Unifying Incident Response
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Transportation and public safety organizations collaborate with the private sector to promote safe, coordinated, and efficient management of traffic incidents.

(Above) Improving incident response will ease congestion and more effectively protect response teams like the one shown here. Photo: Igor Karon, Shutterstock®.

In May 2006, the U.S. Department of Transportation (USDOT) announced the National Strategy to Reduce Congestion on America’s Transportation Network, also known as the Congestion Initiative. The strategy acknowledges that “congestion is one of the single largest threats to [the Nation’s] economic prosperity and way of life” and costs the United States an estimated $200 billion per year.

From minor incidents to multicar crashes with fatalities, traffic incidents constitute a growing national concern, costing time and revenue for motorists and businesses, and — all too often — taking the lives of drivers, occupants, and responders. Traffic incidents account for 25 percent of congestion on U.S. roadways and are challenging to address because their location, timing, and intensity cannot be anticipated. In fact, the nonrecurring nature of traffic incidents not only affects travel times but also disrupts system reliability, turning a routine 15-minute errand into a 45-minute wait. Every minute that a freeway lane remains blocked during peak travel time results in 4 minutes of delay, during and even well after the lane is cleared.

Further, traffic incidents are starting to affect business efficiency. “A delayed delivery can be a disaster for today's supply chains,” says Douglas G. Duncan, president and CEO of FedEx Freight®, “Congestion will roll back the savings in logistics and inventory costs that American businesses have achieved in recent years through 'just-in-time delivery,' and make American companies less competitive worldwide.”

Benefits of Traffic Incident Management

- Congestion relief
- Economic savings
- Fuel savings
- Personnel savings (law enforcement, EMS, and fire) through faster, more
Beyond congestion delays, public safety and transportation professionals responding to roadway incidents can be at high risk for serious injuries or fatalities. As roads grow more congested, the risk increases, as evidenced by U.S. Department of Labor (DOL) statistics showing an upward trend in the numbers of incident responders struck and killed by vehicles every year. The DOL’s Bureau of Labor Statistics reported that 372 responders died in 2006 in “struck-by” incidents — when responders are struck by passing vehicles while they are working at an incident scene — up from an annual average of 369 for 2001-2005. Struck-by incidents accounted for 7 percent of the total number of fatal occupational injuries in 2006.

Improving safety for response personnel and clearing incidents as quickly as possible are the focus of a new multidisciplinary initiative known as the National Unified Goal (NUG) for Traffic Incident Management. The NUG brings major stakeholders together to speed clearance of traffic incidents without compromising responder safety — in fact, to increase responder safety while addressing the congestion issue.

Responding to the Challenge

"Effective transportation operations are as much a part of a highway system as smooth pavement and well-maintained bridges," says Federal Highway Administration (FHWA) Associate Administrator for Operations Jeffrey F. Paniati. Traffic incident management (TIM) is essential to the efficiency and safety of highway systems and to USDOT efforts to alleviate congestion. "The safe and quick clearance of traffic incidents will reduce congestion and improve mobility on our highways and will improve safety for motorists and incident responders," says Paniati. TIM is one of the key focus areas to help alleviate congestion under the operational and technological improvements component of USDOT’s Congestion Initiative. (See www.fightgridlocknow.gov for more information.)

Responders must work together efficiently to accomplish the many tasks necessary to clear incidents quickly and safely, reduce traffic congestion, and safeguard responders and motorists. In major incidents — those most likely to cause extended traffic delays — these tasks generally involve public safety responders responsible for emergency medical services (EMS), emergency communications personnel, fire and rescue services, law enforcement, transportation workers, towing and recovery staff, and public information specialists. Each discipline has a distinct mission and role on the scene, which can make coordination challenging.
Proposed NUG Strategies

Applying the motto "Working Together for Improved Safety, Clearance, and Communications," NTIMC developed 18 strategies to promote the 3 goals that comprise the NUG. NTIMC’s mission statement states: “The NTIMC is committed to working together to promote, develop, and sustain multidisciplinary, multi-jurisdictional TIM programs to achieve enhanced responder safety; safe, quick traffic incident clearance; and more prompt, reliable, interoperable communications.”

