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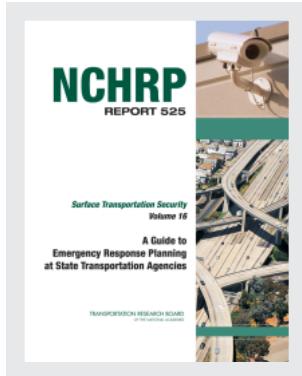
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A Guide to Emergency Response Planning at State Transportation Agencies

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP REPORT 525

Surface Transportation Security
Volume 16
A Guide to
Emergency Response Planning
at State Transportation Agencies

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WASHINGTON, D.C.
2010
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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

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The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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FOR E W O R D

By S. A. Parker

Staff Officer

Transportation Research Board

The 2010 *A Guide to Emergency Response Planning at State Transportation Agencies* replaces a 2002 document, *A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents*. Many states have used the 2002 Guide to institute some kind of emergency response plan; however, the risk environment of threats and hazards has changed since 2002. In addition, new technologies and new, more comprehensive laws, policies, and guidelines require that transportation agencies broaden their operational agenda beyond traffic and weather events to include emergency response planning for all hazards.

The 2010 Guide is designed for use by executive management and emergency response planners at state transportation agencies as they and their local/regional counterparts assess their respective emergency response plans and identify areas needing improvement. The 2010 Guide reflects accepted practices in emergency response planning and incorporates advances made over the last decade in Traffic Incident Management (TIM), Emergency Transportation Operations (ETO), and supporting programs.

In addition to the introduction, background, and institutional context for emergency response planning, the 2010 Guide has two major sections:

- **Sections 3–5: Design an Emergency Preparedness Program**—this contains a program-level review of the all-hazards approach to emergency management, which will help transportation agencies assess their plans and identify areas needing improvement.
- **Section 6: Resource Guide**—this contains guidance on organizational, staffing, and position decisions; decision-making sequences; a full emergency response matrix; and a purpose and supporting resources for action reference matrix.

The 2010 Guide provides links in its appendices to model emergency operations plans, policy and procedural memoranda, and training and exercise plans. These are supplemented on line with

- Appendix K, **an annotated bibliography**;
- Appendix L, which consists of the white paper, “Identification and Delineation of Incident Management and Large-Scale Emergency Response Functions,” and a **spreadsheet tool** referenced within the White Paper;
- Appendix M, a downloadable **Microsoft® PowerPoint slide show**; and
- **Tracking Emergency Response Effects on Transportation (TERET)**, a spreadsheet tool (developed under a previous NCHRP project) designed to assist transportation managers to recognize mass-care transportation needs and identify and mitigate potential transportation-related criticalities in essential services during extreme events.

This volume of *NCHRP Report 525* was prepared under NCHRP Project 20-59(23) by Telvent; Boyd, Caton & Grant; and PB Consult.

Surface transportation agencies are recognizing that because of their broad policy responsibility, public accountability, large and distributed workforces, heavy equipment, and robust communications infrastructure, they are uniquely positioned among civilian government agencies to swiftly take direct action to protect lives and property. The institutional heft of such agencies also provides a stable base for campaigns to mitigate or systematically reduce risk exposure over time through all-hazards capital investments.

This is the sixteenth volume of *NCHRP Report 525: Surface Transportation Security*, a series in which relevant information is assembled into single, concise volumes—each pertaining to a specific hazard or security problem and closely related issues. These volumes focus on the concerns that transportation agencies are addressing when developing programs in response to the terrorist attacks of September 11, 2001, and the anthrax attacks that followed. Future volumes of the reports will be issued as they are completed.

To develop this volume in a comprehensive manner and to ensure inclusion of significant knowledge, available information was assembled from numerous sources, including state departments of transportation. A topic panel of experts in the subject area was established to guide the researchers in organizing and evaluating the collected data and to review the final document.

This volume was prepared to meet an urgent need for information in this area. It records practices that were acceptable within the limitations of the knowledge available at the time of its preparation. Work in this area is proceeding swiftly, and readers are encouraged to be on the lookout for the most up-to-date information.

Volumes issued under *NCHRP Report 525: Surface Transportation Security* may be found on the TRB website at <http://www.TRB.org/SecurityPubs>.



