

# Transportation System Management and Operations

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# Basis for Discussion

- New to 2013/2016 TMG
- Promote better sharing of traffic data
- Fostering relationships



# Where does the traffic monitoring program fall within the state DOT?

- Planning
- Engineering
- Research
- Operations
- Policy
- Technology
- Other



Are there other DOT offices  
that collect traffic monitoring  
data?



# Traffic Management Centers (TMCs)

1. What data do they collect?
2. Where do opportunities exist to share data?
3. What are some of the pros and cons related to sharing data and resources and integrating data sets?



# Traffic Management and Operations (ITS)

- Operations collects real-time traffic data at Traffic Management Centers (TMCs) vs. historical traffic data (typically collected by Planning or Programming group)
- Coordination between groups occurs for equipment installation and sharing of data
- Coordination results in cost savings to each group



# Types of Operations-Based Traffic Monitoring Systems

- **Fixed-point sensor systems** – measure attributes of *all detected vehicles* passing a permanent equipment location (relevant to planning traffic monitoring)
- **Probe-based systems** – measure a *sample of specially instrumented vehicles* as they traverse the road network (relevance to planning traffic monitoring is limited)



# Coordination issues

- Focus on real-time data
- Communications design
- Location of sensors
- Equipment maintenance
- Equipment calibration



# ITS Data and Traffic Statistics

- Speed
  - Incident Detection
  - Traffic Messages
  - Dynamic Speed Limit
- Volume Data
  - Traffic Management Decisions (especially during peak hours)
  - Headways
  - Classification



# Traffic Management and Operations

- Distribution of traffic data between operations and planning work groups also occurs at different points:
  - At the traffic sensor
  - At the roadside cabinet
  - At the coordinated equipment location only
  - After the TMC



# Sharing and Exchange of Traffic Data

- Traffic management and operations
- Special monitoring (evacuations/emergency/ planned events)
- Engineering /Design
- Safety
- Planning/Environment
- Commercial vehicle enforcement



# Special Monitoring: Evacuations/ Emergencies/Planned Events

- Emergency Operations Centers (EOCs) are collectors/users of speed and volume data
- Important to plan for special events as part of transportation management plans



# Special Monitoring: Evacuations/ Emergencies/Planned Events

Example traffic statistics that can be obtained using operations data on special event days:

- Congestion delay
- Travel time
- Travel speed
- Change in travel mode
- Change in transit ridership
- Turning movements



# Special Monitoring: Evacuations/ Emergencies/Planned Events

Potential uses of day of event traffic data include:

- Track changes in system operations during event
- Identify locations with poor performance
- Note potential causes and required mitigation
- Provide information to decision makers and public
- Present specific improvements for future events
- Provide input for post-event evaluation activities
- Determine maximum capacity values for various roadways



# Data Uses – Engineering/Design

- Traffic data useful for highway design include the following:
  - Speed
  - Class
  - Speed by Class
  - Weight (GVW)
  - Volume



# Data Uses - Safety

- Traffic data useful for managing and improving highway safety include the following:
  - Speed
  - Class
  - Speed by Class
  - Weight (GVW)
  - Volume
- Data are used for statistical reports and analysis
  - Performance measure related to fatalities
  - VMT relative to high crash locations



# Data Uses – Planning/Environment

- Long- and short-range plans need detailed traffic data (volume and speed) for travel demand models
- Access management
- Corridor planning
- Project prioritization
- Programming of funding streams
- Noise studies
- Air quality



# Data Uses - Commercial Vehicle Enforcement

- Weigh-in-Motion (WIM) equipment used to enforce maximum weight limits
- Data needed to prevent damage to pavement which shortens the life of transportation facilities
- Data can determine speed by class
- Data also used for planning freight operations



# Data Sharing and Integration

Benefits	Challenges
Eliminates duplicate data collection	Integration of multiple datasets is challenging
Provides timely access to data	Different requirements exist for level of precision of planning and operations data
Facilitates understanding of how data are used	Operations data are real-time and unless archived are difficult to use for planning, safety, and other needs
Provides independent data verification and QC points	



# Tips for Coordination

- Identify contacts in the various offices using traffic data
- Reach out to the contacts to discuss needs/uses of traffic data for each group, including how, when, and why traffic data are used
- Establish data coordination group to facilitate the sharing and exchange of traffic data and information



# Questions and Comments

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