Crosscutting Strategies

Strategy 1. TIM partnerships and programs. TIM partners at the national, State, regional, and local levels should work together to promote, develop, and sustain effective TIM programs.

Strategy 2. Training. TIM responders should receive multidisciplinary National Incident Management System training and TIM training.

Strategy 3. Goals for performance and progress. TIM partners should work together to establish and implement performance goals at the State, regional, and local levels for increasing the effectiveness of TIM, including methods for measuring and monitoring progress.

Strategy 4. TIM technology. TIM partners at the national, State, regional, and local levels should work together for rapid and coordinated implementation of beneficial new technologies for TIM.

Strategy 5. Effective TIM policies. TIM partners at the national, State, regional, and local levels should join together to raise awareness regarding proposed policies and legislation that affect achievement of the NUG objectives of responder safety; safe, quick clearance; and prompt, reliable traffic incident communications.

Strategy 6. Awareness and education partnerships. Broad partnerships should be developed to promote awareness and education regarding the public’s role in safe, efficient resolution of incidents on the roadways.

Objective 1: Responder Safety

Strategy 7. Recommended practices for responder safety. Recommended practices for responder safety and traffic control at incident scenes should be developed and widely published, distributed, and adopted.

Strategy 8. Move-over/slow-down laws. Drivers should be required to move over and/or slow down when approaching traffic incident response vehicles and personnel on the roadway.

Strategy 9. Driver training and awareness. Driver training and awareness programs should teach motorists how to react to emergencies on the roadway to prevent secondary incidents, including injuries and deaths of traffic incident responders.

Objective 2: Safe, Quick Clearance

Strategy 10. Multidisciplinary TIM procedures. TIM partners at the State, regional, and local levels should develop and adopt multidisciplinary procedures for coordination of TIM operations, based on nationally recommended practices and procedures.

Strategy 11. Response and clearance time goals. TIM partners at the State, regional, and local levels should commit to achieve goals for traffic incident response and clearance times (as a component of broader goals for more effective TIM — see Strategy 3).

Strategy 12. 24/7 availability. TIM responders and resources should be available around the clock.

Objective 3: Prompt, Reliable Incident Communications

Strategy 13. Multidisciplinary communications practices and procedures. Traffic incident responders should develop and implement standardized multidisciplinary communications practices and procedures.
Strategy 14. Prompt, reliable responder notification. All traffic incident responders should receive prompt, reliable notification of incidents to which they are expected to respond.

Strategy 15. Interoperable voice and data networks. State, regional, and local TIM stakeholders should work together to develop interoperable voice and data networks.

Strategy 16. Broadband emergency communications systems. National TIM stakeholders (working through NTIMC) should work together to reduce the barriers to developing and integrating broadband emergency communications systems (both wired and wireless).

Strategy 17. Prompt, reliable traveler information systems. TIM partners should encourage development of more prompt and reliable traveler information systems that will enable drivers to make travel decisions that reduce the impacts of emergency incidents on traffic flow.

Strategy 18. Partnerships with news media and information providers. TIM partners should join with news media and information service providers to provide prompt, reliable incident information to the public.

In 2004, the National Traffic Incident Management Coalition (NTIMC) formed to coordinate between these disparate disciplines. The coalition’s 19 member organizations then created the NUG to serve as a strategic roadmap for activities aimed at improving safety for response personnel and clearing incidents as quickly as possible. Specifically, the NUG provides a framework for coordinating the major stakeholders at an incident site to speed clearance of traffic incidents while improving responder safety. The coalition's expectation is that coordinated operations with clear lines of responsibility will increase responder safety while addressing the congestion issue. This partnership marks the first time such a broad coalition of traffic incident responders has collaborated to produce policies to address common concerns.

What Is the NUG?

In November 2006, FHWA funded and sponsored an NTIMC conference in Newport Beach, CA, to obtain input from designated stakeholders on a draft NUG that was developed over a 1-year period. Developed under the leadership of NTIMC and with input from organizations representing traffic incident responders across the country, the NUG constitutes a national policy with three major goals: responder safety; safe, quick clearance of incidents; and prompt, reliable, and interoperable communications.

