TSMO Train-the-Trainer
Olathe, KS/ September 4-5, 2019
McPherson / Volz
Drive to Zero
Sitting Disease

Americans spend 7.7 hours a day sitting! This can:

• Compromise the metabolic system
• Increase blood pressure, obesity
• Increase cardiovascular disease and cancer

What can you do?

• Adding two minutes of activity to every hour spent sitting can lower risk of dying by 1/3
  • Get an activity tracker- aim for at least 5,000 steps a day
• 20-8-2 Rule: 20 minutes sitting, 8 minutes standing, 2 minutes moving
  • Walk over to someone’s desk instead of emailing or take the stairs instead of the elevator
Agenda Review
Your Facilitators

Matt Volz
Sr. Transportation Project Manager

Negil McPherson Jr.
Sr. Performance Consultant
Introductions

- Name
- Agency / Company
- Job role
- My Speaking Experience
Why Are We Here?

• Share TSMO knowledge
• Evaluate our progress
• Practice communicating TSMO
• Learn how to address benefits / concerns
• Why is TSMO Important? (video)
Go to this link for video:
https://youtu.be/NkWYIKaUyM0

From TSMO practitioners – Why is TSMO important?
- Austin Yates, Iowa DOT; Lee Smith, Tennessee DOT; Patrick Son, NOCoE; and San Lee, CDOT
- https://youtu.be/NkWYIKaUyM0
TSMO Principles Review

- Randy Johnson, KC Scout/MoDOT
- Mandy Anderson, Garver
- Lindsay Francis, WSP
- Tony Carr, HDR
TSMO in Action
TRAFFIC SIGNAL COORDINATION
Coordinated Signal Timing Plans

Key Characteristics

- **Cost**: Low
- **Technology**: Medium
- **Collaboration**: Low

Benefits
- Reduce Congestion
- Reduce Fuel Consumption / Vehicle Emissions
- Reduce Travel Time
- Reduce Number of Stops for Traveling Public
Coordinated Signal Timing Plans

APPROACHES

Time-of-Day Plans
Optimized and operate the same cycle length
Cycle length changes throughout the day
Operate same time period every day

Traffic Responsive
Change based on changes in real-time traffic conditions.
Detection to measure volumes
Timing plans change as traffic increases or decreases
Coordinated Signal Timing Plans

Automated Traffic Signal Performance Measures (ATSPMs)
Continuous performance monitoring capability
Data driven traffic operations
High-resolution (tenth-of-a-second) data from traffic signal controllers and detectors
Data analysis techniques
Traffic Signal Operations

Regional Traffic Signal Coordination Program
Adaptive Signal Operation
Commuter Rail Preemption
Transit Signal Priority
TSMO at Home

President’s Award - ITS Heartland
TSMO Strategies
TSMO Activities …

- TSMO strategies address goals related to quality of life, such as safety, security and environmental impact.
Introduction of TSMO principles to internal and external stakeholders

- TSMO education, live and web-based training
- SHRP2 Traffic Incident Management (TIM) training
- SHRP2-based TSMO regional operations training
- Introduction to TIM and Media TIM training
- Multi-disciplinary TIM executive and working group meetings
- Live training exercises
- Strategic communications

Training & Education

Planning

Design

Construction

Operations

Continually driving operationally focused design

- Signal timing optimization
- Signing and guide signing
- Pavement markings
- ITS infrastructure deployment
- Communications design
- Fiber optic design and testing
- Maintenance of traffic and traffic control plans
- Managed lane design

Integrating Operational Considerations into all agency projects

- Service layer plan development
- Network architecture design
- Concepts of operation and new technologies
- Communications network plans
- Intelligent Transportation Systems (ITS) master plans
- Integrated Corridor Management (ICM)
- Alternative routes and predictive safety
- Connected and Autonomous Transportation (CAT) planning

Operationally focused construction staging

- Transportation Management Plan (TMP) development
- Dynamic traffic assignment analysis
- Intelligent work zones
- Construction services support
- Construction engineering and inspection, ITS and as-builts
- Portable devices to maintain ITS during construction

Maintaining operations

- Towing and recovery incentive program management
- Safety service patrol program management
- Performance measures
- Adaptive signal control technology
- Traffic Management Center (TMC) operations
Traffic Cameras and DMS
Traffic Cameras and DMS
Work Zone Management
Traffic Incident Management (TIM)
Safety Service Patrols and Incident Response Trucks
Poor planning led to toy run crash that killed 2, safety officials say

The National Transportation Safety Board faulted the Augusta Police Department and the United Bikers of Maine for poor communication and planning in a 2017 toy run that left two motorcyclists dead.
- 3,000 motorcyclists
- 2 killed
- 7 injured
- Full closure 2+ hours
Event Planning

