Jim Davis, New York State DOT <i>Format: Presentations followed by discussion.</i>	
10:30 am – 10:45 am (15 min.)	BREAK	
	<u>Module 2 – Advancing Metropolitan Planning for Operations</u>	
10:45 am – 11:45 am (60 min.)	1. Eric Hill, NOCoE TAC, MetroPlan Orlando <i>Format: Presentation followed by discussion.</i>	

Module 3 – Local and Rural Considerations for Integrating Operations, Safety, and Multimodal Planning

- 11:45 am
–
12:45 pm
(60 min.)
1. Dan Hennessey, ITE Planning Council, City of Austin
 2. Carrie Kissel, National Association of Development Organizations

Format: Presentations followed by discussion.

12:45 pm
–
1:45 pm
(60 min.)

LUNCH BREAK

Module 4 – Regional Coordination and Collaboration

- 1:45 pm
–
2:45 pm
(60 min.)
1. Jeff Kramer, Center for Urban Transportation Research
 2. Athena Hutchins, Niagara International Transportation Technology Coalition

Format: Presentations followed by discussion.

2:45 pm
–
3:00 pm
(15 min.)

DAY WRAP UP

THURSDAY, DECEMBER 7, 2023

Time	Topic	Speakers
8:30 am – 9:00 am (30 min.)	Continental Breakfast / Coffee	
9:00 am – 9:30 am (30 min.)	<u>Welcome and Introduction</u> 1. Welcome for the Day 2. Agenda Review	Luana Broshears, ITE
9:30 am – 10:30 am (60 min.)	<u>Module 5 – The Role of TSMO in Supporting Users of the Transportation System</u> 1. Brian Kary, Minnesota DOT 2. Caleb Winter, Oregon Metro <i>Format: Presentations followed by discussion.</i>	
10:30 am – 10:45 am (15 min.)	BREAK	
10:45 am – 11:45 am (60 min.)	<u>Module 6 – Adapting to New Needs and Sustaining TSMO</u> 1. Catalina Echeverri, NOCoE SAC and ITE TSMO Council 2. Natalie Bettger, North Central Texas Council of Governments <i>Format: Presentations followed by discussion.</i>	
11:45 am – 12:45 pm (60 min.)	LUNCH BREAK	
12:45 pm – 1:45 pm (60 min.)	<u>Module 7 – FHWA Considerations</u> 1. Jim Hunt and Tracy Scriba, FHWA <i>Format: Presentation followed by discussion.</i>	
1:45 pm – 1:50 pm (5 min.)	BREAK	

1:50 pm	<u>Module 8 – Group Discussion</u>	
–		
2:50 pm (60 min.)	Success stories, challenges, agency needs Format: Group discussion.	Douglas Noble, ITE

2:50 pm	<u>Wrap Up</u>	
–		
3:00 pm	Action items for NOCoE and participants	Luana Broshears, ITE Adam Hopps, NOCoE

MODULE 1 – STATEWIDE OPPORTUNITIES FOR LINKING PLANNING AND OPERATIONS

Ohio DOT

Ohio DOT TSMO Program PROTECT Projects: Justin Yoh, TSMO Program Manager and Traffic Incident Management Program Manager at the Ohio Department of Transportation (ODOT)

The first discussion of the peer exchange focused on the importance of planning for TSMO to support system resiliency, and an example of how planning for TSMO resulted in ODOT receiving federal PROTECT grants. The Federal Program's PROTECT program aims to improve the resilience of surface transportation infrastructure against natural disasters such as climate change, rising sea levels, flooding, extreme weather events, and other natural disasters. Funded under the Bipartisan Infrastructure Law, it provides grants to support planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure.

ODOT District 9:

- Identified 33 frequently flooded locations with significant impact.
- Submitted 15 projects, 13 received \$13.2 million in funding.
- Challenges include staffing, deadlines, design schedules, and matching funds.
- Locations 1-5 secured funding in November 2023, Location 6 is awaiting the next application cycle.

Key takeaways:

- ODOT District 9 actively utilized PROTECT funds, demonstrating leadership in rural resilience efforts. This was the first known use of TSMO funds for flooding.
- The program strives for improved transparency and inclusivity across all regions.
- Monthly meetings with district coordinators helped maintain collaborations. There was an important collaboration with the state EPA as well.
- Collaboration with other initiatives and increased funding will enhance program effectiveness.
- The program seeks better collaboration with districts to address rural needs.
- Increased funding and planning flexibility are desired for future projects.

New York State DOT

Planning for Operations, NYSDOT Statewide Perspective: Debra Nelson, Director, Office of Planning, Policy and Performance and Jim Davis, Director, Policy and Performance Bureau

This presentation was conducted by NYSDOT to highlight the key objectives and collaborative efforts that NYSDOT undertakes to ensure statewide mobility and efficient Transportation System Management and Operations (TSMO).

