Regional Operations Forum
Traffic Incident Management / Emergency Operations / Planned Special Events

Accelerating solutions for highway safety, renewal, reliability, and capacity
Session Purpose

• Session purpose is to introduce the concept of managing events
• “Events” = conditions that are outside “normal” or ideal.
  – Traffic Incident Management
  – Emergency Operations
  – Planned Special Events
• Other conditions outside normal will be discussed this afternoon
  – Weather Events
  – Work Zones
Managing Non-Recurring Congestion and TSMO

Managing and preparing for these events is an operational philosophy that supports and becomes a foundation for transportation system management and operations (TSMO).
How Do These Topics Relate?

- **They all deal with aspects of non-recurring congestion.**
- Organizational capability
  - Part of the CMM guide focuses on institutional support for applying strategies that combat non-recurring congestion, such as:
    - Traffic incident management,
    - Emergency operations, and
    - Planned special events
Traffic Incident Management (TIM)

Accelerating solutions for highway safety, renewal, reliability, and capacity
Session Purpose/Objectives

• Establish an understanding of the importance of traffic incident management
  – Recognize how TIM fits within broader programs
  – Requires coordination and collaboration
• Provide a shared understanding of the National Unified Goal (NUG)
• Share experiences and new developments among participants
Traffic Incident Management (TIM)

• TIM consists of a planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible.

• Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims, and emergency responders.
National TIM Program Vision…

Through continuous and enhanced planning and training of all TIM personnel:

1. Reduce or eliminate responder and motorist injuries and fatalities
2. Promote rapid incident clearance, thereby reducing traffic congestion and vulnerability
3. Develop or enhance local TIM Programs that ultimately benefit corridors, regions, and states
4. Measure performance that demonstrates improved TIM responses and programs over time
5. Emphasize TIM as a system operations “core mission” for all responders
The Evolving Business Case: Why TIM?

1. Safety
   – Victims
   – Responders
   – Travelers
## The Evolving Business Case: Why TIM?

### 2. Cost

<table>
<thead>
<tr>
<th></th>
<th>Cost of Crashes</th>
<th>Cost of Congestion</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Average Per Person</td>
</tr>
<tr>
<td>2005 National</td>
<td>$164.2 billion</td>
<td>$1,051</td>
</tr>
<tr>
<td>2009 National</td>
<td>$299.5 billion</td>
<td>$1,522</td>
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</tbody>
</table>

*Source: AAA Crashes vs. Congestion, What’s the Cost to Society? - Nov. 2011*
TIM Process

Detection → Verification → Response → Site Management → Clearance/Removal → Traffic Management → Traveler Information → After-Action Review/Debrief
Group Exercise Scenario

- Multi-vehicle collision eastbound on the I-50 Interstate Bridge, connecting the states of Lincoln and Jefferson in the Monroe-Buchanan metropolitan area
  - Key commuting corridor, dense ITS device coverage
  - 4 lanes in each direction plus an HOV lane in each direction
  - Key interstate freight corridor
  - AADT > 250,000
  - Alternate freeway route 8 miles to the north (operates @ capacity), 3 lanes in each direction, 175,000 AADT
  - Alternate arterial 1 mile to the south (4 lanes, signalized, CBD)
- Tanker truck carrying a flammable load is involved
- Break into team to discuss the next TIM actions
  - You are operations managers at the LDOT TMC
TIM at a National Level

• National Traffic Incident Management Coalition (NTIMC)
  – Formed in 2004
  – multidisciplinary partnership of national public safety and transportation organizations
  – Sets and supports a national agenda for TIM
• A national vision – The National Unified Goal (NUG) for TIM
• International Association of Chiefs of Police (IACP)
• National Fire Protection Association (NFPA) TIM Standards
• International Association of Fire Chiefs (IAFC)
• International Association of Fire Fighters (IAFF)
• U.S. Fire Administration

Additional information can be found at: http://timcoalition.org
National Unified Goal for TIM

The NUG for TIM is:

- Responder Safety
- Safe, Quick Clearance
- Prompt, Reliable, Interoperable Communications
NUG Framework

3 Objectives

12 Core Strategies

6 Cross-Cutting Foundational Strategies
NUG Strategies

Cross-Cutting Strategies:
1. TIM Partnerships and Programs
2. Multidisciplinary NIMS and TIM Training
3. Goals for Performance and Progress
4. TIM Technology
5. Effective TIM Policies
6. Awareness and Education Partnerships
What is a TIM Program?

