

**ARAPAHOE COUNTY**

## IMPLEMENTING THE OPERATIONS (TSMO) PHILOSOPHY AT THE LOCAL AGENCY LEVEL

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## PRESENTATION OBJECTIVE

- This presentation is designed to introduce the concept of TSMO to some and for others, a refresh
  - The topic of TSMO is too large of a topic for a single presentation
  - Today's goal is to create awareness and spark interest for further discussions
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WHAT IS TSMO?

# TSMO?

- TSMO is the acronym for Transportation Systems Management and Operations
  - The ideology and initiatives of TSMO are often referred to as “operations”
- What is Operations?
  - Depends who you ask
  - Many examples of agencies with programs and units with “operations” in the name
    - Example: Arapahoe County Traffic Operations

# TSMO?

- TSMO is defined in the United States Code as:

*“An integrated set of 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.” 23 USC 101 (a) (30)*

- The goal of TSMO is to maximize the performance (safety or efficiency) of the existing transportation infrastructure without building capacity
- The important part is not what it’s called but rather what an agency is doing, or could do, to enhance the performance of the transportation network

# INTEGRATED SET OF STRATEGIES

- According to the FHWA, an integrated set of strategies involves:
  - **System** – Implementing and combining strategies as a corridor or region matures in needs.
  - **Technical** – Developing a framework used to support information sharing between technology deployed on the system.
  - **Cultural** – Developing a workforce that values and prioritizes the use of TSMO solutions across multiple disciplines.
  - **Operational** – Coordinating day-to-day operational strategies so that corridor, region, or system-wide objectives are achieved.
  - **Institutional** – Incorporating TSMO policies and processes into an agency's normal way of doing business. This step includes TSMO integration with various disciplines, such as planning, program management and design, to support long-term goals for the transportation system. This can be applied both internally and externally

## AGENCY ADOPTION OF TSMO

- The formal adoption of TSMO practices can be found in a number of State Departments of Transportation
- The maturity levels of TSMO adoption can be categorized as:
  - Many agencies have adopted TSMO and have formally designated TSMO units within their organization
  - Some agencies knowingly practice TSMO without formality
  - Some agencies unknowingly practice TSMO

## FORMAL TSMO PROGRAMS

- Typically seen at State Departments of Transportation
- Includes such programs and initiatives as:
  - Traffic incident management staff
  - Safety Service Patrol
  - Traffic operations/management centers
  - Traveler information dissemination
  - Managed lanes – example, peak shoulder lanes
- Some local agencies do have formal TSMO programs
- Some Metropolitan Planning Organizations have published TSMO strategic plans



## INFORMAL TSMO PROGRAMS

- Many agencies have implemented TSMO philosophies without a formal program
  - Examples
    - Traffic Management/Operations Centers
    - Traveler Information Systems
    - Incident Management Programs
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## INFORMAL TSMO PRACTICE

- Many agencies have programs that fit well within TSMO but not recognized as such
  - Often times deployed to improve performance of the transportation network
- Examples:
  - Traffic signal central systems
  - Traffic operations/management centers
  - Coordinated regional traffic signal timing
  - Traveler information
    - Variable message signs
    - Travel time reporting

# TSMO AT THE LOCAL LEVEL

## TSMO AT THE LOCAL LEVEL

- The concept of TSMO has been implemented in a number State DOT's
- TSMO has a place at the local agency level
- Regardless of whether an agency formally adopts a TSMO program, there are examples of great work of those concepts at the local level
- Examples:
  - Regional coordinated traffic signals
  - Incident management
  - Traffic operations/management centers
  - Traveler information
  - Work zone management

## EXAMPLE - INCIDENT MANAGEMENT

- Local agencies can provide support to incident management activities
  - Promoting and managing diversion routes
    - Messaging alternate routes
    - Adjusting traffic signal timing in real-time
      - Local
      - Regional
  - Aiding in quick clearance efforts
    - Coordination with other partners
    - Local agency resources
      - City of Seattle Response Team



Source: City of Seattle

## EXAMPLE - TRAFFIC OPERATIONS/MANAGEMENT CENTERS

- Local agencies operate traffic management/operations centers
  - Facilities and operational periods vary
- Play a vital role in maintaining situational awareness of the transportation network and managing real-time operations
  - Incident management
  - Traveler information
  - Signal operations
- Potential to conduct coordinated operations with neighboring agencies