Key takeaways:

- NYSDOT faces diverse operational environments across 11 regions. The key is to focus on systems and relationships. Trust and ideas became part of the culture to foster and grow as a system.
- It is important to make “TSMO talk” relatable to all programs, and not losing track of what the goals are.
- Shared goals include congestion reduction, efficient enterprise deployment, consistent best practice application, predictable funding, and collaboration with agency and modal partners. Collaboration with universities is a strength for NYSDOT and helps connect planning and operations.

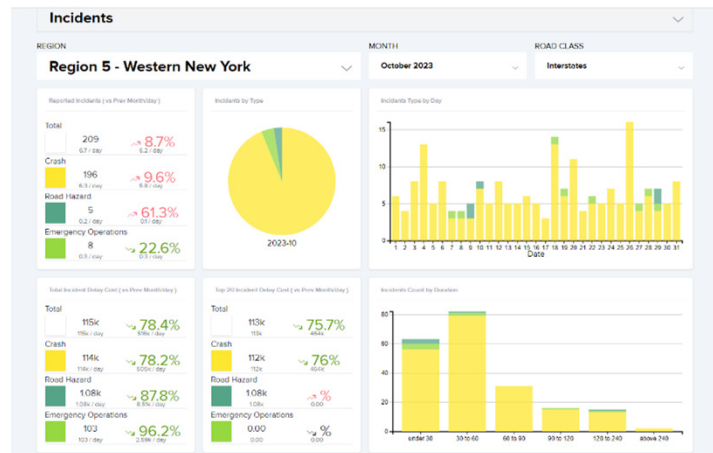


Figure 2. TSMO monthly dashboard. Source: NYSDOT.

- Planning and operations work across various timeframes, from real-time to beyond two years.
- Synergies exist between planning and operations, with data and analysis feeding into each other.
- Planning and Operations collaboration efforts include the NYSDOT TSMO Strategic Plan.
- Near-term action items focus on improving operational practices, deploying systems to improve safety and mobility, and applying advanced data/information methods.
- TSMO performance is measured through various data sources and displayed in a monthly dashboard
- Moving forward, Planning and Operations collaborations at NYSDOT will focus on building nimble capabilities to collaborate with partners through:
 - Establishing a statewide TSMO Steering Committee.
 - Integrating TSMO into the Planning and Project development process.
 - Creating opportunities to link TSMO-related programs with transit providers.
 - Implementing Integrated Corridor Management (ICM) in selected corridors.
 - Improving emergency transportation management capabilities for partners.
 - Describing the economic aspects of TSMO (e.g., for asset management teams, if you invest X dollars now, this is how it helps the systems in the long term.)

MODULE 2 – ADVANCING METROPOLITAN PLANNING FOR OPERATIONS

MetroPlan Orlando

Advancing Metropolitan Planning for Operations in the Orlando Region: Eric Hill, Director of TSMO at

MetroPlan Orlando

Module 2 began with a presentation from Eric with a focus on the regional transportation partnership at the MPO level to advance planning for operations. MetroPlan Orlando is developing a Transportation Systems Management and Operations (TSMO) Master Plan to address future transportation challenges in the region. This plan aims to maximize mobility and safety through strategic use of technology and operations.

Key takeaways:

- TSMO Master Plan:
 - Regional growth: population and economic activity are expected to increase significantly by 2045, necessitating changes to the transportation system.
 - TSMO vision and goals: create a multimodal network that prioritizes safety, reliability, accessibility, and environmental sustainability.
 - Master plan framework: a structured approach involving needs assessment, prioritization, strategy development, and action planning.
 - Needs assessment: evaluates existing infrastructure, performance, and stakeholder needs.
 - Strategies and operations: prioritizes projects based on impact and feasibility, with investments in training, collaboration, and interoperability.
 - Agency and organizational considerations: focuses on workforce development, public awareness, and collaboration with active transportation plans.
- Regional TSMO Program: workshops with peers to discuss the potential framework resulted in the consensus on Strategic Plan.
- Regional TSMO Project List: defines projects as integrated strategies optimizing existing and new infrastructure, serving regional needs.
- Electric Vehicle Readiness Study: analyzes EV supply, infrastructure, and public outreach needs for future planning.

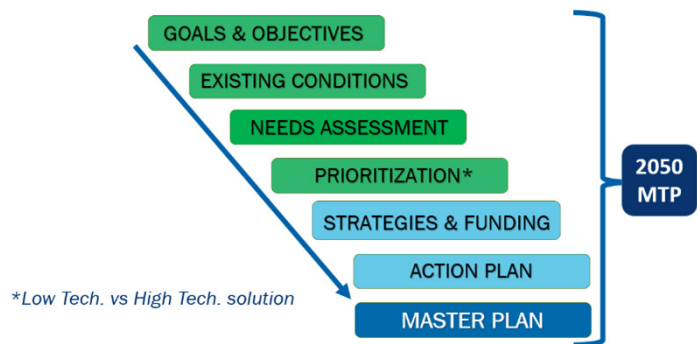


Figure 3. MetroPlan Orlando TSMO Master Plan framework. Source: MetroPlan Orlando.