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SUMMARY

A Guide to Emergency Response Planning at State Transportation Agencies

The unprecedented advancement in technology, social change, and worldwide economic development has ushered in a 21st Century world much different from that at the close of the 20th Century. At the same time there has been unparalleled technological advancement, the nation has endured a major terrorist attack; a wide range of weather-related calamities; the specter of chemical, biological, radiological, nuclear, and explosive (CBRNE) events associated with terrorist threats; and cyber threats. These events have raised the global and national consciousness of vulnerability and the profile of emergency response management.

In response to the changing threat environment, the nation has taken numerous steps to improve planning for incidents of all types, including broadening the definition of threat *incidents* and instituting an *all-hazards* threat response system. The Department of Homeland Security (DHS), which consolidated federal emergency management and response agencies following the 9/11 terrorist attacks, leads these initiatives. In response to a sequence of Presidential Directives, DHS has developed policies, plans, and guidelines and a systematic and organized set of emergency preparedness and emergency response doctrines and procedures.

Key players in the emergency response process are the owners-operators of surface transportation infrastructure—state, territorial, tribal, and local transportation agencies. In addition to the traditional role of managing major traffic and weather events, state transportation agencies are also assuming greater responsibility for large-scale evacuations resulting from natural disasters (e.g., hurricanes and wildfires). In addition, state transportation agencies are asked to play a new role in addressing no-notice evacuations and situations requiring mobility limitations—or shelter-in-place/quarantine—in response to biological outbreaks, epidemics, pandemics, and threats of weapons of mass destruction (WMDs).

It is crucial that state transportation agencies better understand how to upgrade their traditional activities and integrate them with the national emergency activities—generally led by designated state and regional Emergency Management Agencies (EMAs). Throughout this integration process, it is important that state transportation agencies recognize the overlap and need for consistency regarding procedures, protocols, relationships, and resources across the complete spectrum of disruptive and/or emergency hazards. *A Guide to Emergency Response Planning at State Transportation Agencies* (the 2010 Guide, the Guide) is a tool designed and developed specifically to assist these agencies as they plan for and assume this changing role.

NOTE: The term *state transportation agency* usually refers to state departments of transportation (DOTs). As used in this publication, the term includes those agencies at the state, territorial, multi-regional, local (county and city), and tribal authorities.

Nongovernmental organizations and private-sector stakeholders involved in emergency response can also benefit from using this 2010 Guide.

2 A Guide to Emergency Response Planning at State Transportation Agencies

Relevance and Context

The 2010 *A Guide to Emergency Response Planning at State Transportation Agencies* replaces a 2002 document, *A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents* (AASHTO, 2002). Most states have used the 2002 Guide to institute some kind of emergency response plan; however, the risk environment of threats and hazards has changed. In addition, new technologies and new, more comprehensive laws, policies, and guidelines require that transportation agencies broaden their operational agenda beyond traffic and weather events to include emergency response (ER) planning.

In assuming this role in the state's emergency response program, the transportation agency must understand that DHS and the Federal Emergency Management Agency (FEMA) manage a consolidated ER planning process. They also regularly publish updated policies and guides that support standardizing the ER process. Most states have some type of emergency response plan in place, but these plans also are often revised and updated.

In this context, as emergency response planning becomes an integral part of a state transportation agency's operational agenda, it is important to understand that the transportation agency always fulfills a support role in the emergency response effort to major incidents. Rather than serving as the lead emergency response agency, the transportation agency will receive direction from the state or some higher government authority.

Challenges Facing State Transportation Agencies

The importance of planning for emergency response (and the value of this 2010 Guide and its use) relates to the following important challenges for transportation agencies:

- **Increased public awareness of the impact of major incidents and emergencies.** State transportation agencies are increasingly accountable for their performance in areas such as evacuation, shelter-in-place/quarantine, and HAZMAT response.
- **Protection of critical assets can be essential in some contexts,** but the scarcity of resources implies the need for an organized risk management approach on an all-hazards basis that can capitalize on a range of funding sources.
- **Extending the range of transportation agency responsibilities to all-hazards requires a custom-tailored response to the state's particular circumstance.** There are significant economies to closely coordinating traffic-related incident procedures and resources with those needed by other types of emergencies.
- **State agency plans and procedures are expected (indeed required if the agency seeks federal compensation) to be related to state and regional emergency structure and plan(s).** This involves multi-agency, multi-jurisdictional cooperation in emergency planning and operations.
- There are **specific federal requirements and accepted practices** that establish standard practice.
- **State transportation agencies have important resources that can be made available in the event of emergencies** (transportation management centers, surveillance, field staff, trucks, etc.). EMAs have not always adequately considered these resources in their ER planning.
- **Effective emergency response is increasingly multimodal,** including all modes and sectors that use the highway system—personal travel, transit, and commercial vehicle transport.

NOTE: The 2010 Guide does not directly address aviation, marine, heavy rail, or pipeline modes, although these modes and the threats against them can affect transportation infrastructure and

operations. These modes should be considered, as appropriate, in the ER planning process (e.g., aviation and marine have a place in emergency evacuation planning).

Executive Leadership is Key

Meeting an agency's emergency response needs requires an organized management response—championed at the executive level—based on clear agency policy and commitment in the form of program and organizational arrangements. It is essential that state transportation agency executives become familiar with the changing context and challenges facing emergency response, in addition to the challenge of the 4-Cs—multiple agency communication, cooperation, coordination, and consensus system.

Some key overarching principles of interest to transportation agency top management in this 2010 Guide include the following:

- Use the emergency management planning cycle (plan, prepare, respond, recover) as specified in the Comprehensive Preparedness Guide (CPG) 101, *Developing and Managing State, Territorial, Tribal, and Local Government Emergency Plans* (CPG 101, 2009). Within the planning framework, transportation agencies should strongly consider preparing for specific response activities.
- Recognize the need for transportation agencies to understand the basic concepts of the Incident Command System (ICS), including Unified Command (UC), as defined in the National Incident Management System (NIMS). Familiarity with these procedures can be coordinated and integrated with the broader emergency transportation operations and with the day-to-day incident management process.
- Working within a State EMA context is likely to require the ability to respond to the DHS requirements in the form of NIMS.
- EM roles and responsibilities cannot be left to an ad hoc real-time approach. The respective roles of various state transportation agency units within both headquarters and the districts must be predetermined and exercised. Likewise, many of the functions covered in this 2010 Guide are accomplished more at the district (or even local) government levels, and the agency central office has little role. The important point is that transportation agencies should properly account for all applicable actions in some manner.
- Planning and executing emergency response demands special expertise. Developing sufficiently trained planners to meet and sustain planning requirements may be a special challenge.
- Throughout the ER planning process, it is important to identify explicit resource demands and operational options. The most efficient approach may be to allocate resources, used originally to prepare for terrorist incident responses, for pre-event preparedness efforts that enable the state transportation agency to respond to the full range of emergencies.
- Prioritize plans and planning efforts to best support emergency management and homeland security strategies.

The importance of Unified Command is not to have a single Incident Commander, but rather to operate under a single Incident Action Plan (IAP).

(Paraphrased from NIMS)

State transportation agency top-level management leadership is necessary to give the ER process and resource requirements the prominence they require to compete for funding resources and organizational attention. The planning and actual response processes—and the intensive coordination required—cannot take place without clear top-down leadership and an accountability framework. It is important, therefore, that agencies use the 2010 Guide as a tool to energize and check the agency's current level of preparedness.

4 A Guide to Emergency Response Planning at State Transportation Agencies

Value of the 2010 Guide

The 2010 Guide is designed to help state transportation agencies and their local/regional counterparts assess their ER plans and identify areas needing improvement.

The 2010 Guide reflects accepted practices in emergency response planning and incorporates advances made over the last decade in Traffic Incident Management (TIM), Emergency Transportation Operations (ETO), and supporting programs.

In addition to the introduction, background, and institutional context for ER planning, the 2010 Guide has two major sections:

- **Sections 3–5: Design an Emergency Preparedness Program**—a program-level review of the all-hazards approach to emergency management, which will help transportation agencies assess their plans and identify areas needing improvement.
- **Section 6: Resource Guide**—guidance on organizational, staffing, and position decisions; decision-making sequences; a full emergency response matrix; and a purpose and supporting resources for action reference matrix.