NTIMC encourages State and local transportation and public safety agencies to adopt this unified, multidisciplinary policy because it has the potential to dramatically improve the way traffic incidents are managed on U.S. roadways.

The possibility of enhancing responders' safety at incident scenes is a key motivator of support for the NUG. "The safety of firefighters is a big issue in the fire service," said David Daniels, chairman of the Safety, Health, and Survival Section of the International Association of Fire Chiefs, during the 2006 NTIMC conference, where invited delegates provided input on a preliminary draft of the NUG. "We are very interested in the opportunity to partner with other incident responders for safety."

Harriet Cooley, executive director of Towing and Recovery Association of America, Inc., added: "We lose [tow operator] lives in the line of duty at the same rate as other responders. Responder safety is a top priority for our industry."

Sustained, strategically planned partnerships build and maintain accountability for the transportation, first responder, towing, and law enforcement organizations managing traffic incidents at the scene. TIM programs will continue to be key to the NUG’s success at the State, regional, and local levels.

Successful TIM programs address mobility through the adoption of performance measurements. Recognizing that you can't manage what you can't measure, FHWA and NTIMC are collaborating to create national metrics that will help responders develop their own programmatic and incident response goals and commit to them in written agreements. Once partnerships have common, consistent, and reliable methods for measuring incident duration, they will have a means to establish common response goals (such as clear the incident within 90 minutes) and then to measure the relative benefit of different strategies and tactics deployed to attain the goal.
Like police, fire, and emergency medical personnel, tow truck operators, such as the one shown here, often find themselves in harm's way due to the nature of their jobs.

Other NUG strategies promote responder safety through establishing full-function service patrols; encouraging safe, quick clearance of incidents through the adoption of laws and policies; and recommending integrated, interoperable incident communications through intelligent transportation systems (ITS) technologies, such as integrating computer-aided dispatch systems into traffic management centers for more effective communication among responders.

**Responder Safety**

A critical step toward improving responder safety is adopting and enforcing "driver removal," "move-over," and "authority removal" laws. Driver removal laws require motorists involved in minor crashes, without apparent or serious injuries and where vehicles are still drivable, to move their vehicles out of travel lanes to safer locations, such as the road shoulder, before exchanging information or waiting for law enforcement or towing response. About 50 percent of the States have some form of driver removal law, also called "move-it" or "steer it, clear it" laws, but the laws vary widely in wording, coverage, and sanctions.

Move-over laws require drivers passing an incident to move over and slow down for emergency vehicles and responders on the roadway. FHWA and NTIMC agree that definitions of "emergency vehicles" and "emergency responders" must include all traffic incident responders, both public and private sector, including State department of transportation (DOT) service patrols. (More information about move-over laws is available at www.respondersafety.com.)

A third type of law, known as authority removal laws, provides authorization for predesignated public agencies to remove disabled or wrecked vehicles and spilled cargo and other property that interferes with the normal flow of traffic. In 2008, FHWA and NTIMC will undertake an effort to increase awareness of driver responsibilities to comply with these State laws or policies and to encourage more consistency in move-it (driver removal) laws from State to State. FHWA will publish an informational document on clearance laws including move-it, move-over, and authority removal laws that will contribute to greater responder safety and aid in quick clearance of incidents.

Another key to improving responder safety is development of recommended practices that are acceptable to all responding disciplines at the incident scenes. Through multidisciplinary TIM training, NTIMC will promote these practices, which might include safe, quick clearance for responders; prompt, reliable responder notification; the National Incident Management System (NIMS); and full-function service patrol operations — vehicular units and transportation personnel that patrol assigned routes, usually on freeways, and provide a variety of services from motorist assistance to full incident response.