MetroPlan Orlando's proactive approach to managing future transportation challenges through a comprehensive TSMO Master Plan and related initiatives is a good example of regional collaborations to advance planning for TSMO.

MODULE 3 – LOCAL AND RURAL CONSIDERATIONS FOR INTEGRATING OPERATIONS, SAFETY, AND MULTIMODAL PLANNING

City of Austin

Local and Rural Considerations for Integrating Operations, Safety, and Multimodal Planning in Austin, TX: Dan Hennessey, Chair of the ITE Planning Council and Project Development Program Lead at the City of Austin

Dan kicked-off Module 3 with a presentation focused on the Austin Strategic Mobility Plan and a few examples on how to incorporate safety, demand management, transportation infrastructure, TSMO, health and environment, in supporting your community.

Key takeaways:

- Austin's population and housing costs have skyrocketed, putting pressure on infrastructure and affordability.
- Land Use and Transportation Disconnect: disconnected development patterns contribute to traffic congestion and limited multimodal options.
- Traffic Safety: crash rates are a concern, with targeted safety projects underway.
- When thinking about TSMO, it is important to take a people-centered approach vs. thinking about cars. There needs to be consistency between highway improvements and transit improvements, for example.
- The Austin Strategic Mobility Plan represents a new way of thinking, with eight mobility goals: commuter delay, placemaking, travel choice, economic prosperity, affordability, sustainability, health and safety, and innovation.
- Project Connect: a major public transportation plan aims to expand rail and bus rapid transit.
- Vision Zero Austin: addresses safety concerns with focus on five categories: intersections, traffic signals, Highway Safety Improvement Program, pedestrian crossing, and speed management.
- Community Engagement: public input and funding support are crucial for successful implementation.

National Association of Development Organizations

Building Capacity for Intelligent Transportation Systems in Rural and Small Metropolitan Areas: Carrie Kissel, National Association of Development Organizations (NADO) Associate Director

Carrie presented on how to build capacity for Intelligent Transportation Systems (ITS) in Rural and Small Metropolitan Areas, exploring challenges and concerns specific to rural travel, how to improve safety through shared ITS assets, and how to improve traffic conditions and visitor experiences.

Key takeaways:

- NADO represents regional development organizations, including Rural Transportation Planning Organizations (RTPOs or RPOs). They advocate for policies that strengthen rural and small urban communities through regional strategies.
- 501c3 NADO Research Foundation provides capacity building for RTPOs/RPOs.
- 540 multi-jurisdictional regional development organizations exist across the country. They plan, identify projects, engage the public, and offer technical assistance for nonmetropolitan areas.
- NADO conducted studies on ITS implementation in rural areas for the USDOT ITS Joint Program Office. The 2020 rural ITS report addresses challenges and concerns specific to rural travel and why consideration and deployment of ITS in rural, small cities, and suburban locations when taking into consideration the effects of travel speeds and road conditions in rural areas, mountainous and coastal topography, harsh weather conditions, and the higher incidence of wildlife crossings. 18 case studies in 14 states and federal lands are included.
- Missouri RDOs: shared dynamic message signs, speed radar trailers, and a Safety Lab improved awareness and safety.
- Rocky Mountain National Park: dynamic message signs provided information to visitors, reducing congestion and park access issues.
- Fort Smith, AR: smart intersections and signal timing improved traffic flow and safety.
- Rural ITS Challenges to Implementation:
 - Lower traffic volumes than urban areas, a lower tax base to pay for ITS projects, less political clout (over urban areas).
 - Return on investment.
 - Less predictable or less frequent congestion patterns, such as construction, special events, or weather.
 - Regional context: physical barriers, rugged terrain, and available cellular network.
- Rural ITS Considerations and Opportunities:
 - Many “urban” technologies are scalable and applicable in rural and small urban areas.
 - Effective ITS projects can be low cost and low tech.
 - Partnerships: State DOT partnership is important for ITS discussion, broadband expansion, and setting statewide technology standards.
 - Capacity building: ITS training and technical assistance provide opportunities to define what ITS is, role of communications, role of RPOs.

MODULE 4 – REGIONAL COORDINATION AND COLLABORATION

Center for Urban Transportation Research

MPO-Centric TSMO Planning in the Central Florida Corridor: Jeff Kramer, Program Director with the Center for Urban Transportation Research at the University of South Florida

Central Florida faces significant congestion issues, costing billions annually. To address this, a TSMO Working Group was formed to collaborate and cultivate a culture of Transportation System Management and Operations (TSMO).

