ODOT Transportation Systems Management & Operations Plan

Goals and Objectives Brief

Prepared for:

OHIO DEPARTMENT OF TRANSPORTATION

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Introduction

Historically, state departments of transportation (DOT), including Ohio DOT (ODOT), have focused efforts and resources primarily on construction and maintenance activities. Limited focus and resources have been placed on daily operational needs. The Federal Highway Administration (FHWA) has highlighted, through their Office of Operations, the Fixing America's Surface Transportation (FAST) Act, and Moving Ahead for Progress in the 21st Century (MAP-21) legislation, the need for state DOTs to strategize, implement, and evaluate the integration of systems management and operations into the agency. This requires an ongoing, iterative process that evaluates strengths, weaknesses, opportunities, and threats (SWOT) within the context of other agency plans and initiatives while taking into consideration relationships and interactions with stakeholders. As technology and demands on infrastructure change and funding and resources become more strained, ODOT must be positioned to meet these challenges and increase efficiency in the existing system through operational improvements.

To this end, ODOT developed a Transportation Systems Management and Operations (TSMO) Plan. ODOT's TSMO Plan will serve as a road map to guide the Department as it continues to integrate operations, asset management, and preservation into the organization. The TSMO Plan is the basis for statewide policy and process changes aimed at increasing the focus and execution of traffic operations to better meet future system needs.

This technical brief describes the early stages of developing ODOT's TSMO Plan. It explains the process of forming and facilitating committees, meetings, staff interviews, and workshops. As a result of extensive research and collaboration with ODOT staff and leadership, the project team created Goals and Objectives and a preliminary Policy Framework for ODOT's TSMO Plan. Collectively, the Goals and Objectives serve as a basis for defining strategies that will ultimately guide ODOT to the efficient management of a safe and reliable transportation system that supports the state's economic vitality.

Developing the TSMO Plan

Two committees within ODOT are guiding the process to develop a statewide TSMO Plan. The first committee is a technical advisory committee (TAC) and the second committee is a steering committee. These two committees provide feedback and guidance to the project team.

The project team gathered information from a variety of sources to develop the TSMO Plan's Goals and Objectives and Policy Framework. Methods of data gathering included group interviews with ODOT staff, workshops, surveys, and collaboration with both the TAC and steering committee. Resources included ODOT's Scan Tour data and recommendations, business plans, documents and studies that guide ODOT decisions and practices, internal organizational charts, and national best practices as presented in the Setting the Stage Brief.

Technical Advisory Committee (TAC)

The TAC includes Central Office personnel from Traffic Operations, Planning, Engineering, and Communications, District personnel from five Districts, as well as representatives from the Federal Highway Administration (FHWA) Ohio Division Office. **Table 1** on the following page shows the TAC roster.

The TAC guides the TSMO Plan development on a regular basis and gives feedback to the team through bi-monthly conference calls and topic-specific meetings. The TAC also reviews draft technical briefs and other products for workshops and meetings.

Steering Committee

The steering committee includes ODOT Executive leadership, Deputy Directors and other personnel who meet monthly. The ODOT TSMO project managers provide monthly briefs on the progress of the TSMO Plan.

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Table 1: TAC Committee Members

Name	District/Office
Alan Craig	District 10 Capital Program Mgmt.
David Holstein	Roadway Engineering Administrator
David Slatzer	Division of Engineering Deputy Director
Jason Yeray	Traffic Operations Administrator
John MacAdam	Traffic Operations Project Manager
Justin Yoh	District 7 Operations Engineer
Matt Parrill	District 7 Capital Program Mgmt.
Michael Herceg	District 12 Capital Program Mgmt.
Nick Hegemier	Traffic Operations
Paul Pegher	Innovative Delivery
Randy Chevalley	District 7 Deputy Director
Scott Phinney	Statewide Planning & Research Administrator
Sonja Simpson	District 5 Deputy Director
Tammy Campbell	District 8 Deputy Director
Tom Corey	Division of Highway Operations Deputy Director
Treea Sekela	FHWA Ohio Division Office
Ty Thompson	District 5 Capital Program Mgmt.
Vicky Fout	Planning Project Manager

ODOT Interviews

The project team conducted over 30 interview sessions with ODOT personnel related to TSMO. The purpose of the interviews was to:

1. Discover the level of TSMO understanding.
2. Understand current roles and responsibilities.
3. Discuss how TSMO impacts areas of business.
4. Explore existing challenges and new challenges TSMO may bring.
5. Discuss positive impacts of TSMO on ODOT's future.

