TDOT
Department of Transportation

Traffic Operations Program Plan Development

Brad Freeze, PE

Director, Traffic Operations Division

Planning for Operations, Glossary (FHWA)

***Transportation Systems Management and Operations (TSM&O)**: An integrated program to optimize the performance of existing infrastructure through the implementation of systems, services, and projects designed to preserve capacity and improve security, safety, and reliability.*

TDOT Incident Management Program (HELP)

- June, 1999, Staged implementation begins with patrols in Nashville & Knoxville.
- June, 2000, Service begins in Chattanooga & Memphis.
- September 2001, Patrols expanded to 7 days a week.

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Deployment of the TDOT SmartWay

- June 6, 2003 – Nashville Transportation Management Center (TMC) Opens
- May 5, 2005 – Knoxville TMC Opens
- November 13, 2008 – Memphis TMC Opens
- December 14, 2011 - Chattanooga TMC Opens

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TDOT smartway

TDOT SmartWay Statewide Deployment Numbers

- Dynamic Message Signs: 174
- CCTV Cameras: 517
- Radar Detection System: 1291
- Video Detection System: 49
- Highway Advisory Radios: 57
- Visibility Sensors: 9
- Dynamic Speed Limit Signs: 10
- Automated Swing Gates: 6
- Miles of Dark Fiber: 465

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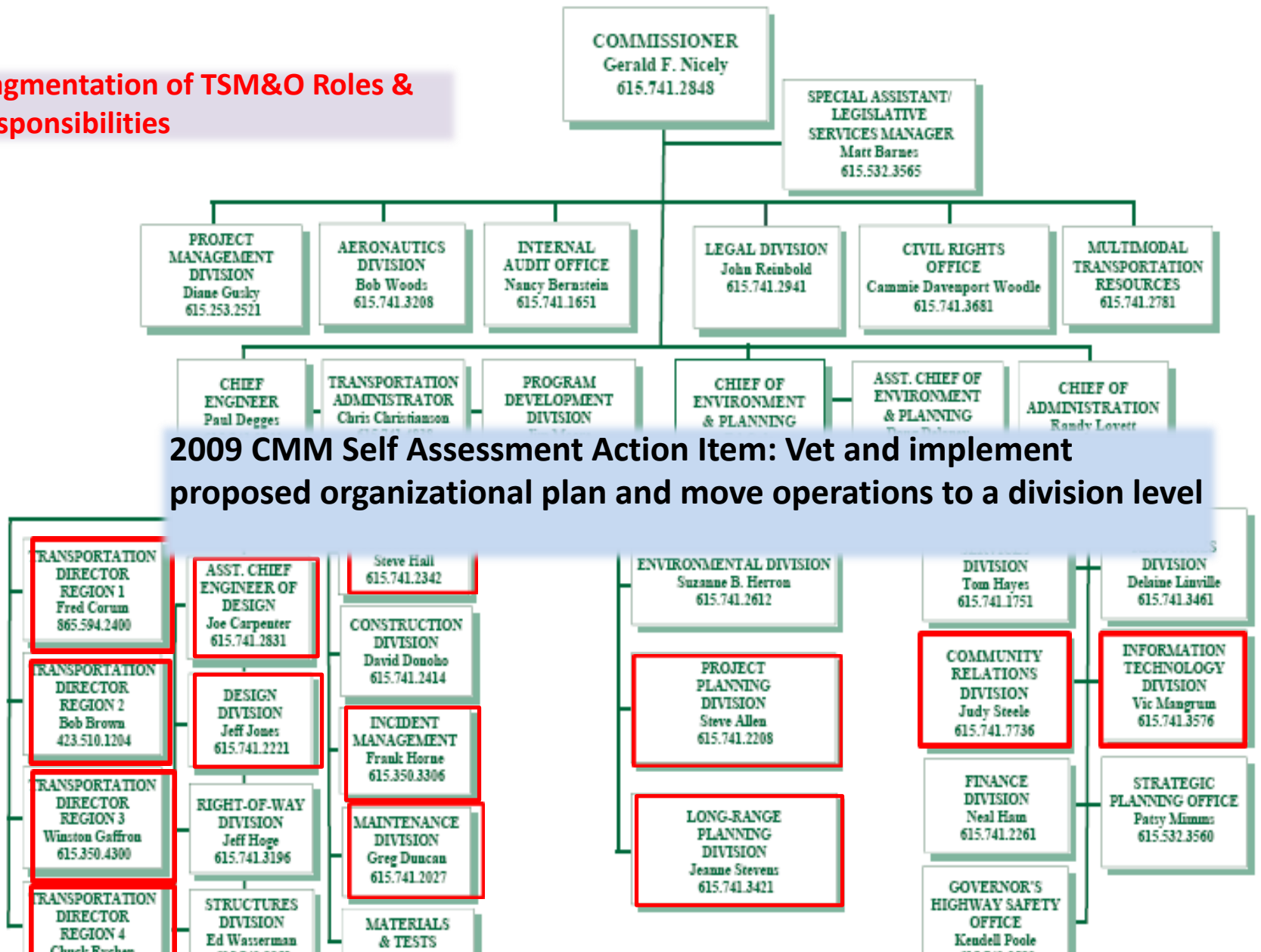
TDOT smartway

Nov, 2009 – TN Operations & Mobility Summit – Capability & Maturity Model Self Assessment

Element	Rating	Comments
Planning and Programming	1	Systems Operations and Management in some metro long-range plans; Past focus on low-hanging fruit projects.
Technology and Systems	2	Major challenge-working with first responders; TDOT can't apply data; Existing Manual of Operations.
Performance	2	There is no data consistency; Incident Management program has performance measures in place.
Culture	2	Good customer service approach (511, information); TTAP library provides access to traffic operations and ITS info.
Organization/Staffing	1	HELP operator training program is nationally recognized. Fragmented legacy organization with some operations.
Resource Allocation to Systems Operations and Management	2	Signal Timing funding major concern; Ongoing operations budgets in place, but not for program expansion; Smart Way Traffic Management Center System well funded. No long term allocations; No budget for program expansion.
Partnerships	2	Signals maintained on local basis; Agreements - good faith but not enforceable; Limited with maintenance & planning.

Tennessee Department of Transportation

Fragmentation of TSM&O Roles & Responsibilities



2009 CMM Self Assessment Action Item: Vet and implement proposed organizational plan and move operations to a division level

State apologizes for 11-hour tie-up after potato truck crashes on I-40

A Tennessee DOT HELP Operator works to clear Interstate 40 after a tractor-trailer carrying a load of 40,000 pounds of potatoes overturns

Officials from two Tennessee state agencies apologized to an estimated 400 motorists on Interstate 40 who were forced to spend 11 hours in their vehicles from Thursday night into Friday morning after an accident that involved an overturned truck.

Officials from two Tennessee state agencies apologized to an estimated 400 motorists on Interstate 40 who were forced to spend 11 hours in their vehicles from Thursday night into Friday morning after an accident that involved an overturned truck.