- Problem: congestion on major Central Florida corridors significantly impacts safety and the economy.
- Goal: establish a regional planning entity for MPOs to advance TSMO.

A framework was developed based on best practices and peer exchange:

- Identify current state: literature review and case studies.
- Develop framework: MPO-centered with potential for a regional entity.

Key success factors include:

- Develop critical processes and institutional arrangements: enable TSMO improvements to be seen as on par with other improvements.
- Identify Shared Priorities
- Identify a TSMO Champion
- Trust built through transparency and incremental progress.
- Formal structure and dedicated funding: intergovernmental agreements, memorandum of understanding/memorandum of agreements, Councils/Forums/Working Group, etc.

Recommended framework:

1. Develop a TSMO strategic plan.
2. Publish a work plan.
3. Publish an annual review.
4. Identify stable and dedicated funding mechanisms for specific purposes.
5. Provide dedicated staff.
6. Establish a clear governance structure and foster political support.
7. Develop an education and communication program.
8. Address equity within the regional TSMO framework (goals, objectives, performance measures, funding criteria)

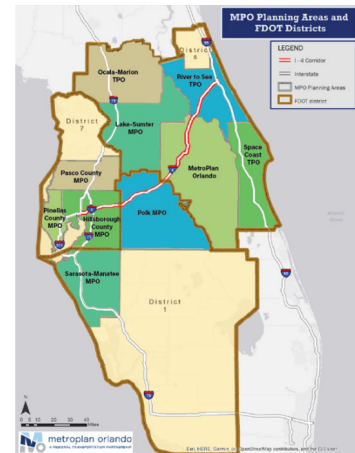


Figure 6. Central Florida MPOs.
Source: MetroPlan Orlando.

Niagara International Transportation Technology Coalition

Regional Coordination and Collaboration at NITTEC: Athena Hutchins, Executive Director at the Niagara International Transportation Technology Coalition

NITTEC, a bi-national coalition in Western New York and Southern Ontario, aims to improve mobility, reliability, and safety across the region through information sharing, coordinated operations, and advanced technologies. This presentation provided an overview of NITTEC and examples of planning for operations.

Key takeaways:

- Established in 1995, NITTEC is a multi-agency coalition with various members such as transportation agencies, border services, and emergency responders.
- Regional Operations: NITTEC handles various functions including Traveler Information, Border Traffic Management, Emergency Management, Incident Management, Construction Coordination, Traffic and Congestion Management, Weather System Monitoring, Special Event Planning and Management, Transportation System Monitoring, and Performance Measures Reporting.
- Regional Collaboration: NITTEC has centralized 24/7 operations and traffic management services for a bi-national region. Collaboration includes Information Clearinghouse, Standardized Operations, Multi-Agency Event Planning and Operations, Multi-Agency ITS Deployment, Regional Messaging Standards, and Traffic Management Plans. Regional training includes yearly workshops, tabletop exercises, special training sessions, and educational videos.
- Information Sharing: NITTEC provides traveler information through dynamic message signs, apps, and websites. Standardized operations and multi-agency planning ensure smooth traffic flow.
- Integrated Corridor Management (ICM): this project uses sophisticated modeling to identify effective traffic management strategies and incorporate new technologies.
- Advanced Transportation and Congestion Management Technologies Deployment Initiative (ATCMTD): this federally funded project focuses on improving border crossing performance, commercial vehicle operations, and overall regional mobility.
- AllRoads Solution: this system serves as a data hub and decision support system, integrating existing systems and providing real-time information.

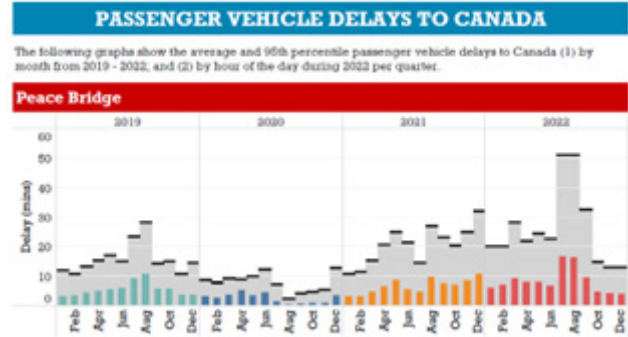


Figure 7. Border crossing reporting. Source: NITTEC.

Challenges and Lessons Learned:

- Selecting a consultant involved multiple years and RFPs due to protests and revisions.
- Dividing the project into a planning phase and implementation phase with separate RFPs improved clarity and efficiency.
- The consultant for planning phase remained on project to assist NITTEC in project management and review of deliverables, which has been invaluable given NITTEC's limited resources.