Participants were encouraged to speak freely. The information gained from these discussions directly influenced the TSMO Plan's Goals and Objectives and Policy Framework. ODOT personnel from the following areas participated in interviews:

- Asset Inventory and System Integration
- Aviation
- Connected and Automated Vehicle Initiative
- Construction
- Division of Information Technology
- Division of Operations
- Emergency Operations and Incident Management
- Finance
- Innovative Delivery
- Maintenance
- Planning and Capital Programs
- Project Management: Safety Program
- Rail
- Roadway Engineering
- Sign Shop
- Special Hauling Permits
- Statewide Planning and Research
- Technical Services
- TMC
- Traffic Operations
- Transit
- Transportation Information Mapping System Team
- UAS Center
- Work Zones

A summary of all interview sessions with ODOT staff is available in the supporting document "ODOT Interviews Summary."

TSMO SWOT/CMM Workshop

In October 2016, the project team facilitated a workshop to discuss strengths, weaknesses, opportunities, and threats (SWOT) related to TSMO activities. The attendees included TAC members and other TSMO specialists. The group exchanged ideas for best practices and visions for the future through the evaluation of 20 TSMO functions, which was completed using a Capability Maturity Model (CMM) analysis. Results are summarized in CMM/SWOT Workshop Report.

Capability Maturity Model Overview (CMM)

The Capability Maturity Model is widely used for various applications in the Information Technology world.

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The CMM is an approach to review common barriers to adoption and success of TSMO. The model allows for a rigorous common understanding and improvement of institutional issues that an agency faces on a continual and consistent basis.

By understanding and using a CMM, agencies can:

- Develop consensus around needed agency improvements.
- Identify immediate priorities for improvements.
- Identify concrete actions to continuously improve capabilities to plan, design, and implement TSMO.

Consistent with the AASHTO Guidance, capabilities of agencies are described in the same six dimensions:

1. **Business Processes** including formal scoping, planning, programming, and budgeting.
2. **Systems and Technology** including use of systems engineering, systems architecture standards, interoperability, and standardization.
3. **Performance Measurement** including definition of measures, data acquisition, and data utilization.
4. **Culture** including technical understanding, leadership, outreach, and program legal authority.
5. **Organization and Staffing** including programmatic status, organizational structure, staff development, and recruitment and retention.
6. **Collaboration** including relationships with public safety agencies, local governments, metropolitan planning organizations (MPOs), and the private sector.

For each of the dimensions, the same four levels of capability are used in the framework:

- **Level 1** – Activities and relationships largely ad hoc, informal and champion-driven, substantially outside the mainstream of other DOT activities.
- **Level 2** – Basic strategy applications understood; key processes support requirements identified and key technology and core capacities under development, but limited internal accountability and uneven alignment with external partners.
- **Level 3** – Standardized strategy applications implemented in priority contexts and managed for performance; technical and business processes developed, documented, and integrated into DOT; partnerships aligned.
- **Level 4** – Full, sustainable core DOT program priority, established on the basis of continuous improvement.

By following a structured process, agencies can self-identify their current and desired levels of capability for each dimension. **Figure 1** illustrates the actions related to each level of the CMM rating scale. **Figure 2** on the following page shows the CMM results for each of the 20 TSMO functions and shows average ratings for the six dimensions.