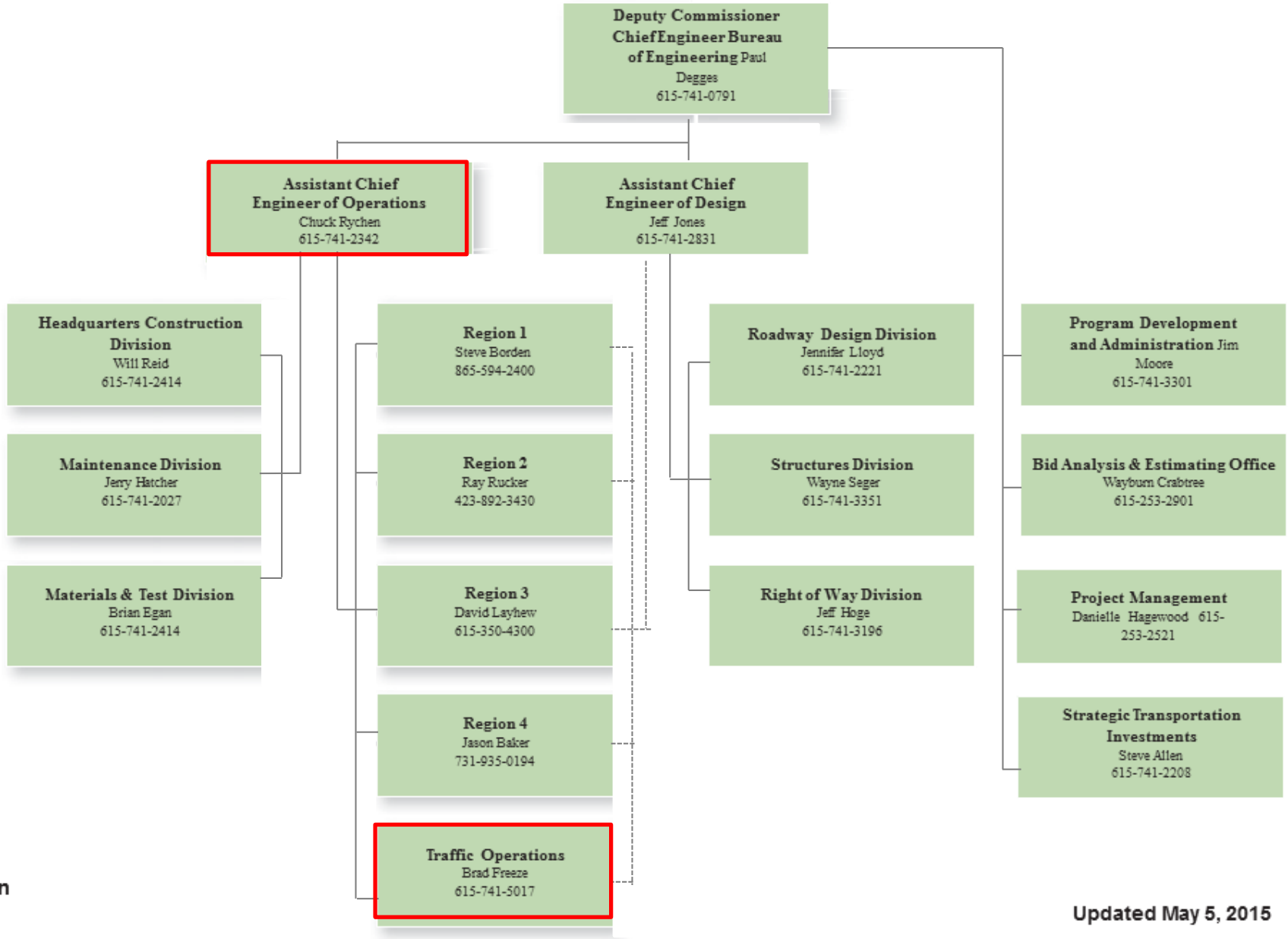
"We should have done better, and we apologize,"

aftermath of the wreck.

The tractor-trailer carrying a load of about 40,000 pounds of potatoes crashed about 8 p.m. Thursday just before mile marker 245 in the Tuckers Crossroads area east of Lebanon in Wilson County. All the eastbound lanes were blocked for about 11 hours until the interstate partially opened just after 7 a.m.

Reorganizing to Support TSM&O

- Traffic Operations Division established on January 16, 2013. This Division consists of the following offices:
  - Headquarters Traffic Engineering (Relocated from Maintenance Division)
  - Intelligent Transportation Systems (Relocated from Design Division)
  - Transportation Management (Relocation of Incident Management Office, with the expanded oversight of Traffic Management Center (TMC) Programs)


Deputy Commissioner Chief Engineer Bureau of Engineering Paul Degges 615-741-0791
Assistant Chief Engineer of Operations Chuck Rychen 615-741-2342
Assistant Chief Engineer of Design Jeff Jones 615-741-2831
Headquarters Construction Division Will Reid 615-741-2414
Maintenance Division Jerry Hatcher 615-741-2027
Materials & Test Division Brian Egan 615-741-2414
Region 1 Steve Borden 865-594-2400
Region 2 Ray Rucker 423-892-3430
Region 3 David Layhew 615-350-4300
Region 4 Jason Baker 731-935-0194
Traffic Operations Brad Freeze 615-741-5017
Roadway Design Division Jennifer Lloyd 615-741-2221
Structures Division Wayne Seger 615-741-3351
Right of Way Division Jeff Hoge 615-741-3196
Program Development and Administration Jim Moore 615-741-3301
Bid Analysis & Estimating Office Wayburn Crabtree 615-253-2901
Project Management Danielle Hagewood 615-253-2521
Strategic Transportation Investments Steve Allen 615-741-2208
Updated May 5, 2015

SHRP2SOLUTIONS

TOOLS FOR THE ROAD AHEAD

Reliability Focus Area

L01-L06

Organizing for Reliability

Technical Assistance Program

TN TDOT Department of Transportation

SHRP2 L01/06 - TDOT CMM Workshop Results
Feb 24-25, 2014

Dimension	Level	Priority Actions
Planning & Programming	1.5	Develop a TSM&O Program Plan
Systems & Technology	2.0	1. Develop ITS Qualified Product Lists 2. Develop a TSM&O Asset Management System
Performance	2.0	Develop a TSM&O Performance Measurement Plan
Culture	2.5	Publish an annual/quarterly report describing recent TSM&O success stories and outcomes
Organization/Staffing	3.0	Provide technical training for TDOT staff to ensure efficient delivery of systems and services
Collaboration	1.5	Establish methods for more effectively and efficiently capturing and sharing roadway incident information

Actions Taken

- **Established TSM&O Coordinating Committee, May 2014. Committee Scope:**
  - Coordinate efforts for utilizing existing transportation management assets to improve operating efficiency, safety, security and consistency
  - Provide strategic direction to Regions and functional areas of TDOT to increase TSM&O efforts
  - Evaluate TSM&O strategies for use by TDOT
  - Set priorities and initiatives and present recommendations to top management
  - Lead the creation & maintenance of TDOT's TSM&O Program Plan

Traffic Operations Program Plan

Purpose of the Traffic Operations Program Plan

- Identify TSM&O goals and objectives for Tennessee
- Identify strategies to achieve those goals and objectives
- Identify projects to implement over a three-year period to support the strategies (*Three-Year Strategic Deployment Plan*)
- Develop a performance measures plan to monitor progress towards achieving the goals and objectives

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Traffic Ops Program Plan Inputs

1. ITS Technology WG
2. Collaboration WG
3. System Performance Measures WG

1. Long Range Plan
2. Strategic Highway Safety Plan
3. Congestion Management Process
4. Others

1. TDOT Divisions
2. TDOT Regions
3. Tennessee Highway Patrol
4. MPO/Municipalities
5. FHWA

Stakeholder Input

- Consider renaming TSM&O Program Plan to something that is more easily understood…Traffic Operations Program Plan was suggested
- Share and promote success of the TSM&O Program with decisions makers and the public
- Develop a 3-year Strategic Plan that identifies projects and programs for implementation
- 3-Year Strategic Plan should addresses congestion, reliability, and safety and state the expected benefits…this is important to keep the TSM&O program from being pulled into other areas that don't address the long-term vision

Stakeholder Input (cont.)

- Focus on the basics
- Be sure all TSM&O deployments are being fully utilized prior to expanding systems or incorporating new deployments and programs
- Focus should be on incident management and real-time information including travel times
- Formalize integration of TSM&O into project design…concern that opportunities for TSM&O integration into projects may be missed

Traffic Ops Program Plan Output

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Three Structural Layers

Strategic Level Perspective

The strategic level perspective of the Traffic Operations Program Plan considers what goals, objectives, and strategies TDOT can develop to guide and foster the implementation of TSM&O efforts across the state.

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TDOT: To serve the public by providing the best multimodal transportation system in the nation.

Traffic Ops: To lead TDOT to the forefront of Transportation Management & Operations practices nationally.

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TDOT: To provide a safe and reliable transportation system for people, goods and services that supports economic prosperity in Tennessee.

Traffic Ops: To innovate, maximize and preserve the efficiency, reliability, and safety of Tennessee's roadway infrastructure.