Within the context of transportation-accepted practices, as well as existing state transportation agency protocols and procedures, the 2010 Guide integrates concepts from NIMS and the National Response Framework (NRF) and incorporates recommendations from FEMA's 2005 nationwide review of all state emergency operations plans. The 2010 Guide also references the DHS Target Capabilities List (TCL), which identifies the fundamental capabilities essential to implementing the National Preparedness Guidelines.

The material in this 2010 Guide also connects the federal guidance and the state transportation agency's participation in the state/regional ER community plans and the agency's internal EOP.

Finally, this is a guide, not a standard.



SECTION 1

Introduction

Background

September 11, 2001. Northeast Blackout. Hurricanes Katrina and Rita. Wildfires in the West. Tornadoes in the Midwest. Flooding in New England and the upper Midwest. Threat of pandemic influenza. Paralyzing snow and ice storms.

The nation's emergency preparedness and response framework is being challenged by the more extensive all-hazards definition of emergency. At all levels of government, practices in place to plan for and respond to emergencies have had to evolve rapidly, driven by the changing risk environment, emergency technology, and new policy direction at both state and federal levels.

At the state level, perhaps no agency is more affected by these changes than the transportation agency.¹ No longer are these agencies primarily focused on construction and maintenance of the infrastructure, they are assuming greater responsibility for large-scale evacuations in response to natural disasters such as hurricanes and wildfires. They are also being asked to establish and assume new roles and systems to address no-notice evacuations and situations requiring limited mobility (e.g., shelter-in-place/quarantine) such as responding to biological outbreaks, epidemics, pandemics, and the threat of weapons of mass destruction (WMDs).

In response to the 9/11 terrorist attacks and the anthrax attacks that followed, a newly formed AASHTO Security Task Force (now the Special Committee on Transportation Security and Emergency Management—SCOTSEM), in cooperation with the FHWA and with funding from NCHRP Project 20-07, Task 151A, produced *A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents* (the 2002 Guide, AASHTO, 2002). The 2002 Guide clearly responded to the threat of terrorism.

Subsequently, the newly created Department of Homeland Security (DHS), which includes the Federal Emergency Management Agency (FEMA), the Transportation Security Administration (TSA), and the U.S. Coast Guard, became the focal point for federal emergency response. One of DHS's first actions was to consolidate the emergency planning/emergency response

¹State transportation agencies, often Departments of Transportation (DOTs), are those agencies responsible for major components of a state's transportation system. Some states have separate agencies responsible for different transportation modes—highways, transit, rail, aviation, ports. Other agencies may support the transportation agency, such as traffic enforcement and regulation of motor carriers, which may have transportation-related security needs. When state transportation agency is used in this Guide, it generally applies to transportation agencies, not just at the state level, but also to territorial, multi-regional, local (county and city), and tribal authorities. Nongovernment organizations and private-sector stakeholders involved in emergency response will also find the guidance useful.

6 A Guide to Emergency Response Planning at State Transportation Agencies

(EP/ER) process and begin to publish policies and guidelines to help ER planners at all levels standardize ER doctrines, processes, and resources to ensure a consistent program nationwide.

The 2002 Guide was conceived as a quick-response project. AASHTO's intent was to workshop the 2002 Guide; allow time for state transportation agencies to identify necessary changes through their experience in implementing the 2002 Guide; allow time for federal roles to be clarified; and then to publish a new emergency response guide for state transportation agencies that reflects mature regulations, requirements, and research. The product of that effort is *NCHRP Report 525: Surface Transportation Security, Volume 16: A Guide to Emergency Response Planning at State Transportation Agencies* (the Guide; the 2010 Guide), which was developed under NCHRP Project 20-59(23).

Object and Scope of the 2010 Guide

A Guide to Emergency Response Planning at State Transportation Agencies was developed for use by state transportation agencies as they plan and develop their organizational functions, roles, and responsibilities for emergency response within the all-hazards context of the National Incident Management System (NIMS).