MODULE 5 – THE ROLE OF TSMO IN SUPPORTING USERS OF THE TRANSPORTATION SYSTEM

Minnesota DOT

The Role of TSMO in Supporting Users of the Transportation System in Minnesota: Brian Kary, Minnesota Department of Transportation (MnDOT) TSMO Director

In June 2019, MnDOT completed a comprehensive group of plans for their Transportation Systems Management and Operations (TSMO) program. These plans outline the strategic direction, justification, goals, and implementation strategies for optimizing the state's transportation system.

Key takeaways:

- TSMO aims to address increasing traffic congestion, improve safety, and enhance system reliability for all travel modes. MnDOT's original TSMO Plan included a Strategic Plan, an Implementation Plan, and a Business Plan, all completed in June 2019.



Figure 8. MnDOT Family of Plans. Source: MnDOT.

- The original implementation plan included 34 strategies such as improving pedestrian/bicycle service at signals, expanding HOT lanes, and deploying transit signal priority.
- Coming soon is an overarching TSMO Strategic Plan, which includes a series of tactical plans: Traffic Management, Signal Operations, Traveler Information, Road Weather Management, Traffic Incident Management, Work Zone Management, and Connected and Automated Vehicles.
- The proposed goals of the overarching TSMO Strategic Plan are:
 - Increase Safety of Public and Workers in the Right-of-Way
 - Improve System Reliability, Mobility, and Efficiency
 - Promote, Integrate, and Sustain a MnDOT TSMO Program
- Examples of specific strategies include:
 - Improve safety: support the Safe System approach, reduce fatal and serious injury crashes for all

road users, including vulnerable road users, prioritize worker safety, leverage connected/automated vehicle technology.

- Enhance mobility: reduce congestion for all modes, reduce delay across facilities and modes, provide alternatives to single-occupancy vehicles, minimize weather impacts, improve incident response times.
- Promote sustainability: foster a TSMO culture, secure funding, manage data effectively, engage partnerships, understand the implications of connected/automated vehicles.
- The new TSMO Strategic Plan will relate to the TSMO elements in the MnDOT Family of Plans.

Oregon Metro

The Role of TSMO in Supporting Users of the Transportation System in the Portland Region: **Caleb Winter, TSMO Program Manager at Oregon Metro**

This presentation summarized TSMO efforts in the Portland region to support all road users. Metro has done significant work to incorporate diversity and equity in everything they do, including TSMO. Key takeaways from the presentation are summarized below.

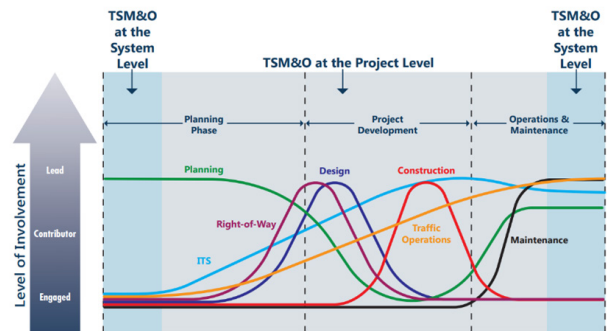


Figure 9. Level of involvement throughout the duration of a TSMO program. Source: FHWA.

- TSMO levels of engagement: the level of involvement of each discipline fluctuates throughout the stages of a TSMO program. The level of involvement of planners is at its peak in the initial stages of a project or program. Planners stay engaged during project development, although not in a lead role. During operations and maintenance, planners increase their participation, assuming a contributor role.
- Segregated housing landscape contributes to different transportation experiences, travel options, and safety conditions for road users. Metro considered three elements to address disparities in the Portland region through TSMO:
 - Progress: build on 10 years of TSMO progress.
 - Diversity: develop a strategy with a broader and more diverse set of voices.
 - Equity: approach TSMO with an equity focus.
- Equity focus: Metro agreed that “by addressing the barriers experienced by people of color, we will effectively also identify solutions and remove barriers for other disadvantaged groups.”
- Strategy for Equity: A “TSMO Equity Tree” guides Metro’s strategy, setting clear goals, objectives, and performance measures. At the tree top, evaluate and refine actions, being accountable to the result. Continue through the Strategies level to develop a solution step to a problem. Follow the branches and leaves of the tree through the Plans level to identify keys

to solving a problem. Start at the root and define a problem.

- Shifting Priorities:

In 2010	2021-2031
Equity was one of many outcomes	Begin projects with racial equity incorporated; people’s voices initiate priorities.
Multimodal approach to congestion	Whose congestion? What are the mobility and access needs?
Residential demographics	Voiced need and origin destination data.

