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Successfully Managing Traffic Incidents Is No Accident

by *Kimberly C. Vásquez*

FHWA is taking the lead to enhance the multidisciplinary responses required when problems strike on busy roadways.



Ronald Moore, ResQue-1, LLC

Responders create a safe zone for incident response operations by blocking lanes with a fire engine and traffic cones. FHWA is taking the lead in efforts nationwide to improve the effectiveness of traffic incident response.

Listening to traffic reports and watching the evening news serve as daily reminders of the number of traffic incidents that occur on the Nation's roadways. For public safety responders and support teams removing vehicles from the highways, the risk of injury or death is constant. In 2012 alone, more than 250 public safety professionals -- including police officers, firefighters, emergency medical services providers, and tow operators -- lost

their lives in the line of duty, with an estimated 13 percent of those occurring during incident response.

Moreover, incidents cost billions each year in congestion-related costs and impacts on local economies.

Since the 1990s, the Federal Highway Administration (FHWA) has worked with its State and local partners to define and develop a new public safety discipline focused on safely and quickly clearing incidents from highways and roadways. Today, FHWA systematically coordinates a national program to support the safe and expedient clearance of incidents.

This is the first in a series of articles in Public Roads that will explore national efforts to enhance and professionalize traffic incident management (TIM) as a public safety discipline. The series begins with an overview of TIM and how FHWA is providing national leadership in establishing programs, guidance, and education to help State and local authorities improve the safety and effectiveness of responses to incidents on the Nation's roadways.

TIM Defined

TIM involves the detection and verification of incidents, response and clearance, and restoration of traffic flow. Incident response requires stakeholders from a variety of disciplines, including law enforcement, firefighting, transportation, emergency medical services, public safety, towing and recovery, public works, and hazmat responders.

Through collaborative planning and operations, responders can reduce a traffic incident's duration and impacts on safety and congestion. Further, they can protect themselves and safeguard crash victims and other motorists by applying best practices and operating under a unified command structure.

Safety and Incident Management

The National Highway Traffic Safety Administration (NHTSA) is responsible for documenting the numbers of crashes and fatalities on the Nation's highways. In 2011, more than 32,300 motorists and others lost their lives in highway incidents. Among the fatalities were trained responders who died while trying to assist the public.

"TIM responders and motorists have to constantly protect themselves from the 'D Drivers' - - distracted, drunk, drugged, drowsy, and simply dumb -- that cause the majority of the traffic incidents," says Paul Jodoin, TIM program manager with FHWA.

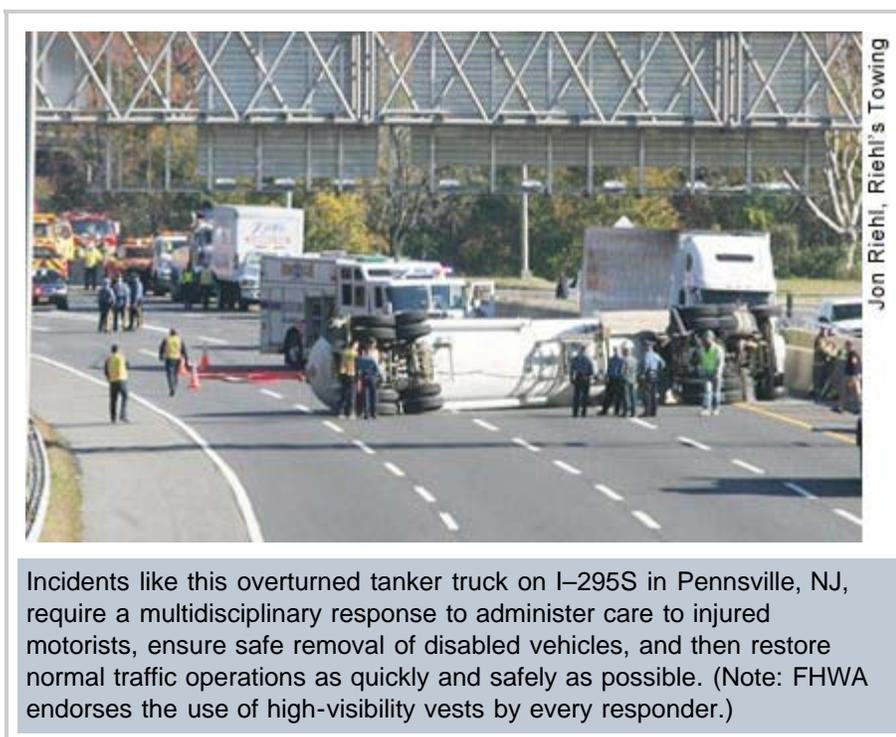
In 2012, according to estimates compiled by officials with the Hampton Roads Transportation Planning Organization in Virginia, nationwide 120 police officers, 83 firefighters, 21 emergency medical services personnel, and 34 tow operators were killed in the line of duty. Although no central organization collects the number of traffic operations officials -- including safety/service patrols and maintenance professionals -- killed while aiding in incident response, these numbers nonetheless underscore the importance of maintaining a focus on safety during incident response.