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Traffic Ops Goals & Objectives

TDOT Operational Goals	Traffic Ops Goals	Traffic Ops Objectives
System Operation: Operate and manage Tennessee's transportation system to provide a high level of safety and service for our customers and workers	Safety	Reduce the frequency and severity of crashes on the transportation system
	Efficiency	Minimize traffic delays from recurring and non-recurring congestion
	Reliability	Increase the travel-time reliability of the transportation system
System Preservation: Manage the state transportation system to protect the long-term investment of our infrastructure assets	Preservation	Maintain functionality of the operations infrastructure and plan for life-cycle replacement

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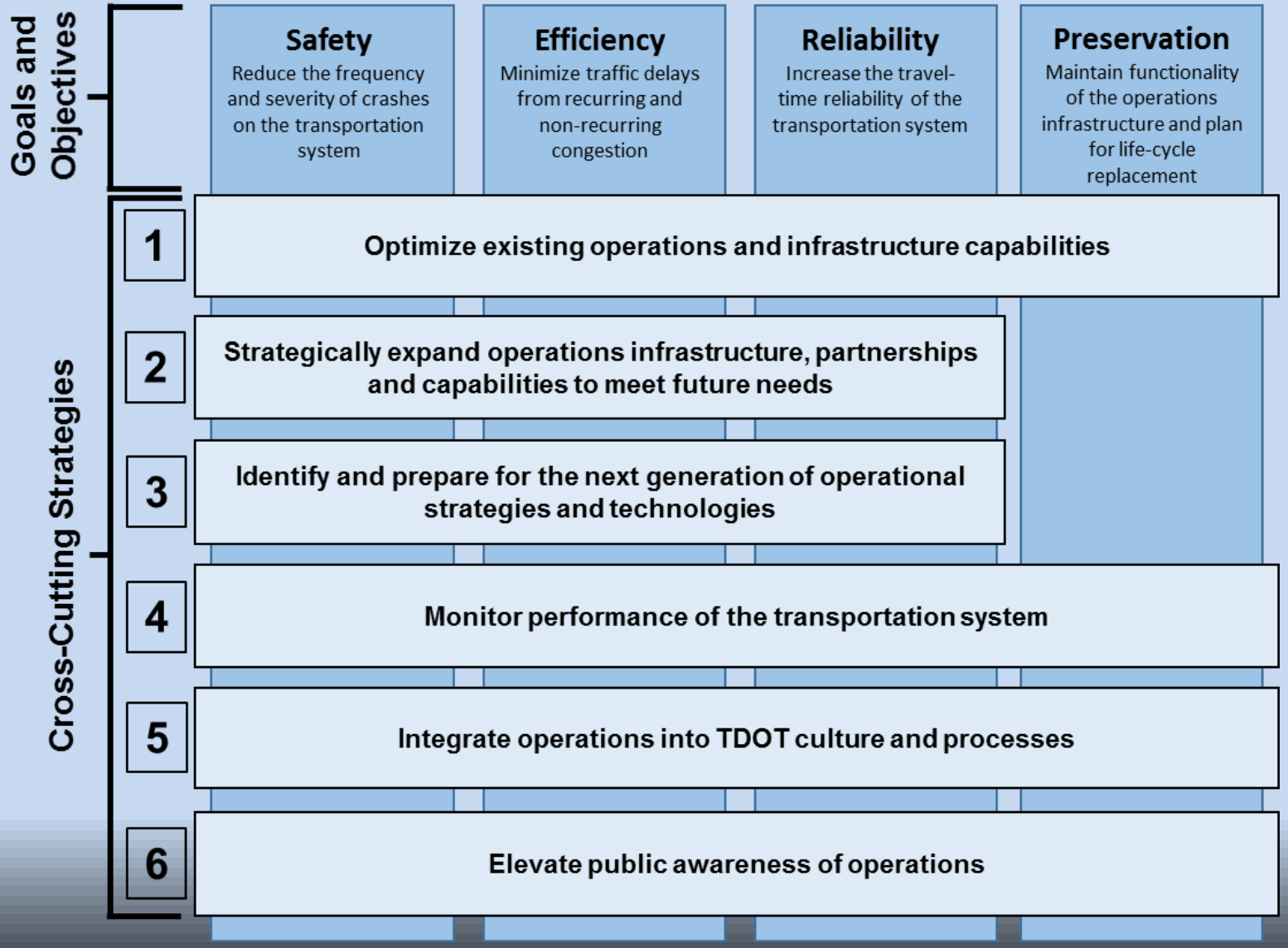
Traffic Ops Goals & Objectives



Traffic Ops Strategies & Actions

Cross-Cutting Strategy 1	
Optimize existing operations infrastructure and capabilities	Action 1: Upgrade the Regional Traffic Management Centers (TMC) operations platform for uniformity and consistency in program deliverables. Action 2: Fully staff the Regional TMCs and provide comprehensive operations training as needed Action 3: Provide an advanced traffic incident management training program to TDOT, emergency responders and local agencies that incorporates the Tennessee Traffic Incident Management Training Facility. Action 4: Manage all components of the SmartWay system Action 5: Develop and implement a life-cycle replacement plan as a part of an overall ITS infrastructure maintenance model. Action 6: Develop Intelligent Transportation System (ITS) Approved and Qualified Products List (APL & QPL)
Cross-Cutting Strategy 2	
Strategically expand operations infrastructure, partnerships and capabilities to meet future needs	Action 1: Develop a statewide ITS master plan to guide future field deployments and assist TDOT with prioritization of Strategic Deployment Plan projects Action 2: Develop a TSM&O Strategic Deployment Plan with short-term (1-3 years), medium-term (3-6 years) and long-term (6-10 years) implementation items Action 3: Develop a data driven project evaluation and selection process Action 4: Expand partnerships and integration with local and regional transportation agencies Action 5: Develop a Joint Operational Guideline for Traffic Incident Management that builds upon existing Quick Clearance MOUs with partnering agencies Action 6: Host 4 Regional Operations Forums in each TDOT Region with both internal and external operations and planning partners
Cross-Cutting Strategy 3	
Identify and prepare for the next generation of operational strategies and technologies	Action 1: Support the research and testing of new operational strategies and technologies to determine feasibility for implementation in Tennessee Action 2: Prioritize new operational strategies and technologies in coordination with TDOT Regions and external partners to determine implementation strategy Action 3: Identify existing and future sources of funding to support next generation deployments

Traffic Ops Strategies & Actions

Cross-Cutting Strategy 4	
Monitor performance of the transportation system	Action 1: Identify and implement TDOT TSM&O performance measures Action 2: Use performance measures data to guide real-time operations as well as short and long-term planning for TSM&O Action 3: Quantify how each project in the Strategic Deployment Plan will improve performance Action 4: Develop quarterly and annual system performance reports
Cross-Cutting Strategy 5	
Integrate operations into TDOT culture and processes	Action 1: Integrate TSM&O related infrastructure into long-range planning, project planning and design phases where applicable Action 2: Create awareness throughout all of TDOT of TSM&O capabilities and benefits
Cross-Cutting Strategy 6	
Elevate public awareness of operations	Action 1: Provide consistent and visible branding of SmartWay Action 2: Develop quarterly public newsletters describing success stories of TSM&O activities

Program Level Prospective

The program level perspective of the Traffic Operations Program Plan considers how TDOT and its Traffic Operations Division are organized and funded to best implement TSM&O projects and programs.

