Integrating Traffic Incident Management into the Long-range Planning Process

Efforts by FHWA & AASHTO to Advance the Practice
Presentation Overview

- Background
- Planning for Operations
- Traffic Incident Management (TIM) Overview
- The Objectives-Driven, Performance-Based Approach
- Methods & Benefits of Integration
- TIM Success Stories
Planning for Operations – A Federal Mandate

- The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)
  - Transportation System Management & Operations shall be considered in the MTP process
  - The MTP shall include “operational and management strategies . . . To relieve congestion and maximize safety and mobility of people and goods”
  - The process “shall address congestion management . . . through the use of . . . operational management strategies”
Planning for Operations – A Federal Mandate

- SAFETEA-LU (23 Code of Federal Regulations 450.208) goes on to stipulate that statewide transportation planning shall explicitly consider . . .
  - Transportation system management and investment strategies designed to make the most efficient use of existing transportation facilities AND
  - Methods to reduce traffic congestion and to prevent traffic congestion from developing in areas where it does not yet occur
Federal Partnership Approach

• Federal Highway Administration (FHWA) Offices
  – Operations
  – Planning
  – Safety

• Federal Transit Administration (FTA) Offices
  – Planning & Environment
  – Program Management
  – Research, Demonstration & Innovation
FHWA Office of Operations

- Leadership in management & operation of the system
- Responsible for efforts in:
  - Congestion Management
  - Intelligent Transportation Systems (ITS) Deployment
  - Traffic Operations
  - Emergency Management
  - Freight Management
  - Operations

http://ops.fhwa.dot.gov
Areas of Emphasis for Operations

Creating a Foundation for 21st Century Operations

- Reducing Recurring Delay
- Reducing Non-recurring Delay
- Improving Mobility and Security through Better Emergency Management
- Improving Global Connectivity by Enhancing Freight Management and Operations
Office of Operations Program Areas (part 1)

- Arterial Management
  - Access Management
  - Operations Asset Management
  - Traffic Signal Timing
- Congestion Mitigation
- Corridor Traffic Management
- Emergency Transportation Operations
- Facilitating Integrated ITS Deployment
- Freeway Management
- Freight Analysis
- Freight Infrastructure
- Freight Operations and Technology
- Freight Professional Development
Office of Operations Program Areas (part 2)

- Manual on Uniform Traffic Control Devices
- National Transportation Operations Coalition
- Planning for Operations (RTOCC)
- Performance Measurement
- Real Time Traveler Information
- Road Weather Management
- Tolling & Pricing Program
  - Value Pricing Pilot Program
- Traffic Analysis Tools
- Travel Demand Management
- Traffic Incident Management
  - Planned Special Events
- Vehicle Size and Weight
- Work Zone Management
PLANNING FOR OPERATIONS
Planning for Operations

• Formerly known as:

  Regional  
  Transportation  
  Operations  
  Collaboration &  
  Coordination
Planning for Operations

- A joint effort between operations and planning to achieve effective Transportation System Management and Operations (TSM&O).
- Includes three important aspects:
  - Collaboration and coordination
  - Consideration of TSM&O in planning
  - Synergy from integration
Advantages of Planning for Operations

• Actions build strong connections
• Discover operational strategies help attain near- and long-term goals and objectives
• Integrates operations thinking into the planning of infrastructure projects
• Leverages existing coordination efforts
• Unites all providers, operators, and responders for a common purpose (save lives & improve the system)
Outcomes of Not Planning for Operations

- Increasing risks and exposure for responders
- Piecemeal system with limited functionality
- Loss of efficiency
- More costly investments needed with less benefit
TRAFFIC INCIDENT MANAGEMENT
Traffic Incident Management (TIM)

• A planned and coordinated multi-disciplinary process to:
  – Detect, respond to, and clear traffic incidents and
  – Restore traffic flow quickly & safely

• Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of:
  – Motorists
  – Crash victims
  – Emergency responders
TIM Impact on Delay

TIM Impact on Secondary Incident Frequency

- 20-25% of all incidents are secondary
- Likelihood of a secondary incident increases 2.8% for every minute of first incident
  - A 35-minute incident has almost a 100% likelihood of triggering a secondary incident
- Secondary incidents are often more severe than the primary incident
TIM Impact on Society

- **Annual cost of congestion:**
  - $97.7 billion (+ 45% from 2008)
- **Cost per person:**
  - ~$600
- **Annual cost of traffic crashes:**
  - ~$300 billion (+ 83% from 2008)
- **Cost per person:**
  - ~$1,525