In addition to those killed on the job, many others are injured or experience near-miss situations. First responders risk their personal safety to provide medical assistance to victims and to investigate the cause of crashes, while highway workers and tow operators work adjacent to traffic to clear the scene and resume normal operations. Other drivers also are at risk of becoming involved in secondary crashes due to unexpected slowing or stopping, or distraction caused by the primary crash scene.

Congestion Caused by Crashes

According to calculations by the Texas A&M Transportation Institute, highway congestion in the United States costs billions of dollars each year. For every minute a freeway lane is blocked during peak use, an estimated 4 minutes of delay result after the incident is cleared, accounting for 4.2 billion hours of delay annually. The cost of crashes, which are

a major contributor to congestion, dwarfs the cost of congestion, as suggested by AAA reports released in 2008 and 2011. In 2005 (the most recent data available at the time of the 2008 study), congestion cost the United States more than \$67.6 billion. The same report indicated that traffic crashes in 2005 cost more than \$164.2 billion -- more than twice as much as congestion.

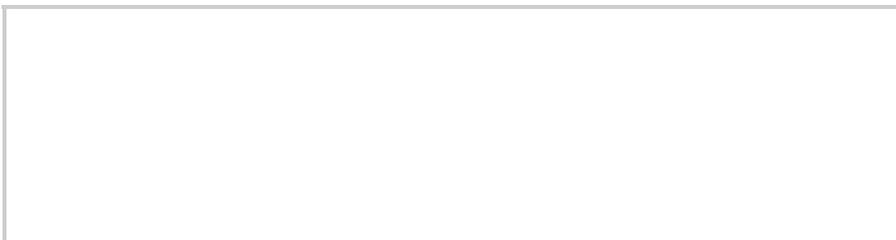


Four years later, the numbers for crashes and congestion had grown exponentially. In November 2011, AAA reported that the societal cost of traffic crashes in 2009 (again, the most recent data available at the time of the study) was \$299.5 billion, more than three times the \$97.7 billion cost of congestion in that year.

The cost of crashes factors in elements such as the cost of State and local police response, towing and recovery operations, fire and emergency medical service response, damage to vehicles, cleanup operations, and ecological studies (when spills occur). The calculation does not include costs from insurance impacts, medical costs outside of transport to the hospital, or lost time in wages.

FHWA's Role in TIM

Motorists often see a mix of flashing blue, red, and amber lights at incident scenes. Law enforcement officials secure the scene, manage traffic control, make reports, and initiate crash investigations. Fire personnel might stage trucks to block lanes to safeguard responders and affected motorists, extricate victims from cars if significant structural damage has occurred, and handle hazardous materials spills when needed. Emergency medical professionals rush to the scene to address serious injuries. Finally, towing and recovery personnel, public works employees, and transportation maintenance crews are on the scene to clear the incident and restore safe driving lanes. In addition, safety/service patrols, a more recent transportation operations tool, rush to the scene to aid in traffic control and documentation.





Jim Laughlin, Nebraska Department of Roads

The message "Move Over, Slow Down for Highway Workers" appears on the sides and back of this truck to remind motorists of the Move Over legislation in place to help protect incident responders.

It takes a village to respond to an incident. However, many of these responding groups do not routinely coordinate with State and local departments of transportation (DOTs). To address this need, FHWA established a national program that brings together the many players to local, regional, and State planning tables to facilitate better management, planning, and operations at traffic incidents.



Jon Riehl, Riehl's Towing

To help clear incidents like this overturned tanker truck, TIM responders must describe the situation clearly or send a photograph of the scene to the towing company to ensure that the proper equipment reports to the scene.