- The presentation ended with Metro’s examples of TSMO capabilities, upgraded controllers and communications, next generation transit signal priority, pedestrian safety, and accessible, routable sidewalk data.

MODULE 6 – ADAPTING TO NEW NEEDS AND SUSTAINING TSMO

NOCoE SAC and ITE TSMO Council

Adapting to New Needs and Sustaining TSMO: Catalina Echeverri, Chair of the ITE TSMO Council, NOCoE SAC Member, and Transportation Operations Manager at Gannett Fleming

TSMO aims to optimize existing infrastructure for maximum efficiency, safety, and reliability. A comprehensive TSMO program should detail its purpose, vision, and mission, along with strategic goals and objectives. It can delve into the program’s organizational structure, encompassing its internal workings, budget processes, resource management, and quality control measures. Systems engineering, performance management, and data utilization are crucial aspects. The plan should detail staffing, resource inventories, financial planning, research and development, and communication strategies both within the organization and with external partners. Finally, the plan should lay out the implementation process, including planned services, activities, and deployment guidelines, concluding with performance assessment methods. This overarching structure ensures a well-defined and well-managed TSMO program focused on maximizing the potential of the existing transportation system.



Figure 10. TSMO program planning. Source: FHWA.

There are five key areas for TSMO sustainability: Operations & Maintenance (O&M), mainstreaming, workforce development, environmental considerations, and smart communities. By attending to these areas, TSMO programs can adapt to new needs and remain sustainable in the long term.

- O&M: best practices such as design reviews, infrastructure maintenance, and communication system upkeep.
- Mainstreaming: strategies including emphasizing benefits, fostering agency culture, building a business case, and using performance measures.
- Workforce: the critical role of diverse professionals beyond engineers and planners is acknowledged, along with challenges in attracting qualified candidates. NOCoE has good resources for workforce development: <https://transportationops.org/workforce>
- Environmental sustainability: EV infrastructure planning and resources were explored, along with the importance of considering environmental concerns within TSMO operations. ITE has an *Equity in Electric Vehicle (EV) Charging Infrastructure Resource Portal*: <https://www.ite-eveportal.org>
- Smart communities: affordability, cybersecurity, privacy, data integration, and smart community resources.

North Central Texas Council of Governments

Adapting to New Needs and Sustaining TSMO: Natalie Bettger, Senior Program Manager, Congestion Management and System Operation, North Central Texas Council of Governments (NCTCOG)

This NCTCOG presentation outlined key considerations for TSMO programs in the Dallas-Fort Worth region. NCTCOG manages transportation planning for a vast region exceeding the population of 38 states. The Regional Transportation Council (RTC) serves as the Metropolitan Planning Organization (MPO), and tackles challenges through TSMO quick and affordable solutions for smoother traffic flow. This presentation highlighted key considerations for successful TSMO implementation.

Adapting and sustaining TSMO need to consider the following:

- Partners
- Funding
- Agreement/Contract
- Data/ Technology/ Software

Key takeaways:

- Focus on low-cost, scalable solutions: TSMO prioritizes solving problems quickly and affordably rather than large-scale infrastructure projects.
- Collaboration is crucial: building strong partnerships with various entities, including TxDOT districts, is essential for success.
- Embrace data-driven decisions: utilize existing data sources, evaluate new ones, and leverage technology to analyze information and guide program development.

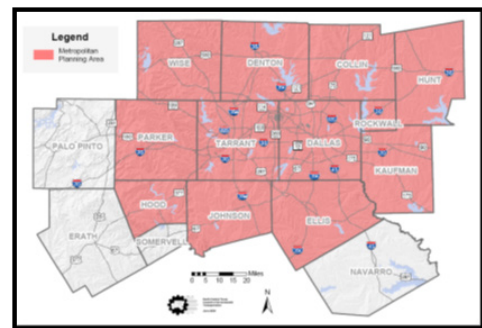


Figure 11. NCTCOG map. Source: NCTCOG.

- Clear funding strategies are vital: understand funding eligibility, explore innovative approaches, and ensure compliance with regulations (such as Buy America).
- Effective communication and integration are key: maintain constant communication with partners, policymakers, and the public, prioritize system integration, and ensure operational interoperability.

By following these strategies, TSMO programs can adapt to evolving needs and contribute to a more efficient and sustainable transportation system.

MODULE 7 – FHWA CONSIDERATIONS

Planning for TSMO – FHWA Considerations: Jim Hunt and Tracy Scriba, FHWA Office of Operations

Paradigm Shift:

- From operating completed projects to integrated throughout project lifecycle.
- From reactive to proactive and reactive.
- From average travel time to travel time reliability.
- From highways and jurisdictions to corridors and system.
- From individual strategies to integrated strategies.
- From cars and trucks to people and goods.

