NDOT Statewide TSMO Program

September 2019

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Remarks by Director Swallow

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Introductions

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Why are we here?

- Brief introduction to TSMO for our new TSMO Champion Team (TCT) members
- Update on our progress with the TSMO Program Plan
- Introduction to new TSMO elements that are being incorporated into our business process
- Support from TCT to implement the TSMO Program

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What is TSMO?

Transportation Systems Management & Operations

"Integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system"

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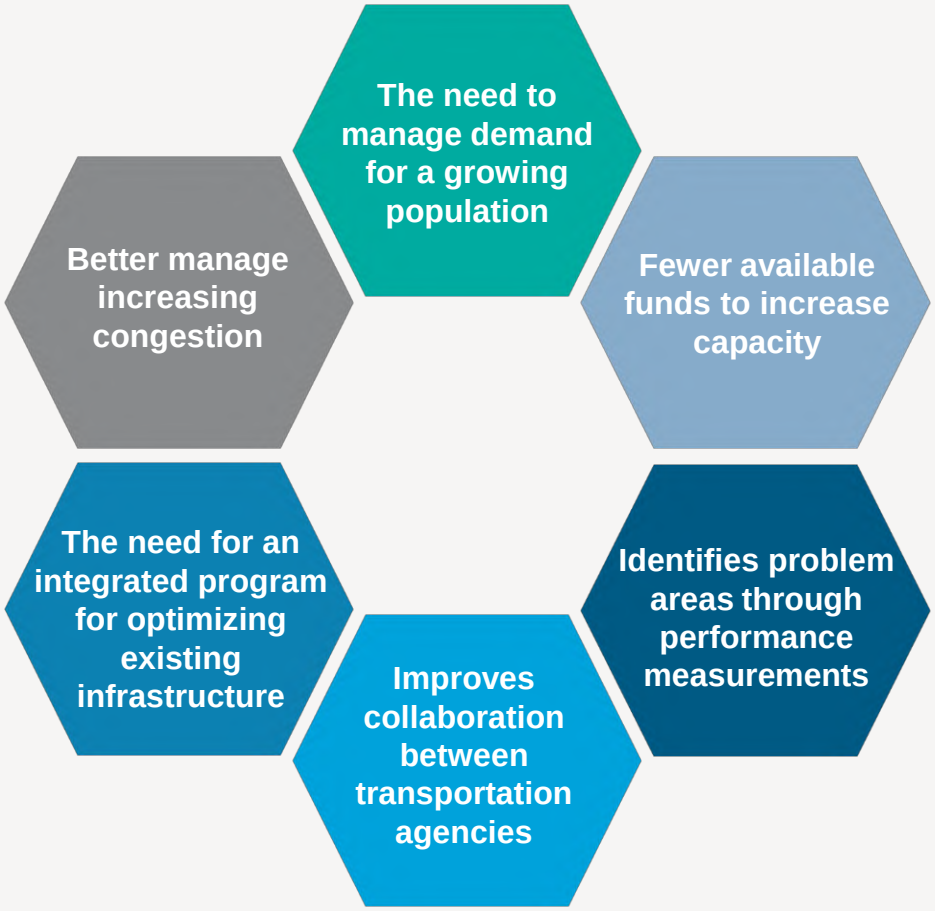
Why TSMO?



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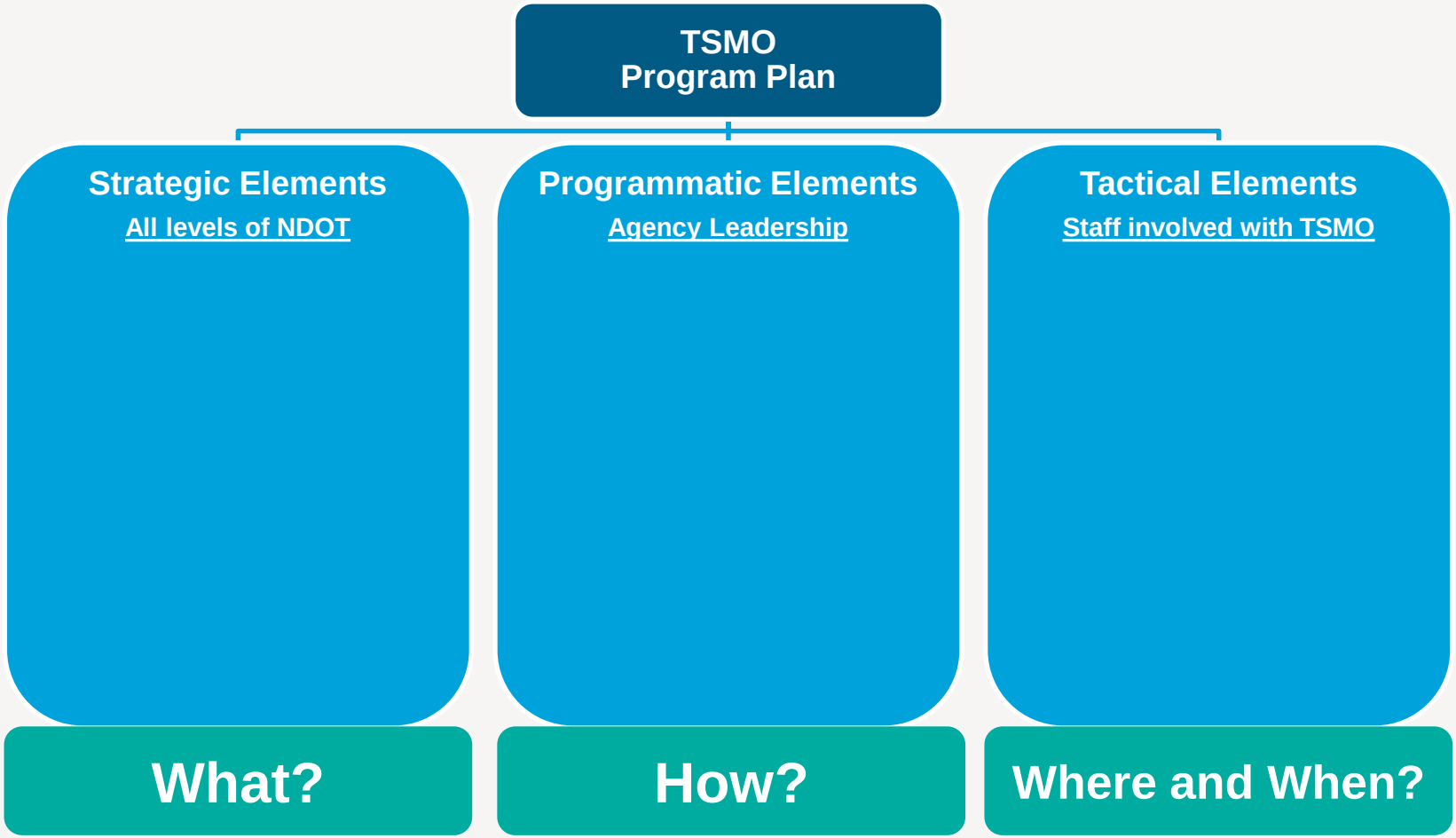
NDOT TSMO Program Plan Components