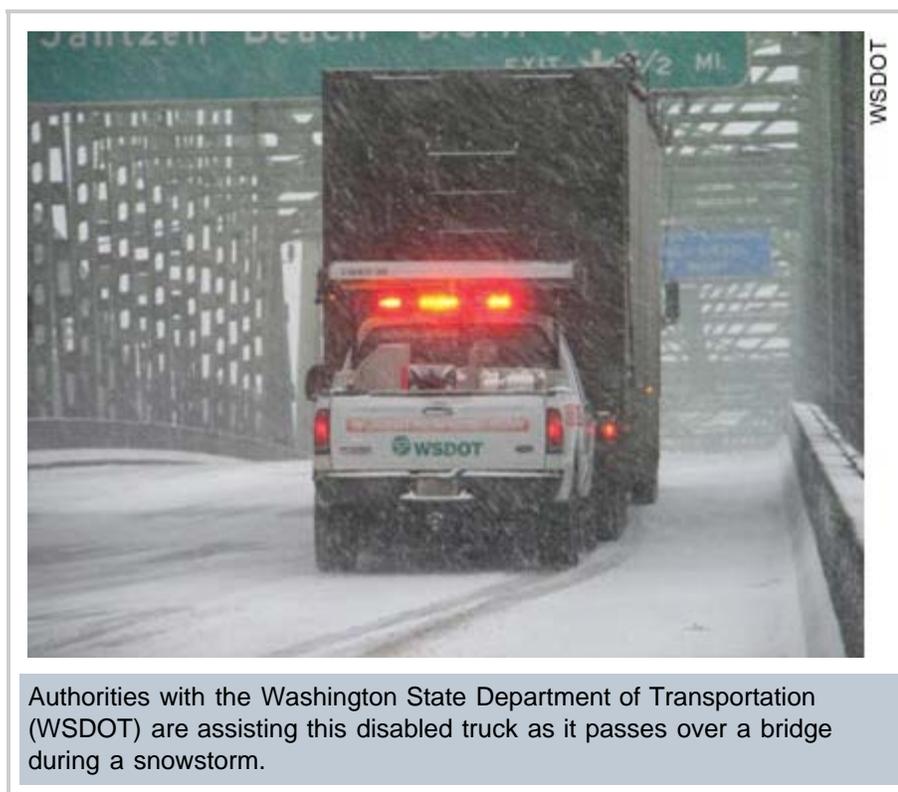
FHWA and State DOTs are active partners in working with public safety and support organizations. FHWA's Office of Operations has contributed to the evolution of this public safety discipline for more than two decades. During that time, FHWA division offices and

State DOTs have assumed a leadership role in working with planning and tactical partners to identify the best TIM policies, plans, processes, and tools, and to define what constitutes an effective TIM program.

Staff with FHWA's Office of Operations continues to work with governments at all levels, as well as numerous national associations, to enhance the TIM discipline. Activities fall into four categories: (1) national leadership on legislation, including coalition building, a national goal, and executive-level leadership; (2) institutional development and sustainability; (3) practitioner capacity building, including safety/service patrols, improved worker and equipment visibility, and training; and (4) public awareness and education. What follows are details on the major undertakings by FHWA on behalf of the TIM program.

National Leadership On Legislation

FHWA encourages States to pass legislation or establish State policies designed to safeguard responders and motorists at the scene of a crash. These laws are known as Move Over, Driver Removal, and Authority Removal laws.



Authorities with the Washington State Department of Transportation (WSDOT) are assisting this disabled truck as it passes over a bridge during a snowstorm.

All 50 States have adopted Move Over laws, which aim to safeguard responders. The laws require motorists to move over one lane or slow down as they pass a vehicle with flashing blue, red, or amber lights.

Driver Removal laws or policies require drivers to move their vehicles off the roadway if the damage is minor and no injuries have occurred. Forty-one States had passed such laws as of March 2013. Contrary to what was taught in drivers' education courses in the past, motorists involved in a crash now should move their vehicles from travel lanes when possible. Doing so provides a safer environment -- on a shoulder or side street -- for both the driver and responders. Law enforcement officers can conduct crash investigations more safely, and insurance companies also prefer that drivers move to a safer place to prevent secondary crashes and other injuries.

The third type of legislation, Authority Removal laws, allows authorities to move vehicles from roads after a crash. Many law enforcement officers and fire personnel are reluctant to push vehicles for fear of lawsuits. Authority Removal laws, however, enable responders to reopen traffic lanes quicker, thus reducing the likelihood and number of secondary incidents. Forty States had passed such laws as of March 2013.

Leadership on Coalition Building

In addition to encouraging legislation, FHWA builds relationships with and between key responder organizations. Preliminary efforts focused on forming a coalition of organizations whose members are involved in traffic incident planning or response.

In the early 1990s, FHWA financed the National Incident Management Coalition, which sponsored 20 conferences around the country to assemble various stakeholders and make the case for coordinated efforts. The coalition's work continued through meetings of focus groups of TIM experts in 1996 and again in 2001, designed to document state-of-the-practice recommendations. In addition, in 2000, the coalition released the *Traffic Incident Management Handbook*, which first coined the term traffic incident management -- or TIM -- and served as a revision of the 1991 *Freeway Incident Management Handbook*.



