Transportation Systems Management & Operations (TSMO) State of the Practice

NDOT TSMO Implementation Plan

Nevada Department of Transportation, Traffic Operations Division

November 2018

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
АТМ	Active Traffic Management
CHART	Coordinated Highway Action Response Team
СММ	Capability Maturity Model
COG	Council of Governments
FHWA	Federal Highway Administration
ICM	Integrated Corridor Management
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organization
NCHRP	National Cooperative Highway Research Program
NDOT	Nevada Department of Transportation
NOCoE	National Operations Center of Excellence
OSA	Operations and Safety Assessment
SHRP 2	Strategic Highway Research Program 2
TDM	Transportation Demand Management
TSMO	Transportation Systems Management and Operations
USDOT	U.S. Department of Transportation

Summary

Congestion on freeways and arterials continues to increase while funding for roadway system improvements remains stagnant. The solution to this disparity involves strategies that implement Transportation Systems Management and Operations (TSMO). TSMO refers to a multimodal, strategic approach to maximizing mobility and safety. TSMO encourages the integration of planning and design with the coordination of operations and maintenance to take advantage of existing infrastructure. The goal of TSMO is to improve the system user experience, travel time reliability, and traveler safety by optimizing existing infrastructure with new technology and services, ideally without adding capacity. With the rapid growth of congestion on corridors in Nevada, TSMO seeks to identify processes to enhance capacity on operational routes and, together with management, introduces concepts that focus on consumer and system performance, user experience, travel time reliability, and safety (National Operations Center of Excellence, 2016).

Including TSMO initiatives and solutions in transportation improvement projects will require a cultural shift to place the operations of the roadway system on the same level as the design and maintenance of the same facility. Rather than only adding capacity to reduce delay on roadways, it is becoming necessary for agencies to focus more on operations and management to maximize the utility of their transportation systems. The future looks toward enhancing the operations of the transportation system to provide safe, sustainable, reliable, and efficient mobility solutions to the end user. To that end, a detailed TSMO implementation plan is required to outline guidance for the development of a TSMO program and, as a result, facilitate this cultural shift (National Operations Center of Excellence, 2016) (Institute of Transportation Engineers).

With its mission to "Provide, operate, and preserve a transportation system that enhances safety, quality of life and economic development through innovation, environmental stewardship and a dedicated workforce.," the Nevada Department of Transportation's (NDOT) development and implementation of this guidance was initiated with a TSMO Capability Maturity Model (CMM) workshop held in conjunction with the Federal Highway Administration (FHWA) in December 2014. CMM is a performance improvement approach based on an established model defined by the American Association of State Highway and Transportation Officials (AASHTO). It was first established by the Software Engineering Institute (Select Business Solutions). It is a structured collection of tasks describing the characteristics of an effective process. For TSMO, in particular, CMM is used to assess the organization, processes, and outcomes against a scale of maturity level, and identifies areas that require further attention for improvement. The workshop established a baseline for a self-assessment of six TSMO dimensions that included:

- Business Processes
- Systems and Technology
- Performance Measurement
- Culture
- Organization and Staffing
- Collaboration

(Federal Highway Administration, 2015)

The TSMO CMM process was used to provide a benchmark for NDOT's state of the practice in operations. The results from that workshop helped shape action plans aligned with the six CMM dimensions and outlined the steps required for improvement, of which one was the development and implementation of a TSMO program.

With an action plan completed, the next logical step in the development of a TSMO program for NDOT was to perform a literature review and develop a State of the Practice matrix for TSMO activities nationwide. The matrix summarizes documents identified during the literature review to determine the frequency of specific TSMO elements in guidance documents and state implementation plans.

1. Research Process & Sources

A comprehensive review of literature was conducted to determine the state of the practice with regard to TSMO nationwide. The following provides a list of websites used as key resources for these findings:

- National Operations Center of Excellence (NOCoE), <u>http://www.transportationops.org</u>
- AASHTO TSMO Guidance, http://www.aashtotsmoguidance.org/
- FHWA, Planning for Operations, <u>http://www.ops.fhwa.dot.gov/plan4ops/</u>
- FHWA, Office of Operations, http://ops.fhwa.dot.gov/publications/publications.htm
- U.S. Department of Transportation (USDOT), http://www.transportation.gov
- Strategic Highway Research Program (SHRP 2), http://shrp2archive.org
- National Cooperative Highway Research Program (NCHRP), http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(345)_FR.pdf
- http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07(365)_FR.pdf

The literature review included a comprehensive study of all the available documents and materials, as well as interviews with field experts and specialists. Using these means of study, 49 documents were reviewed: 20 were TSMO plans from state departments of transportation, metropolitan planning organizations (MPO), or councils of governments (COG), and 29 were guidance documents developed by national organizations.