Source: City of Scottsdale

# TSMO AT THE LOCAL LEVEL – CASE STUDY

# TRAFFIC OPERATIONS/MANAGEMENT CENTERS

- Traffic operations/management centers as a component of incident management
  - Have a role in detection, verification, information dissemination, and active management
- Also have a role in managing diversion routes
  - As an example, can change the signal timing to adjust for unexpected traffic flows
  - Important to note that incidents on one agency's roadways can have impacts upon the roads of a neighboring agency



## Local Agency Traffic Management Center

### Traffic Incident Response Summary—Interstate

#### Incident Background

- Multiple vehicle crash on northbound Interstate near the Central Business District
- Crash occurred during the morning rush hour
- Involved a commercial vehicle hauling hazardous materials which had turned onto its side and required extensive recovery efforts
- The northbound lanes were **completely closed for 2.5 hours** before the HOV lane was opened for NB traffic
  - Allowed for NB traffic to flow; however, vehicles were required to merge into 1 lane—under normal conditions there are 5 lanes available
- The Interstate fully opened **approximately 8 hours** after the incident occurred

#### Traffic Impacts

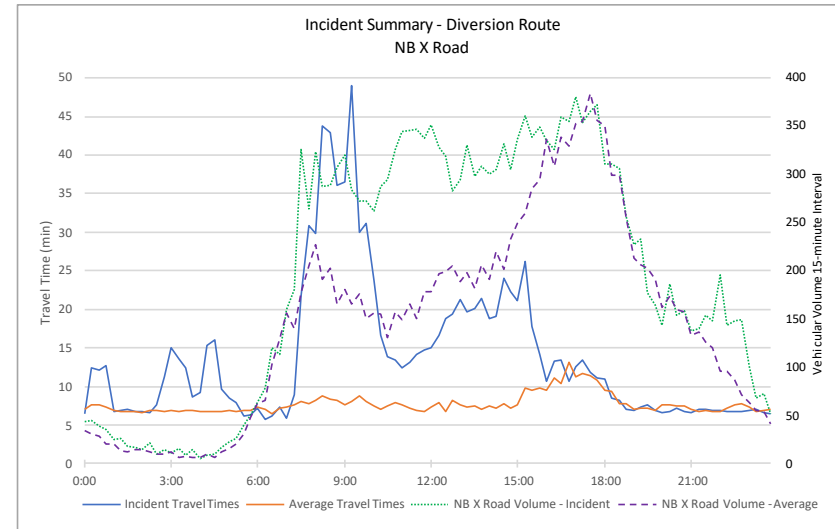
- Interstate
  - During 2.5 hour full closure of NB Interstate traffic was diverted onto an arterial roadway managed by a local agency
- Local roads
  - X Road became a primary diversion route
  - Travel times increased **up to 419%** when compared to normal conditions
  - Traffic volumes increased up to 130% during the incident



Travel times on X Road increased to **over 400%** of average prior to TMC actions



Travel volumes on X Road increased **up to 130%** of average



#### TMC Response

- Once alerted to the Interstate closure, the TMC began analyzing the impacts on the City's transportation network
- The closure point of the Interstate along with the main diversion route was identified
  - Located the most significant bottleneck location at X Road and the Interstate
- **Changes were made to traffic signal timing** from the TMC to locations on X Road
- Activated Interstate closure messages on **City variable message signs**

**Active Management by the TMC Mitigated Congestion on the Diversion Route**



Travel times seen on X Road during the incident **decreased by 67%** due to the **response** of the TMC

# CONCLUSION

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- Regardless of names and acronyms it is critical to remember the actions and results is important
  - However, raising awareness of TSMO and working to increase the formal adopting into an agency does heighten the potential
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# CONCLUSION

- There are numerous resources for further information on TSMO

National Operations Center of Excellence

- <https://transportationops.org/>

FHWA – Organizing and Planning for Operations

- <https://ops.fhwa.dot.gov/plan4ops/index.htm>

AASHTO – Transportation Systems Management and Operations

- <http://www.aashtotsmoguidance.org/>

Operations Academy – Senior Management Program

- <https://operationsacademy.org/>

Thank you for your time

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