Guide Scope

The 2010 Guide reflects the evolving context of threats and hazards, improved state transportation agency organization for traffic management, and the nation's emergency management context (DHS, FEMA, etc.). Consistent with this context, the Guide is

- **NIMS-compliant**, as it fully embraces the incident command, joint planning, standardization, and performance-based improvements in incident/emergency management (NIMS, 2008).
- **All-hazards oriented**, which considers the full range of hazards and threats from minor traffic incidents to catastrophic events. It applies to all transportation agencies, from the state to territorial, local, and tribal-level agencies, and even to interregional coalitions.
- **Multimodal**, including all modes and sectors that use the highway system, including personal travel, transit, and commercial vehicle transport.²
- **Oriented to the safe and efficient management of incidents**, for the safety of responders and victims alike, for preserving public and private infrastructure and socioeconomic activities, and for rapid restoration to normalcy.

The 2010 Guide also explores how transportation fits into the traditional emergency management community and what transportation offers. The 2010 Guide provides the legal/institutional perspective because it is imperative that a transportation agency understand what it must—or should—do and assess its capability to do it. Through its ER planning evaluation and assessment, the agency can incorporate a stronger, broadly focused operations and management perspective.

It is also important to understand that a state transportation agency will always fulfill a support role in the emergency response effort to major incidents. Rather than serving as the lead emergency response agency, the transportation agency will receive direction from the state or some higher government authority.

²The 2010 Guide does not directly address aviation, marine, heavy rail, or pipeline modes, although these modes and the threats against them can impact transportation infrastructure and operations. These modes should be considered, as appropriate, in the ER planning process (e.g., aviation and marine have a place in emergency evacuation planning).

Material in the 2010 Guide connects the state agency's participation in state/regional ER community plans and its internal Emergency Operations Plan (EOP). Readers will also understand that responses range from the routine traffic incident—so familiar to transportation agencies—through major emergencies, to catastrophic events.

The 2010 Guide also updates previous NCHRP work related to transportation, security, and emergencies. Appendix K, Annotated Bibliography, covers a number of other relevant guidance documents referenced in the 2010 Guide (Appendix K can be accessed at <http://www.TRB.org/SecurityPubs>).

The 2010 Guide incorporates advances made over the last decade in Traffic Incident Management (TIM); Emergency Transportation Operations, and supporting programs developed by the FHWA. These include the Strategic Highway Research Program, second generation (SHRP II); the National Traffic Incident Management Coalition (NTIMC); National Unified Goal (NUG) for Traffic Incident Management; and AASHTO's Subcommittee on Systems Operations and Management (SSOM) and SCOTSEM research programs.

Finally, this is a guide, not a standard.

Guide Audience

Organizationally, the 2010 Guide is designed to help state transportation agency program-level managers and their counterparts at other levels of government plan, organize, staff, train, exercise, manage, implement, and fund preparations to carry out their emergency response responsibilities. These include the primary and supporting agencies identified in each state's Emergency Operations Plan (EOP) under Emergency Support Function (ESF) #1—Transportation. These responsibilities include all transportation modes that are under state control or influence and those functions agencies perform to support multi-state, state, and local emergencies.

Often the state transportation agency, including its headquarters, divisions/districts, departments and bureaus, and/or transportation management centers (TMCs), is the lead ESF #1 agency. Support agencies to ESF #1 often include state patrol and other law enforcement agencies, State National Guard/Department of Military Affairs, and the State Emergency Management Agency. Other state transportation agencies involved could include turnpike and toll, state railroad, and port authorities and waterway agencies (if not part of the transportation agency); civil aviation authority (if not part of the transportation agency); and state pipeline authorities. Other state department-level involvement could include education (school buses and school shelters), agriculture, corrections, and environmental protection.

How individual transportation agencies use the 2010 Guide will depend on their current levels of ER planning:

- **Agencies that have no EOP in place.** These agencies will find that the 2010 Guide covers the entire gamut of ER planning, but as the scope can be complex, the Guide includes suggestions for prioritizing ER planning requirements.
- **Agencies that have some EOPs within the larger EM community and/or at the agency level.** Aimed primarily at this group, the 2010 Guide provides a mechanism for identifying gaps in the planning process and the plans themselves and can help agencies prioritize the needed improvements.
- **Agencies that have very comprehensive interagency EOPs that fully comply with all national policies and recommended guidelines.** The 2010 Guide serves as a double check.