WSDOT's Incident Response Team is assisting State troopers and other responders working to clear an incident. The electronic sign mounted on top of the truck helps to redirect traffic around the scene of the crash. (Note: FHWA endorses the use of high-visibility vests by every responder.)

FHWA and the National Incident Management Coalition held a national TIM conference in 2002, which resulted in the expansion of the coalition and revision of its mission to focus on incident management on highways. The National Traffic Incident Management Coalition (NTIMC), formed in 2004, was the first national organization focused entirely on incident management nationwide on highways, roads, and bridges and in tunnels. Members of stakeholder organizations formed the nucleus of NTIMC, which expanded into a forum of 26 associations consisting of leaders in the field of traffic incident response.

"The key for the advancement of TIM programs in the United States is leadership -- understanding the strategic value of TIM to transportation safety and efficiency, incorporating it into agency vision, policies, and training, and making it happen," says Associate Administrator Jeffrey Lindley, with FHWA's Office of Operations. "An underlying theme is partnerships and the continued progress toward improving communication, coordination, and collaboration among transportation and public safety agencies. Traffic incident management is important business, but we need sustained leadership and partnership to realize the benefits."

NTIMC worked to promote effective, multidisciplinary TIM programs and practices. The coalition served a niche as it recommended a national agenda for those responding to incidents on the highways and roadways. Congestion relief, responder safety, and domestic emergency preparedness shaped the NTIMC platform for improvements to TIM. In 2008, NTIMC released a strategic plan to link public safety and transportation communities to define, standardize, and advance the state of the practice.

The strategic plan included the following goals:

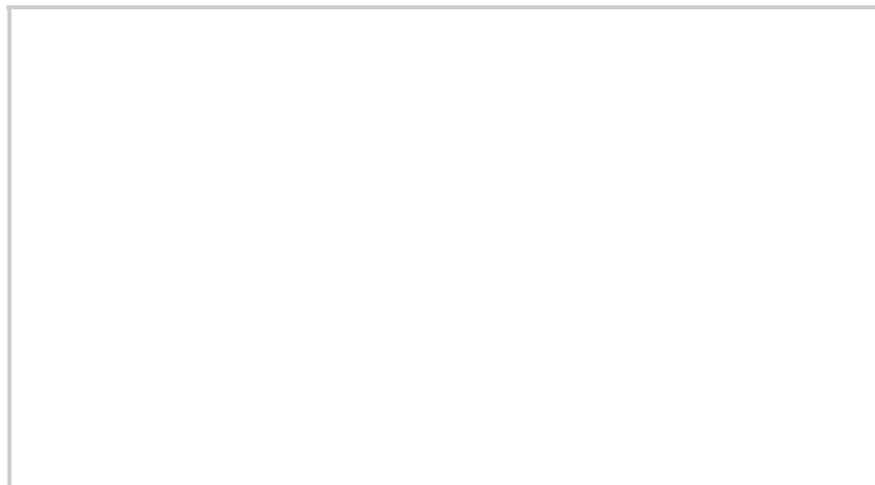
- Promote and support the development and conduct of local, regional, and statewide TIM programs through peer networking, mentoring, and knowledge exchange among public safety and transportation professionals.
- Provide leadership in the development of multidisciplinary best practices, guides, standards, and performance measures in support of sound TIM activities.
- Develop and recommend appropriate research problem statements for referral to one or more coalition partners to take advantage of multiple research avenues.
- Develop a delivery mechanism for NTIMC products, including a national unified goal for TIM (more on this later).

In 2009, NTIMC formed the TIM Network as a way for practitioners to join the coalition and contribute to products under development. The network grew to more than 1,000 members in just a few years. FHWA relies on this group of practitioners to serve on focus groups and review policy documents and training materials.

A National Unified Goal

One of NTIMC's most significant contributions followed an April 2005 international scan sponsored by FHWA, the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). Representatives from these organizations and an NTIMC member collected best practices in the area of TIM from several European nations. Using 25 recommendations that resulted from the scan, NTIMC spearheaded the creation of a national unified goal for TIM in the United States.

The goal, as adopted by NTIMC committee members in November 2007, provides the framework around which local and State jurisdictions can form and improve their TIM programs. The goal encourages common, multidisciplinary policies, procedures, and practices to support responder safety; safe, quick clearance; and prompt, reliable, and interoperable communications. Further, it includes 18 strategies to address critical elements of an effective TIM program, such as awareness and education partnerships and goals for response and clearance times. In some States, such as Virginia, legislators are working to establish the national unified goal as a key planning tool for public safety and emergency management.