2. Discussion of Findings

Each source was reviewed to identify if TSMO components or guidance reports were discussed within its components. The items this review investigated included, but are not limited to:

- Elements of TSMO Program Implementation Guidance
- TSMO Strategy
- Dimensions of TSMO Capability

The TSMO elements and strategies were defined based on reviews of plans and guidance from other states; the dimensions of TSMO capability were defined by the AASHTO TSMO Guidance and FHWA documents. These dimensions are the same dimensions that NDOT incorporated in their CMM workshop. Each dimension and its progress within the TSMO program is assessed through four levels of maturity: Performed, Managed, Integrated, and Optimizing.

In the state of the practice matrix, a column has been dedicated to every reviewed document. In addition to every relevant document being listed on this matrix, an "x" was placed against the relevant component within the matrix. Using this approach, Figures 1-3 demonstrate a comprehensive summary of findings through discussing the occurring frequency of elements, strategies, and CMM dimensions in guidance documents versus TSMO plans.

Figure 1: Occurring Frequency Elements of TSMO Programs Implementation Guidelines



Figure 2: Occurring Frequency of TSMO Strategies



Figure 3: Occurring Frequency of Dimensions of TSMO Capabilities



Based on the analysis, the most discussed parameter of TSMO programs in TSMO plans was the mission, vision, and goal; however, not many guidance documents have included this parameter. Organizational structure and staffing has been identified as the second most discussed parameter, and research shows that guidance documents have had a high level of response to this item. The frequency of implementation of

other elements varies, and between them, programming/budgeting plans and technical processes had a greater focus compared to TSMO plan documents.

The TSMO strategies reviewed indicate a primary focus on incident and emergency management, as well as traffic signal and arterial management. Analysis shows that specific strategies were not discussed in detail in guidance documents due to the very broad nature of each item; however, analysis suggests that there is a focus on developing secondary plans if the plans do not include full recommendations on specific strategies.

In terms of capability dimensions, many guidance plan documents include specific discussions followed by action plans and items for improvement on each item. Within the capability dimensions, business processes were identified as the most discussed dimension. In discussions with field experts, culture was identified to be the major component affecting the success of a statewide TSMO program and yet remains to be the biggest challenge. Hence, it is ranked as the least discussed dimension among capability dimensions. This level of in-depth discussion around capability dimensions, and comparing them against the state of the practice identified from the NDOT CMM workshop, will be useful in determining the required action plans for NDOT's TSMO implementation guidance.

Within the reviewed literature, it was observed that the Second Strategic Highway Research Program (SHRP 2) has conducted numerous workshops and self-assessment practices on CMM across the nation. A total of 23 workshop documents indicated the maturity level of each capability dimension. As demonstrated in Figure 4, most of the studied regions and states are operating between "performed" and "managed" levels for most of the dimensions. It can be concluded that these regions or states have either commenced a TSMO program, or are in the process of considering solutions of a TSMO nature, or working toward integration and improvement of a TSMO plan in their work order (Federal Highway Administration , 2015) ((SHRP2), 2012-2014).



Figure 4: Distribution of Self-Assessments (23 workshops)

Source: Cambridge Systematics, Inc. and Parsons Brinkerhoff, Organizing for Reliability—Capability Maturity Model Assessment and Implementation Plans Executive Summary, May 2015.

Following the reviews on each state's available documents in search of TSMO implementation plans, it was concluded that, as shown in Figure 5, 40 percent of all states are engaged in TSMO planning activities. This is the identified current state of the practice based on the available reviewed documents and the states' websites.

Figure 5: Statewide or Regional TSMO Plans Nationwide



Further reviews were undertaken with a focus on determining the state of the practice for the State of Nevada. These reviews were categorized under five main sectors of Nevada Department of Transportation, Southern Nevada Regional Transportation Commission, Washoe County Regional Transportation Commission, Carson Area Metropolitan Planning Organization, and Tahoe Metropolitan Planning Organization.