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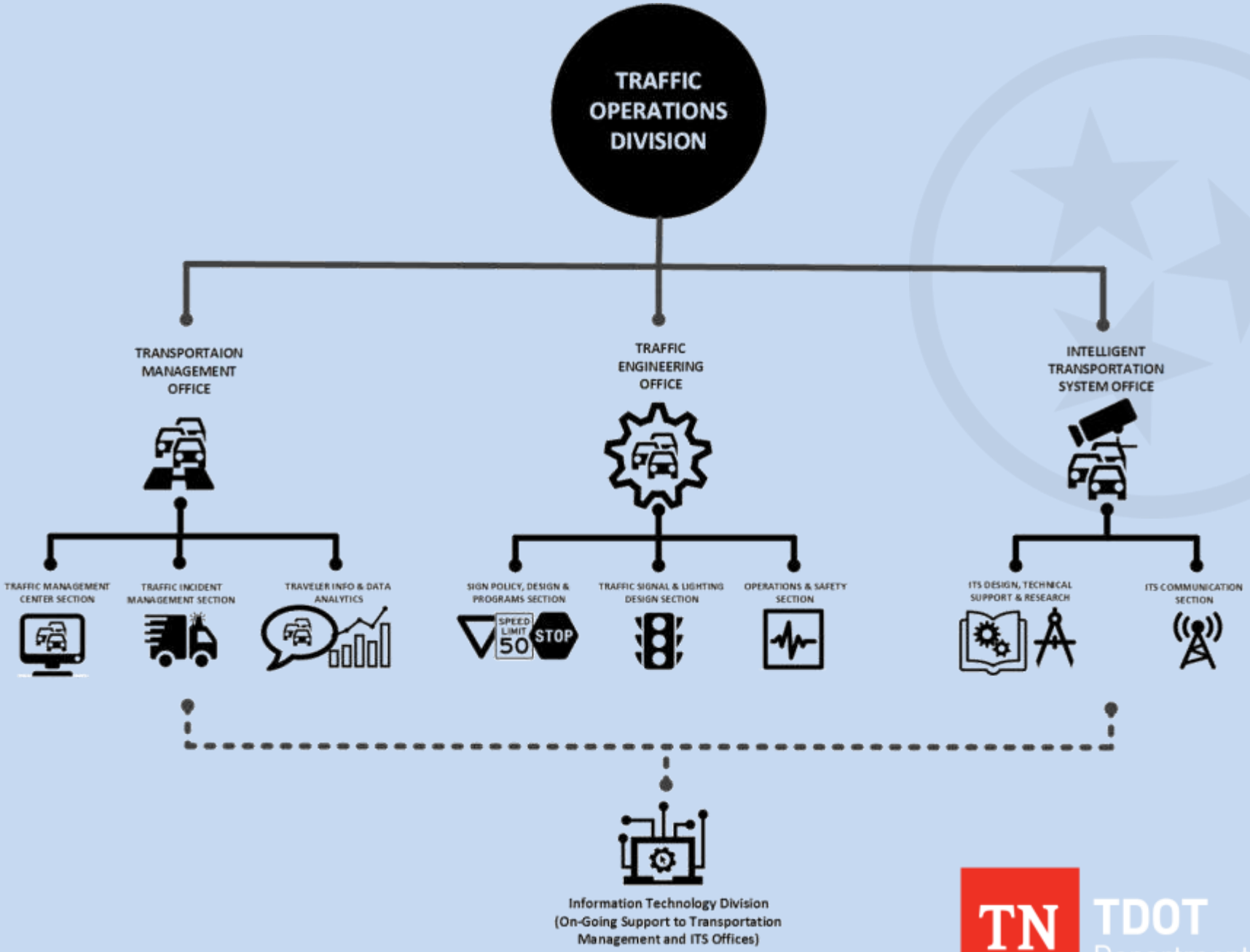

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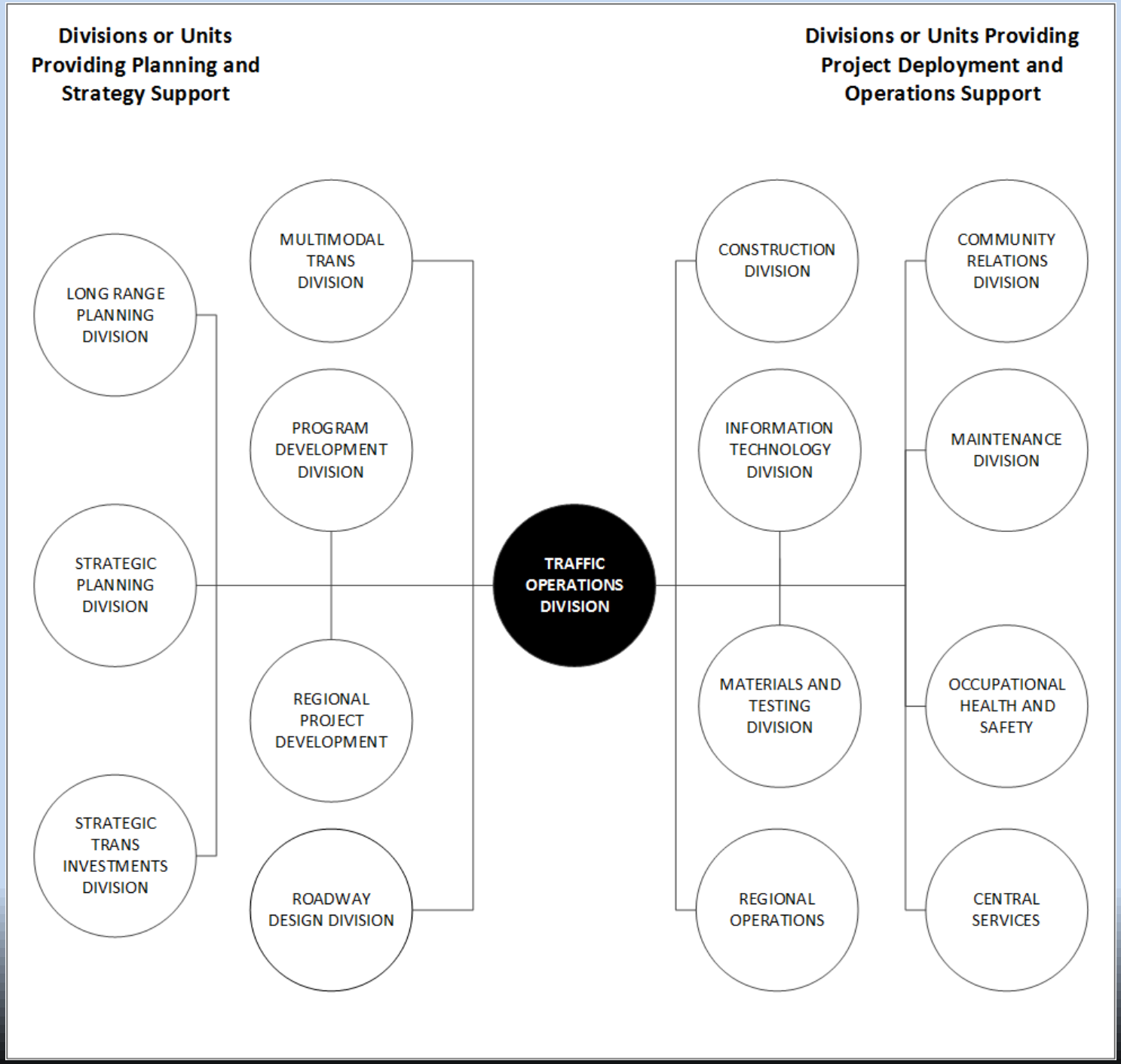
Office	Section	Functions
TRANSPORTATION MANAGEMENT OFFICE	TRAFFIC MANAGEMENT CENTER SECTION	■ Support TMC program expenditures and maintenance contracts ■ Managing annual program budgets ■ Performance monitoring & reporting ■ Establishing statewide guidelines and procedures ■ Review of National-practices ■ Facilitate TMC Managers meetings ■ Continual improvement for comm/coordination/collaboration between Division and Regions ■ Develop & Manage TMC Training Programs
	TRAFFIC INCIDENT MANAGEMENT SECTION	■ Establish policy and procedure for Regional TIM Programs ■ Support the development & management of TIM Budgets (Regional & Statewide) ■ Support Regional Traffic Incident Management meetings with multi-discipline partners ■ Support Traffic Incident Management Training ■ Manage TDOT's Yellow DOT Program ■ Coordinate & Support TDOT's Protect the Queue Program ■ TIM performance monitoring & reporting
	TRAVELER INFO & DATA ANALYTICS	■ Manage and Operate TDOT's 511 Program ■ Manage TDOT's Incident Information twitter feeds ■ Support TDOT's Incident Management Database (SWIFT) ■ Assists in construction closure response planning