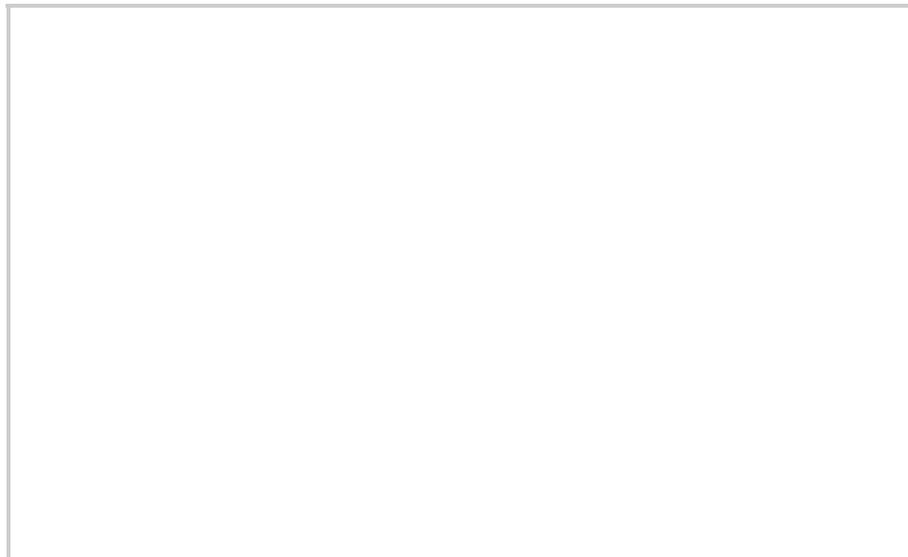
This motorist is adhering to her local Driver Removal law, which requires drivers involved in a traffic incident to move their vehicles out of the travel lanes when possible.

Executive-Level Support

As the national TIM program progresses, FHWA's ties to the public safety community are strengthening. In June 2012, FHWA conducted an executive-level Transportation and Public Safety Summit, bringing together top officials from law enforcement, firefighting, emergency medical services, towing, and transportation to discuss supporting FHWA's delivery of a training course for responders. The group also addressed some of the greatest challenges facing the TIM community, including building executive-level support within the responder community.

Summit participants identified a key action item: the need to change the current structure of the coalition to gain buy-in from senior executives. The recommendation included closing out NTIMC work in 2013 and creating a new structure consisting of an executive leadership group, a technical working group, and a national networking group.

Executive leadership group. This small, executive-level group includes experts from law enforcement, firefighting, and transportation as well as leaders from associations, such as AASHTO, the International Association of Chiefs of Police, the International Association of Fire Chiefs, and the National Volunteer Fire Council. The group's goal is to identify barriers and opportunities to promote progress toward TIM goals and strategies.





In some cases, such as this one involving an overturned car, authorities may need to remove a vehicle from the roadway. Many States have Authority Removal laws that protect certain responders from lawsuits resulting from damage to vehicles during removal.

Technical working group. This group, yet to be established, will include a broader set of stakeholders to provide input and recommendations to the executive leadership group. The technical working group will act as an intermediary between senior leadership and the responder communities.

National networking group. This group, which evolved from the existing TIM Network, consists of a network of associations and practitioners who share information on the state of the practice and identify program gaps.

“With buy-in and input from officials at each level, we can ensure that TIM achieves a sustained presence and priority of focus among governmental officials and others responsible for developing and administering these programs locally,” says Mark Kehrl, director of FHWA’s Office of Transportation Operations.

Developing and Sustaining TIM Programs

In addition to encouraging executive-level support for TIM programs, FHWA provides technical assistance and educational materials to jurisdictions and regions to help them establish or maintain their programs.

In 2002, FHWA facilitated creation of a TIM Self Assessment tool, which transportation and public service agencies can use to assess their programs and identify opportunities for improvement. Program managers perform the online survey annually to evaluate progress, and FHWA uses the aggregate results to identify program gaps and better manage resources. In 2008 and 2011, FHWA revised the tool to incorporate performance metrics and rephrase some of the questions to better align with the national unified goals.

FHWA also maintains a peer-to-peer program that helps jurisdictions address their programmatic questions about TIM, improve collaboration with law enforcement, and conduct traffic planning for special events. Moreover, FHWA occasionally provides direct technical assistance when a program has special needs. For example, FHWA sent TIM law enforcement experts to assist several jurisdictions in Oregon and Kentucky with integrating law enforcement and transportation into TIM planning.





Ronald Moore, ResQue-1, LLC

Proper traffic control, as shown here, aids in managing the flow and establishes a safe area for responders.