The literature review indicated no records of TSMO plans for the above-mentioned regions; however, a few TSMO elements and strategies were identified within the discussions of some documents. Elements discussed include, but are not limited to:

- Development of standards for performance measurements
- TSMO training
- CMM workshops for employees and partner organizations
- Procedures with partners

Incident and emergency management, transportation demand management, multimodal traffic management, advanced traveler information, traffic signal and arterial management, and freight and commercial vehicle transportation management also were identified as strategies discussed.

A summary of each TSMO capability dimension, as well as highlighted best practices from across the country, can be found on the factsheets on the following pages.

Collaboration

DESCRIPTION:

Referred to as external agency cooperation by AASHTO, collaboration is defined as the cooperative understanding and actions among two or more associated entities to accomplish mutual goals. These goals often include both public-public and public-private cooperation, as well as the public safety community. The key entities highlighted by AASHTO to identify the state of the practice of this dimension are: public safety agency collaboration, metropolitan planning organization (MPO)/ regional transportation planning agency/local government collaboration, and outsourcing/ public-private partnership.

NATIONWIDE EXAMPLE SOLUTIONS:

AZTech - Phoenix Metropolitan Area

- Regional traffic management partnership with no operational responsibilities
- Divisions involved:
- Major governmental transportation agencies
- Public safety agencies
- Private technology and media companies

CHART Maryland State Highway Administration

- Senior technical and operational personnel from Maryland State Highway Administration
- Divisions involved:
- Maryland Transportation Authority
- Maryland State Police
- FHWA
- The University of Maryland Center for Advanced Transportation Technology

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration

TSMO PLAN EXAMPLE:

Participants from multiple local cities, counties, and other agencies collaborated to develop the Regional Transportation Systems Management and Operations Plan for Southwest Washington. To address specific agency concerns, the plan includes a section on how TSMO contributes to the Metropolitan Transportation Plan. This exemplifies the value of TSMO and how it can be integrated with plans that may have been developed prior to the initiation of TSMO. It also may help gain buy-in from other participating agencies and encourage involvement in the initiative.

Source: Regional Transportation Systems Management and Operations Plan for Southwest Washington

SUGGESTED GUIDANCE FOR NEXT STEPS: To move from Level 1 to Level 2 in the collaboration capability, the following actions should be taken: • Develop an approach to facilitate and encourage outreach to internal and external stakeholders regarding TSMO.

• Create and maintain a repository of up-to-date TSMO information that is available to all stakeholders.

Key Outcomes:

Key Outcomes:

budgets

activities

• Road Emergency Action Coordinating Team

• Traveler information support

• Development of regional operations guidelines

• Long-standing program of short- and long-range plans

• Development of capital, operating, and maintenance

• Periodic meetings to review process and planning

- Include TSMO components in the Long-Range Transportation Plan as an approach to improve traffic flow instead of and/or as integral components of capital capacity projects.
- Develop a TSMO Review for all new projects to ensure that TSMO components are considered to achieve project objectives.

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:

aboration

-----0% 10%



NDOT CMM LEVEL: 1

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Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 - FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans





Occurring frequency in guidance documents

Occurring frequency in TSMO plans

20%	30%	40%	50%	60%	70%	80%	90%	100%

Organization & Staffing

DESCRIPTION:

Organization and staffing have been recognized as a systematic dimension, crucial for the development and success of TSMOrelated organizational composition. It assists by integrating TSMO champions and experts among all the entities involved. Key elements of organization and staffing as described by AASHTO are program status, organizational structure, staff development, and recruitment and retention. A successful program has TSMO knowledge spread throughout different levels and disciplines within the organization, and has an established training program and core capabilities.

NATIONWIDE EXAMPLE SOLUTIONS:

Colorado DOT University

- Training programs for general and specialized curricula
- Operates on federal model organized by four clusters
- Clusters are unified by common policies, standards, operating practices, and core administrative services

New Jersey DOT: Creation of Transportation Systems Management Office

• Creation of a new office of Transportation Systems Management by involving traffic operations, Bureau of Mobility and Systems Engineering, and close cooperation with state's toll road, transit, and law enforcement entities

Key Outcomes:

• Curriculum material

Identified program-related needs

- Key Outcomes:
- Responsible for all statewide traffic management activities, resource allocation, program evaluation, and budget requests

• CDOT in process of building a TSMO-related curriculum

• Reports to Deputy Commissioner

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration

program effectively.