It is important to stress that not all actions suggested in this 2010 Guide will be the responsibility of the state/territorial/tribal transportation agency; in some states, these may be the responsibility

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of local jurisdictions. What is most important is that—together—all levels of government agree on who is responsible for what and that their respective emergency response plans reflect those responsibilities.

Guide Organization and Structure

The 2010 Guide follows the basic structure established by FEMA in *Comprehensive Preparedness Guide 101 (CPG 101) Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans*.³ (CPG 101, 2009) The March 2009 CPG 101 expands upon FEMA's previous guidance regarding emergency operations planning for transportation agencies. As noted, it also integrates NIMS and NRF concepts and incorporates recommendations from FEMA's 2005 nationwide review of all state EOPs and references the Target Capabilities List (TCL), which outlines the fundamental capabilities essential to implementing the National Preparedness Guidelines.

In addition to introductory material and the institutional context for emergency response, the two major sections of the 2010 Guide are

- **Guidelines for Developing an Emergency Response Program.** A detailed step-by-step guide for assessing transportation agency status for emergency response planning that relates ER planning and operations with Emergency Transportation Operations. It addresses prioritizing improvement for both internal agency EOP and the State EOP, introduces the more detailed self-assessment tool, and identifies other external assessments.
- **Resource Guide.** Includes key resource issues related to surface transportation (generally highway-based) and provides further detailed guidance on ER policies and practices. This section contains guidance on organizational, staffing, and position decisions; decision-making sequences; a full emergency response matrix; and a purpose and supporting resources for action reference matrix.

The first section—a detailed high-level review—relies on the FEMA CPG 101 planning process and will be valuable to those who do the ER planning and implement EOPs, both for the agency's involvement within the larger EM community and for the agency's own internal EOP—at both state transportation agency central offices and their regional/district offices and TMC. Additionally, the 2010 Guide is aimed at all individuals involved in design, deployment, operation, and maintenance of transportation infrastructure and ongoing operations.

Guide Development Process

In developing the 2010 Guide, research team members reviewed guidance materials, many other documents, and websites and held discussions with knowledgeable individuals. A key step in the process was to survey state transportation agencies. The team used survey results to identify areas that particularly needed emphasis in the 2010 Guide.

The team used the National Response Framework, which establishes new response capability requirements for states and their respective agencies. The team reviewed self-evaluation and guidance practices to develop evaluation criteria against which agencies can assess their current response programs. The criteria use and build upon existing state transportation agency protocols and procedures, especially those used for different types of emergencies.

³FEMA published the newly revised CPG 101 in March 2009. The research team had access to a draft copy of that report and information in the 2010 Guide reflects the FEMA 2009 publication.

The focus is on the key elements of NIMS: Command and Management, Preparedness, Resource Management, Communications and Information Management, Supporting Technologies, and Ongoing Management and Maintenance—in combination with the following institutional dimensions:

- All-hazards preparedness;
- Formal program with senior responsibility, organization, and reporting;
- Adequate resource allocation;
- Objectives with related performance measures and accountability; and
- Laws, regulations, agency policies, and interagency agreements.

Based on the above evaluation criteria, the core of the 2010 Guide is a practical self-assessment tool, developed to enable state transportation agencies to (1) evaluate their plans along several response parameters, including training, exercising, adequacy of plans, and interagency relationships and (2) recognizing and building on existing agency protocols and procedures, rather than starting from a blank slate.

The remainder of the 2010 Guide is organized as follows. Section 2, Institutional Context for Emergency Response, covers the authorities (e.g., laws, policies, and guidelines), the institutional architecture of ER, guiding principles, and key definitions, and the state transportation agency's role in planning and implementing the National Preparedness Guidelines. Section 3 discusses how to Assess Agency Status in Emergency Response Training. Section 4 is an in-depth guide to help state transportation agencies Develop an Emergency Preparedness Program. Section 5, Nature and Degree of Hazards/Threats, identifies the array of hazards/threats faced by states that affect transportation and indicates the typical impacts of each hazard on the transportation system and how the transportation system contributes to emergency responses. Section 5 concludes with a list of acronyms, references, and other resources. Section 6 is the Resource Guide.