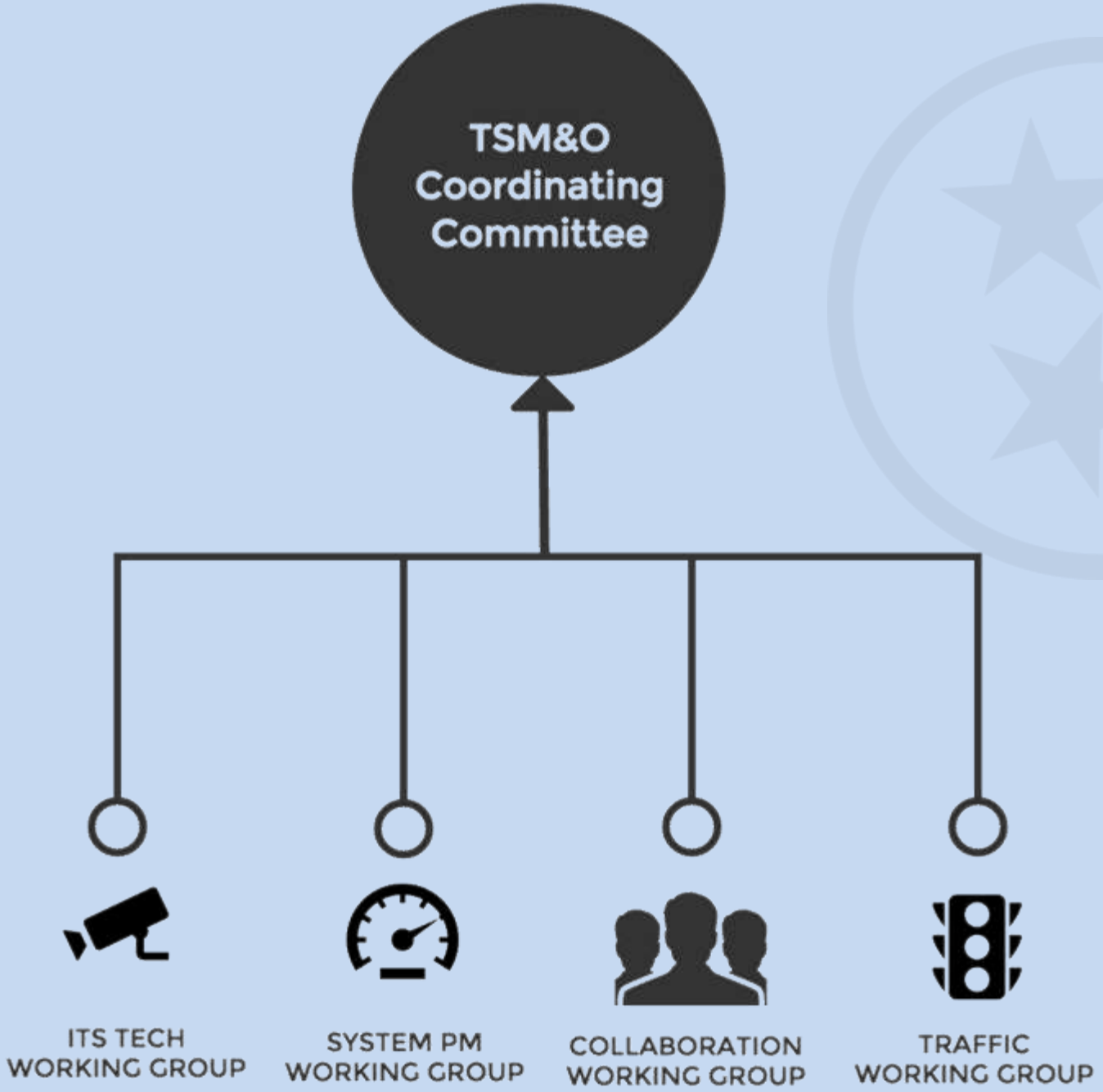
Office	Section	Functions
INTELLIGENT TRANSPORTATION SYSTEM OFFICE	ITS DESIGN, TECHNICAL SUPPORT, & RESEARCH	■ ITS Project Design ■ ITS Project Letting Support ■ ITS Construction and Maintenance Technical Support ■ ITS Statewide Architecture Management ■ Systems Engineering Review ■ Traffic Technology Research
	ITS COMMUNICATION SECTION	■ Design, implement and manage TDOT's statewide wireless communications network ■ Manage TDOT's FCC Licensing, serve as AASHTO's TN frequency coordinator ■ Provide specialized ITS communication network support

Office	Section	Functions
TRAFFIC ENGINEERING OFFICE	SIGNAL POLICY, DESIGN & PROGRAMS SECTION	■ Sign Design, Review, & Approval ■ Major Guide Signs ■ Regulatory/Warning Signs ■ Retroreflectivity Requirements & Program Implementation ■ Specific Services Signing (Logo Signing) ■ Tourist-Oriented Directional Signs Program ■ Wayfinding ■ Promote Statewide Application & Uniformity in Sign Policies
	TRAFFIC SIGNAL & LIGHTIN DESIGN SECTION	■ On-call Signal Design Contracts ■ In-house Traffic Signal Design ■ In-house Lighting Design ■ Signal and Lighting Design Review and Technical Support ■ Local Signal Agreements ■ Local Programs Project Review
	OPERATIONS & SAFETY SECTION	■ Local Program Project Review ■ Congestion Mitigation ■ Access Management ■ Traffic Studies & Simulations ■ On-call Traffic Engineering Contracts ■ Highway Safety Analysis & Mitigation ■ Road Safety Audit Support ■ Local Roads Safety Initiative Support ■ Policy Development, Implementation, and Training


Divisions or Units Providing Planning and Strategy Support
Divisions or Units Providing Project Deployment and Operations Support
LONG RANGE PLANNING DIVISION
STRATEGIC PLANNING DIVISION
STRATEGIC TRANS INVESTMENTS DIVISION
MULTIMODAL TRANS DIVISION
PROGRAM DEVELOPMENT DIVISION
REGIONAL PROJECT DEVELOPMENT
ROADWAY DESIGN DIVISION
TRAFFIC OPERATIONS DIVISION
CONSTRUCTION DIVISION
INFORMATION TECHNOLOGY DIVISION
MATERIALS AND TESTING DIVISION
REGIONAL OPERATIONS
COMMUNITY RELATIONS DIVISION
MAINTENANCE DIVISION
OCCUPATIONAL HEALTH AND SAFETY
CENTRAL SERVICES

Division-Unit	Most Relevant to Traffic Operations Division	Somewhat Relevant to Traffic Operations Division	Less Relevant to Traffic Operations Division
Planning and Strategic Support Divisions and Units			
Long Range Planning Division	■ Regional ITS Architecture Funding (Planning Areas) ■ Planning Agency Coordination (Office of Community Transportation) ■ Freight Planning ■ Congestion Mitigation and Air Quality (CMAQ) Improvement Program Management ■ Traffic Counting ■ Access Management Plan	■ TDOT Research Program Oversight ■ Long Range Transportation Plan ■ Travel Demand Management Plan ■ Transportation Planning Models	■ Not Applicable
Strategic Planning Division	■ TDOT Agency Wide Performance Measures ■ Annual TDOT Performance Measures Report ■ TDOT Strategic Direction (Mission, vision, guiding principles, operational goals, and strategic initiatives)	■ Customer Focused Government Survey	■ Not Applicable
Strategic Transportation Investments Division	■ Safety Program Oversight (Highway Safety Improvement Program, Strategic Highway Safety Plan, Roadway Safety Audits) ■ Project Prioritization Evaluations (3-year Plan) ■ Traffic Forecasting ■ Planning Studies	■ Not Applicable	■ Not Applicable
Multimodal Transportation Division	■ Travel Demand Management Plan	■ Public Transit Grant Program ■ Bicycle and Pedestrian Program ■ Multimodal Access Policy and Grant Program ■ Multimodal Access Grants ■ Smart Commute (Commuter Information Services)	■ Not Applicable
Program Development Division	■ Highway Program (3-year comprehensive funding program) ■ State Transportation Improvement Program (STIP) (3-year listing of transportation projects) ■ Project Funding Coordination ■ Project Scheduling	■ Local Programs (Local government administrative support and oversight of state and federal aid projects)	■ Not Applicable
Regional Project Development	■ Regional Project Management ■ Project Design (Roadway)	■ ROW Coordination and Acquisition ■ Utility Relocation Coordination ■ Environmental Support ■ Field Surveying	■ Not Applicable
Roadway Design Division	■ Value Engineering Coordination	■ Roadway Design Standards and Guidelines ■ Standard Roadway Drawings ■ Surveying ■ Quality Assurance / Quality Control of Roadway Plans	■ Pavement Design ■ Consultant Design Services Oversight and Project Management