• The goal of a TIM program is not to create a response, but rather to allow for a more effective, efficient response for all responding agencies

• Incident response in and of itself does not entail the same degree of coordination, planning, and conscious effort that is more broadly required for an effective, comprehensive TIM program

• TIM programs and associated committees and/or task forces are sustained and ongoing
Discussion Item

• What are your current activities and program for TIM?
• What has been a significant challenge to your program?
• How are you addressing that challenge?
Incident Timeline: What Does Safe Quick Clearance Mean?
Authority Removal or “Remove It” Laws

These laws provide authority (and immunity from liability in general) for designated public agencies to remove abandoned vehicles and spilled cargo from the roadway to restore traffic flow.
Driver Removal or “Move It” Laws

Require motorists involved in minor crashes (where there are no serious injuries and the vehicle can be driven) to move their vehicles out of the travel lanes to the shoulder or other safe area before initiating the exchange of insurance information, or while awaiting the arrival of law enforcement and/or a tow truck.
Safety Service Patrols

• Trained personnel using specially equipped vehicles to:
  – patrol congested highways,
  – search for and respond to traffic incidents, and
  – provide motorist assistance

• Recognized as one of the most effective TIM strategies
  – often play a role in all stages of the TIM process

• One of the most valued services by the public

• Benefit-to-Cost Ratios (Baird, 2008)
  – Average - 12.4:1
High-Level TIM Training Framework and Tiered TIM Focus Areas

**Tier 1:**
Training for Traffic Incident Responders (SHRP 2 L12)

**Response Focus**
- TIM Process

**Tier 2:**
Advanced TIM Workshop (for Mid-Level Managers)

**Program Focus** (Committee/Task Force)
- Relationships
- Needs Assessment
- Training
- Performance Evaluation
- Asset Management
- Contracting
- Administration & Staffing
- Finance/Budget

**Tier 3:**
Executive Level Briefings (for Decision Makers)
Traffic Incident Management Training

- **Train-the-trainer program** through FHWA and SHRP2
- **Multi-disciplinary training** with national curriculum
- Develops **cadre of emergency responders** who work together at an accident scene in a coordinated manner
- Improves **safety** to responders and travelers
- Developed by **responders** for responders
Training for Traffic Incident Responders (SHRP 2 L12)

Training Course Design:

• Final course developed so the entire course can be presented in its entirety or selected modules can be presented
  – Each module designed for stand-alone presentation
• Final course – 2-day “Train-the-Trainer” course
• Final course includes subset of materials for 1½-day practitioners’ course
• Certificate issued to participants based on successful course completion
Measuring Success

• What Gets Measured Gets Performed...
  – Quantifying TIM benefits will advance program continuity:

• Builds critical mass for program support from managers and elected officials:
  – Supporting what works

• Ensures buy-in from diverse stakeholders:
  – Multiple agencies, coordinated response

• Supports allocation of technical and budget resources
TIM Performance Measures

- **“Roadway” Clearance Time**
  - Time from first record of an incident by a responsible agency to all lanes being open to traffic

- **“Incident” Clearance Time**
  - Time from first record to time last responder leaves scene

- **Secondary Crashes**
  - Crashes beginning with the time of detection of the primary incident
    - within the incident scene or
    - within the queue, including the opposite direction
FHWA Annual TIM Self-Assessment

• **Purpose:** To provide a formal process for state and local transportation, public safety, and private sector partners to collaboratively assess their traffic incident management programs and identify opportunities for enhancement.