- Issues:
  - Planning
  - Geometrics
  - Traffic Control
  - Advance Warning
  - Speed
  - Alt. Routes
  - Coordination
  - Permits
  - Barriers
Road Weather Management
Road Weather Management
Road Weather Management
Traveler Information

Example Benefits

- 511 customer satisfaction of 68% - 92%
- Route-specific travel times: 5% - 13% increase in on-time performance (i.e., reliability)
Active Transportation and Demand Management (ATDM)
TMC Improvements
Integrated Corridor Management

Example Benefits

- ICM along I-15 in San Diego: estimated B/C ratio of 9.7:1
- Simulation of ICM: B/C ratios of 7.1:1 to 25.1:1
Alternative Intersections
Turn Lanes
Peak Period Shoulder Lane
Median/Pedestrian Refuge
Road Diets
Restriping
Access Management
Managed Lanes

Example Benefits
In Minneapolis (HOV lanes converted to HOT lanes)
- Peak hour corridor throughput increased 5%
- No change / slight increase in speeds
- General reduction in speed differentials (HOT/GP lanes)
Variable Speed Limits
Queue/Advance Warning Systems
Intersection Warning Systems
Infrastructure

Example Benefits

- 511 customer satisfaction of 68% - 92%
- Route-specific travel times: 5% - 13% increase in on-time performance (i.e., reliability)
TSMO Benefits

Strategy
- Traffic Light Retiming
- Ramp Metering
- Freeway Incident Management
- Traveler Information

Benefits
- Delay reduced 8-25%
- Speeds increased 24%
- Incident duration reduced 39-51%
- On-time reliability improved 5-16%
Lunch
How Far Have We Come

• Opportunities to promote TSMO
• TSMO Culture Changes / Actions
• TSMO Collaboration (R. Webb)
• ROLF Report from Iowa (June)
• TSMO Progress Nationally
**FAST FACTS**

700+ Traffic Signals

200+ Roadway Miles

1.6 Million Trips/Day

50/50 Local Agency/Federal Funding

$600 Local Agency Annual Cost Per Signal
FHWA (MO & KS)

KANSAS
KDOT
Bonner Springs
Fairway
Lansing
Leavenworth
Leawood
Lenexa
Merriam
Mission
Mission Woods
Prairie Village
Olathe
Overland Park

Shawnee
Unified Government-WyCoKCK
Westwood

MISSOURI
MoDOT
Belton
Blue Springs
Gladstone
Grandview
Independence
Kansas City
Lee’s Summit
Liberty
North Kansas City
Raymore
1. US-40 PM Peak plan is #3 except at I-70 ramps and Lees Summit Rd which are plan #3. Might need to adjust splits at I-70 as PM PKP normally has heavy EB/L onto EB 70.
2. US-40 from Cliff to LBP runs a Saturday plan, largest cycle length (except “Event Ingress” which I don’t recommend using).
3. M-78 from Maywood to Lees Summit PM Peak plan is #3 except Nolan and Hyvee are #3.
4. Hub and 391 down to 32nd St, PM PKP is plan #4. Consider adjusting splits at 78 & 391 to take time from SB and give it to NBLT if NBLT is over capacity.
5. 39th St runs a Saturday plan, largest cycle length.
6. Little Blue Pkwy, PM Peak is plan 37 except at I-70 it’s #9. Might adjust splits at 39th & LBP or put in free and adjust if NBLT is over capacity.
7. M-350 PM Peak is a directional EB, plan #8 except at Nolan it’s #2. AM Peak is very directional WB, plan 7 except at Nolan it’s #2. If both directions are heavy do PM PKP.
8. 39th, expect heavy E-W heavy.

Adjust?
FHWA Perspective

- Tracy Scriba, Team Leader - FHWA Office of Planning & Organizing for Operations
Advancing Transportation Systems Management and Operations (TSMO)

Tracy Scriba
Federal Highway Administration (FHWA)
ITS Heartland Meeting
September 2019
Challenges Communicating and Integrating TSMO

Why should I care about TSMO?

What budget funds TSMO?

Is it better to:
- Spread it throughout the agency?
- Have a TSMO Division?

Where does TSMO fit in my agency?

TSMO Outreach

TSMO Education

TSMO

Internal Agency Culture

Design-Construct-Maintain

Moving People and Goods

Is it better to:...
What is the key factor for explaining the success (or lack of success) of TSMO strategies at transportation agencies?