Jurisdictions also can judge their performance during operations using incident-specific measurements established by FHWA. Performance criteria include duration of roadway closure, time responders were on the scene, and number of secondary crashes.

TJ Nedrow, who is director of the National Volunteer Fire Council for Washington State and served as vice chairman of the NTIMC, says the best measure of success is responder safety. "TIM success is achieved with all partners working together for the common good," he says. "Show me a successful TIM operation, and I'll show you responders returning safely."

FHWA also is working with representatives from traffic management centers to develop ways to improve operations to address nonrecurring traffic challenges such as crashes and inclement weather events.

Practitioner Capacity Building

To complement its technical assistance and training efforts, FHWA has developed and posted a number of relevant publications on its "Traffic Incident Management" Web site at http://ops.fhwa.dot.gov/eto_tim_pse/about/tim.htm.

Available documents range from the 2010 update of the *TIM Handbook* (FHWA-HOP-10-013) to a primer series on safe, quick clearance topics and the *Service Patrol Handbook* (FHWA-HOP-08-031) and *Field Operations Guide for Safety/Service Patrols* (FHWA-HOP-10-014). FHWA currently is developing a concept of operations document for jurisdictions formulating a TIM program. FHWA drew on the U.S. Department of Homeland Security's *National Response Framework* to develop a *National TIM Framework*, which incorporates the *TIM Handbook* and describes the roles and responsibilities of all responding partners. The *National TIM Framework* will be available in fall 2013.

FHWA also developed a TIM Performance Measurement Knowledge Management System, available for download at http://ops.fhwa.dot.gov/publications/fhwahop10011/tim_kms.htm. The tool has two complementary components: a searchable knowledgebase and a managed email list. The system houses best practices, lessons learned, and tools related to performance management.





Arizona State Highway Patrol

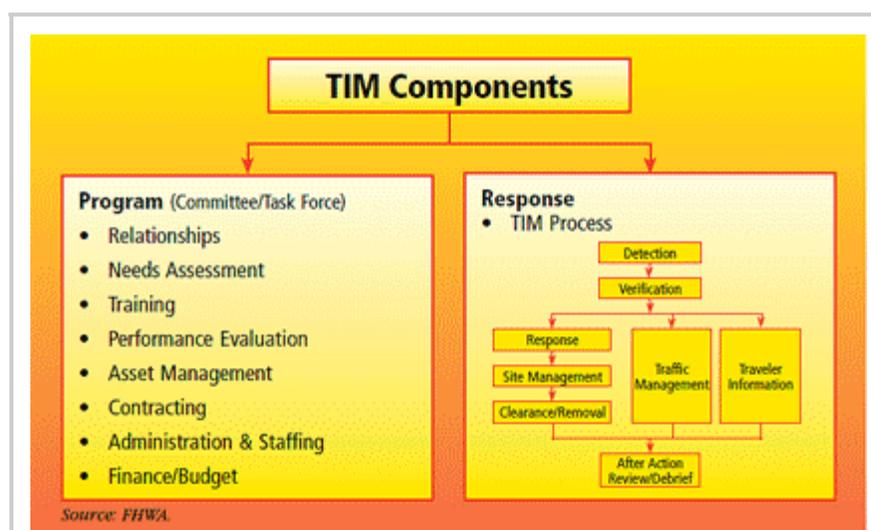
Proper lighting is essential for responders, like this Highway Patrol officer, after dark. Too much or too little light may cause secondary crashes or injuries to responders and motorists. For example, current technology for emergency lighting may be blinding to drivers. Responder training provides awareness of such lighting issues.

Safety/Service Patrols

The Service Patrol Handbook and *Field Operations Guide for Safety/Service Patrols* establish methods to set up, equip, and manage safety/service patrol operations. These patrols are State and local DOT assets that respond to traffic incidents along with law enforcement, fire service, emergency medical services, and other responders. Safety/service patrols may perform a variety of services, including fixing a flat tire, providing gasoline, and even conducting traffic control during an incident.

Also known as courtesy patrols or freeway response vehicles, these responders primarily exist only in larger jurisdictions due to the associated costs. Examples include Florida's Road Rangers and Maryland's Coordinated Highways Action Response Teams, or CHART.

FHWA's *Service Patrol Handbook* encourages safety/service patrols to provide a full range of services. Many jurisdictions provide these patrol services during peak travel times only, while others provide 24/7 service. When a DOT does not provide these services, State or local police may equip a vehicle with traffic control or other response equipment. Some DOTs, such as Florida, even pre-stage vehicles off major highways with key assets (such as lighting, extra cones, variable message signs, and flares).