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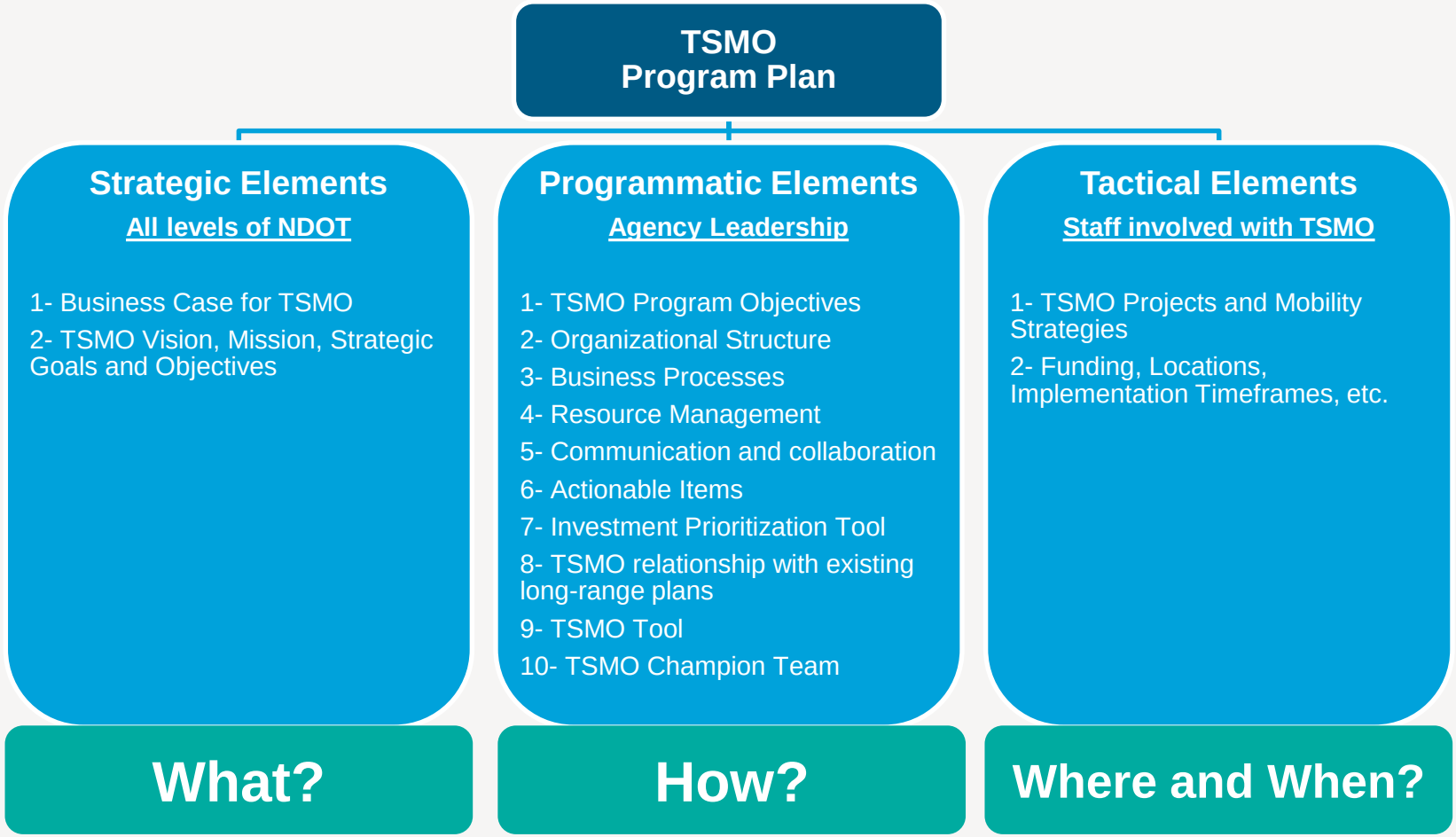
NDOT TSMO Program Plan Components



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TSMO Vision

NDOT Vision:	TSMO Vision:
To be a leader and partner in delivering effective transportation solutions for a safe and connected Nevada.	Deliver a safe and connected multi-modal transportation system that links Nevadans and supports the state's economic vitality through TSMO solutions.

TSMO Mission

NDOT Mission:	TSMO Mission:
Provide, operate, and preserve a transportation system that enhances safety, quality of life and economic development through innovation, environmental stewardship and a dedicated workforce.	Proactively manage, operate, and improve the transportation system through the integration of TSMO throughout NDOT.

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Updated NDOT TSMO Business Case

WHY TSMO

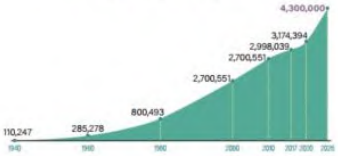
POPULATIONS

CURRENT CHALLENGES

133% 1990—2008, fastest growing State in the nation.

3 Million Population in 2018, fastest growing in the nation based on U.S. Census Bureau.

4.3 Million
Projected population by 2026



NEED:

- Increase in demand, congestion, and delay
- Reduction of capacity, transportation safety, and reliability

TSMO'S CONTRIBUTION

BENEFIT:

Implement solutions on existing roadways and collaborate within NDOT to include TSMO strategies such as Traffic Incident Management, Work Zone Management, Special Event Management, and Road Weather Management as well as the design of new infrastructure that can increase efficiency, reduce congestion and crashes, and increase the reliability of NDOT roadways to help to accommodate this growing population.

Ohio—Kentucky—Indiana Regional Council of Governments benefits from TSMO strategies:

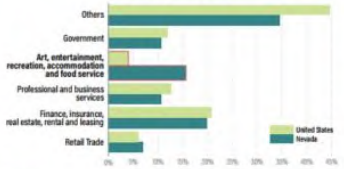
- Advanced Regional Traffic Interactive Management and Information System (ARTIMIS) program yielded a benefit of 12:1, while the capacity-adding project would have had a benefit of only 1.1:1.
- Additionally, the ARTIMIS program cost was 1/20 the cost of the capacity-adding project.

TOURISM-BASED ECONOMY

CURRENT CHALLENGES

Service sector employs about
half of Nevada's workers

Tourism sustains
27%
of all jobs in Nevada



NEED:

- NDOT must provide, maintain, and operate a safe, reliable, and efficient transportation network for its workers and tourists

TSMO'S CONTRIBUTION

BENEFIT:

Easily implementable and cost-effective TSMO strategies such as real-time traffic information to plan efficient and reliable work trips, encouraging ridership on public transportation to reduce the number of vehicles on the road, and providing safe alternatives such as pedestrian and bicycle paths will help to reduce congestion and subsequent crashes.

The Colorado DOT benefits from TSMO strategies such as the Freeway Service Patrol, I-70 Peak Period Shoulder Lane, and Colorado Bottleneck Reduction Alternatives (COBRA) Project. These projects have:

- High benefit-cost ratios typically 10:1 and as much as 40:1
- Readily implementable in less time (usually within 12 months) and for less money than adding lanes
- Highly visible, many times but not always, and noticeable improvements
- Quantifiable reduction in delay and improvement in travel time reliability
- Measurable safety-related improvements
- Improvements that continue to provide value even when long-term construction projects are completed

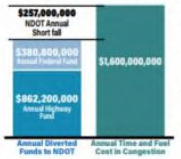
CONGESTION AND ASSOCIATED COSTS

CURRENT CHALLENGES

$121 B In wasted time and fuel cost in U.S. per year.

$1,400 & 60 hrs Cost of congestion to average driver in Nevada annually.

$1.6 Billion
Value of lost time and fuel in Nevada



Roadway incidents account for:

25% of travel delay,

4 minutes for every minute of congestion, and

2.8% increased chance of secondary incident

NEED:

- Wasted time and vehicle operating costs
- Hundreds of lost lives
- Increased chance of secondary incidents

TSMO'S CONTRIBUTION

BENEFIT:

TSMO focuses on easily implementable and cost-effective solutions that have measurable benefits to existing roadways and maximizes the efficiency of new infrastructure. Solutions such as Traffic Responsive Freeway Ramp Metering can decrease delay and improve trip reliability, which in turn reduces traffic crashes.

The Pennsylvania DOT benefits from TSMO strategies:

- Incident Response Management reduced incident response times by 8.7 minutes, incident clearance times by 8.3 minutes, and hours of delay by 547,000 hours per year, with a total monetary savings of $6.5 million per year.

Nevada WayCare Project:

- The WayCare Project reduced congestion and incident response times by leveraging real-time predictive analytics to identify high-risk incident locations. Therefore agencies such as NDOT, DPS-NHP, and RTC FAST can now take proactive preventative measures accordingly.

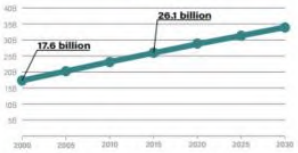
VEHICLE MILES TRAVELED (VMT)

CURRENT CHALLENGES

48% From 17.6 billion in 2000 to 26.1 billion in 2015

Projected increase of **30%** by the year 2030 to:

34 Billion
VMT



NEED:

- With VMT demand increasing at rapid rate, the need for efficient and reliable roads to accommodate this demand is paramount.

TSMO'S CONTRIBUTION

BENEFIT:

Improvements to non-motorized facilities (pedestrian and bicycle paths) to reduce the demand on motorized facilities, switching mode choices (bus rider or ride share) to reduce the number of vehicles on the roadway, real-time traffic information to help with trip pre-planning, and trip rerouting due to congestion or incidents will help to make the roadway more efficient and reduce the potential for traffic crashes.

Washington DOT Commute Trip Reduction (CTR) Program:

- In 2009, WSDOT's CTR program implemented strategies such as encouraging vanpools, carpools, condensed work weeks and telecommuting to help shift commuters out of single-occupancy automobiles and into alternative modes. The program was implemented across the nine most populous counties within the State and is credited with reducing the average daily weekday morning peak-period trips by 28,000, congestion delays by 12,900 hours, annual VMT by 62 million, and fuel consumption by 3 million gallons. This equates to a reduction of approximately 27,500 metric tons of carbon dioxide emissions.

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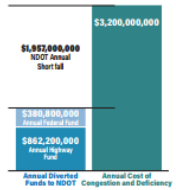
Updated NDOT TSMO Business Case

WHY TSMO

DEFICIENT ROADS AND BRIDGES

CURRENT CHALLENGES

$3.2 Billion Annual cost to Nevada motorists due to inadequate roads.