Driver training and awareness also are essential to improving responder safety. AAA, an NTIMC member organization in the process of ratifying the NUG, is launching a public education campaign to promote driver awareness of move-over laws and other ways that motorists can prevent secondary incidents. Secondary incidents involving emergency responders can take many forms, but they typically occur when responders working at the scene of a traffic incident are struck by passing vehicles.
Safe, Quick Clearance Of Incidents

Although public safety responders support the concept of quick clearance, they are concerned that the need to clear the road quickly must not impede their abilities to safely and efficiently carry out their missions of treating patients, controlling fire hazards, enforcing traffic laws, and investigating crash scenes.

The NUG’s strategies for safe, quick clearance reflect those proposed by FHWA and provide guidance and techniques to clear roads more efficiently without sacrificing safety or other missions, such as EMS, law enforcement, crime scene investigation, motorist assistance, and fire safety. “The International Association of Chiefs of Police’s Highway Safety Committee, part of an organization of more than 21,000 police executives from countries around the world, cares about this issue, and we are participating in the NUG,” chairman of the committee Earl Sweeney said at the 2006 NTIMC conference.

To ensure safe, quick clearance, all organizations that are part of traffic incident response need to have 24/7 — or round-the-clock, every day — capacity. Although fire, law enforcement, EMS, and towing responders already are available 24/7, transportation agencies often do not have response capabilities or service patrols available outside of regular business hours. Consequently, incident responders must manage traffic incidents without the transportation agency's resources and capabilities, or they need to wait for transportation personnel who are offduty but oncall to report to the scene. FHWA and NTIMC recognize the resource challenges facing State transportation agencies as they move toward providing 24/7 traffic incident response. Staffing and outfitting service patrol vehicles will need to be implemented incrementally over time.

“A serious commitment to responder safety and a true partnership between first responders and transportation organizations addressing roadway incidents implies 24/7 availability of onscene traffic control and motorist assistance,” says FHWA's Paniati. FHWA and State DOT officials are building a strong case for this 24/7 availability on interstates and other high-volume transportation facilities. Traffic control during nighttime work zone operations is particularly important. Many State and local highway authorities are conducting their work zone operations overnight to reduce the impacts of construction on motorists. But nighttime operations can increase the danger to construction workers due to reduced visibility, speeding, and drunk driving. As a result, full-function service patrols and emergency services increasingly are being called to work zones to address incidents at night.

In addition, cost-benefit studies indicate a clear advantage to establishing these full-function service patrols. For example, in 2004 the Florida Department of Transportation (FDOT) sponsored a study to evaluate the cost-effectiveness of the FDOT Road Ranger program, which was established in 1999 to assist disabled vehicles along congested freeway segments and to provide quick detection, verification, and removal of freeway incidents. The results of the analysis revealed a net benefit due to reductions in incident delays and fuel consumption. The overall benefit-to-cost ratio for the program was 25.8 to 1, with individual districts
reporting benefit-to-cost ratios ranging from 2.3 to 1 to 41.5 to 1. More information on this study and other examples of positive cost-benefit ratios for service patrol programs around the country are available on USDOT’s Intelligent Transportation Systems Joint Program Office Web site at [www.its.dot.gov](http://www.its.dot.gov).

FHWA and NTIMC encourage State and local transportation authorities to establish full-function service patrols, including full-time dispatch triage capabilities, in their largest metropolitan areas and to move toward 24/7 services in other areas where practical. FHWA and NTIMC will release a handbook in 2008 to provide technical assistance to State and local authorities in building effective service patrols that serve as extensions of the community’s first-response capabilities.

One goal of the NUG is to improve communications among responders, who, like the police and medical vehicles shown here, often have to jostle for position to address incidents.

Prompt, Reliable, and Interoperable Communications

Incident communications involve complex technical and institutional issues, yet are essential to achieving TIM goals. Technical problems include: (1) nonstandard communications system architectures that make it difficult to share information across disciplines and jurisdictions, (2) implementation of wireless emergency location technologies so cell phone users can call 9-1-1, and (3) a lack of broadband spectrum.

The following institutional issues also pose challenges: (1) a lack of uniform procedures and policies for incident notification across all disciplines, and (2) a lack of standardized procedures and policies for onscene communication across disciplines.