New Planning Reference:

- Updates the 2010 “Advancing Metropolitan Planning for Operations”.
- Includes new topics like data sharing, emerging mobility, and autonomous vehicles.
- Organized by key topics, objectives, and resources.

Key Considerations:

- Data sharing and integration
- Baseline TSMO inventory and maturity assessment
- Sustaining TSMO after initial implementation
- Planning for freight and TSMO
- TSMO project prioritization

Examples:

- Ohio DOT’s TOAST prioritization tool

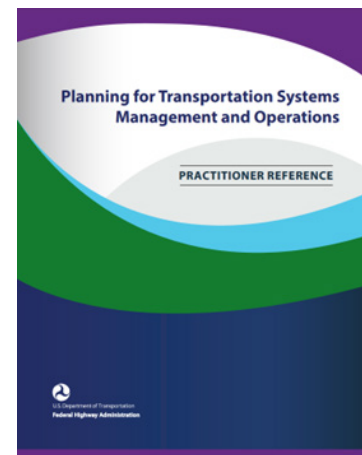


Figure 12. Planning for TSMO Practitioner Reference. Source: FHWA.

- Nevada DOT's TSMO evaluation tool

Resources:

- NHI Planning for TSMO courses <https://ops.fhwa.dot.gov/resources/news/trainingNews.htm>
- Planning for TSMO Practitioner Reference: <https://ops.fhwa.dot.gov/publications/fhwahop22019/fhwahop22019.pdf>
- Federal Highway Administration's "Organizing and Planning for Operations" web page: <https://ops.fhwa.dot.gov/plan4ops>
- Connecting TSMO and Planning: <https://ops.fhwa.dot.gov/publications/fhwahop18096/index.htm>
- Funding and Procurement:
 - <https://ops.fhwa.dot.gov/plan4ops/resources/memorandum/itsprocurementmemo092519.htm>
 - https://ops.fhwa.dot.gov/travelinfo/resources/ops_guide.htm

Questions for Discussion:

- Coordinating P4TSMO, TPM, and CMP.
- Incorporating travel time reliability in CMPs.
- Supporting project planning between programming and development.
- Ensuring TSMO sustainability and asset management.
- Using scenario planning and addressing future uncertainties.
- Role of demand management and coordination with P4TSMO.
- Coordinating TSMO planning with safety objectives and Complete Streets.
- Dynamic planning for day-to-day systems management.
- Coordinating P4TSMO with other plans.
- Role of TSMO Program Plans and evaluation in future planning.

Discussion comments:

Planning and Project Development:

- Challenge: Connecting long-range plans (CMP, MTP) to project development.
- Considerations:
 - Integrating TSMO projects effectively: budget allocation, organizational culture.
 - Influence of local agencies and elected officials.

- Operations and maintenance costs vs. project funding.
- System engineering role: how TSMO projects fit into existing infrastructure.
- Updating planning documents when projects deviate.
- Half of non-TMAs in the US don't require a CMP.
- Some states are reducing active traffic management projects.

Scenario Planning:

- Importance: accounting for uncertainties such as technology advancements and environmental issues.
- Examples:
 - DC vision plan.
 - Portland green smart model.
 - MDOT's TSMO approach as futureproofing.

Planning Horizon:

- Debate: 20 vs. 10-year horizons for long-range plans.
- Considerations:
 - Technology advancements in vehicles and autonomy.
 - Need for new infrastructure vs. TSMO for capacity expansion.

Funding and Flexibility:

- Challenge: using MPO plans for short-term needs and funding allocation.
- Strategies:
 - LRP signal enhancement as generic category for flexibility.
 - "Box funds" for quick response to emerging needs.
 - Flexible funding allocation within defined selection processes.

MODULE 8 – GROUP DISCUSSION AND NEXT STEPS FOR NOCOE

Group discussion summary and items NOCoE can explore:

Main Challenges:

- Safety: Lack of crash modification for TSMO, limited actionable data.
- Funding: Need for ongoing funding for programs and services, not just projects.
- Equity: Addressing disparities in resource allocation and program implementation.

- Workforce: Building a skilled workforce to manage TSMO programs.
- Private sector involvement: Declining private sector investment in mobility solutions.

Success Stories & Agency Needs:

- More relatable explanations and terms for non-technical audiences.
- Sharing success stories and case studies on different funding models.
- Leveraging universities for data expertise.
- Building community support through advisory committees and speakers bureaus.