$24 M Deficit has been projected in bridge preservation by 2020

NEED:

- NDOT's yearly operating budget is not sufficient to keep up with operations and maintenance, let alone to keep up with the demands for new infrastructure.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO tries to focus on easily implementable, low-cost, high-return solutions with highly visible results. When these low-cost solutions produce the desired results, it has the potential to save money, which then can be reallocated to help solve more problems.

NDOT I-515/215 Restriping:

- In 2018, NDOT restriped the I-515/I-215 interchange for the southbound to westbound movement. This solution improved roadway efficiency, delayed the need for major rehabilitation and reconstruction, increased safety, and improved mobility at the cost of approximately $800,000, which was substantially lower than the cost to rebuild the entire interchange.

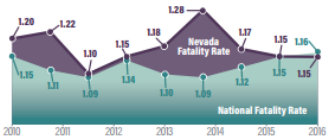
SAFETY

CURRENT CHALLENGES

331 People died in Nevada in 2018.

$1.9 B Economic cost of traffic crashes in 2017.

$906 M Annual cost to Nevada motorists from medical costs, lost productivity, etc.



NEED:

- Traffic crashes have a demonstrable negative effect on the operations of NDOT roadways and cost billions of dollars to the economy.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO focuses on increasing the efficiency of roadways, reducing congestion, and helping to eliminate the causal factors of these crashes. It is most effective on reducing the secondary crashes that are associated with the congestion that results from the primary crash. Through Integrated Statewide Traffic Incident Management Programs and real-time traffic monitoring, these primary crashes can be identified and cleared quickly.

Traffic Incident Management (TIM):

- Nevada DOT implemented this effective TSMO strategy to more efficiently detect, respond to, and resolve traffic incidents to restore traffic capacity as safely and quickly as possible through planned and coordinated processes between various public agencies and private sectors.

TRUCKS AND FREIGHT MOVEMENT

CURRENT CHALLENGES

The efficiency of the transportation system is critical to the health of the state's economy in Nevada. The key to success is the level of access and convenience for customers and markets.

$144 Billion

Goods and products are shipped mostly by truck to and from the state of Nevada

73%

of goods and products are carried by trucks annually.

NEED:

- Negative effect on the economy of Nevada.
- Delay has a negative effect on the cost of goods and products.

TSMO'S CONTRIBUTION

BENEFIT:

Several TSMO strategies can be implemented to help provide a reliable and efficient roadway system for truckers. Each dollar spent on typical road, highway, and bridge improvements results in an average benefit of $5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs, and reduced emissions. TSMO strategies are expected to greatly increase this average benefit..

Wyoming Freight:

- Truckers use a dedicated radio band on SiriusXM Radio that provides them with Real-Time Traffic Information on WYDOT roads. This service increases trip reliability and allows the industry to make informed decisions on their routes.

Smart Truck Parking Systems:

- These types of real-time systems allow truckers to more efficiently plan their routes and determine where they can safely park and rest between pick-ups and deliveries. The State of Michigan is currently implementing this TSMO strategy with much success throughout the state. To view this parking data from MDOT, please visit MiDrive.

ASSET & PERFORMANCE MANAGEMENT

CURRENT CHALLENGES

NDOT Asset Management Program has identified

$23 Billion

replacement cost for pavements, bridges, and ITS assets.

Over 20% of state pavements are more than 10 years old

Most of the state bridges have already or will soon exceed their design life of **50 years**

$1.21 B or approximately 24% of the NDOT's annual budget in preservation activities between 2017 to 2027 to extend the assets' lives

NEED:

- Cost to maintain is increasing while funding is stagnant.
- To efficiently maintain infrastructure, NDOT needs to develop a comprehensive database and management strategies to establish priorities.

TSMO'S CONTRIBUTION

BENEFIT:

TSMO strategies will help NDOT to more efficiently spend their limited funds on their aging infrastructure. The benefits of Asset Management include:

- Improves and embraces decision-making based on long-term life-cycle cost considerations.
- Allows NDOT to efficiently prioritize maintenance projects.
- Increases safety and reliability of the transportation system.

NDOT ITS Asset Management Database and Dashboard:

- NDOT's Traffic Operations developed a comprehensive database of ITS and communication devices. This database provides real-time information on the conditions and performance of ITS assets that helps to efficiently operate NDOT roadways.

NDOT Transportation Asset Management Plan (TAMP):

- NDOT developed its TAMP that includes pavement, bridge, and ITS assets. It outlines NDOT's planned investments over the next 10 years, placing priority on actively preserving these assets so they continue to operate as efficiently and effectively as possible.

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TSMO Strategic Goals and Objectives

Enhance Safety

Reduce crashes, injuries, and fatalities.

Preserve Infrastructure

Maintain transportation assets to preserve investments.

Optimize Mobility

Maximize system efficiency by reducing congestion and/or promoting multi-modal transportation.

Foster Sustainability

Develop a sustainable transportation system through sustainable and balanced design, operations, and maintenance.

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TSMO Strategic Goals and Objectives

Enhance Reliability

Improve economic competitiveness and enhance quality of life through consistent travel times.

Optimize Customer Service

Provide timely and accurate travel information to internal and external customers to enable informed decision-making.

Enhance Collaboration

Maximize coordination and cooperation between NDOT divisions and partnering agencies to proactively manage and operate an integrated transportation system.

Strengthen TSMO Integration

Incorporate and prioritize TSMO as a core objective in NDOT's planning, design, construction, operations, and maintenance activities.

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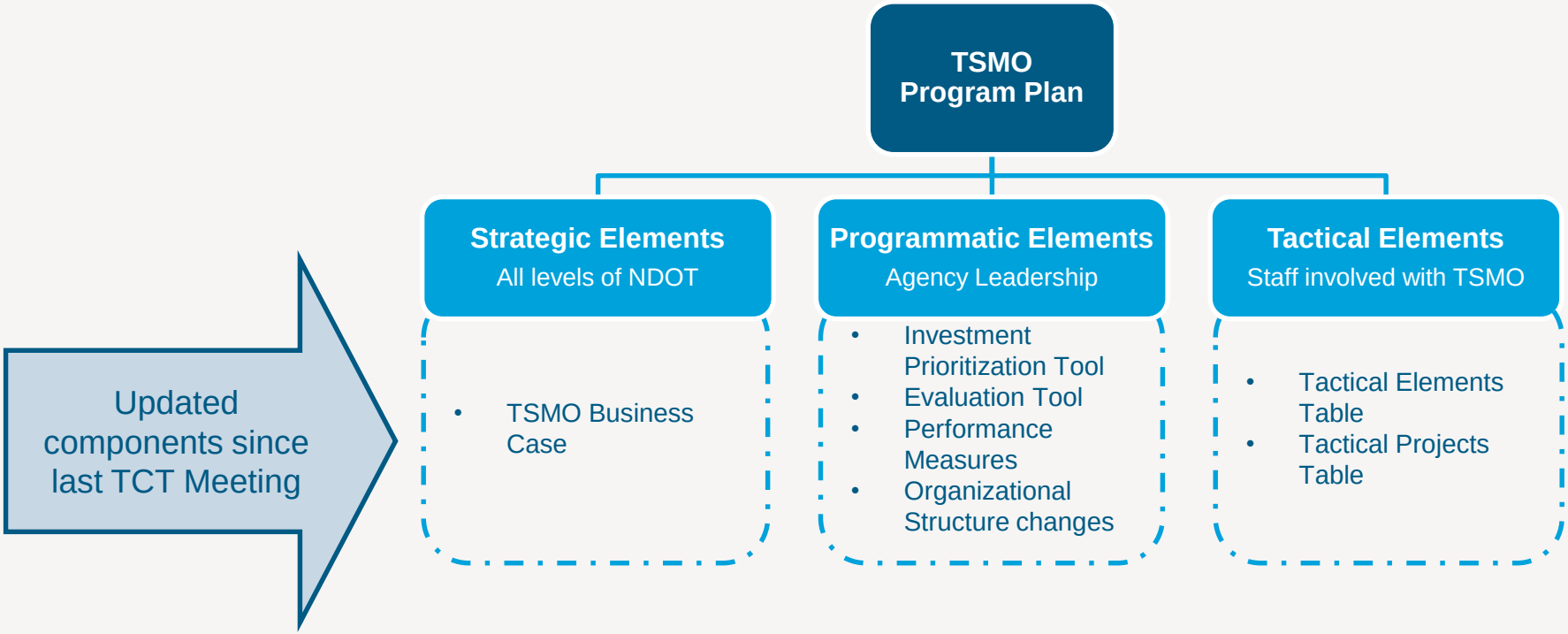
NDOT TSMO Program Plan Elements



TSMO Investment Prioritization Tool (IPT)

To prioritize projects efficiently, allocate resources, and ensure alignment of the division's efforts with the TSMO Vision, Mission, and Goals and Objectives.