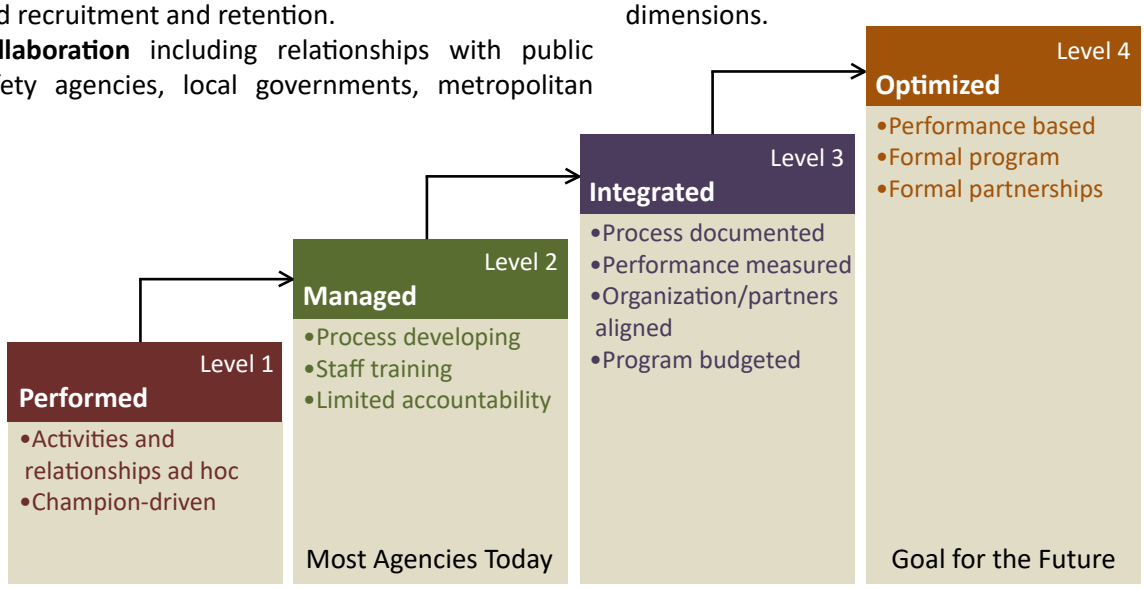

Figure 1: CMM Action Levels

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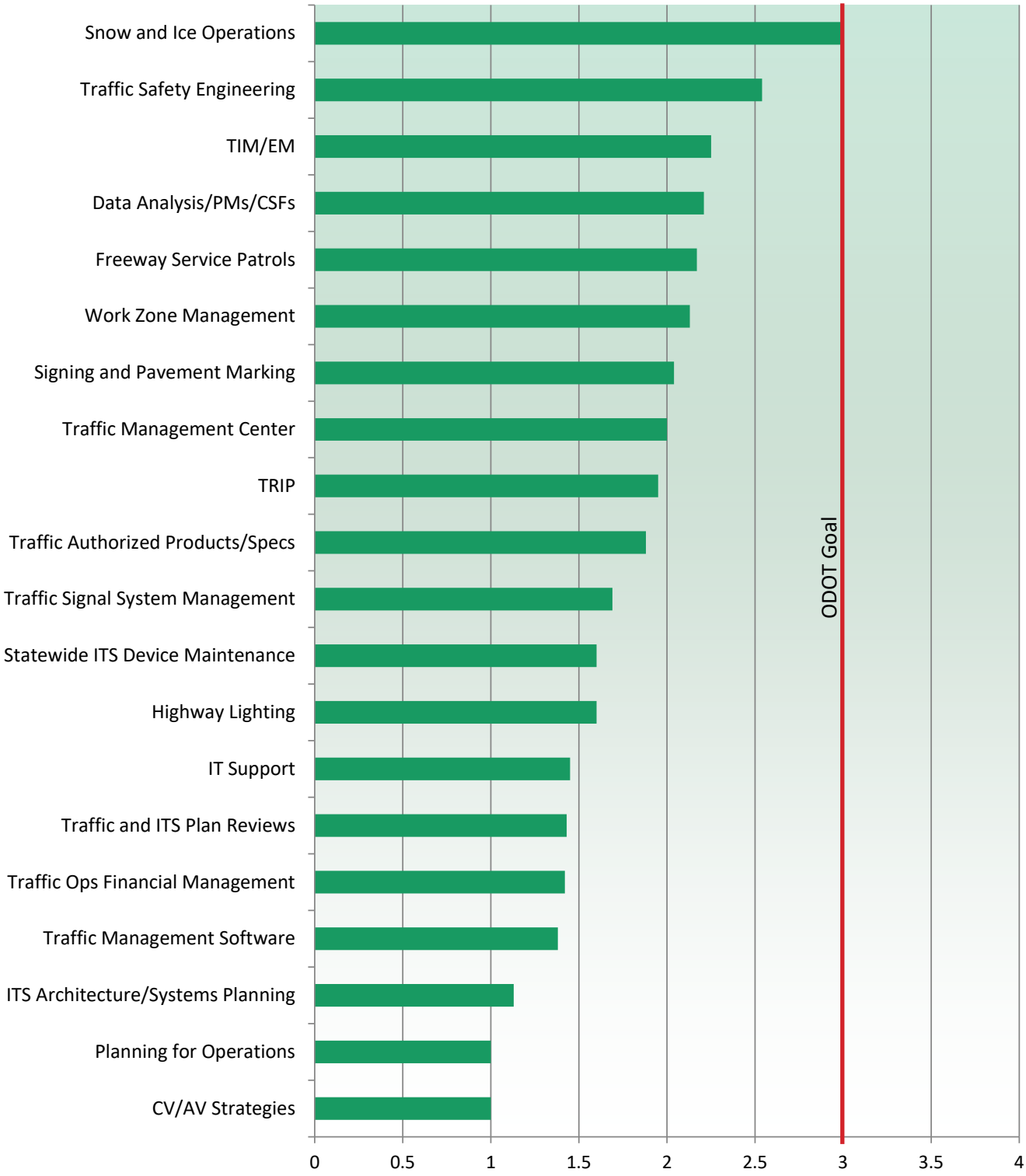

Figure 2: ODOT CMM Results

Internal ODOT TSMO Survey

In October 2016, 587 ODOT employees completed an online TSMO survey. The purpose of the survey was to establish a baseline for communicating the TSMO Plan to all ODOT employees, gauge how much is known internally about TSMO, and understand what level of agreement ODOT employees have as to whether TSMO strategies can help solve some of Ohio's congestion issues.