A series of appendices conclude the Guide. Appendices A–J are printed in the 2010 Guide. Appendix A is a Guide to Using Portions of the 2002 Guide (as a matrix). Appendix B identifies Emergency Response Legal Authorities. Appendix C identifies Emergency Response Stakeholder Responsibilities. Appendix D is a glossary of Key Emergency Response Definitions. Appendix E provides Key Traffic Incident Definitions. Appendix F identifies the nation's Intelligence Fusion Centers. Appendix G describes the Transportation Emergency Response Effects Tracking (TERET) Tool. Appendix H provides links to Model Emergency Operations Plans. Appendix I provides links to Policy and Procedural Memoranda and Memoranda of Understanding. Appendix J provides links to resources for state transportation agency Training and Exercise Plans.

Appendices K through M and spreadsheet tools referenced in the 2010 Guide and its appendices are available by download and can be accessed at <http://www.TRB.org/SecurityPubs>; search for *A Guide to Emergency Response Planning at State Transportation Agencies*. Appendix K is an Annotated Bibliography. Appendix L is a white paper, “Identification and Delineation of Incident Management and Large-Scale Emergency Response Functions.” Appendix M is a PowerPoint presentation that provides an overview of NCHRP Project 20-59(23).



SECTION 2

Institutional Context for Emergency Response

Emergency Response Authorities

At the federal level, public laws are the governing authorities for other directives, policies, and guidance. Figure 1 illustrates this relationship.

Public Laws Governing Homeland Security and Emergency Management

The key laws implementing Homeland Security policy are as follows (see Appendix B for more details):

- Homeland Security Act of 2002 (6 U.S.C. 101),
- Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122),
- USA PATRIOT Act of 2001 (42 U.S.C. 5195c[e]), and
- Emergency Management Assistance Compact (EMAC) (PL-104-321, 1996).⁴

Numerous other laws are cited as authorities for various Homeland Security Presidential Directives (HSPDs) and other policy documents, but the four identified above are the key ones. The *List of Authorities and References* component of the National Response Framework (NRF, 2008) provides a more complete list.

Homeland Security Presidential Directives

The HSPDs are directive in nature and must be implemented in other formats, generally policy documents and/or guidelines. The requirements of these directives and implementing mechanisms are voluntary to state, territorial, tribal, and local governments (but note that typically the entity must comply to qualify for federal disaster relief compensation). Indeed, the HSPDs provide specific schedules for incremental compliance. The three relevant HSPDs are as follows:

- **HSPD-5, Management of Domestic Incidents**—created the National Incident Management System and the National Response Plan (the latter was later replaced by the National Response Framework), as shown in Figure 1.
- **HSPD-7, Infrastructure Identification, Prioritization, and Protection**—led to the National Infrastructure Protection Plan (NIPP).
- **HSPD-8, National Preparedness**—led to creation of a National Preparedness Goal, which was implemented in the form of the National Preparedness Guidelines (NPG) document and several other guidelines.

⁴For more information on EMAC, see (EMAC, 2008) and (NEMA, 2008).