The NUG calls for developing and implementing standardized, multidisciplinary practices and procedures to improve communications at traffic incidents. These strategies include the following:

- Developing systems and procedures for prompt, reliable notification of responders regarding incidents to which they are called.
- Encouraging State, regional, and local TIM stakeholders to work together to build interoperable voice and data networks.
- Promoting more prompt and reliable traveler information systems that will enable drivers to make more responsive travel decisions, reducing the impacts of emergency events on traffic flows.
- Encouraging TIM partners to partner with news media and information service providers to provide prompt, reliable incident information to the public. FDOT and the Florida Highway Patrol, for example, have built strong relationships with the media, as have TIM teams in the Atlanta, GA, area, and in the Houston, TX, metropolitan area.

NUG Adoption

Nearly all of the 19 NTIMC member organizations, as well as some State and regional organizations, have ratified the NUG. (See "Organizations That Have Ratified the NUG" on page 29.)

"Within AASHTO, I have made the NUG one of my key objectives," says Victor Mendez, president of the American Association of State Highway and Transportation Officials (AASHTO). "We are committed to supporting its implementation through the individual States."
The NUG is an important, high-level program for AASHTO that will allow us to accomplish many positive outcomes.*

FHWA's Paniati agrees: “The NUG will play a critical role in structuring improvements to TIM efforts, facilitating more efficient responses, reducing congestion, and creating safer working environments for responders around the country. We at FHWA strongly encourage all agencies involved in traffic incident management to adopt the NUG.”

**Organizations That Have Ratified the NUG**

**Fully Ratified:**
- American Association of State Highway and Transportation Officials
- Association of Metropolitan Planning Organizations
- American Traffic Safety Services Association
- Association of Public-Safety Communications Officials International, Inc.
- Cumberland Valley Volunteer Fireman’s Association
- Emergency Responder Safety Institute
- I-95 Corridor Coalition
- International Association of Fire Chiefs
- International Fire Service Training Association
- Institute of Transportation Engineers
- Intelligent Transportation Society of America
- National Association of State EMS Officials
- National Emergency Number Association
- National Volunteer Fire Council
- Towing and Recovery Association of America, Inc.

**Quasi-Ratified (endorsed at a policy committee level and optimistic about full endorsement soon):**
- AAA
- International Association of Chiefs of Police

**Action Pending (in the process of pursuing approval):**
- American Transportation Research Institute

**Other Endorsements (non-NTIMC-member organizations that have formally endorsed the NUG):**
- Hampton Roads Highway Incident Management Committee
- Hampton Roads Fire Safety Officials Committee
- National Fallen Firefighters Foundation
- Washington State Fire Fighters’ Association

The NUG provides a framework for law enforcement, fire, EMS, transportation, towing, and 9-1-1 responders to work together more safely and efficiently at incident scenes such as this one on a highway in St. Louis County, MO.

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Wisconsin-Milwaukee and a master's in civil and environmental engineering from the University of Wisconsin-Madison.

**Kimberly C. Vásconez** is team leader for the Emergency Transportation Operations program at FHWA. Her team covers TIM, planned special events, and evacuation and movement coordination planning. She is on several Transportation Research Board panels related to evacuations and serves as the secretariat for the AASHTO Emergency Response Planning Practices Task Force of the Special Committee on Transportation Security. A professional emergency manager, Vásconez worked for 14 years for the Federal Emergency Management Agency and the U.S. Department of Homeland Security and 4 years with the U.S. Agency for International Development's Office of U.S. Foreign Disaster Assistance before joining FHWA in 2005. She holds a master's degree in public and international affairs from the University of Pittsburgh and a bachelor's in journalism from Indiana University of Pennsylvania.

**David Helman** is manager of the TIM Program for FHWA. He is a founder and ex officio member of NTIMC's Steering Committee and played a key role in aligning NTIMC's NUG with the TIM elements of the Congestion Initiative. Before joining FHWA, Helman was a safety programs engineer for the West Virginia Department of Transportation. He holds bachelor's degrees from the University of Illinois and Rockford College, and a master's degree in civil engineering from West Virginia University.

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