Key Findings:

1. TSMO is a largely unfamiliar process and concept within ODOT. However, once the term is explained and divided into specific functions personnel understand that in many cases they are already engaged in some form of TSMO.
2. A majority of ODOT personnel agree that most traffic congestion is the result of non-recurring incidents, more capacity can be "squeezed" out of the system and customers have increased expectations for information about and problem solving of these incidents.
3. ODOT personnel overwhelmingly agree that TSMO concepts can help meet customer expectations and cooperation among all ODOT business units is critical.
4. ODOT personnel overwhelmingly believe that establishing clear TSMO goals, developing a business case, prioritizing actions, and providing adequate resources is key to TSMO success.
5. ODOT personnel agree that increasing awareness of TSMO and developing internal champions is critical for success.

Further analysis of the responses can be found in the First District Workshop Report.

ODOT District Workshops

Three workshops were planned during development of the TSMO Plan. In November 2016, an educational workshop initiated the engagement of ODOT Districts in the TSMO Plan's development. Fifty-five ODOT personnel representing all 12 Districts attended. The objectives of the workshop were to:

- Engage Districts in conversation about the TSMO Plan – its value to ODOT and implementation.
- Discuss how TSMO will benefit ODOT at all levels.
- Discuss what ODOT is already doing and present ideas for future plans.
- Understand District needs and challenges related to current processes and organization.
- Share ideas on how TSMO fits within the framework of ODOT.
- Gain insight on how to communicate TSMO within ODOT.
- Increase ODOT's level of TSMO understanding.

The program consisted of ODOT and FHWA speakers as well as breakout sessions to analyze District organizational structure related to TSMO functions, and to conduct SWOT analyses on specific areas of TSMO. The results of this workshop informed the Policy Framework recommendations and Communications Plan.

The second workshop was held in February 2017, with over 50 ODOT District and Central Office staff in attendance. Although brief updates were given at the beginning of the workshop, the primary focus was to involve the Districts in shaping the recommendations of the TSMO Plan. To this end, the project team led an open discussion between district employees about challenges and opportunities they may face when implementing TSMO. The discussion covered the following topics:

- Role of District TSMO Coordinators
- Resource Alignment
- Relationship with Local Jurisdictions
- TSMO Training Requirements and Qualifications

The workshop concluded with small groups organized to identify District operational hot spots and potential TSMO strategies to relieve congestion.

The third workshop was held in June 2017, with over 60 ODOT District and Central Office staff in attendance. There were several goals of the workshop:

- Review scope and substance of the Draft TSMO Plan, with emphasis on roles and benefits across Districts and Divisions.
- Invite and address District representative feedback.

- Initiate regional conversations about challenges and opportunities related to implementation.

The project team presented an overview of ODOT's Draft TSMO Plan, discussing and answering questions related to the Plan Summary. ODOT staff presented current examples of TSMO applications in the Districts. The workshop also included an in depth policy brief discussion, performance measures presentation, and FHWA presentation, followed by small group discussions.

For more information on the District workshops, refer to the District Workshop Reports.

ODOT TSMO Philosophy

ODOT's Mission is the foundation of the Department's Strategic Plan, guiding all aspects of its programs and policies:

ODOT's Mission
To provide easy movement of people and goods from place to place, we will:

1. Take care of what we have;
2. *Make our system work better;*
3. Improve safety;
4. Enhance capacity.

While ODOT's Transportation Asset Management Plan focused on the first item, the TSMO Plan focuses on the second item. Once the TSMO Plan is successfully implemented, advances in improved safety and enhanced capacity — the third and fourth items, respectively — will follow.

TSMO Vision
The TSMO Plan's vision is summarized in the following statement:

TSMO strategies and principles guide the efficient management of a safe and reliable transportation system that supports Ohio's economic vitality.

TSMO Strategic Goals and Objectives

A well-structured and managed TSMO Program will provide ODOT the ability to meet current and future operational challenges. This is a shift in philosophy from a Build-and-Maintain focus to a Monitor-and-Operate focus that leverages data and technology applications. Ohio's TSMO Plan includes Goals, Strategic Objectives, and Program Objectives. These elements guided development of specific operational strategies described in the Policy Action Brief.

The TSMO Strategic Goals and Objectives, shown in **Table 2** on the following page, provide a basis for the structure, strategies, actions, and management of the TSMO Program. The goals and objectives reflect and reinforce ODOT's overall mission.

The Strategic Objectives clarify each goal at the highest levels of ODOT. **Table 3**, on the following page, highlights how the TSMO Strategic Goals align with the Access Ohio 2040 Long Range Transportation Plan goals.