“The emotional toll for Americans who lose a friend or loved one in a motor vehicle crash has a steep financial counterpart — an average $6 million per fatal accident”

November 2011 Study
TIM Impact on Responder Safety

• Average annual number of responders struck and killed nationally while working in or near moving traffic:
  – Fire/Rescue and EMS: 6 to 8/year
  – Law Enforcement: 10 to 12/year
  – Tow/Recovery: 50/year
  – Highway: 100/year + 20,000 injured

Source: Emergency Responder Safety Institute
THE OBJECTIVES-DRIVEN, PERFORMANCE-BASED APPROACH TO PLANNING FOR OPERATIONS
Desk Reference - Seminal Document in the Series

• Equips planners and their partners to build a transportation plan with:
  – Operations objectives
  – Performance measures
  – Strategies

• That are:
  – Relevant
  – Reflect community values and constraints
  – Improve mobility and safety
The O-D, P-B Approach

- Goals
- Objectives
- SMART Objectives
- Solutions & Strategies
- Timing & Funding
- Implementation
- Monitoring & Reporting

Monitoring and Evaluation

Regional goals and motivation

Operations objectives

Systematic process to develop and select M&O strategies to meet objectives—Process encompassed by CMP

M&O Strategies

Metropolitan transportation plan

Transportation improvement program and other funding programs

Implementation

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Transportation Engineering/Planning

U.S. Department of Transportation
Federal Highway Administration
SMART Operations Objectives

Operations objectives are developed through collaboration with a broad range of regional participants and reflect regional values

Specific. Sufficient to guide approaches

Measurable. Quantitative measurement

Agreed. Consensus among partners

Realistic. Can be accomplished

Time-bound. Identified time-frame for accomplishment
Making a SMART TIM Objective

• **LONG RANGE GOAL**
  - Provide a safe, efficient, and coordinated system of facilities and services that meets the multimodal travel needs of citizens and businesses.

• **OBJECTIVE**
  - Minimize the traveler delay.

• **TIM OBJECTIVE**
  - Minimize delay due to the time to identify, verify, respond to, and clear incidents.
Making a SMART TIM Objective

- **STRATEGIC, MEASURABLE, AGREED TO OBJECTIVE**
  - Reduce the time to identify, verify, respond to, and clear incidents.

- **REALISTIC, TIME-BOUND OBJECTIVE**
  - Reduce the time to identify, verify, respond to, and clear incidents by 25% within 5 years.

- **A SMART TIM OBJECTIVE**
METHODS AND BENEFITS OF INTEGRATION
Developing SMART TIM Objectives

• Focus Area
• Operations Objectives
• Performance Measures
• Data Needs & Sources
• TIM Strategies to Achieve Objective
• Safety-related Impacts
Key TIM Performance Measures

- “Roadway” Clearance Time
  - The time between first recordable awareness of an incident (detection/ notification/verification) by a responsible agency and first confirmation that all lanes are available for traffic flow.

- “Incident” Clearance Time
  - The time between the first recordable awareness and the time at which the last responder has left the scene.

- Secondary Crashes
  - The number of secondary crashes beginning with the time of detection of the primary incident where a collision occurs either a) within the incident scene or b) within the queue, including the opposite direction, resulting from the original incident.
Documents Supporting the Approach

- Management & Operations in the Metropolitan Transportation Plan
- An Interim Guidebook on the Congestion Management Process in Metropolitan Transportation Planning
- Advancing Metropolitan Planning for Operations
- Advancing Metropolitan Planning for Operations: The Building Blocks of a Model Transportation Plan Incorporating Operations
TIM SUCCESS STORIES
Georgia DOT & Atlanta MPO

- All or portions of 18 Counties
- 98 Municipalities
- Average daily one-way commute ~30 miles in 2011
- 174,000 total crashes in 2008
- 405 crash-related fatalities in 2011
- \textit{PLAN 2040 LRP} adopted in August 2011

\textbf{ATLANTA MPO AREA}
Five Strategic TIM Initiatives

• Metro Atlanta Traffic Incident Management Enhancement (TIME) Task Force:
  – TIM coordination and policy change
• Towing Recovery Incentive Program (TRIP):
  – a Quick Clearance incentive program for heavy-duty incidents
• Atlanta Regional Management and Operations Subcommittee
• Open Roads Policy & GDOT/Highway Patrol Partnership
• Regional Traffic Operations Program (RTOP)
Traffic Incident Management Enhancement (TIME)