With State and local budgets declining, safety/service patrols could face cutbacks. However, their operations often are a cost-effective way to respond to traffic incidents, compared to sending higher cost law enforcement or fire personnel. Many safety/service patrol programs also benefit from private sponsorship. FHWA is working with the University of Maryland to develop a tool that will help DOTs justify budgets for safety/service patrols by demonstrating the benefits and costs of maintaining the capability.

Advances in Visibility

FHWA officials also are working to improve responder visibility on roadways. For example, FHWA endorsed the U.S. Fire Administration's efforts to raise the conspicuity of markings on fire vehicles, making them more visible when blocking the incident scene. The markings include reflective, high-visibility patterns on the rear and sides of a response vehicle to catch the eyes of drivers. Newer fire engines and tow trucks include the neon reflective striping.



Full-service safety/service patrol vehicles, like this one from the Tennessee HELP program, carry traffic control equipment and other tools used in responses to incidents ranging in severity from a blown tire to a vehicle fire.

In addition, FHWA worked with the Cumberland Valley Volunteer Firemen's Association -- a regional organization of firefighters and emergency responders in Pennsylvania, Maryland, and Delaware -- and its advisory committee, the Emergency Responder Safety Institute, to revise the *Manual on Uniform Traffic Control Devices* in 2009 to include a section requiring responders to wear high-visibility vests. Today, high-visibility vests help safeguard responders working on-scene, especially at night.

"Visibility to oncoming traffic is the simplest way to protect workers and responders from harm," says Jim McGee, highway programs administrator with the Nebraska Department of Roads. "Federal regulation requires anybody working in the right-of-way of a Federal-aid highway to wear high-visibility apparel."

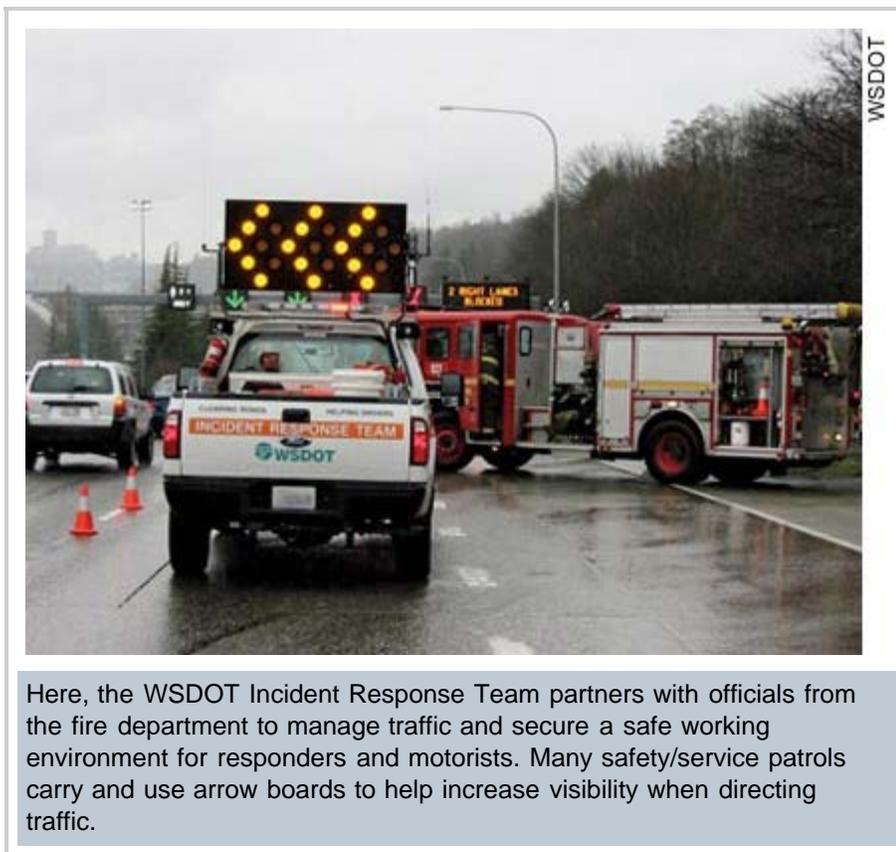
Training for Practitioners

Providing training for decisionmakers and mid-level managers who oversee TIM practitioners is another service that FHWA offers. The agency developed a training series that provides specific instruction geared toward senior-level executives; mid-level managers from law enforcement, fire, transportation, towing, emergency medical services, and other on-scene TIM partners; and practitioners.

In the past 3 years, FHWA conducted workshops for mid-level managers in 48 locations, including both metropolitan and rural areas. The workshops brought together stakeholders

from the TIM community to discuss actions to take to enhance and improve coordination of programmatic and operational activities in their regions. The participants used the national unified goal to develop an action plan specific to their TIM programs.