TSMO Program Objectives
Each Strategic Objective is further broken down and framed within the context of TSMO Program Objectives (**Table 4**). Each Program Objective is assigned to one of two categories:

- **System Performance-Oriented** – Need to monitor and measure outcomes of how the overall transportation network performs.
- **Organization-Oriented** – Requires a variety of activities related to how ODOT is organized to support TSMO including its business processes, culture, and coordination with partners.

Collectively, as shown in **Table 4**, the Strategic and Program Objectives provide a mechanism to manage the overall effectiveness of the TSMO Program and provide a basis for prioritization and programmatic decision-making to deliver an effective TSMO Program in Ohio. A detailed description for each Program Objective can be found in **Appendix A**.

Table 2: TSMO Strategic Goals and Objectives

Strategic Goal	Strategic Objective
1. Safety	Reduce crash frequency and severity.
2. Reliability	Improve transportation system reliability, increase system resiliency, and improve highway capacity in critical corridors.
3. Efficiency	Minimize traffic delay and maximize transportation system efficiency to keep traffic moving.
4. Access	Provide ease of access and mobility choices to customers.
5. Coordination	Engage all ODOT disciplines and external partners to proactively manage and operate the transportation system.
6. Integration	Incorporate TSMO strategies throughout ODOT's transportation planning, design, construction, maintenance, and operations activities.
7. Security	Leverage TSMO strategies to provide a safe and secure transportation network.

Table 3: TSMO and Access Ohio 2040 Goals

TSMO Strategic Goal	Access Ohio Goal					
	Preservation	Mobility & Efficiency	Accessibility & Connectivity	Safety	Stewardship	Economic Development
1. Safety				■		
2. Reliability		■				■
3. Efficiency	■	■			■	■
4. Access			■			
5. Coordination					■	■
6. Integration					■	
7. Security				■		

Table 4: TSMO Program Objectives (continued on following page)

Goal	Strategic Objective	Program Objective	Primary Category	
			System Performance	Organization
Safety	Reduce crash frequency and severity.	Reduce overall commercial vehicle crashes.	■	
		Reduce secondary crashes caused by traffic incidents.	■	
		Reduce work zone related crashes.	■	
		Reduce roadside "struck by" incidents.	■	
		Reduce the number of fatalities.	■	
		Reduce the number of serious injury crashes.	■	
		Reduce total number of crashes.	■	
Reliability	Improve transportation system reliability, increase system resiliency, and improve highway capacity in critical corridors.	Maximize free flow travel time on Ohio's freeway system.	■	
		Increase resilience of the transportation system to winter weather events.	■	
		Reduce incident clearance.		■
		Reduce roadway clearance.		■
		Reduce incident related roadway closures.		■
		Maximize equipment and communications reliability.		■
		Optimize travel time reliability on major freight corridors.	■	

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Goal	Strategic Objective	Program Objective	Primary Category: System Performance	Primary Category: Organization
Efficiency	Minimize traffic delay and maximize transportation system efficiency to keep traffic moving.	Optimize signalized corridors.	■	
		Respond to and clear heavy vehicle incidents as quickly as possible (e.g., TRIP).		■
		Expand TMC surveillance and management capabilities.		■
		Manage TMC staff workload.		■
		Reduce work zone traffic delays.	■	
Access	Provide ease of access and mobility choices to customers.	Provide timely, accurate, and comprehensive information to customers.		■
		Accommodate bicycle, pedestrian, and transit in transportation management and operations.		■
		Provide specialized information for commercial vehicle drivers.		■
Coordination	Engage all ODOT disciplines and external partners to proactively manage and operate the transportation system.	Hold after action review (AAR) meetings for 100% of incidents that exceed clearance goals.		■
		Broaden coverage of TMC engagement with external partners.		■
		Partner with local agencies.		■
		Provide consistent incident response and management across the state.		■
Integration	Incorporate TSMO strategies throughout ODOT's transportation planning, design, construction, maintenance, and operations activities.	Integrate and standardize all ODOT data systems.		■
		TMSO considered as an integral part of highway projects.		■
		TSMO strategies included in ODOT and MPO long range plans.		■
Security	Leverage TSMO strategies to provide a safe and secure transportation network.	Monitor key transportation assets/events to prevent harmful acts.		■
		Promote TSMO tools to improve Emergency Management.		■
		Strengthen ODOT's traffic operations IT infrastructure.		■

ODOT TSMO Policy Framework

In support of the TSMO Plan's Strategic Goals and Objectives, the Team developed a list of policy related actions organized by CMM dimension. These actions were developed from the staff interview analysis, workshops, review of business plans, staffing plans, organizational charts for Central Office and the Districts, and ODOT's SHRP2 Scan Tour recommendations.