• TIM SA are due to FHWA annually
  – Recommended that the survey be completed using a collaborative approach between TIM stakeholders
  – Allows for identification of TIM initiatives that may be easy to implement

Additional information can be found at:

## TIM Self Assessment - National Results

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<tr>
<th></th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
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</thead>
<tbody>
<tr>
<td>Top 40 Average</td>
<td>75.0%</td>
<td>71.9%</td>
<td>69.6%</td>
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<tr>
<td>Top 75 Average</td>
<td>70.2%</td>
<td>65.9%</td>
<td>63.2%</td>
</tr>
<tr>
<td>Overall Average</td>
<td>68.2% [93]</td>
<td>64.6% [83]</td>
<td>61.3% [81]</td>
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</table>
Discussion: Improving Traffic Incident Management

- Self assessment
- How to move to the next level
- How to involve key stakeholders
- How to sell the program internally
TIM Take Aways

• Have you developed a TIM “program”?  
• Have you included all of the critical stakeholders in your TIM activities?  
• Are safety service patrols possible in your area?  
• Are you familiar with the NUG? And the NUG Framework?  
• Have you taken advantage of the TIM training available?  
• Have you done a TIM self assessment?
STRATEGIC HIGHWAY RESEARCH PROGRAM

Accelerating solutions for highway safety, renewal, reliability, and capacity

Emergency Operations
Session Purpose

• Provide an understanding of the role of transportation operations in emergency operations
• Provide overview of emergency operations
  – Understand differences between routine operations and operations during emergencies
  – Understand the challenges in operations for a variety of emergency event types
• Discuss the types of emergency events
• Show the importance of planning in advance of emergency events.
Types of Emergency Events

- Hurricanes / Tornadoes
- Floods
- Heavy rains
- Earthquakes
- Wild Fires
- Winter Weather / Snow and Ice Storms
- Homeland Security / Catastrophic Infrastructure emergencies
Relationship to TIM Programs

• Emergency preparedness is logically related to TIM programs
  – Emergencies and incidents will happen, but you don’t know when or where
  – Planning in advance mitigates the impacts
• TIM tactics/technologies logically extend into emergency transportation operations, emergency, preparedness, and disaster response
  – Planning
  – Relationships
  – Communications
Emergency Operations Goals

- Minimize the impact of disaster on people, property, environment, and the economy.
- Assure mobility of the public and emergency response personnel.
- Assure agency continuity.
- Protect agency facilities and resources.
Discussion Item

• What emergency preparedness actions has your agency undertaken?
• What has worked well?
• Where are there gaps or soft spots?
Common Characteristics of These Events

- Large scale impact
- Can happen anytime, often without warning
- Transportation is critical to effective response
  - Whether transportation infrastructure is affected or not
Prepare, Respond, Recover

Preparation and Mitigation

- Prepare for complete range of hazards and emergency transportation operations strategies.
- Develop structured field response and procedures – effective protocols for scene mobilization and management.
- Deploy technology and equipment – acquire and deploy communications, protective and investigative technology as appropriate.
- Develop performance measurement targets and measuring system to support continuous improvement.
- Establish ETO as formal program with policies, stakeholder identification, responsibilities, budget objectives, standardized training, and field demonstrations.

Response

- Detect and verify – confirm incident/event and its characteristics.
- Mobilize and respond – identify needed resources (personnel and equipment), transport to scene, and conduct consequences assessment (scope/scale).
- Secure scene/enforce – coordinate and manage on-scene resources and assist in priority responder routing, ensure safety.
- Extract/treat – remove victims; provide medical treatment and transportation (individual to mass evacuation); and towing and recovery services.
- Manage – apply traffic control procedures through clearance, evacuate as necessary.