• It’s not all about $$$$ or technology deployment.
• It’s about whether effective TSMO processes and organizational capabilities are in place.
Integrating and Mainstreaming TSMO into Agencies

- TSMO program development
- Building TSMO into agency processes
- Developing agency culture that supports/values TSMO
- Communicating value of TSMO/business case
- Considering reliability
- Developing workforce capabilities for TSMO
- Developing effective partnerships/collaboration – internal and external
Many Connections are Needed

- Planning
- Design
- Construction
- Maintenance
- Operations

TSMO
Connecting Operations
to Other Core Agency Programs

- Establish relationships across units
- Understand what’s important from both perspectives
- Talk a common language
- Build TSMO into agency processes
- Joint training and workshops
- Collaborate on TSMO program development
Federal Education Efforts for TSMO
Why TSMO Education

- Strong foundation for TSMO is critical
- Understanding of TSMO is still developing, and evolving
- Regular need for new workforce capacity
- Education efforts play important role
TSMO Capacity Building Ecosystem

On a Local Level: State DOTs, FHWA Division Offices, Local Technical Assistance Programs
Multi-faceted FHWA TSMO Education Efforts

- Regional Operations Leadership Forum
- Factsheet series
- TSMO outreach kit and videos
- TSMO workshops
- Traffic incident responder training
Regional Operations Leadership Forums - Purpose

• Create TSMO champions
• Help States and their partner agencies:
  – Mainstream TSMO into agency culture
  – Strengthen TSMO programs
  – Enable intergenerational TSMO leadership
  – Develop a multi-state regional community of practice
Multimedia TSMO Outreach Tools

- TSMO outreach toolkit
- Short videos
- Success stories
TSMO Workshop Opportunities

- Contemporary Approaches to Travel Demand Management
- TSMO Program Planning
- Planning for Travel Time Reliability
Strategies: Traffic Incident Management Responder Training

• More than 425,000 responders trained to date
• Train-the-trainer model
• Material in more than 40 public safety training academies in 26 States
• Graduating responders help change the state of the practice for incident response
Leverages combined efforts of many

Is sustained

TSMO Education

U.S. Department of Transportation
Federal Highway Administration

74
Tracy Scriba
Team Leader, Planning and Organizing for Operations
FHWA Office of Operations
tracy.scriba@dot.gov
Our Role in TSMO
Advancement / Education / Implementation

• Public Sector
• Private Sector
• Academia
Our Role in TSMO
Advancement / Education / Implementation

Small Group Discussion

• Divide into three groups by role
  1. Public Sector
  2. Private Sector
  3. Academia

• Actions?
• Advocacy?
• Priorities?
• Mindset Shift?
Break
How People Learn
Adult Learning Principles

Small Group Discussion

• Review adult learning article
• Identify how adults learn best
• Describe situations encouraging adult learning
• Keys to understanding/assessing adult behavior
Facilitator Responsibilities

• Focus on learners
• Encourage discussion
• Manage difficult situations
• Organize learning environment
Facilitator Responsibilities

Small Group Discussion

• Review photo
• Discuss benefit(s) or drawback(s) of room set-up
• Debrief answers with large group
Powerful Training is...

- Effective
- Efficient
- Engaging
- Learner-centered
- Performance-based
Performance is

\[(\text{Ability} + \text{Knowledge}) \times \text{Inspiration} = \text{Success}\]
Communication Channels

- Verbal: 7%
- Vocal: 38%
- Visual: 55%

* Based on research by Albert Mehrabian, Ph.D., Professor Emeritus, UCLA. See his book, Silent Messages.
Communication Channels

Visual Channel

- Controlling nerves
- Eye contact
- Posture and movement
- Gestures and facial expressions
- Personal appearance
Posture and Movement

- Are visual messages
- Decreases nervousness
- Aids proper breathing
- Promotes voice projection
Gestures / Facial Expressions

- Clarify and support message
- Dramatize ideas
- Emphasize feelings
- Reduce nervousness
- Stimulate participation
Effective Gestures

• Involves hands to support message
• Are personal and natural
• Are made smoothly
• Last long enough to connect with participants
Vocal Channel

How you sound

• Voice volume and projection
• Speaking rate
• Voice dynamics
• Articulation
Voice Dynamics

Effective

• Confident, spontaneous, upbeat tone
• Inflection conveys meaning
• Tone reflects spirit of message

Ineffective

• Speaking without meaning, inflection, or emotion
Verbal Channel

Content or “the words you use”

• Use facilitator notes
• Use personal stories
• Manage podiums and other props
• Use AV effectively
Regional Operations Forum Training Program

Speaking Opportunity
Speaking Opportunity

A Favorite Story

• Topic: work, family, school, vacation, hobbies
• Story: humorous, informative, lessons learned
• Open, middle, and close
• 2 min or less
End of Day 1

- Final Comments
- Hotel Check-in
- Dinner instructions
- Day 2 start
Regional Operations Forum Training Program

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McPherson / Volz
Regional Operations Forum Training Program