Division-Unit	Most Relevant to Traffic Operations Division	Somewhat Relevant to Traffic Operations Division	Less Relevant to Traffic Operations Division
Project Deployment and Operational Support Divisions and Units			
Information Technology Division	■ Operations Support (Network and hardware) ■ Information Services Strategic Planning ■ TDOT Software Development and Support ■ Network & Security Architecture	■ Not Applicable	■ Not Applicable
Materials and Testing Division	■ Qualified Product List for Roadway Construction and Safety Appurtenances ■ Proprietary Product Usage Process ■ Research and Product Evaluation	■ Producer/Supplier List (Construction materials and safety appurtenances)	■ Lab testing of Construction Materials ■ Geotechnical Operations ■ Standard Operating Procedures for Material Testing and Processes ■ TDOT Technician Training for Material Testing
Construction Division	■ Construction Specification and Guidelines ■ Alternative Contracting Project Management ■ CEI Contracts	■ Bid Lettings ■ Contractor Prequalification ■ Pre-Letting Construction Project Management ■ Constructability Review	■ Not Applicable
Community Relations Division	■ Traveler Information ■ Social Media ■ Public Comments ■ Public Surveys	■ Multimedia Production	■ Media Relations ■ Public Meetings and Hearings Coordination
Regional Operations	■ Traffic Management Center and Incident Management Operations ■ Protect the Queue Operations (Construction and maintenance staff providing queue protection) ■ Traffic Engineering ■ Operations Staff Training ■ Occupational Safety	■ Construction Project Management	■ Material Testing ■ Roadway Maintenance Activities ■ Facilities Management
Maintenance Division	■ Emergency Management Coordination ■ Roadway Infrastructure Asset Management	■ Winter Maintenance Operations ■ Maintenance Policy and Procedure	■ Contract Management for Maintenance Equipment and Materials ■ Facility Management & Special Projects ■ Pavement Management (Oversight of resurfacing and the Pavement Management System)
Occupational Health & Safety Division	■ Develops and Implements Occupational Safety Policies and Procedures ■ Employee Safety Training ■ Safety Inspections	■ Contractor Prequalification	■ Not Applicable
Central Services Division	■ Over Height Over Dimensional Permitting	■ Coordination of Budget and Purchasing for Heavy Equipment and Fleet Vehicles	■ Not Applicable

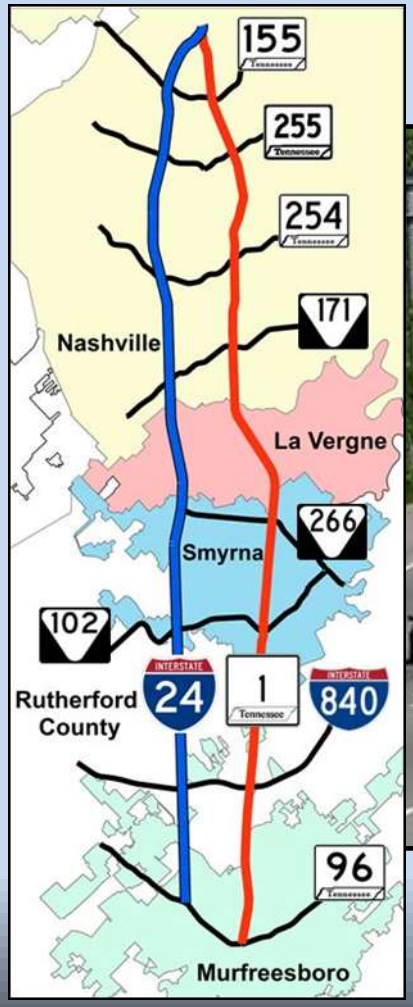

TSM&O Coordinating Committee
ITS TECH WORKING GROUP
SYSTEM PM WORKING GROUP
COLLABORATION WORKING GROUP
TRAFFIC WORKING GROUP

Deployment Level Prospective

The deployment level perspective of the Traffic Operations Program Plan considers how TDOT has developed and prioritized projects for implementation that will meet the TSM&O goals and objectives and TDOT's cross-cutting strategies introduced in the plan. These projects are organized into a **Three-Year Strategic Deployment Plan.**

Project Development & Selection Process

Corridor Focused Deployments



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Project Development & Selection Process

Corridor Focused Deployments

The Corridor Focused development and selection process consists of:

1) Establishing a Corridor Priority Level Ranking
2) Screening Priority Corridors for potential TSM&O projects
3) Conducting a detailed engineering study to quantify the estimated operational and safety benefits and deployment costs for each identified deployment strategy
4) Ranking studied deployment strategies based on estimated benefits and qualitative input from TDOT staff and corridor stakeholder partners (Regional Priority Level Ranking)

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Project Development & Selection Process

Discrete TSM&O Deployments

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Project Development & Selection Process

Discrete TSM&O Deployments

Discrete Deployments will be ranked as the Corridor Focused projects with the following factors: benefit-cost ratio, safety impacts, and operational impacts. The ranking process will consider these estimated benefits and the potential for emerging funding opportunities all in totality in order to prioritize Discrete Deployments.

Corridor Priority Ranking

TSM&O Goal #1: Safety

Reduce the frequency and severity of crashes on the transportation system

Crash Rate – Crash rates are an effective tool to measure the relative safety at a particular location. The combination of crash frequency (crashes per year) and vehicle exposure (traffic volumes or miles traveled) results in a crash rate. This metric shall be calculated using the most recent three years of complete crash data.

- Crash Rate < Statewide Average Crash Rate, Score = 1 point
- Crash Rate = 100% - 125% Statewide Average Crash Rate, Score = 2 points
- Crash Rate = 126% - 150% Statewide Average Crash Rate, Score = 3 points
- Crash Rate > 150% Statewide Average Crash Rate, Score = 4 points

Corridor Priority Ranking

TSM&O Goal #1: Safety (cont.)

Reduce the frequency and severity of crashes on the transportation system

Severe Crash Rate - The combination of severe crash frequency (fatal and incapacitating injury crashes per year) and vehicle exposure (traffic volumes or miles traveled) results in a severe crash rate. This metric shall be calculated using the most recent three years of complete crash data.

- Severe Crash Rate < Statewide Average Severe Crash Rate, Score = 1 point
- Severe Crash Rate = 100% - 125% Statewide Average Severe Crash Rate, Score = 2 points
- Severe Crash Rate = 126% - 150% Statewide Average Severe Crash Rate, Score = 3 points
- Severe Crash Rate > 150% Statewide Average Severe Crash Rate, Score = 4 points

Corridor Priority Ranking

TSM&O Goal #2: Efficiency

Minimize traffic delays from recurring and non-recurring congestion

Crashes per mile per year - Crashes are the most severe form of incidents and are easily tracked with available data across the state. This metric is chosen over crash rate because it considers the impact of each individual crash.

- Crashes per mile per year < 40, Score = 1 point
- Crashes per mile per year 40 – 80, Score = 2 points
- Crashes per mile per year 81 – 120, Score = 3 points
- Crashes per mile per year > 120, Score = 4 points

Corridor Priority Ranking

TSM&O Goal #2: Efficiency (cont.)

Minimize traffic delays from recurring and non-recurring congestion

Incident vulnerability – This metric reflects the incident impacts on traffic flow by examining the combination of the presence of usable shoulders and congestion level. A "usable shoulder" is one where a vehicle can be safely stored without blocking any of the adjacent travel lane

Usable Shoulders	Peak hour v/c		
	< 0.7	0.7 – 0.9	> 0.9
None	3	4	4
1 side	2	3	4
Both sides	1	2	3

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Corridor Priority Ranking

TSM&O Goal #2: Efficiency (cont.)

Minimize traffic delays from recurring and non-recurring congestion

Average Annual Daily Traffic-to-capacity ratio (AADT/C) – This metric reflects recurring congestion levels and is a variant on the volume-to-capacity ratio. It is a measure of general congestion that is not tied to definitions of peak hour or peak period.

- AADT/C < 9.0, Score = 1 point
- AADT/C 9.0 – 11.0, Score = 2 points
- AADT/C 11.0 –13.0, Score = 3 points
- AADT/C > 13.0, Score = 4 points

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Corridor Priority Ranking

TSM&O Goal #3: Reliability

Increase the travel-time reliability of the transportation system

Planning Time Index (PTI) –. The PTI is an index of the worst case travel time (95% percentile) over ideal travel times (Free-flow travel time). This measure captures both the typical delay and unexpected delay on a route. The index can be tabulated using NPMRDS dataset.