Recovery

- Investigate/document – gather data to determine causation factors and provide input for agency performance assessment.
- Restore and repair – evaluate and restore infrastructure.
- Clean up/decontaminate – mitigate spilled loads and/or HAZMAT materials.
- Measure performance – extract and analyze time line data internally and with partners.
Emergency Operations Practice Areas

- Interagency Coordination and Communication
- Policy
- Emergency Response Planning
- Threat and Vulnerability
- Emergency Operations
- Equipment
- Mutual Aid
- Notification, Awareness, and Information Sharing

We will discuss each of these in the following slides
Interagency Coordination and Communication

• Coordination and communication is key during the emergency
  – Public information coordination needs to be included

• Communications interoperability
  – Interagency communications are critical
  – Options include common radio frequencies and mobile phones

• Interagency training is important to coordination and communication
Policy

• Protection of vulnerability assessment
• Critical infrastructure protection
• Cooperation between enforcement and transportation agencies for closing roadways
  – Natural link to TIM
Planning for Emergency Operations

• Define needs by type of emergency event
  – Consider each practice area mentioned earlier
• Define Stakeholders, Partners, and Resources
• Develop a Concept of Operations for emergency response
  – Emergency Operations Center
  – Roles and responsibilities
  – Staffing
    • Especially maintenance and operations needs
  – Relationship of transportation management center
Assessment is Key to Planning

• These elements are critical to successful emergency operations
  – Response times
  – Clearance times
  – Evacuation times
  – Operational strategies

• Assessment of these items can point to needed improvements
Make Sure Your Plan Includes

- Availability and staging of resources
  - Keep in mind non-transportation resources
- Operational Strategies, including:
  - Evaluation of alternate routes and shoulder use
  - Contraflow Operations
    - Cross Over Design
  - Traffic Signal Operation
  - Suspension of work zones
  - Mobilization of contractors and equipment
- Use of public transportation
- Traveler information
Vulnerability Assessment

• Vulnerability assessment identifies system components that may be weak spots in emergency or disaster situations
  – The process of identifying, quantifying, and prioritizing (or ranking) the vulnerabilities in a system

• Vulnerability assessments help identify critical parts of the system that should be
  – Improved (made less vulnerable)
  – Protected
  – Monitored
Emergency Response Planning and Vulnerability Assessment

- Vulnerable systems or components can compromise effective emergency response
- Emergency response planning can be a vulnerability mitigation tactic
  - If critical infrastructure fails, emergency response plans can be implemented in response
  - Emergency response planning may identify vulnerable components
Maintenance of Emergency Operations Plans

- After event de-briefing
- Routine maintenance and monitoring
- Updating emergency plans, contacts, resources
- Training Exercises
Emergency Operations

• Emergency Operations Center coordination
  – Liaisons, shared communications, “virtual” EOC
• Emergency traffic management
  – Clearly define roles
  – Evacuation plans
• Training and drills
• Personnel/resource management
  – Employee reporting
  – Contact lists
  – Identify on-scene liaisons
Discussion Items

• What types of emergency events have you encountered?
• Which ones have most significantly affected your agency’s emergency preparedness?
• What types of modifications to your program have you instituted as a result?
Equipment

• Equipment inventory management
  – List of resources and their location
  – Include TIM, maintenance, ITS resources
• Traffic control equipment / traffic management systems
  – TMC
  – Roadway/weather conditions (e.g. RWIS)
• Telecommunications and power
• Hazardous materials management
• Mapping and information equipment
• Emergency notification equipment
Mutual Aid

- Multi-jurisdictional agreements to provide aid across boundaries and borders
- Participation on tiger teams
Notification, Awareness, and Information Sharing

• Coordination and notification processes
  – Multiple means of notification
  – Media contacts / sharing info with the public
• Information sharing among response agencies
• Role of transportation agencies
  – Maintenance/Operations
  – Traveler information, public outreach, media relations
    • 511, DMS, HAR, Internet, Social Media
    • Emergency Alerts
    • TV, Radio, print media
    • Public information specialists
Recovery

- Investigate and document response
- Restore and repair
- Clean up and decontaminate (e.g. HAZMAT)
- Measure performance
  - Collect data
  - Analyze timeline and actions
  - Use to improve the plan
Continuation of TIM Exercise

- The tanker explodes, the structural integrity of the bridge is in question
  - The bridge has to close for an extended period of time
  - Alternate routes are few and/or incapable of handling the extra load caused by this disaster.

- What are your first actions after the tanker explodes?
- What do you need to plan for over the coming weeks?
Planned Special Events

Accelerating solutions for highway safety, renewal, reliability, and capacity
What is a Planned Special Event?