Table 5 contains a list of recommended policy actions organized by Capability Maturity Model (CMM) dimension. It shows which areas of ODOT could be responsible for leading each policy action (Central Office, Districts, or both):

Tier 1

- Tier 1 actions are those currently being developed/ performed or can begin immediately. In general, the Tier 1 recommendations do not require additional resources beyond dedicated ODOT staff time.

Tier 2

- Tier 2 actions are those that will be either dependent on a Tier 1 action or the completion of the Draft ODOT TSMO Plan in order to provide guidance to the action.

Tier 3

- Tier 3 actions are considered longer-term actions by TSMO standards.

For detailed information on policy actions, refer to the "Policy Action Brief."

The policy actions in **Table 5** align with a four-year TSMO Program Plan as well as the recommended four-year major update cycle for the TSMO Plan.

Details related to each action will be developed and/ or refined as ODOT's TSMO Plan progresses toward implementation.

Time frame and duration recommendations are subject to change based on ODOT's discretion and availability of needed resources.

Table 5: Recommended Policy Actions

Dimension	Recommended Action	Lead		Tier 1	Tier 2	Tier 3
		Central Office	District			
Business Processes (BP)	BP1. Develop a Traffic Operations Assessment Systems Tool (TOAST).	◊		■		
	BP2. Establish TSMO equipment (Signals/ITS) as a Tier 1 asset.	◊	◊	■		
	BP3. Include TSMO in Project Initiation Package (PIP) and Project Development Process (PDP).	◊	◊	■		
	BP4. Formalize design plan review process for TSMO-related projects and components of projects.	◊	◊	■		
	BP5. Partner with other states and agencies for contracts/ product data resources/products/product testing.	◊		■		
	BP6. Develop a four-year TSMO Program Plan with funding sources and identified budgets.	◊	◊	■		
	BP7. Include TSMO in Long Range Transportation Planning (MPOs, RTPOs, and ODOT).	◊			■	
	BP8. Develop TSMO policies, procedures, and guidance documents.	◊			■	

Table 5: Recommended Policy Actions

Dimension	Recommended Action	Lead		Tier 1	Tier 2	Tier 3
		Central Office	District			
Systems and Technology (ST)	ST1. Dedicate staff and resources to support emerging technology and innovative partnership efforts at ODOT.	◊		■		
	ST2. Pursue interim Traffic Management Center upgrades and improvements.	◊		■		
	ST3. Develop a more efficient work order system to replace OSIS.	◊	◊		■	
	ST4. Develop TSMO-based operations master plan for critical corridors.	◊	◊		■	
	ST5. Implement TSMO-based operations master plan for critical corridors.	◊	◊		■	
	ST6. Implement consistent benefit-cost analysis for all project alternatives that allows assessment of TSMO strategies.	◊	◊		■	
	ST7. Establish regional level remote Traffic Management Center capabilities – provide regional support/backup for major events.	◊	◊		■	
	ST8. Develop Traffic Management Center Decision Support Systems.	◊				■
	ST9. Dedicate resources to upgrade highway lighting systems – deploy ITS lighting assets to reduce life cycle costs.	◊	◊			■
	ST10. Establish a new statewide Traffic Management Center.	◊				■
	ST11. Implement and maintain Unmanned Aircraft Traffic Management (UTM) operations.	◊				■

Table 5: Recommended Policy Actions

Dimension	Recommended Action	Lead		Tier 1	Tier 2	Tier 3
		Central Office	District			
Performance Measurement (PM)	PM1. Formalize and expand TSMO performance measures program.	◊		■		
	PM2. Develop and share routine District and Statewide performance reports.	◊			■	
	PM3. Develop TSMO Dashboard.	◊			■	
Culture (CU)	CU1. Integrate TSMO in the guiding documents of the Department (ODOT Business Plan, Strategic Plan).	◊		■		
	CU2. Develop and maintain a TSMO business case report with Ohio data.	◊		■		
	CU3. Develop and implement an internal communications plan.	◊			■	
Organization and Staffing (OS)	OS1. Establish TSMO job descriptions and classifications, including new TSMO-oriented career paths, retention, and succession plans.	◊		■		
	OS2. Establish TSMO organizational guidelines.	◊	◊	■		
	OS3. Establish TSMO Coordinator for each District.		◊	■		
	OS4. Identify and develop TSMO leaders through participation in national dialogue.	◊	◊		■	
	OS5. Develop sustainable TSMO training program for ODOT.	◊	◊		■	
	OS6. Establish regional unmanned aircraft flight teams.	◊			■	
	OS7. Develop backups to support needs related to TSMO strategies.	◊	◊			■