IPT Criteria

- ✓ Alignment with TSMO strategic goals and objectives
- ✓ Cost
- ✓ Implementation timeframe
- ✓ Dependencies, business risks and limitations
- ✓ Benefit/Cost ratio
- ✓ Strategic value

Investment Prioritization Tool (IPT)

		Project Prioritization Criteria													
		Alignment with TSMO Strategic Goals and Objectives							Cost	Implementation	Dependencies, Business Risks, and Limitations	Risk Severity	Benefit/ Cost Ratio	Strategic Value	TSMO Score
Project/Services/Activities	Project Location	Enhance Safety	Optimize Mobility	Enhance Reliability	Preserve Infrastructure	Foster Sustainability	Optimize Customer Service	Enhance Collaboration							
CCTV PTZ & RWIS	US 6, west D16:F16 of Ely	1	0	1	1	0	1	1	4	3	Coordination with NWS	0	1	0	13
CCTV PTZ and RWIS and Weather (Signage) Chain Control	US 6, east of US 6/SR 379 intersection	1	0	1	1	1	1	1	4	2	Comms to site required, Coordination with NWS	-1	1	0	12
Weather (Signage) Chain Control Station, and CCTV PTZ	US 50, west of US 50/Co Road 3 intersection	1	0	1	0	1	1	1	4	3	Coordination with NWS	0	0	0	12
RGB Full matrix Sign mounted DMS	SR-227 & MP2	1	0	1	0	0	1	1	4	3		0	0	0	11
RGB Full matrix Sign mounted DMS	SR 277 & MP7	1	0	1	0	0	1	1	4	3		0	0	0	11
RGB Full matrix Sign mounted DMS	SR 277 & MP5	1	0	1	0	0	1	1	4	3		0	0	0	11
DMS Type 2 (US 93 SB)	US 93, South of I-80/US 93 interchange; Wells	1	0	1	0	0	1	1	4	2		0	0	0	10
Weather (Signage) Chain Control Station	US 50, west of US 50/SR 305 intersection	1	0	0	0	1	1	1	4	2	Solar sign needs upgrade, Coordination with NWS	0	0	0	10
DMS Type 2	US 93, North of I-80/US 93 North interchange; Wells	1	0	1	0	0	1	1	4	2		0	0	0	10
CCTV PTZ	US 50/SR 376 intersection	1	0	1	0	0	1	1	4	1		0	0	0	9
DMS Type 2 (US 93 SB) & CCTV	US 93, near Warm Springs - US 93S SR229 Ruby Intersection	1	0	1	0	0	1	1	4	1		0	0	0	9
Weather (Signage) Chain Control Station and CCTV PTZ	US 50, west of Ely	1	0	1	0	1	1	1	4	1	Comms to site required	-1	0	0	9
Wildlife Crossings Decommission	Pequop, Silver Zone, W. of Pequop (I-80 and 93)	0	0	0	1	0	1	0	4	1		0	0	0	7
DMS Type 2 (US 50 WB)	US 50, Nevada/Utah State Line	1	0	1	0	0	1	1	4	1	Power and comms potential issue	-2	0	0	7
Wind Warning System	Pilot Valley	1	0	0	0	1	1	0	3	1	Power needed, Coordination with NWS	-1		0	6

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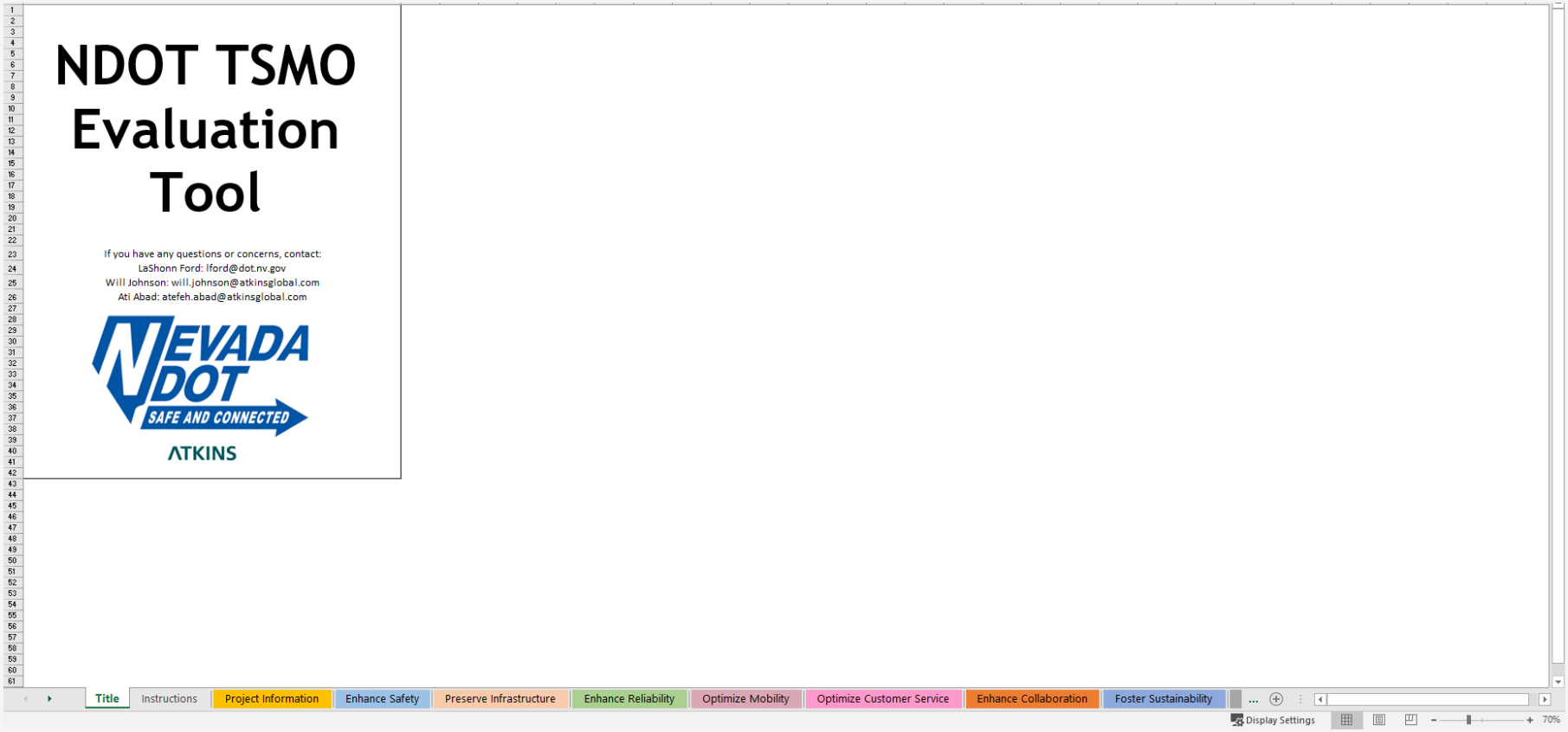
TSMO Evaluation Tool

Projects will be evaluated, by Traffic Operations staff, at the scoping stage to identify opportunities to integrate TSMO strategies in a formalized manner.