• Permanent multi-use venues
  – Sporting events
  – Concerts
  – Festivals
  – Conventions

• Less frequent public events
  – Parades
  – Fireworks displays
  – Bicycle races
  – Sporting games
  – Motorcycle rallies
  – Seasonal festivals
Operational Characteristics of Planned Special Events

Event Time and Duration
Area Type
Event Location
Event Time of Occurrence
Expected Attendance
Event Market Area
Event Type
Audience Accommodation
Planned Special Events and Reliability

• 24,000 major planned special events
  – 600 million attendees
  – $40 billion on “in-event” revenue
  – $160 Billion total economic impact
• If not managed, results could be:
  – Congestion costs of $1.7 to $3.5 billion
  – 90 to 180 million hours of delay
  – Excess fuel consumption (64 and 128 million gallons)
• Not just event patrons are affected
Phases of Managing Travel for Planned Special Events

- Initial Planning Activities
- Feasibility Study
- Traffic Management Plan
- Implementation Activities
- Day-of-Event Activities
- Post-Event Activities
Meeting the Challenges: Stakeholders

- Law Enforcement
- Event Organizer
- Elected Officials
- Private Industry
- Regional Organizations
- Media
- Transportation Agencies
- Public Safety
- Public
- Government Agencies

STRATEGIC HIGHWAY RESEARCH PROGRAM

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES
# Meeting the Challenges

## Event Planning Team
- Stakeholder representatives
- Develops overall plan

## Multi-agency Traffic Management Team
- Develops traffic management plan
- Prepares procedures and protocol
- Day-of-event traffic control and coordination

## Safety and Security Team
- Involves stakeholder representatives involved in event-specific safety and security planning
- Develops Safety & Security Plan and responses
- Implements and, if necessary, modifies the safety and security plan on the day-of-event
- Conducts post-event debrief
National Special Security Events (NSSE)

• Designated by the Secretary of the Department of Homeland Security

• Examples:
  – Presidential inaugurations
  – Presidential nominating conventions
  – Major sports events
  – Major international meetings
NSSE Implementation Planning

- Establish a steering committee
- Establish subcommittees
- Identify and acquire resources
- Construct an operational security plan
- Establish protocols
- Conduct training
- Execute the plan
- Complete after-action reviews
NSSE Roles and Responsibilities

• For a local DOT/DPW, involvement can include:
  – Alternative transportation plan development,
  – Sidewalk garbage can removal or debris removal
  – Signal removal, roadway restriping
  – Detours and multiple street closures, partial or complete highway/freeway closures, ramp or overpass closures
  – Expedited or closed construction projects.

• Local agencies and DOTs are often taking direction from a different authority
Cost Management and Recovery for Planned Events

• Planned event management responsibilities – including costs – are spread across many agencies.
  – Challenging to quantify
  – Challenging to report
  – Challenging to recover

• Staff overtime or contracted support required to properly staff large-scale events

• Who pays?
Event Cost Management Strategies

- Know the costs for all stages of event management
  - Labor/staff resources, including overtime
  - Equipment
  - Contracted services
  - Indirect costs
- Assign costs to activities
- Identify ways to minimize costs
- Strategies for cost recovery
  - Fees/taxes - Negotiate cost sharing
  - Grants - Effective marketing
Benefits of Managing Planned Special Events

– Promote interagency coordination, resource utilization and sharing
– Incorporate new procedures, plans, and practices into day-to-day operation of agencies
– Form partnerships and build trust
– Reduce traffic congestion
– Improve mobility
– Improve travel safety
Recommended Resources

• Freeway Management Handbook
• Managing Travel for Planned Special Events
• National Special Security Events: Transportation Planning for Planned Special Events (FHWA-HOP-11-012)
• Planned Special Events – Economic Role and Congestion Effects,” August 2008, Publication number FHWA-HOP-08-022
Group Discussion

• How does your agency:
  – Handle special events?
  – Describe the largest events undertaken, and some lessons learned.