Table 5: Recommended Policy Actions

Dimension	Recommended Action	Lead		Tier 1	Tier 2	Tier 3
		Central Office	District			
Collaboration (CO)	CO1. Engage external partners (MPOs, RPOs, Turnpike, and Locals) to promote TSMO policies, procedures, and protocols.	◊	◊	■		
	CO2. Create and maintain a TSMO Council.	◊	◊	■		
	CO3. Expand and improve multi-jurisdictional traffic signal management.	◊	◊		■	
	CO4. Expand Traffic Incident and Emergency Management strategies to build additional stakeholder relationships – encourage collaboration.	◊	◊		■	
	CO5. Develop integrated Freeway and Arterial Advanced Traffic Management Systems with ability to support multi-jurisdictional operations.	◊	◊			■
	CO6. Develop ongoing, non-traditional university partnerships to provide TSMO services and products and support data needs.	◊				■
	CO7. Formalize ODOT's Unmanned Aircraft System investments as a shared service with other governmental agencies.					■

Appendix A: Program Objective Descriptions

Goal	Program Objective	Description
Safety	Reduce overall commercial vehicle crashes.	Commercial vehicle crashes create severe disruptions to the transportation system. By reducing the number and severity of commercial vehicle crashes, the transportation system will operate more efficiently.
	Reduce secondary crashes caused by traffic incidents.	FHWA estimates that 20% of all crashes are secondary crashes. The severity of secondary crashes is also higher than typical crashes. Enhanced traffic incident management (TIM) policies and procedures that target secondary crash reduction will improve both safety and mobility.
	Reduce work zone related crashes.	While highway fatalities are declining overall, there has been a slightly higher rate of decline in work zone fatalities. This is likely due to safety measures and public education. Further work in the areas of work zone design, educational campaigns, and technology applications can help make positive impacts in this area.
	Reduce roadside "struck by" incidents.	"Struck by" crashes are crashes involving roadside workers or emergency responders. They can be caused by operator error or errors in procedure. To address this issue, training is critical to maintaining a safe work environment. Work zone traffic control design is also a key factor.
	Reduce the number of fatalities.	A crash resulting in a fatality is the most severe crash event. It is a reminder that the transportation system must be designed and operated to limit to whatever extent possible these events. System design, technology, and driver education can all play a critical role in reducing fatalities.
	Reduce the number of serious injury crashes.	Serious injury crashes are life changing events. Like fatalities, it is a reminder that the transportation system must be designed and operated to limit to whatever extent possible to reduce these events. System design, technology, and driver education can all play a critical role in reducing serious injury crashes.
	Reduce total number of crashes.	By implementing strategies to reduce fatalities and serious injury crashes, the total number of crashes should also see a reduction.

Appendix A: Program Objective Descriptions, continued

Goal	Program Objective	Description
Reliability	Optimize travel time reliability on Ohio's freeway system.	The travel time reliability index (TTRI) measures the percent of time motorists experience free flow travel time. It describes the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day.
	Increase resilience of the transportation system to winter weather events.	The Volpe Center 2014 document entitled Transportation System Resilience, Extreme Weather and Climate Change identified four forces for increasing resilience: 1) Assessment of climate-change risks and vulnerabilities; 2) Adaptation strategies; 3) Mitigation of the consequences; and 4) Planning for resilient infrastructure systems.
	Incident clearance.	"Incident" Clearance Time is defined as the time between the first recordable awareness of the incident and the time at which the last responder has left the scene.
	Roadway clearance.	"Roadway" Clearance Time is defined as the time between the first recordable awareness of an incident (detection, notification or verification) by a responding agency and first confirmation that all lanes are available for traffic flow.
	Reduce incident related roadway closures.	Roadway closures that are the direct result of an incident can have significant impacts on the transportation system. These could be caused by crashes, weather events, or other unforeseen events.
	Equipment and communications reliability.	Reliability is the ability of a system or component to function under stated conditions for a specified period of time. Communication and ITS system reliability is an important measure because it directly relates to transportation operations professionals' ability to complete their tasks.
	Optimize travel time reliability on major freight corridors.	This measure is the same as the "optimize travel time reliability on Ohio's freeway system" objective, but specific to freight corridors.