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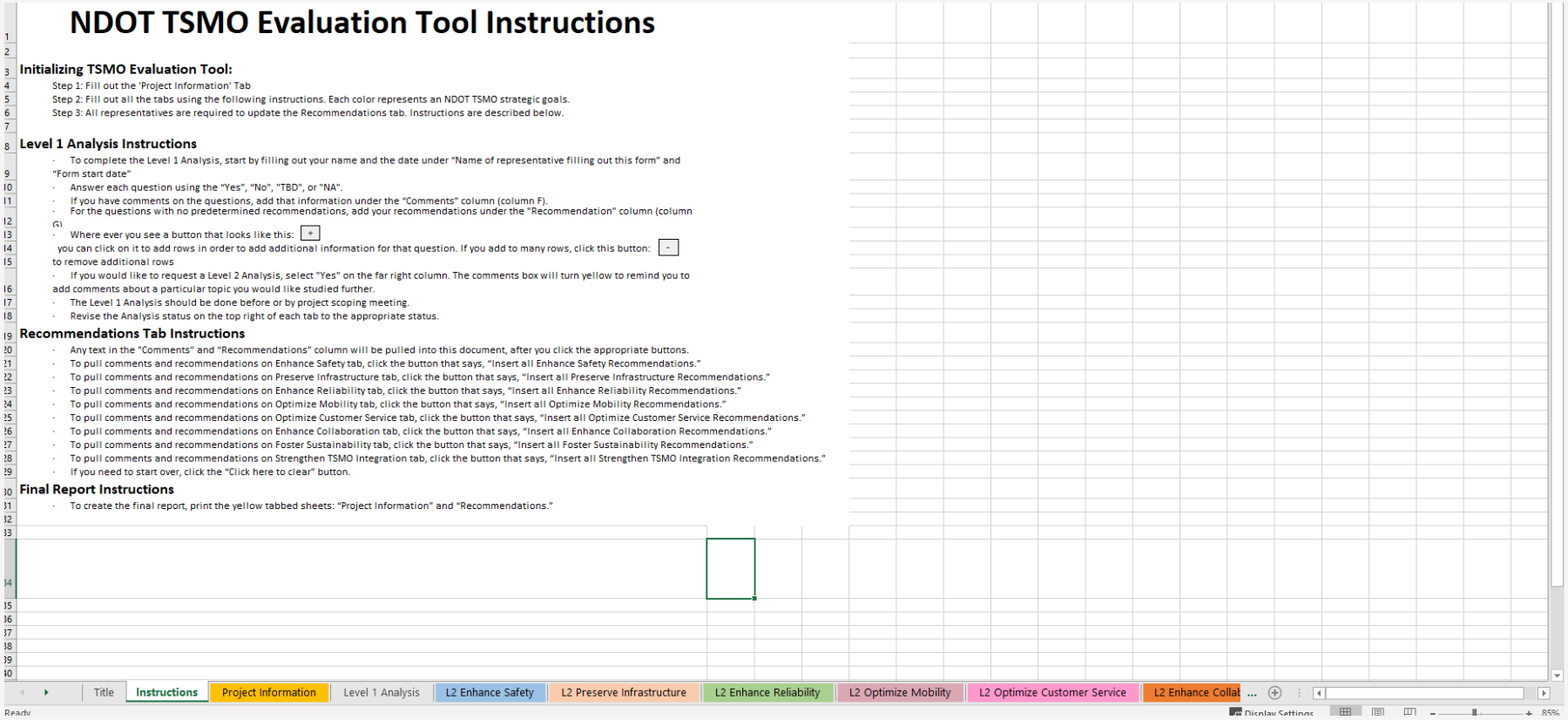
TSMO Evaluation Tool – Instructions



NDOT TSMO Evaluation Tool Instructions

Initializing TSMO Evaluation Tool:

Step 1: Fill out the 'Project Information' Tab
Step 2: Fill out all the tabs using the following instructions. Each color represents an NDOT TSMO strategic goals.
Step 3: All representatives are required to update the Recommendations tab. Instructions are described below.

Level 1 Analysis Instructions

- To complete the Level 1 Analysis, start by filling out your name and the date under "Name of representative filling out this form" and "Form start date"
- Answer each question using the "Yes", "No", "TBD", or "NA".
- If you have comments on the questions, add that information under the "Comments" column (column F).
- For the questions with no predetermined recommendations, add your recommendations under the "Recommendation" column (column G)
- Where ever you see a button that looks like this: [+] you can click on it to add rows in order to add additional information for that question. If you add to many rows, click this button: [-] to remove additional rows
- If you would like to request a Level 2 Analysis, select "Yes" on the far right column. The comments box will turn yellow to remind you to add comments about a particular topic you would like studied further.
- The Level 1 Analysis should be done before or by project scoping meeting.
- Revise the Analysis status on the top right of each tab to the appropriate status.

Recommendations Tab Instructions

- Any text in the "Comments" and "Recommendations" column will be pulled into this document, after you click the appropriate buttons.
- To pull comments and recommendations on Enhance Safety tab, click the button that says, "Insert all Enhance Safety Recommendations."
- To pull comments and recommendations on Preserve Infrastructure tab, click the button that says, "Insert all Preserve Infrastructure Recommendations."
- To pull comments and recommendations on Enhance Reliability tab, click the button that says, "Insert all Enhance Reliability Recommendations."
- To pull comments and recommendations on Optimize Mobility tab, click the button that says, "Insert all Optimize Mobility Recommendations."
- To pull comments and recommendations on Optimize Customer Service tab, click the button that says, "Insert all Optimize Customer Service Recommendations."
- To pull comments and recommendations on Enhance Collaboration tab, click the button that says, "Insert all Enhance Collaboration Recommendations."
- To pull comments and recommendations on Foster Sustainability tab, click the button that says, "Insert all Foster Sustainability Recommendations."
- To pull comments and recommendations on Strengthen TSMO Integration tab, click the button that says, "Insert all Strengthen TSMO Integration Recommendations."
- If you need to start over, click the "Click here to clear" button.

Final Report Instructions

- To create the final report, print the yellow tabbed sheets: "Project Information" and "Recommendations."

Title | Instructions | Project Information | Level 1 Analysis | L2 Enhance Safety | L2 Preserve Infrastructure | L2 Enhance Reliability | L2 Optimize Mobility | L2 Optimize Customer Service | L2 Enhance Collab ...

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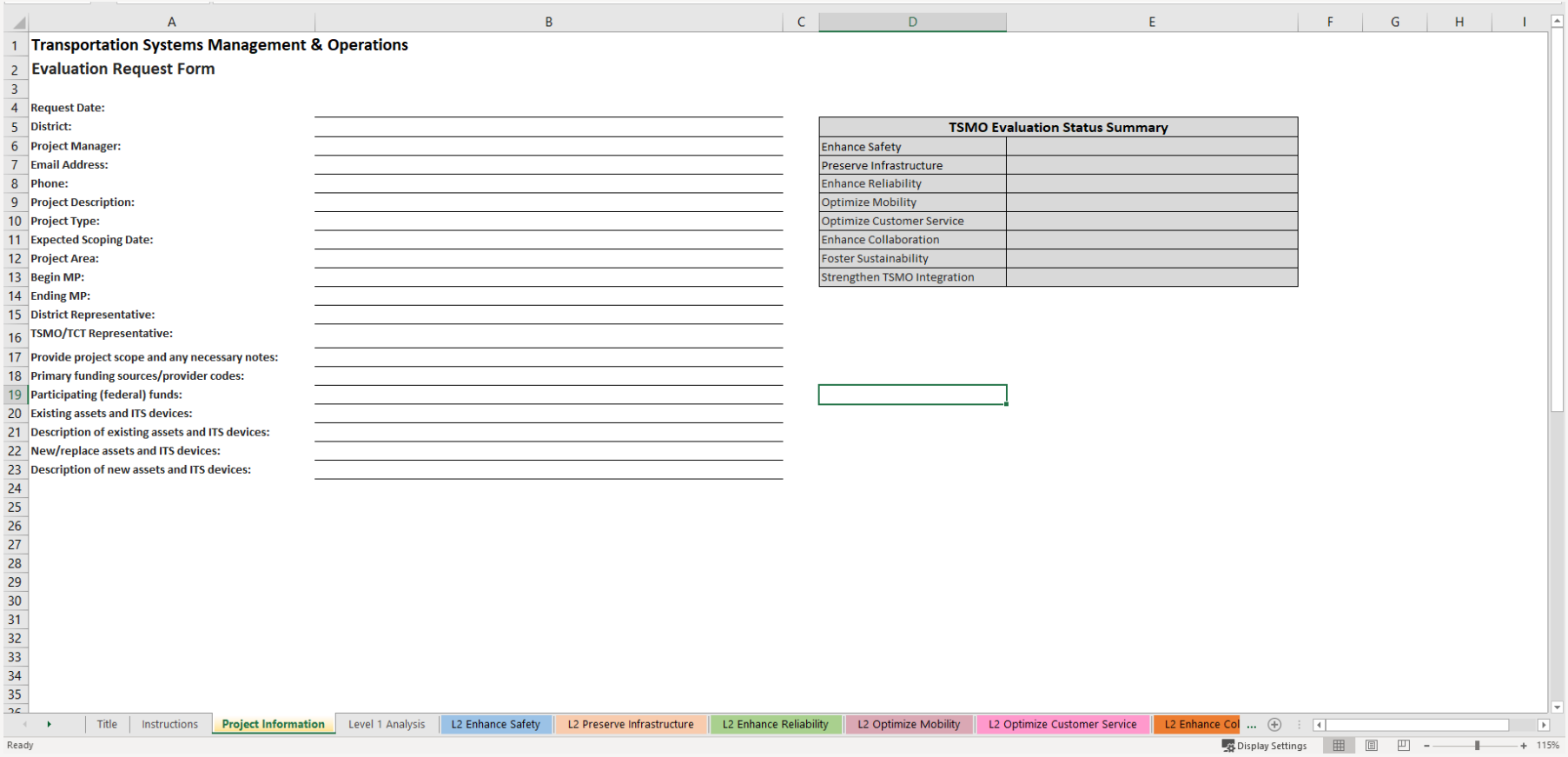
TSMO Evaluation Tool – Project Information



Transportation Systems Management & Operations

Evaluation Request Form

Request Date:	
District:	
Project Manager:	
Email Address:	
Phone:	
Project Description:	
Project Type:	
Expected Scoping Date:	
Project Area:	
Begin MP:	
Ending MP:	
District Representative:	
TSMO/TCT Representative:	
Provide project scope and any necessary notes:	
Primary funding sources/provider codes:	
Participating (federal) funds:	
Existing assets and ITS devices:	
Description of existing assets and ITS devices:	
New/replace assets and ITS devices:	
Description of new assets and ITS devices:	

TSMO Evaluation Status Summary	
Enhance Safety	
Preserve Infrastructure	
Enhance Reliability	
Optimize Mobility	
Optimize Customer Service	
Enhance Collaboration	
Foster Sustainability	
Strengthen TSMO Integration	

Title | Instructions | Project Information | Level 1 Analysis | L2 Enhance Safety | L2 Preserve Infrastructure | L2 Enhance Reliability | L2 Optimize Mobility | L2 Optimize Customer Service | L2 Enhance Col ...