During the workshops, a majority of metropolitan areas identified the need to develop TIM training as one of their priority action items. This common conclusion reinforced FHWA's commitment to allocating resources to training. Over the next 3 years, FHWA and its partners plan to deliver sessions of responder training developed by FHWA, AASHTO, and TRB. FHWA recently adopted the course as an Every Day Counts initiative, providing funding and support to accelerate delivery of the training.



Here, the WSDOT Incident Response Team partners with officials from the fire department to manage traffic and secure a safe working environment for responders and motorists. Many safety/service patrols carry and use arrow boards to help increase visibility when directing traffic.

FHWA also supports development of an evaluation methodology for the Strategic Highway Research Program, or SHRP2, e-learning platform and training, which complements the TIM responder training. FHWA continues to rely on its partnerships with AASHTO, the International Association of Chiefs of Police, the International Association of Fire Chiefs, and the National Volunteer Fire Council to ensure rapid deployment of this training.

Public Awareness And Education

Outreach to the public constitutes another challenge that resonated with the participants in FHWA's workshops. To help jurisdictions educate drivers about what to do when they are involved in a crash, FHWA released a TIM Outreach Toolkit in July 2012. The toolkit includes sample materials such as talking points and press releases. The resource is available at www.ops.fhwa.dot.gov/eto_tim_pse/timtoolbox/index.htm.

Several partners also have produced public awareness and education tools. For example, the Emergency Responder Safety Institute produced videos titled "Move Over," "Move It," and "Blocking Procedures at Roadway Incidents." "Move Over" explains how motorists should maneuver around first responder vehicles by moving to the next lane and slowing down when passing emergency responders. "Move It" describes how motorists should move their vehicles onto the shoulder or side street if there is no serious injury and the vehicles are serviceable after a crash. "Blocking Procedures at Roadway Incidents" aims to educate fire service personnel on best practices for blocking lanes with their fire trucks to help protect crash victims and responders.

The I-95 Corridor Coalition also has products such as publications, videos, and toolkits that jurisdictions can use to spread the word on how the public should respond to incidents. In addition, the State of Georgia produced keychains with reminders of what to do and phone numbers to call when involved in a crash.

FHWA is exploring opportunities with the insurance industry and AAA to expand public awareness and education. Specifically, these efforts would help to reassure motorists that insurance companies now encourage motorists to move their vehicles to safer locations, unlike the former policy of leaving vehicles as is for crash investigations.

Looking Ahead to 2023

Over the next 10 years, FHWA aims to work toward the following goals:

- Reduced or eliminated injuries and fatalities among both responders and motorists
- Rapid clearance of incidents, greatly reducing traffic congestion and risk of secondary crashes
- Formal TIM programs that benefit corridors, regions, and States
- Adoption of TIM as a core mission for all State and local responders and DOTs
- Routine collection of data to measure performance and demonstrate improved responses
- Professionalization and integration of TIM among first responders, transportation agencies, and tow operators through training and performance measurement

In the short term, officials with FHWA's Office of Operations expect a dramatic change in how public safety and support practitioners conduct TIM operations. FHWA's work and leadership in this discipline already is yielding successes.

"Anecdotal information indicates that local and State fire, law enforcement, and transportation organizations continue to take actions to improve their TIM responses," says FHWA's Jodoin. "The numbers generated by the TIM Self Assessment tool demonstrate dramatic improvements, particularly in those jurisdictions where we have conducted training. This is very encouraging, and we hope to continue to see similar progress throughout the country."

Scores from the self assessment within the top 75 jurisdictions rose from 43 percent in 2003 to 70.2 percent today. Performance measures, which many jurisdictions are now collecting, will provide a clearer picture of how collaboration at all levels, best practices, training courses, and tools provided by FHWA and its partners are yielding faster, safer responses to roadway incidents with less congestion and fewer deaths and injuries.

Kimberly C. Vásconez is team leader of traffic incident and events management in FHWA's Office of Operations. Her team develops national policy, guidance, and tools for TIM, traffic planning for special events, incident management for transportation officials, and disaster transportation planning. Vásconez has 23 years of disaster management experience with FHWA, the U.S. Department of Homeland Security, the Federal Emergency Management Agency, and the U.S. Agency for International Development. She holds a master's degree in public and international affairs from the University of Pittsburgh and a bachelor's degree in journalism from Indiana University of Pennsylvania.

For more information, visit http://ops.fhwa.dot.gov/eto_tim_pse/about/tim.htm or contact Kimberly Vásconez at 202-366-1559 or kimberly.vasconez@dot.gov.

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