- Organizes and facilitates jurisdictional TIM Teams
- Nine Voting Board Members
- Operates from bylaws
- Board Members:
  - GA Dept. of Public Safety (DPS)
  - Local Law Enforcement
  - Local Fire & EMS
  - GDOT HERO, TMC, and Traffic Ops. Office
  - Wrecker & HAZMAT Companies
  - FHWA, Region IV
  - Atlanta Regional Commission
  - GA Emergency Management Agency

Mission:
“...to facilitate the **safest and fastest** traffic incident clearance for emergency responders and the motoring public.”
The Organizational Structure of TIM

M&O Subcommittee
ARC Facilitator

Groups
- Regional Traffic Signal Operations Task Force
- Traffic Incident Management Enhancement Task Force (TIME, TRIP, HERO)
- NaviGAtor Users Group

Projects
- NaviGAtor
- Tolling & Managed Lanes
- Regional Evacuation Planning
- Relevant UASI* Projects
  *Metro Atlanta Urban Area Security Initiative

Other relevant groups/projects will be added (e.g., Access Management, Transit ITS, Data Collection, etc.)
Towing Recovery Incentive Program (TRIP)

- TRIP is a TIME Task Force Initiative
- Provides a “Quick Clearance” incentive program for heavy-duty incidents
- Initially funded with CMAQ; future funding identified in PLAN 2040
- Wreckers have specialized training and equipment (certified)
- 11-to-1 benefit-cost ratio
Open Road Policy

• Establishes a benchmark for the State (DPS and GDOT)

• Signed by:
  – Georgia Governor
  – Public Safety Commissioner
  – Department of Transportation Commissioner

• Key Principles:
  – Expedited removal of wrecked vehicles, debris, and spilled cargo
  – Restoration of safe and orderly traffic flow in an urgent manner
  – Three Layers of Responsibility: GDOT, GA DPS, Local Agencies

OPEN ROADS POLICY: “QUICK CLEARANCE FOR SAFETY AND MOBILITY”
• Quick Clearance will be a high priority
• Coordinate with GDOT to setup traffic control and alternate routes
• Relocate incidents and investigations to minimize “gawking” or “rubber necking”
• Review and update wrecker authorization programs
• Seek alternative measures to clear or off-load hazardous cargo
Georgia Department of Transportation

- Provide initial traffic control within 30/60 min. (peak/off-peak) of notification
- Upgrade scene safety
- Provide fully compliant temporary work zones at major incidents
- Coordinate with DPS to implement detour routes and incident clearance strategies
- Deploy heavy equipment when necessary (TRIP)
- Relocate non-hazardous cargo as quickly as possible
- Place temporary traffic control devices after clearance for adjacent damaged vehicles or left behind cargo
- Document hours and equipment used for traffic control, road clearance, and debris removal
Local Agencies

- Endorse the Open Road Policy (ORP)
- Will not interfere with or impede DPS or GDOT in their ORP responsibilities
- Coordinate, cooperate, and communicate with DPS and GDOT
- Develop procedures to meet goal of providing initial traffic control within 30/60 min. (peak/off-peak) of notification
- Train and inform managers, operators, and responders of the ORP
Training

• Foundation (FHWA, NIMS, NTIMC, O.C.G.A.)
• Incident Management Process
• Incident Types/Classifications
• Incident Scene Priorities
• Stakeholder Responsibilities
• Responder Safety
• Emergency Temporary Traffic Control and Scene Safety
• Incident Scenarios and Action Items
Funding the Program

- $893,000,000 Roadway Operations/Safety (13%)
- $385,000,000 Roadway/Bridge Capacity
- $2,172,000,000 Roadway Maintenance
- $2,148,000,000 Managed Lanes
- $1,239,000,000 Transit Capital and Formula Funds
- $298,000,000 Bicycle/Pedestrian
- $458,000,000 Other

Total: $3,858,000,000

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U.S. Department of Transportation
Federal Highway Administration
Jacksonville, FL – Investment in TIM Training

- TIM Handbook
- TIMe4Safety Video
  - United the responder community
  - Standardized approach
  - Distribution throughout Florida and elsewhere
Traveler Information Improvements

- Decision Support System
- Instrumentation on 20 NE FL bridges
- Use of NOAA satellites for communications
- Web-based delivery