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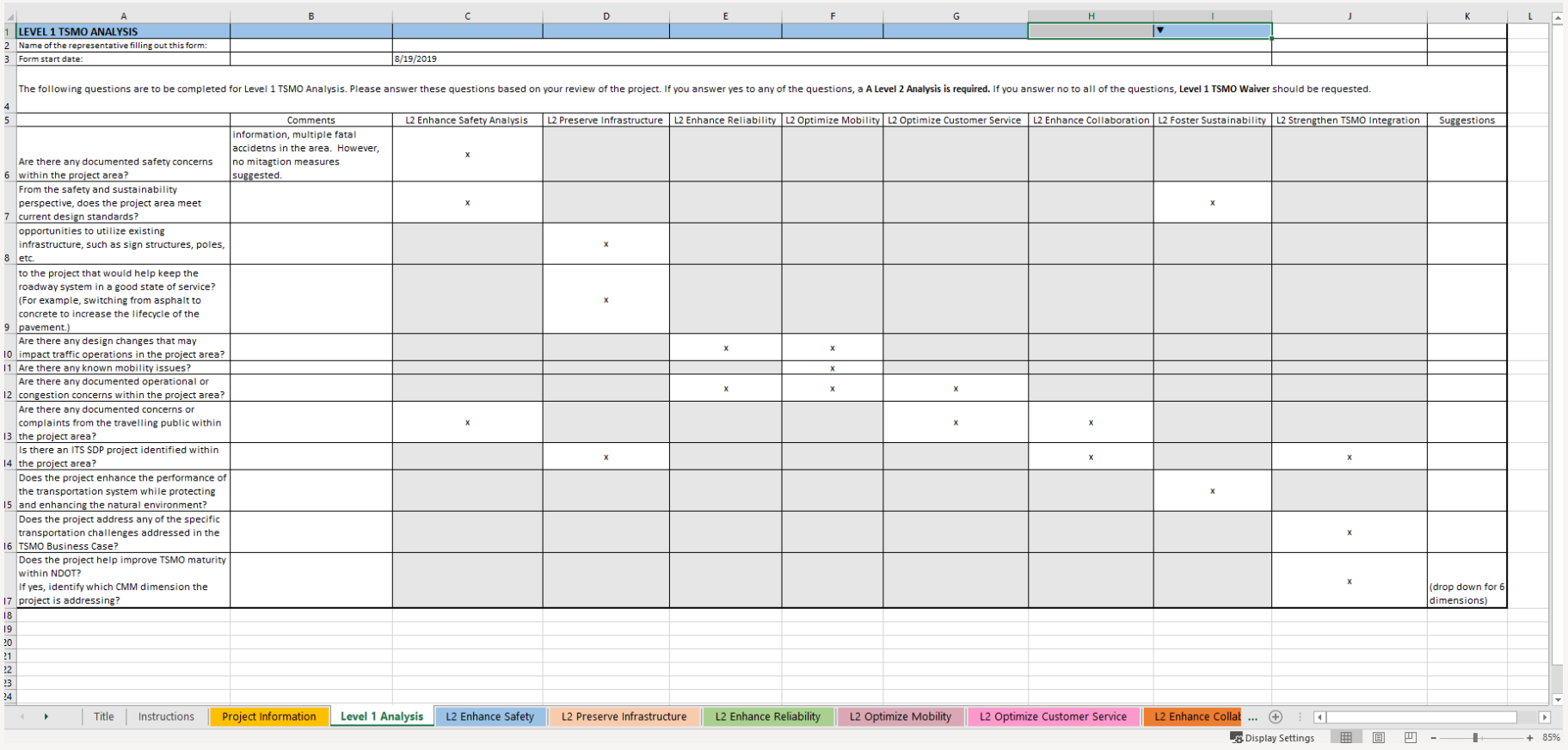
TSMO Evaluation Tool – Level 1 Analysis



LEVEL 1 TSMO ANALYSIS										
Name of the representative filling out this form:										
Form start date:		8/19/2019								
The following questions are to be completed for Level 1 TSMO Analysis. Please answer these questions based on your review of the project. If you answer yes to any of the questions, a **A Level 2 Analysis is required.** If you answer no to all of the questions, **Level 1 TSMO Waiver** should be requested.										
	Comments	L2 Enhance Safety Analysis	L2 Preserve Infrastructure	L2 Enhance Reliability	L2 Optimize Mobility	L2 Optimize Customer Service	L2 Enhance Collaboration	L2 Foster Sustainability	L2 Strengthen TSMO Integration	Suggestions
Are there any documented safety concerns within the project area?	information, multiple fatal accidetns in the area. However, no mitagtion measures suggested.	x								
From the safety and sustainability perspective, does the project area meet current design standards?		x						x		
opportunities to utilize existing infrastructure, such as sign structures, poles, etc.			x							
to the project that would help keep the roadway system in a good state of service? (For example, switching from asphalt to concrete to increase the lifecycle of the pavement.)			x							
Are there any design changes that may impact traffic operations in the project area?				x	x					
Are there any known mobility issues?					x					
Are there any documented operational or congestion concerns within the project area?				x	x	x				
Are there any documented concerns or complaints from the travelling public within the project area?		x				x	x			
Is there an ITS SDP project identified within the project area?			x				x		x	
Does the project enhance the performance of the transportation system while protecting and enhancing the natural environment?								x		
Does the project address any of the specific transportation challenges addressed in the TSMO Business Case?									x	
Does the project help improve TSMO maturity within NDOT? If yes, identify which CMM dimension the project is addressing?									x	(drop down for 6 dimensions)

Title | Instructions | Project Information | Level 1 Analysis | L2 Enhance Safety | L2 Preserve Infrastructure | L2 Enhance Reliability | L2 Optimize Mobility | L2 Optimize Customer Service | L2 Enhance Collat ...

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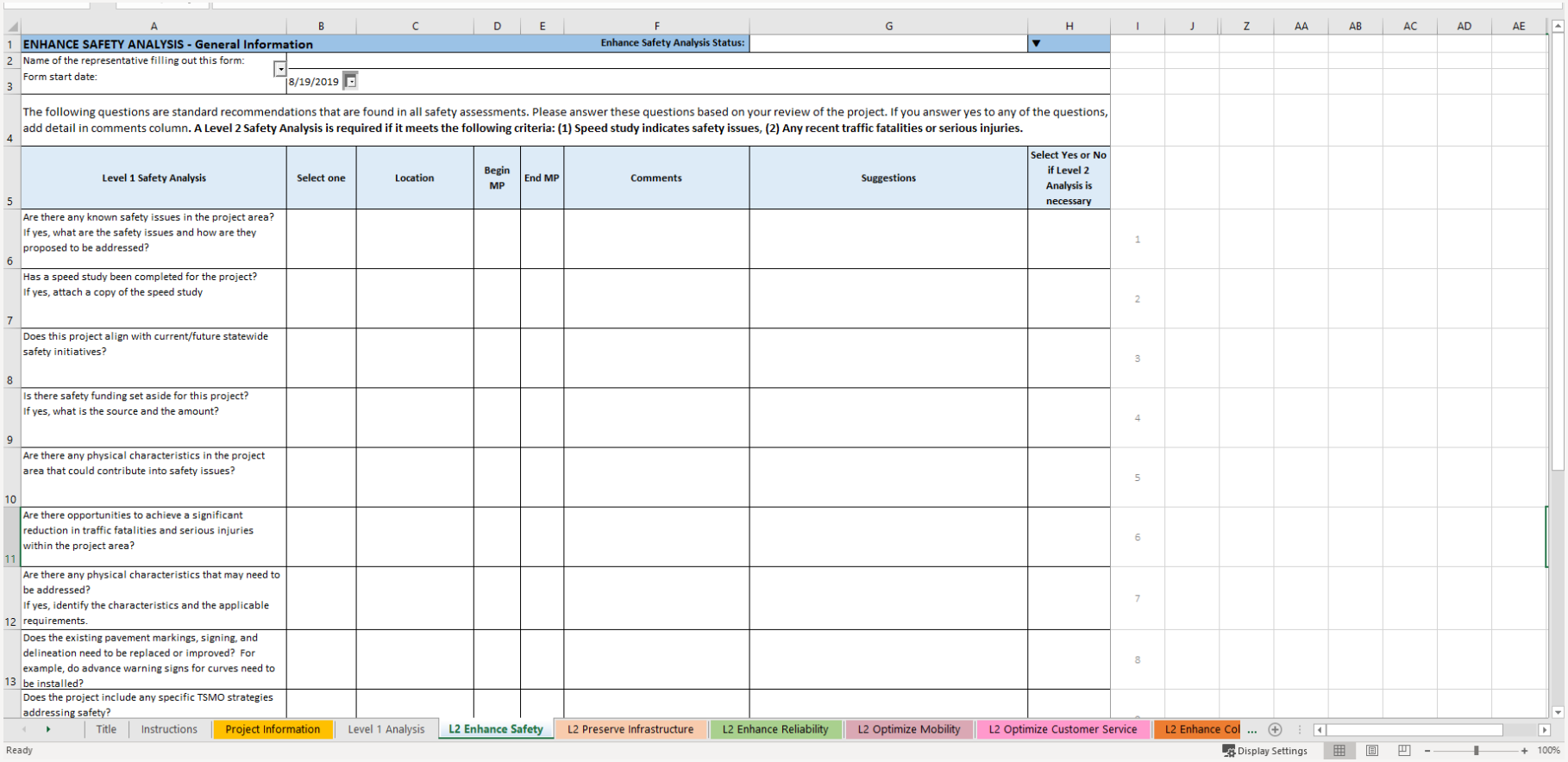
TSMO Evaluation Tool – Level 2 Analysis