Source: Iowa TSMO Program Plan

NATIONWIDE CMM RESULTS:

Level 1 – Performed

TSMO added on to units

within existing structure

and staffing; dependent

on technical champions

NDOT CMM LEVEL: 1

TSMO-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place

Level 2 – Managed

Level 3 – Integrated TSMO managers report directly

to top management; job specifications, certification, and training in place for core positions

Level 4 – Optimizing

TSMO senior managers at equivalent level with other jurisdiction services and staff professionalized

Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 - FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans

SUGGESTED GUIDANCE FOR NEXT STEPS:

To move from Level 1 to Level 2 in the organization and staffing capability, the following actions should be taken:

- Identify and engage a team of TSMO Champions who are internal and external to NDOT.
- Create and maintain a repository of up-to-date TSMO information that is available to all stakeholders.
- Identify staff with TSMO skills and further their TSMO knowledge through training and other types of staff development.
- Participate in regular CMM self-assessments with the goal of continual improvement of processes and procedures.

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:





of Response

Number

10

8

6

4

2

0

TSMO PLAN EXAMPLE:

In the Iowa TSMO Program Plan, a new organizational structure, including the Office of Traffic Operations, is displayed to highlight where TSMO staff fit in the organization. Other staff that support TSMO initiatives also are documented. The plan also discusses staffing needs and presents recommendations for improvement to administer the TSMO



COWADOT





Culture

DESCRIPTION:

This dimension is defined as an institutional dimension representing shared values, visions, and beliefs within transportation agencies. The state DOTs have embedded culture in all their related activities in delivery of TSMO. This starts at the policy level, driving the culture into the daily practices of the program, legal entities, and in all communications media. AASHTO has suggested four elements in this dimension: technical understanding and business case, leadership/champions, internal and external outreach, and policy/program status/authorities.

NATIONWIDE EXAMPLE SOLUTIONS:

Performance Culture: The Gray Notebook – Washington State DOT

• Approach to focus on cost-effective solutions based on efficient operation, demand management, and strategically increasing the capacity

District Level Programs: Florida DOT District 4

• Leadership and technical expertise from key staff have improved TSMO program, in addition to established business processes

Major Statewide Public-Private TSMO Performance Contract – Virginia DOT

- Outsourced and combined under a single performancebased contract
- Involves all VA transportation operations centers and all relevant parties

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration



Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 - FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans

Key Outcomes:

Key Outcomes:

• Programs and major inter-regional facility improvements at individual District levels

• "Moving Washington" transportation policy to be

incorporated into its planning and programs

• Report of progress and accomplishments is developed annually

Key Outcomes:

- Key emphasis on outsourcing for consistency in management
- Using incentives to improve performance

• Investing in contractors

SUGGESTED GUIDANCE FOR NEXT STEPS:

To move from Level 1 to Level 2 in the culture capability, the following actions should be taken:

- Identify and engage a team of TSMO Champions internal and external to NDOT.
- Develop and identify opportunities for educating stakeholders to understand and support TSMO.
- Develop a TSMO Review for all new projects to ensure that TSMO components are considered to achieve project objectives.

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:

Occurring frequency in guidance documents Culture

corridors.

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LEVEL: 1

TSMO PLAN EXAMPLE:

In the Regional Operations Plan for Southwestern Pennsylvania, a new Operations and Safety Assessment (OSA) process is proposed to improve mobility and safety for projects. The OSA process considers operations and safety improvements to include in short-term and long-term plans. This process will improve the culture of TSMO and help

spread information about mobility on Pennsylvania's

Source: 2015 Regional Operations Plan for Southwestern Pennsylvania





2015 Regional Operations Plan for Southwestern Pennsylvania



Performance Measurement

DESCRIPTION:

Performance measurement is a concept used to determine and track the effectiveness and productivity of institutional activities through different measures, such as definition, data acquisition, and utilization. It is used to both create and apply the framework for managing those measures. It is referred to as a fundamental tool in that it identifies the effectiveness and measures the progress of delivered services while also identifying areas that require improvement. It includes diverse aspects of transportation-related issues, such as mobility and travel time reliability.