Appendix A: Program Objective Descriptions, continued

Goal	Program Objective	Description
Efficiency	Optimize signalized corridors.	To improve the efficiency of signalized intersections, transportation professionals must make sure that equipment, such as signal heads, control boxes, and sensors, are functioning optimally, and that the data, which include traffic volumes and intersection specific traffic movements, are current and reliable.
	Respond to and clear heavy vehicle incidents as quickly as possible (e.g., TRIP).	Traffic Incident Quick Clearance is the practice of rapidly and safely removing temporary obstructions—such as disabled, wrecked, or abandoned vehicles, and spilled cargo—from the roadway. Quick Clearance practices are intended to enhance motorist and responder safety as well as reduce traffic congestion and delays.
	Expand Transportation Management Center surveillance and management capabilities.	Operations staff use Closed Circuit Television (CCTV) surveillance to verify and detect incidents for the proper coordination of incident management resources. Proactive use of CCTV cameras helps to improve the TMC's incident management productivity, dispatch response times, and performance measures by providing early detection, incident verification, increased visual coverage, and most importantly, motorist safety.
	Manage TMC staff workload.	One of the most complex procedures in assuring an efficient and well-prepared TMC shift operation is its staffing. Proper staffing will determine whether the operation meets the expectations of both the TMC's internal and external customers. A staffing model can be useful in the short range planning of weekly schedules and daily work role assignments. It can also be used to forecast the demand for future staffing levels.
	Reduce work zone traffic delays.	The traffic flow is disrupted and delayed at a work zone because the traffic capacity and the vehicle speeds are lower in the work zone than on other portions of the roadway. Traffic delays at a work zone include delays caused by deceleration of vehicles while approaching the work zone, reduced vehicle speed through the work zone, time needed for vehicles to resume freeway speed after exiting the work zone, and vehicle queues formed at the work zone.

Appendix A: Program Objective Descriptions, continued

Goal	Program Objective	Description
Access	Provide timely, accurate, and comprehensive information to customers.	Transportation system operations in the 21st century require efficient management to reduce congestion, delay, and air pollution. Providing real-time information to travelers allows them to reschedule or re-route trips away from traffic incidents, construction zones, road closures, and transit service changes, thereby improving travel time reliability, safety, and the quality of life.
	Accommodate bicycle, pedestrian, and transit in transportation management and operations.	Federal legislation in Title 23 of the United States Code § 217 provides the funding mechanisms, planning requirements, and policy tools necessary to create more walkable and bicycle-friendly communities. Two current DOT initiatives, Ladders of Opportunity and Safer People, Safer Streets, both help plan for safer, better connected bicycling and walking networks.
	Provide specialized information for commercial vehicle drivers.	Although access to safe and convenient parking areas for trucks is essential for a robust freight transportation network, truck drivers consistently have difficulty finding areas to safely rest. In response to these concerns a multi-state Regional Truck Parking Information and Management System (TPIMS) is being funded through a $25 million Federal TIGER grant.

Appendix A: Program Objective Descriptions, continued

Goal	Program Objective	Description
Coordination	Hold after action review (AAR) meetings for 100% of incidents that exceed clearance goals.	Follow-up reviews or assessments of incidents after their occurrence are important to discuss what went well and what actions could be improved upon. Ideally, after-action reviews/debriefings should occur immediately after the incident has been cleared (to ensure that details and procedures of the response effort are not forgotten) but following the necessary data collection. The main goals of these meetings are to constructively critique the procedures used and any decisions made, and to determine whether future management could be improved in any way (e.g., by restructuring the procedures, adding extra resources, etc.).
	Broaden coverage of TMC engagement with external partners.	Additional stakeholders such as media, private traffic reporting firms, and others potentially benefit from information from the TMC. Depending on the function and role of a TMC, these additional stakeholders also could include transit, law enforcement, and citizen advisory groups from MPO/ regional transportation planning authorities.
	Partner with local agencies.	As a home rule state, it can be challenging to execute multi-jurisdictional agreements for traffic signal corridor projects. These agreements are key to the ability to operate the transportation network as a system of corridors.
	Provide consistent incident response and management across the state.	Consistency in policies and procedures for incident management and response will improve working relationships with stakeholders, such as the state police, and provide cross-training opportunities.

Appendix A: Program Objective Descriptions, continued

Goal	Program Objective	Description
Integration	Integrate and standardize all ODOT data systems.	System integration can be challenging when managing disparate legacy systems. By utilizing common data attributes for systems focused on transportation operations, data may be better utilized for performance measurement and asset management.
	TSMO considered as an integral part of highway projects.	Integrating TSMO into the planning process so that it is seen as a real solution, rather than a last option, will provide both cost and traffic operations benefits.
	TSMO strategies included in ODOT and MPO long range plans.	Encouraging ownership of TSMO initiatives among ODOT's partners will further integrate TSMO into the planning process so that it is seen as a real solution at the regional and local levels.
Security	Monitor key transportation assets/events to prevent harmful acts.	ODOT can build off the DHS/DOT Transportation Systems Sector-Specific Plan. The plan details how the National Infrastructure Protection Plan risk management framework is implemented within the context of the unique characteristics and risk landscape of the sector. Each Sector-Specific Agency develops a plan through a coordinated effort involving its public and private sector partners.
	Promote TSMO tools to improve Emergency Management.	Data sharing including CCTV is a straight-forward strategy that can improve communications as well as access to data for stakeholder partners.
	Strengthen ODOT's traffic operations IT infrastructure.	With cybersecurity becoming more of a risk in all industries, close attention to network security is crucial as TSMO and ITS systems are deployed in the field.