ENHANCE SAFETY ANALYSIS - General Information

Enhance Safety Analysis Status:

Name of the representative filling out this form:

Form start date: 8/19/2019

The following questions are standard recommendations that are found in all safety assessments. Please answer these questions based on your review of the project. If you answer yes to any of the questions, add detail in comments column. **A Level 2 Safety Analysis is required if it meets the following criteria: (1) Speed study indicates safety issues, (2) Any recent traffic fatalities or serious injuries.**

Level 1 Safety Analysis	Select one	Location	Begin MP	End MP	Comments	Suggestions	Select Yes or No if Level 2 Analysis is necessary
Are there any known safety issues in the project area? If yes, what are the safety issues and how are they proposed to be addressed?							
Has a speed study been completed for the project? If yes, attach a copy of the speed study							
Does this project align with current/future statewide safety initiatives?							
Is there safety funding set aside for this project? If yes, what is the source and the amount?							
Are there any physical characteristics in the project area that could contribute into safety issues?							
Are there opportunities to achieve a significant reduction in traffic fatalities and serious injuries within the project area?							
Are there any physical characteristics that may need to be addressed? If yes, identify the characteristics and the applicable requirements.							
Does the existing pavement markings, signing, and delineation need to be replaced or improved? For example, do advance warning signs for curves need to be installed?							
Does the project include any specific TSMO strategies addressing safety?							

Title | Instructions | Project Information | Level 1 Analysis | L2 Enhance Safety | L2 Preserve Infrastructure | L2 Enhance Reliability | L2 Optimize Mobility | L2 Optimize Customer Service | L2 Enhance Col ...

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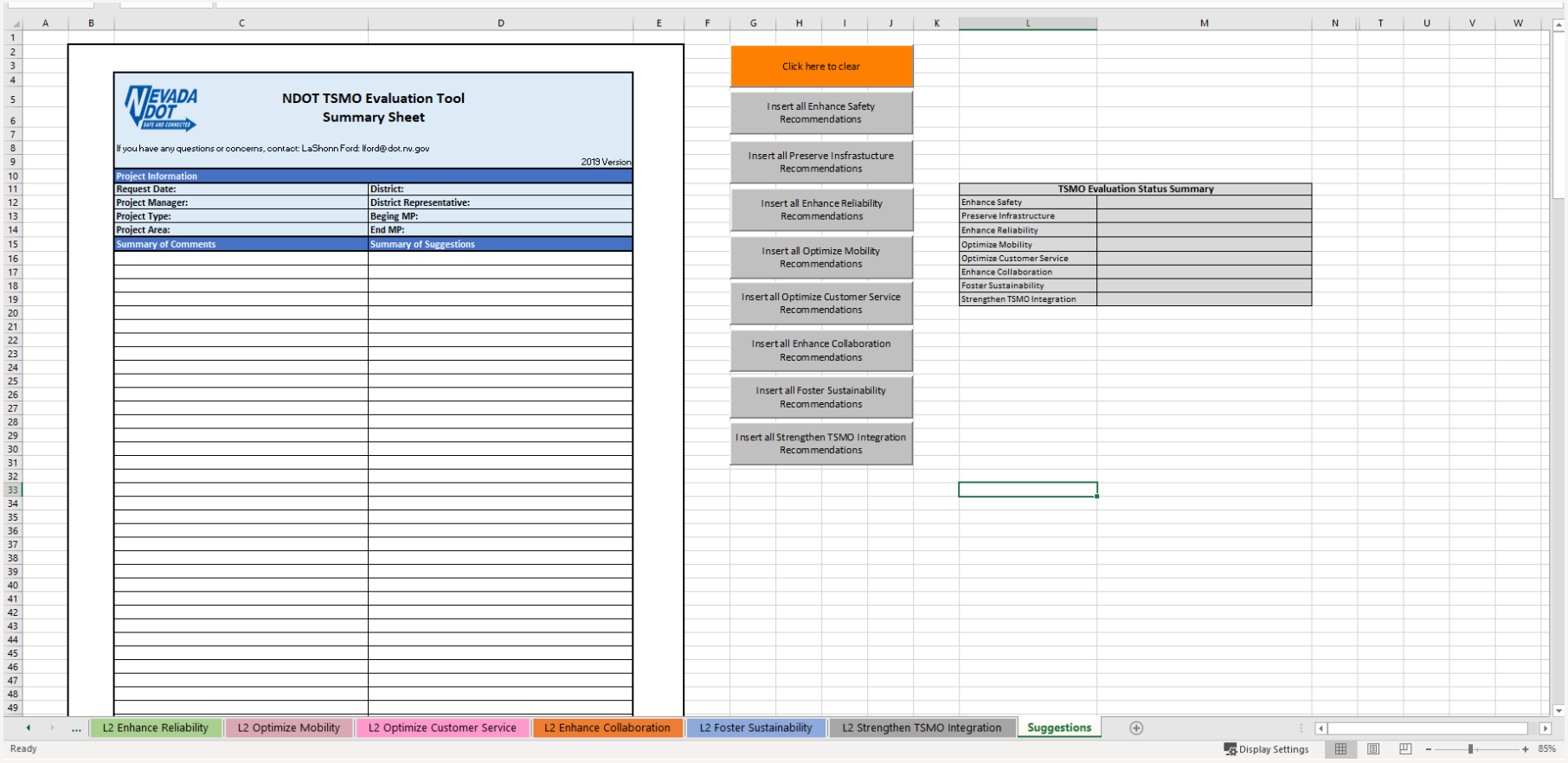
TSMO Evaluation Tool – Suggestions



NDOT TSMO Evaluation Tool
Summary Sheet

If you have any questions or concerns, contact: LaShonn Ford: lford@dot.nv.gov

2019 Version

Project Information	
Request Date:	District:
Project Manager:	District Representative:
Project Type:	Beging MP:
Project Area:	End MP:
Summary of Comments	Summary of Suggestions

Click here to clear

Insert all Enhance Safety Recommendations

Insert all Preserve Insfrastucture Recommendations

Insert all Enhance Reliability Recommendations

Insert all Optimize Mobility Recommendations

Insert all Optimize Customer Service Recommendations

Insert all Enhance Collaboration Recommendations

Insert all Foster Sustainability Recommendations

Insert all Strengthen TSMO Integration Recommendations

TSMO Evaluation Status Summary	
Enhance Safety	
Preserve Infrastructure	
Enhance Reliability	
Optimize Mobility	
Optimize Customer Service	
Enhance Collaboration	
Foster Sustainability	
Strengthen TSMO Integration	

L2 Enhance Reliability | L2 Optimize Mobility | L2 Optimize Customer Service | L2 Enhance Collaboration | L2 Foster Sustainability | L2 Strengthen TSMO Integration | Suggestions

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TSMO Organizational Structure