- PTI 1.00 – 1.33, Score = 1 point
- PTI 1.33 – 1.67, Score = 2 points
- PTI 1.67 – 2.00, Score = 3 points
- PTI > 2.00, Score = 4 points

Corridor Priority Ranking

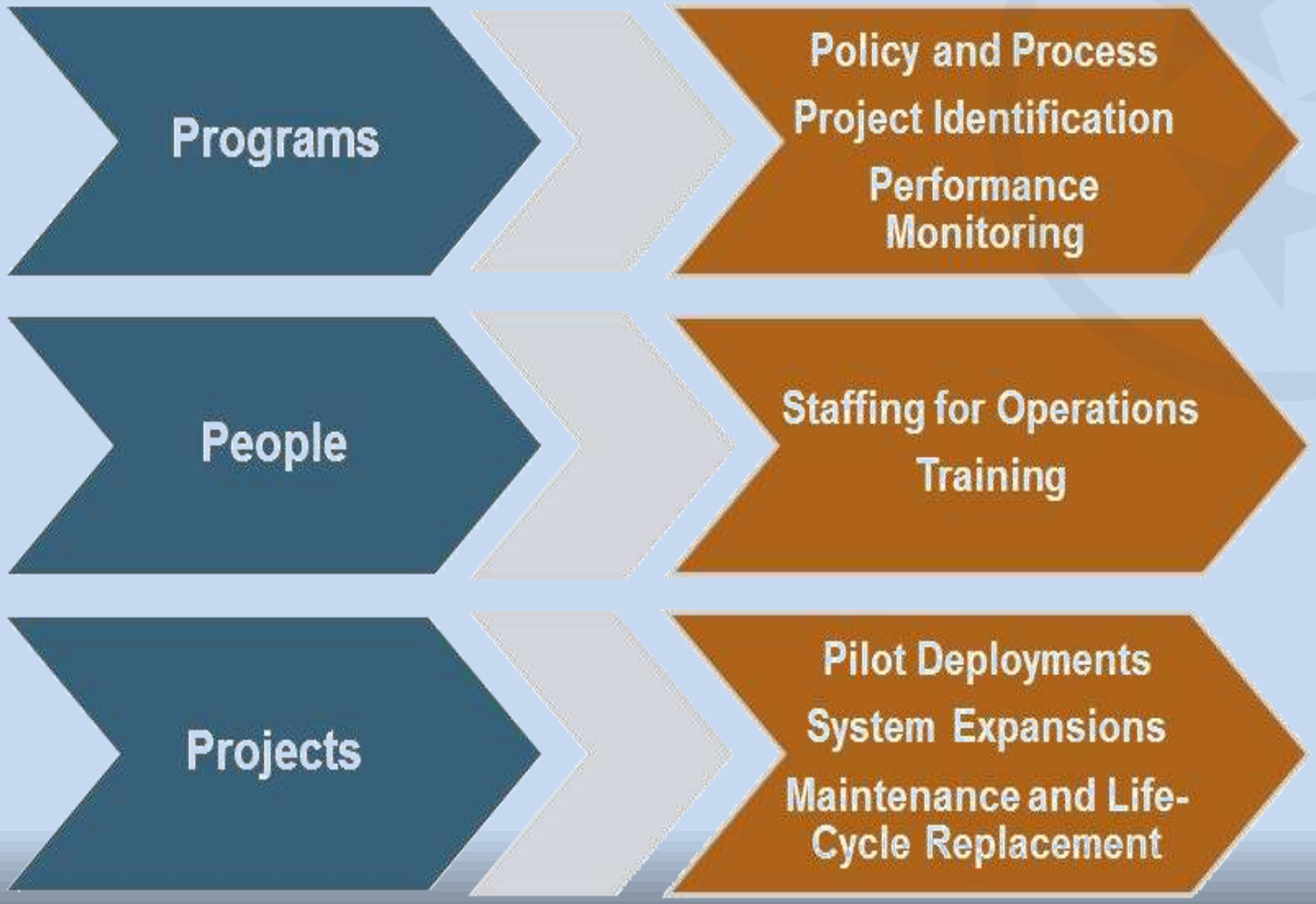
TSM&O Goal #3: Reliability (cont.)

Increase the travel-time reliability of the transportation system

Severe Weather Influence Factor - Is the corridor influenced by extreme weather events for an unusually high amount of time (are they more prone to extreme weather events than “typical” sections)?