NOCOe Support:

- Develop educational materials and resources.
- Connect agencies with relevant expertise and funding opportunities.
- Facilitate collaboration and knowledge sharing among agencies.
- Explore emerging mobility issues and their impact on TSMO:
 - TSMO's role after private capital exits: can TSMO facilitate discussion on the future of emerging mobility?
 - TDM integration: how can TSMO systems encourage multimodal behavior through emerging mobility options?
 - Regional models: can experiences from regional negotiations inform larger-scale implementation?
 - "Enterprise systems" for emerging mobility: defining and exploring its relevance for scaling up pilots.
 - Real-world examples of successful scaling: moving beyond the venture capital-driven model.
- Explore public ownership vs. private partnerships:
 - Historical lessons from public takeover of private transit: can we avoid repeating past mistakes?
 - Alternative models to full public ownership: exploring options such as e-bikeshare programs.
 - Determining the optimal balance between public control and private flexibility.
- Asset management topics:
 - Retirement and replacement strategies: focus on asset retirement, replacement, and cost savings potential.
 - Leveraging asset management: explore how participating in asset management practices can support cost savings while managing O&M expenses.
 - Modernize center-to-center communication: analyze the agreement at the peer exchange about outdated communication flows and explore modern solutions including internet, wireless, and cloud technologies.

- Balance easy and tough decisions: identify examples of both “easy” decisions (e.g., retiring Bluetooth readers) and “tough” decisions (e.g., supporting obsolete controllers) related to cost savings and O&M optimization.
- Equity and safety topics:
 - V2X Pilot Projects: explore the potential of MetroPlan Orlando’s V2X pedestrian pilot and similar projects to improve safety for vulnerable road users, particularly regarding travel time impact and effectiveness.
 - Vision Zero & Safe System Approach: discuss approaches to meet Vision Zero targets (e.g., Portland 2025) and further implement the Safe System Approach. Explore how Safe Systems for All funds can support safety planning and TSMO/ITS integration.
 - TSMO/ITS for Equity: identify and prioritize TSMO/ITS strategies (e.g., from the mentioned resource) that can address safety disparities for BIPOC and low-income communities.
 - Deployment Strategies: analyze how TSMO/ITS deployments can be targeted to reduce safety disparities for marginalized groups, ensuring equitable access and benefits.
 - Data & Evaluation: discuss data collection and evaluation methods to measure the effectiveness of TSMO/ITS strategies in promoting both safety and equity outcomes.
- Electric vehicles and electrification:
 - TSMO vs. EV Charging Buzz: should TSMO receive similar attention as EV charging within the Bipartisan Infrastructure Law?
 - Traveler Information for EVs: how can TSMO effectively provide real-time information on EV charging availability, payment options, and charging status, similar to gas stations for traditional vehicles?
 - EV Roadside Assistance: what role can organizations such as AAA play in assisting stranded EVs with charging issues? Is there a need for dedicated EV roadside assistance services?
 - Emergency Response for EVs: how can emergency responders be trained and equipped to handle incidents involving EVs, considering potential safety risks and unique weight concerns?
 - TSMO’s Contribution to BIL: how can TSMO contribute to the goals of the Bipartisan Infrastructure Law, both in terms of providing accurate traveler information and addressing safety concerns related to EVs?

ACKNOWLEDGEMENTS: PEER EXCHANGE CONTRIBUTORS

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Planning Committee

- Eric Hill (MetroPlan Orlando)
- Jim Hunt (FHWA)
- Tracy Scriba (FHWA)
- Adam Hopps (NOCoe)
- Luana Broshears (ITE)
- Matt Hardy (ITE)
- Syed Ahnaf Morshed (ITE)
- Doug Noble (ITE)

Contributors

- Alexandra Lopez (FDOT)
- Athena Hutchins (Niagara International Transportation Technology Coalition)
- Brian Kary (Minnesota DOT)
- Caleb Winter (Oregon Metro, TRB co-chair TSMO Planning for Ops Subcommittee)
- Carole Delion (Delion Consulting, former Maryland SHA)
- Carrie Kissel (National Association of Development Organizations)
- Catalina Echeverri (GF, NOCoE SAC, ITE TSMO Council)
- Chester Osborne (Massachusetts DOT)
- Dan Hennessey (City of Austin, ITE Planning Council)
- Debra Nelson (New York State Department of Transportation)
- Eileen Singleton (Baltimore Metropolitan Council)
- Eric Rensel (GF, NOCoE SAC, ITE Council Leadership Team)
- Erin Flanigan (ARA)
- Margaret Herrera (Maricopa Association of Governments)
- Jeff Kramer (Center for Urban Transportation Research)
- Jennifer Portanova (North Carolina DOT)
- Jocelyn Bauer (Leidos/TRB co-chair TSMO Planning for Ops Subcommittee)
- Justin Yoh (Ohio DOT)
- Les Jacobson (WSP)
- Natalie Bettger (NCTCOG)
- Marc Jacobson (City of San Antonio, ITE NCUTCD Delegation)
- Nicholas King (New Hampshire DOT)
- Ray Webb (Mid-America Regional Council)
- Shane McKenzie (Kentucky Transportation Cabinet)
- Warren Henry (Maryland SHA)