- Phased approach to make the transition within Traffic Operations Division
- Using NOCoE TSMO Workforce Development as a resource:
  - Review of TSMO position descriptions
  - Review of the TSMO areas and the 19 TSMO positions

Phase 1:
2020 to mid-2022

- Review and revise Work Performance Standards (WPS) to incorporate TSMO responsibilities
- Implement Phase 1
- Re-evaluate and revise WPS defined in Phase 1

Phase 2:
Mid-2022 to 2025

- Implement Phase 2
- TSMO Workforce Development Plan (WDP) to define TSMO positions
- Re-evaluate and revise WPS defined in Phase 2
- Develop Phase 3

Phase 3:
2025 to TBD

- Implement Phase 3 with TSMO positions as defined in TSMO WDP

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TSMO Tactical Elements

TSMO Tactical Elements	Description	Current Activities	Future Actions	Planned Tactical Projects
Real time Traveler Information	A program with focus on information for all sorts of travel on our surface transportation networks - how the information is collected, how it's processed, how it's provided to consumers, and how it may be used by transportation system operators to improve travel for everyone. Source:	• NDOT utilizes multiple data sources to collect speed, classification, delay, incident response times and incident clearance times to optimize the flow of traffic on the roadways. • NDOT has partnered with RTCSNV to monitor this real time data to aid in real time operations.	• Integrate data from static sources into a user-friendly dashboard to more proactively manage the network. • Investigate in utilizing big data to supplement static sources to further determine areas of need and possible solutions.	• RWIS and Signage Chain Control projects • DMS • ATMS • Variable Speed Limit signs • 511 Traveler Information • HAR
Connected and Automated Vehicles	Programs that consider opportunities to deploy Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) connectivity to improve safety, mobility, environmental performance, and organizational efficiency on major travel corridors. *Source:*	• NDOT has established a new innovation office, NV2X, with a focus on assisting with the development of an overarching strategy for the implementation and integration of emerging transportation technologies. • NDOT is actively supporting connected and automated vehicles initiatives in southern Nevada.	• Implementation of initiatives championed by the NV2X office. • Development of connected and automated vehicles implementation policies and guidelines. • Coordination between the NV2X office and the newly requested TSMO staff.	• NDOT Adaptive Lighting Systems
Active Traffic Management (ATM)	Provide the ability to dynamically manage recurring and non-recurring congestion based on prevailing and predicted traffic conditions and maximize the effectiveness and efficiency of the facility. Source:	• NDOT, through the ITS SDP, has planned on implementing ITS devices (such as DMS) to help implementation of ATM. • Recently, NDOT constructed multiple Active Traffic Management Systems (ATMS) signs along I-15 to support ATM.	• Implementation and refinement of ATMS along I-15. • Installation of ATMS along other NDOT major roadways.	• ATMS and Variable Speed Limit signs • Ramp meters • Intelligent Animal Warning Systems

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TSMO Tactical Elements

TSMO Tactical Elements	Description	Current Activities	Future Actions	Planned Tactical Projects
Traffic Incident Management	A planned and coordinated program that develops a process to detect, respond to, and remove traffic incidents and restore capacity as safely and as quickly as possible. Source:	• NDOT's TIM Coalition has been established to formalize coordination and collaboration of first responders in response to incidents. • NDOT has partnered with Waycare and successfully reduced incident response times.	• Further deployment of Waycare at a statewide level. • Additional coordination with partnering agencies such as Nevada Highway Patrol (NHP)	• DMS • ATMS • Variable Speed Limit signs • Waycare
Transportation Asset Management	Act as a focal point for information about the assets, their management strategies, long-term expenditure forecasts, and business management processes. Source:	• NDOT's Traffic Operations Division is currently developing a comprehensive database of ITS assets to integrate into the overall asset management program. • NDOT is developing a TSMO Asset Management Business Plan to enhance the maintenance of agency's TSMO assets.	• Completion of the comprehensive ITS database through integration of TSMO assets. • Integration of the TAMP dashboard to better respond to maintenance needs.	• Enhancement of ITS Asset Management Dashboard • Upgrade/Lifecycle replacements of ITS devices

TSMO Tactical Elements

TSMO Tactical Elements	Description	Current Activities	Future Actions	Planned Tactical Projects
Transportation Performance Management	A strategic approach that uses system information/data to make investment and policy decisions to achieve national performance goals. Source:	• NDOT is developing a TSMO Performance Measures Business Plan that will define performance targets for TSMO assets. • NDOT has incorporated the IPT into the ITS strategic deployment process.	• The NDOT Performance Management Program will define performance measures to monitor the efficiency of TSMO activities. • Collaboration with the new TSMO Performance Manager position in monitoring the agency's TSMO activities.	• NDOT TSMO Performance Management Plan
ITS Data Base and Communications	Include, but not limited to mobile and fixed sensors, cameras, DMS, Highway Advisory Radio (HAR) Systems, Road Weather Information Systems (RWIS), ITS communication infrastructure, etc.	• NDOT's ITS SDP identifies short, mid, and long-term projects for deployment of necessary ITS devices such as RWIS, CCTV, DMS, etc. • The ITS SDP also identified the required ITS communication infrastructure.	• Ensure timely deployment of the prioritized ITS SDP projects. • Annual review of the ITS SDP projects and the IPT to determine prioritized projects based on needs and TSMO objectives.	• RWIS and Signage Chain Control projects • DMS • ATMS • CCTV • Wrong Way Driver

Tactical Projects

District 1 Projects																					
No.	PCEMS No.	Project, Services, or Activities	Location (specific or District or statewide)	Cost					Responsible Parties/ Stakeholders	Targeted Strategic Goal							Targeted CMM Dimension	TSMO Score	Comments
				2020	2021	2022	2023	2024		Enhance Safety	Optimize Mobility	Enhance Reliability	Preserve Infrastructure	Foster Sustainability	Optimize Customer Service	Enhance Collaboration			
D1-33	2-03276	RWIS and CCTV PTZ	US 95 (south of Searchlight)	$ 120,000.00					NDOT and District 1	X		X	X		X	X	Collaboration, Systems & Technology	13	Project chosen given high TSMO score and its alignment with existing package K.
D1-35	2-03276	RWIS and Chain Control	US 95 (near Searchlight)	$ 290,000.00					NDOT and District 1	X		X	X	X	X	X	Collaboration, Systems & Technology	14	Project chosen given high TSMO score and its alignment with existing package K.
D1-37	2-03276	RWIS and CCTV PTZ	North of US 95/ SR 164 intersection	$ 120,000.00					NDOT and District 1	X		X	X		X	X	Collaboration, Systems & Technology	13	Project chosen given high TSMO score and its alignment with existing package K.
D1-19-2	8-00249	RWIS	North of US 95/ SR 164 intersection	$ 220,000.00					NDOT and District 1	X		X	X		X	X		13	Project chosen due to high TSMO score. Will be grouped with lower-priority projects in the area given available funding.
D1-41	8-00249	RWIS and CCTV PTZ	US 93/ SR 375/ SR 318 intersection	$ 700,000.00					NDOT and District 1	X		X	X		X	X	Collaboration, Systems & Technology	11	Project chosen due to high TSMO score. Will be grouped with lower-priority projects in the area given available funding.
D1-43	8-00249	Curve Warning System	US 93 (south of US 93/ SR 375 intersection)	$ 120,000.00					NDOT and District 1	X		X	X		X			9	Grouped with higher-priority projects in the area given available funding.
D1-44	8-00249	DMS Type 2 , CCTV PTZ and Chain Control	US 93/ SR 375/ SR 318 intersection	$ 700,000.00					NDOT and District 1	X		X	X	X	X	X		10	Grouped with higher-priority projects in the area given available funding.
D1-47	8-00249	CCTV and RWIS	US 93/ SR 318 intersection	$ 460,000.00					NDOT and District 1	X		X	X		X	X	Collaboration, Systems & Technology	13	Project chosen due to high TSMO score. Will be grouped with lower-priority projects in the area given available funding.
D1-49	8-00249	Chain Control	US 93 (west of Caliente)	$ 220,000.00					NDOT and District 1	X				X	X		Collaboration	9	Grouped with higher-priority projects in the area given available funding.
D1-50	8-00249	CCTV PTZ, DMS Type 2 and Chain Control	US 93 (near Caliente)	$ 1,200,000.00					NDOT and District 1	X		X		X	X	X		9	Grouped with higher-priority projects in the area given available funding.
D1-19-3	To Be Assigned (TBA)	RWIS and CCTV PTZ	SR 157 (west of SR 158)		$ 220,000.00				NDOT and District 1	X		X	X		X	X	Collaboration, Systems & Technology	13	

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Next steps

- Finalize Program Plan
- Finalize Performance Measures for TSMO goals in alignment with One Nevada Transportation Plan
- Integration of TSMO into Asset Management and Performance Measures Business Plan
- CMM workshop

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Questions?

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