- None, Score = 1 point
- Flooding, snow/ice, fog, Score = 4 points

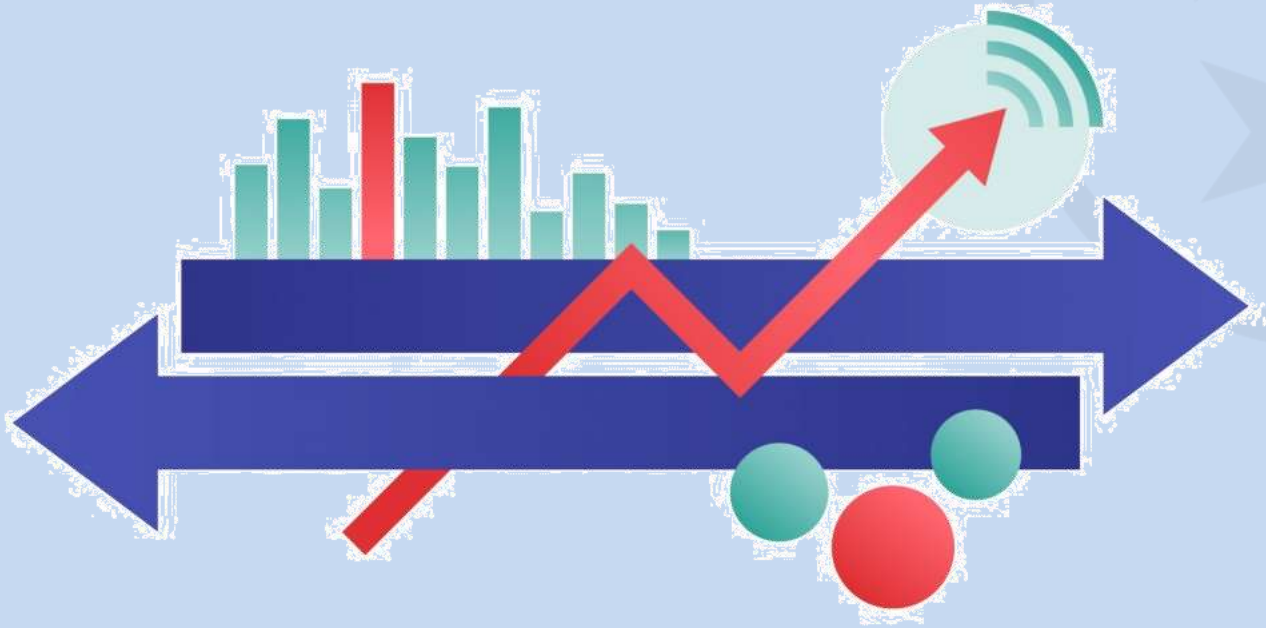
3-Year Strategic Deployment Plan



3-Year Strategic Deployment Plan

Priority	Deployment	Description	Projected Benefits	Goals Supported by Deployment	Cost Estimate	Source of Estimate	Project Origin
Year 1 Deployments							
High	**TSM&O Coordinating Committee Support**	Support and maintain the TDOT TSM&O Coordinating Committee.	TSM&O Committee will provide guidance and direction for the development, deployment, and integration of operations programs and projects within TDOT.	All Goals	No Cost (In-house Support)	TOD	3-Year Plan
High	**TSM&O Project Planning and Design Review**	Implement a process to ensure projects in the planning and design phase are reviewed to determine how they might benefit from the implementation of TSM&O strategies. The review will also identify opportunities for advanced implementation of TSM&O infrastructure.	Provides a more cost effective method to implement ITS and other TSM&O infrastructure into projects.	All Goals	No Cost (In-house Support)	TOD	3-Year Plan
High	**Performance Measures Program Development and Implementation**	Develop and implement a TSM&O performance measures program that is consistent with guidance from the USDOT. The performance measures program will include reporting of performance measures on a regular basis.	Provides feedback on the impact of TSM&O strategies and allows TDOT to make data driven decisions on project selection.	Safety Efficiency Reliability	No Cost (In-house Development)	TOD	Capability Maturity Model Self-Assessment
High	**Regional TMC Operations Structure Review**	Review the existing TMC operations structure to determine if and when Regions 2 and 4 should move to a 24-hour operation rather than have after-hours support provided through Regions 1 and 2. The TMC operator and dispatch positions will also be reviewed for reclassification and staffing levels should be reviewed for standardization among the Regions.	Continuous 24-hour operation in each Region provides greater local knowledge and more effective traffic management for after-hours incidents. Standardized staffing levels of the TMC can also provide more consistency in Regional operations throughout the state.	Safety Efficiency Reliability	No Cost (In-house Review)	TOD	TOD Regions
Medium	**Smart Work Zone Guidelines & Specification**	Develop guidelines for when to deploy Smart Work Zone technology and design specifications for application of Smart Work Zone technology.	Provides en-route and advanced traveler information on work zones to improve work zone safety, reduce congestion, and increase travel-time reliability, and improve accessibility.	Safety Efficiency Reliability	To Be Determined	TOD	3-Year Plan
Medium	**Qualified Products List (QPL) Development**	Develop a QPL to use for procurement of ITS and other TSM&O infrastructure.	Provides TDOT Regions with guidance for procurement and leads to a more standardized set of field infrastructure.	Preservation	No Cost (In-house Development)	TOD	Capability Maturity Model Self-Assessment
Low	**Statewide ITS Architecture Development**	Update the Statewide ITS Architecture in coordination with the TDOT Regions. The Statewide ITS Architecture should support the projects identified in the Three-Year Strategic Deployment Plan.	Provides a systems architecture for deployment of future operations projects. Also enables TDOT to meet the USDOT ITS architecture conformity requirements for statewide and rural ITS projects.	All Goals	No Cost (In-house Development)	TOD	3-Year Plan
Low	**Future Transportation Technologies Action Team**	Create, support, and maintain the TDOT Future Transportation Technologies Action Team. The team will evaluate future transportation technologies to determine their feasibility for TDOT, and develop implementation plans for those technologies that are determined to be feasible.	Supports and accelerates the transformation of Tennessee's transportation system by deploying technologies which hold the potential of radically improving safety and reliability for the traveling public.	Safety Efficiency Reliability	No Cost (In-house Support)	TOD	TOD Regions
Low	**TSM&O Research & Development**	Implement a program to research and test TSM&O strategies to determine which should be considered for implementation within Tennessee.	Provides guidance to the Regions on strategies, technologies and programs that will improve operations.	All Goals	To Be Determined	TOD	3-Year Plan
High	**Advanced Incident Management Training**	Deploy advanced incident management training to TDOT and emergency response personnel statewide to promote quick and safe clearance of incidents at the Traffic Incident Management Facility.	Reduces road closures and maximizes capacity of the road network. Improves safety for responders and travelers.	Safety Efficiency Reliability	To Be Determined	TOD	3-Year Plan

Performance Measures Plan



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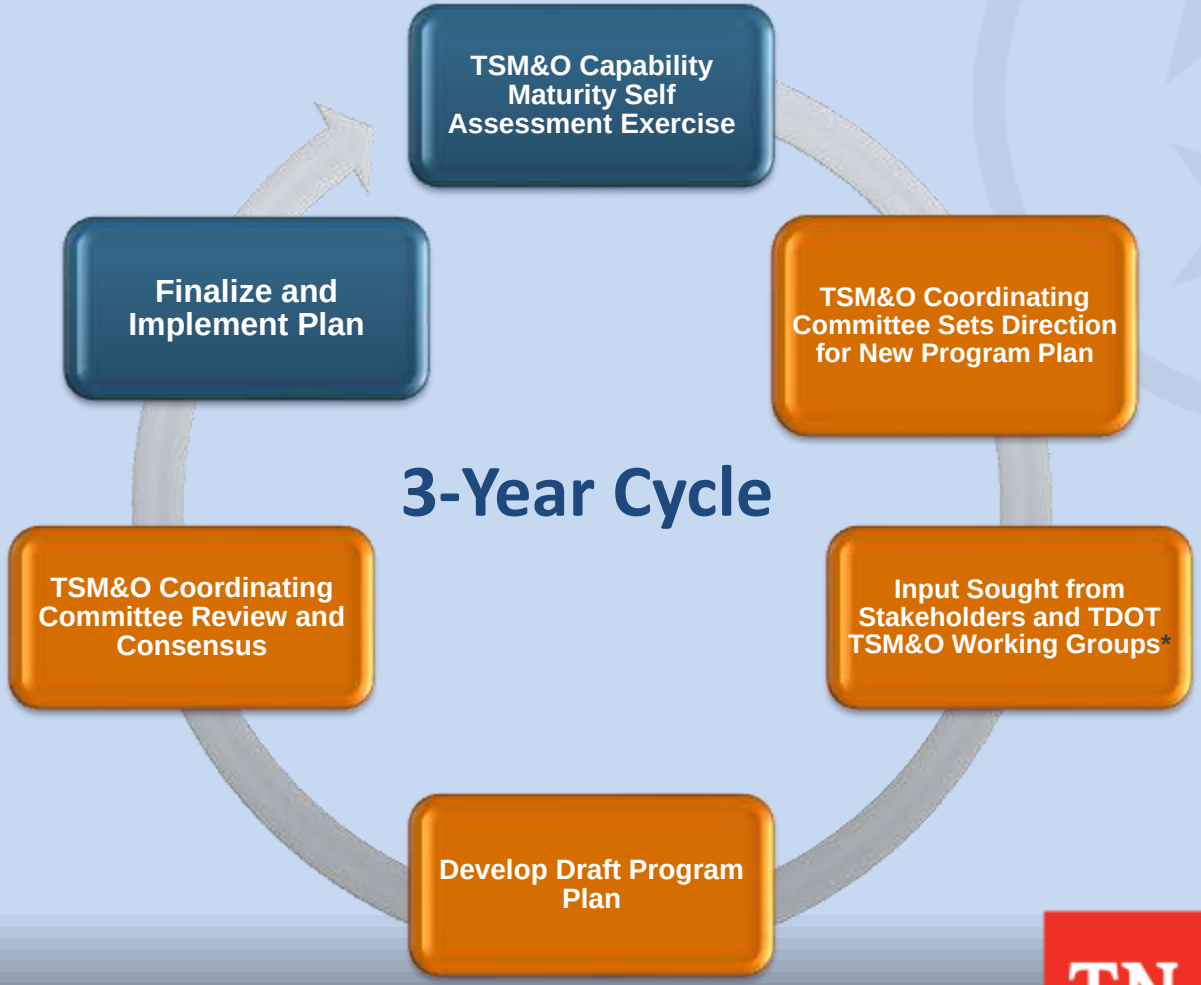
Performance Measures Matrix

TDOT Operational Goals	TSM&O Goals	TSM&O Objectives	Outcome Measures of Effectiveness	Activity Measures of Effectiveness	Program Plan Strategies
System Operation: Operate and manage Tennessee's transportation system to provide a high level of safety and service for our customers and workers	Safety	Reduce the frequency and severity of crashes on the transportation system	• Work Zone Crashes • Secondary Incidents • Wrong Way Crashes • Overall Fatalities • Serious Injuries and Fatalities of first responders	Traffic Management Center Operations Activity Measures Traffic Incident Management Operations Activity Measures Protect the Queue Measures Traveler Information Measures Collaboration Measures Work Zone Operations Measures Traffic Engineering Activity Measures ITS & IT Project Measures	Strategy #1 – Optimize existing operations infrastructure and capabilities Strategy #2 – Strategically expand operations infrastructure, partnerships and capabilities to meet future needs capabilities Strategy #3 – Identify and prepare for the next generation of operational strategies and technologies Strategy #4 – Monitor performance of the transportation system Strategy #5 – Integrate operations into TDOT culture and processes Strategy #6 – Elevate public awareness of operations
	Efficiency	Minimize traffic delays from recurring and non-recurring congestion	• Annual Hours of Delay (vehicle or person hours) • Annual Hours of Delay Per Capita • Hours of delay associated with incidents and bottlenecks • Cost of Congestion • Average Travel Times During Peak Travel Period by Corridor • Causes of Delay Pie Charts		
	Reliability	Increase the travel-time reliability of the transportation system	• Travel Time Reliability (Major Interstate Corridors and Urban areas) • Buffer Index • Planning Index • Incident Clearance Times • Recovery Times		
System Preservation: Maintain the state transportation system to protect the long-term investment of our infrastructure assets	Preservation	Maintain functionality of the operations infrastructure and plan for life-cycle replacement	• Travel Time Posting & Accuracy • ITS Device Downtime (By type/function) • Life Cycle Replacement by Device Type (Within 1 year) • Life Cycle Replacement by Device Type (Exceeded)	ITS Maintenance Measures • ITS Operational Device Totals by type and function	

Traffic Operations Program Plan Update Cycle



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SHRP2SOLUTIONS

TOOLS FOR THE ROAD AHEAD

Reliability Focus Area

L36 - Regional Operations Forum

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Thank You!

Brad Freeze, PE
Director, Traffic Operations Division