NATIONWIDE EXAMPLE SOLUTIONS:

Georgia DOT (GDOT)

 Focus on traffic incident management (TIM) characteristics, as well as including 511 calls, GDOT traveler information website, and device health Uses a strong detector network Agency-wide performance dashboard 	 Key Outcomes: Comprehensive plan for evaluating the implementation of all new TSMO strategies TSMO measures and summary outcome measures on the front page of dashboard allow users to obtain details about every top-level measure
Maryland State Highway Administration	
 Currently limited to freeways; will be extended to cover signalized arterials Incorporating measures for investment decisions is the main obstacle Strong output-level performance on Coordinated Highways Action Response Team program, based on modeling rather than measurements 	 Key Outcomes: Annual mobility report that includes measures for outcome congestion and TIM performance Some outcomes of their performance measure reports are used for state legislation funding discussions
Washington State DOT	
 Data are used effectively in long-term programming and planning Set performance targets 	Key Outcomes: • Successfully used data to secure capital for further

- TSMO projects

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration



Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 – FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans

SUGGESTED GUIDANCE FOR NEXT STEPS:

To move from Level 1 to Level 2 in the performance measurement capability, the following actions should be taken:

- Identify NDOT's specific goals for TSMO.
- Work with MPOs to identify required and desired performance measures that are consistent with MAP-21
- Identify readily available data that measure TSMO and MAP-21 goals.
- Build on existing performance measures used by NDOT and MPOs.

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:





LEVEL: 1





TSMO PLAN EXAMPLE:

Minnesota has a strong focus on performance measures and maintains a State Road Operations and Maintenance Performance and Investment Snapshot to summarize the data into an easily understood format. Presenting the historical data allows the Minnesota Department of Transportation to develop trend-based performance measures and set goals that are realistic and effective. In the Statewide Highway Systems Operation Plan, each operations initiative has an associated performance metric to assess successful efforts and identify areas of improvement.

Source: Minnesota Statewide Highway Systems Operation Plan



Systems & Technology

DESCRIPTION:

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With a great focus on technology procurement and systems and operations planning, rather than the technology infrastructure, this dimension reflects the concepts, standards, processes, and architecture required for systems engineering in TSMO. As introduced by AASHTO, this dimension involves regional architectures, project systems engineering/ testing and validation, and standards/ interoperability as its key elements.

NATIONWIDE EXAMPLE SOLUTIONS:

Utah DOT

- Strong Intelligent Transportation Systems (ITS) based on strong planning across jurisdictions
- Application of Concept of Operations to new technology designs and consistent processes statewide
- Learn and share their ITS lessons

Maryland State Highway Administration

- Coordinated Highways Action Response Team, a fully integrated and interoperable statewide system
- Using institutional architectures, processes, and methodologies to create a defined path for a successful system
- Consists of integration manager and relationships with Division of Information Technology

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration

Key Outcomes:

• Statewide and regional Transportation Management Center using centralized software system

Key Outcomes:

• Facilitates intrastate coordination through advanced data management and warehouse capabilities

In the Oregon Metro Regional Transportation System Management and Operations Plan, several initiatives (traveler information, incident management, transportation demand management, etc.) are outlined to improve the mobility of Oregon's corridors. Each initiative has several corridor-wide and region-wide projects identified, in addition to a rough cost estimate for both the capital cost and operations and maintenance. This level of detail in the plans helps ensure that the projects and ITS devices to improve congestion and support the TSMO program will be implemented.

NATIONWIDE CMM RESULTS: of Responses 10 8 6 Number 4 2 0 Level 1 – Performed Level 2 – Managed Level 3 – Integrated Level 4 – Optimizing Regional or statewide Systems and technology Ad hoc approaches to system Architecture and technology ConOps and architectures routinely upgraded to improve implementation without standardized and integrated on developed and consideration of systems a regional or statewide basis performance; systems integration/ engineering and appropriate documented with cost (including arterial focus) with other interoperability maintained on procurement processes included; appropriate related processes and training as continuing basis procurement process appropriate employed

NDOT CMM LEVEL: 2

Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 - FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans

SUGGESTED GUIDANCE FOR NEXT STEPS:

To move from Level 2 to Level 3 in the systems and technology capability, the following actions should be taken:

- Traffic Operations Division participates in the scoping of the Long-Range Transportation Plan to ensure TSMO components are considered.
- Include Traffic Operations staff in project development and review beginning at the scoping level of the project.