Drive to Zero
Safety Moment
Driving in Construction Zones

Between 1982 and 2014, 24,745 people lost their lives in work zone crashes. Here are some tips to stay safe when entering work zones:

- Be patient
- Expect the unexpected
- Buckle up
- Pay attention to all signs and flaggers
  (Don’t assume there are no workers present even if you don’t see them)
- Watch for detours and lane diversions
  (Merge promptly at lane closures)
- Leave plenty of following distance between vehicles
  (Most accidents in construction zones are rear-end collisions)
Agenda Review

- Day 1 Review
- TSMO Culture
- Peer State TSMO Program
- Conveying the TSMO Message
- Review/Update TSMO Materials
- Speaking Opportunity/ TSMO Topics
- TSMO-related Q/A
- Next steps for Advancing TSMO
Day 1 Review

- TSMO Principles
- FHWA Perspective
- Our Role in TSMO Advocacy
- Learning Styles
- Speaking Opportunity
- NOCoE Awards Video
What is TSMO Culture?

- Acceptance of TSMO in agency’s mission
- Institutionalization of TSMO into agency activities
- Values, assumptions, knowledge and expectations for TSMO within an agency
- Key aspects of culture
  - Leadership/championing TSMO
  - TSMO program status
  - Staff recruitment, retention and training
TSMO Culture in Public Agency

Burt Morey
Deputy Secretary
Kansas Department of Transportation
Peer State TSMO

Brent Cain
TSMO Division Director
Arizona Department of Transportation
Break
Conveying the TSMO Message
Public. Politicians. Media

The “TOM” Project

Tom Hein
Wichita Metro Public Information Officer
Wichita TMC Manager
Kansas Department of Transportation
THE TOM PROJECT

An integrated program of projects, strategies, services, technologies and processes that can help mitigate congestion, improve safety and increase the efficiency of our transportation system
MULTIPLE VEHICLE CRASH
I-35 & SOUTHWEST BLVD
TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

An integrated program of projects, strategies, services, technologies and processes that can help mitigate congestion, improve safety and increase the efficiency of our transportation system.
TSMO

An integrated program of projects, strategies, services, technologies and processes that can help mitigate congestion, improve safety and increase the efficiency of our transportation system.
TSMO

Integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services and projects.
TSMO TOOLS
TSMO TOOLS

- Work Zone Management
- Traffic Incident Management
- Traveler Information
- Special Event Management
- Road Weather
- Freight Management
- Traffic Signal Coordination
- Service Patrols
- Ramp Management
- Managed Lanes
- Transit Management
- Active Traffic Management
- Integrated Corridor Management
WORK ZONE MANAGEMENT

ZIP
The urge to merge

When traffic is heavy travel in two lanes to the merge point then take turns merging.
TRAFFIC INCIDENT MANAGEMENT

Wichita >700 trained
Statewide 3,496
National 312,401
WICHway
KDOT's Intelligent Transportation System

wichway.org
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BENEFITS OF TSMO

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THE TOM PROJECT
Prep Time
Speaking Opportunity

TSMO-Specific Materials

• Identify mock audience
  • Executive Level
  • Mid-level Operations Staff
  • Field Contractor
• Deliver TSMO presentation
• Answer questions, if asked
• 2 min or less
Lunch
Facilitation Techniques

- Managing your notes
- A/V
- Managing Discussions / Questions
- Intervention strategies
Encourage Discussion

- Ask effective questions
- Use listening skills
- Use flipchart or whiteboard
- Think “parking lot”
- Be careful with laser pointers
Questions Provoke Learning

• Ask open-ended questions
• After posing question
  • Be selectively quiet (pause)
  • Listen
  • Allow participants think time
• Avoid being judgmental
• Never embarrass participants
Managing Questions

• Repeat the question
• Answer question for room (not just the individual)
• Involve entire audience
• Thank question “asker”
• Use your interpersonal skills
Responding to Participants

- Paraphrase
  “So, what you’re saying is…”

- Reflect feelings
  “You feel that…”

- Summarize and request confirmation
  “Let me see if I understand, you…”
Intervention Strategies

- Level 1: Do Nothing
- Level 2: Off-line Conversation
- Level 3: Impersonal Group Time
- Level 4: Off-line Confrontation
- Level 5: In-group Confrontation
Intervention Strategies

Table Exercise

• Review situation
• Identify most effective strategy
• Communicate answer to large group
Mid-Day Knowledge Check

Table Exercise

• Identify top five key takeaways (Review notes)

• Share answer with group, when called upon
Next Steps

• Action items and next steps
• Putting the training in action
• Audiences to target
• Adding TSMO to the transportation discussion
End of Day 2

• Final Comments
• If you have follow-up questions