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:



0% 10%



TSMO PLAN EXAMPLE:

Source: Oregon Metro Regional Transportation System Management and Operations Plan



Occurring frequency in guidance documents

Occurring frequency in TSMO plans

20%	30%	40%	50%	60%	70%	80%	90%	100%

Business Processes

DESCRIPTION:

The structured and specific tasks and activities, designed and required to produce efficient TSMO systems and services are referred to as business processes. These processes include programming, planning, scoping, budgeting, and project development. Developing a TSMO plan is the first step to being successful in the business processes dimension.

NATIONWIDE EXAMPLE SOLUTIONS:

Portland – Regional TSMO 2010-2020, Portland Metro, 2010

 Set of mitigation plans to deal with unplanned congestion To improve travel information to allow for informed decision making Enhanced incident management following unplanned incidents 	 Key Outcomes: An action plan targeting specific projects, including timeframe, cost, and lead agency Enhanced data collection to allow for improved performance management
Pennsylvania – Transportation Operations Master Plan, DV	RPC, 2009
• Based on previous activities, including regional architecture, congestion management, ITS master plan, and regional operations plans that fed into an operations task force to create four principal components for success	 Key Outcomes. Four main components: Alignment of themes and strategies Road-mapping visions Prioritizing action plans Creation of business cases for each action plan
Colorado – CDOT TSMO Evaluation Process	
• Evaluate each new multi-disciplinary project to determine if	Key Outcomes:

- any operational enhancements could be achieved
- Development of a new procedure to evaluate all new projects
- Implementation of a new system-based work flow to automatically advise project team members on
- recommendations

Source: Improving Transportation Systems Management and Operations. Federal Highway Administration



SUGGESTED GUIDANCE FOR NEXT STEPS:

To move from Level 1 to Level 2 in the business processes capability, the following actions should be taken:

- Identify stakeholders and resources necessary to implement a statewide TSMO plan.
- Develop a TSMO Review for all new projects to ensure that TSMO components are considered to achieve project objectives.
- Identify a work flow process for operational reviews.

agency.



0% 10%

Sources: NDOT Statewide CMM Assessment Workshop Draft, Carson City, NV, 12/03/14 – FHWA & NDOT Organizing for Reliability – Capability and Maturity Model Assessment and Implementation Plans

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LEVEL: 1



TSMO PLAN EXAMPLE:

To implement a TSMO program in Florida, a list of operations and planning recommendations, a well as high-level policy recommendations, were identified. The recommendations also were split into near term (less than two years away) and long-term (three to five years away) to prioritize action items. Determining what policies need to be amended or created helps the agency's leadership understand the plan for developing a successful TSMO program and shows a commitment to TSMO in all aspects of the

Source: Florida Transportation Systems Management and Operations Strategic Plan

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	FDOT Level Central Office	Recommended Action Recommended Action Develop a formal T3MAD program within PDOT Develop T3MAD Proley Develop Guidance Documents Updatelmaintain T3MAD Stratege Pan and Functional Plan Develop Calabine Documents Develop Actionations Develop Actionation Develop Actionation	Near Term (2013- 2015) X	Long Term (2015- 2018) X X X X X X X X X X X

OCCURRING FREQUENCY OF DIMENSIONS OF TSMO CAPABILITIES:

Occurring frequency in guidance documents

Occurring frequency in TSMO plans

						_	_	
20%	30%	40%	50%	60 %	70 %	80%	90%	100%

3. Conclusion

States and agencies nationwide are increasingly advancing their TSMO programs. Along with these other agencies, NDOT initiated the development and advancement of their TSMO capabilities with the goal to improve the integration of TSMO plans into the operations and management of their transportation system. Following this goal, NDOT, using the existing information, can develop TSMO implementation guidance and address the necessary components that are effective and applicable to the different regions and districts within the state of Nevada. Table 1 highlights the current state of the practice on a TSMO plan in Nevada in comparison to the nation.

Table 1 State of the Practice Comparison

		Statewide TSMO Planning activities	MPO, COG, or similar with TSMO Plan	Traffic Operations Division	TSMO Division
TSMO Practice Nationwide	Total No. of States	21	9	26	2
	Percentage	40%	18%	52%	4%
Nevada's Contribution		\checkmark	Х	\checkmark	Х

The next step toward developing a TSMO plan for Nevada will be to engage the Senior Nevada Leadership to encourage TSMO champions within NDOT. Following this, a framework or strategy for how TSMO will be conducted across the state will be developed. This will be the anchor for the development of the statewide TSMO program planning.

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