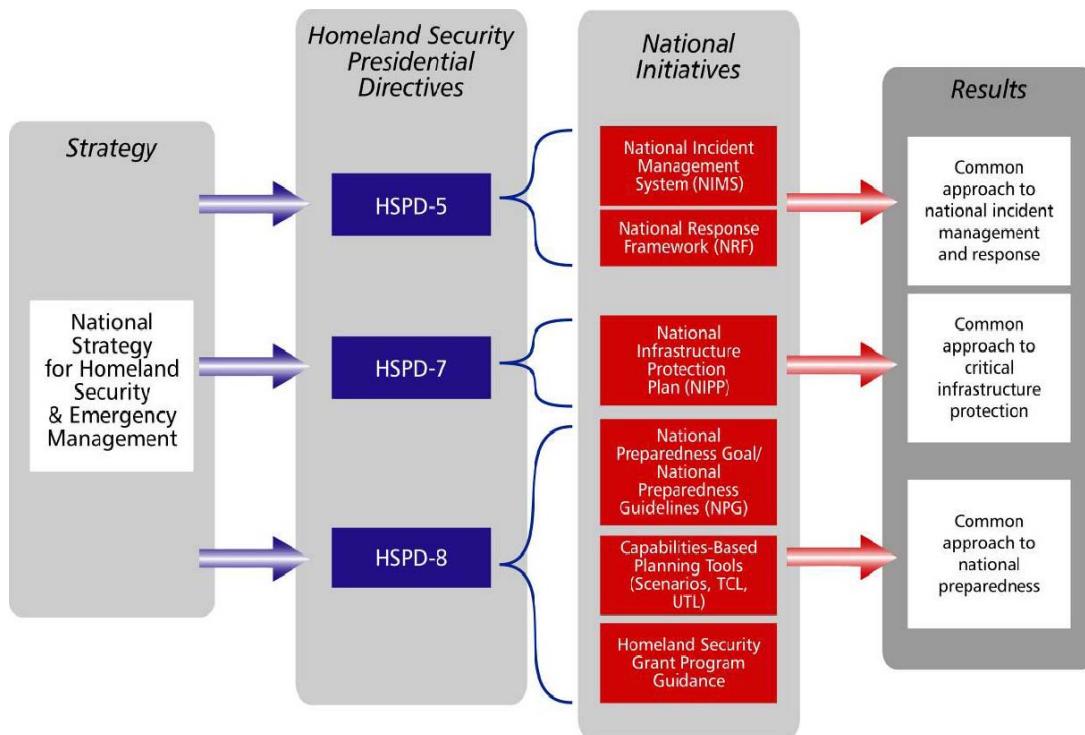


Figure 1. National context for homeland security and emergency management.

National Emergency Management Policies and Guidelines

This set of documents created the principle requirements for ER planning and relates to various agencies:

- **NIMS**—created a national standard system for federal, state, tribal, and local governments to work together to prepare for, and respond to, incidents affecting lives and property. It presents and integrates accepted practices proven effective over the years into a comprehensive framework for use by incident management organizations in an all-hazards context. (NIMS, 2008)

The following two NIMS companion documents are tailored to transportation professionals:

- FHWA's *Simplified Guide to the Incident Command System for Transportation Professionals* (FHWA, 2006a)⁵ introduces the Incident Command System (ICS) to stakeholders who could be called upon to provide specific expertise, assistance, or material during highway incidents, but who may be largely unfamiliar with ICS organization and operations.⁶
- I-95 Corridor Coalition's *Supplemental Resource Guide to the National Incident Management System (NIMS) for Transportation Management Center Professionals*. (I-95CC, 2008)⁷
- **National Response Framework (NRF)**—replaced the earlier National Response Plan and was expanded in scope, audience, and breadth (NRF, 2008). The NRF is the definitive guide for

⁵Available at http://ops.fhwa.dot.gov/publications/ics_guide/ics_guide.pdf (accessed January 2009).

⁶ICS was an outgrowth from lessons learned from wildfires in the western U.S. in the 1970s and has since been refined and formalized in NIMS.

⁷Available at http://www.i95coalition.net/i95/Portals/0/Public_Files/pm/reports/I95CC%20NIMS%20Guide%20-%202011-3B.pdf (accessed January 2009.)

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ER and delineates the nation's response doctrines, responsibilities, and structures. It embraces NIMS and updates the Emergency Support Function (ESF) descriptions. There are several important companion documents to the NRF:⁸

- ESF Annexes define the stakeholders and their roles and responsibilities, purpose, capabilities, and concept of operations for the 15 ESFs. These are critical to effective ER planning; state/local versions adapted to state and local conditions are typically included in EOPs.
- Support Annexes are a separate set of annexes that describe how federal departments and agencies; state, territorial, tribal, and local entities; the private sector; volunteer organizations; and nongovernmental organizations (NGOs) coordinate and execute the common functional processes and administrative requirements for efficient and effective incident management. They may support several ESFs.
- Incident Annexes are a separate set of annexes that describe the concept of operations to address specific contingency or hazard situations or an element of an incident requiring specialized application of the Framework.
- **National Infrastructure Protection Plan (NIPP)**—meets HSPD-7, Infrastructure Identification, Prioritization, and Protection (DHS, 2006) requirements. The NIPP provides the coordinated approach used to establish national priorities, goals, and requirements for Critical Infrastructure and Key Resources (CI/KR) protection so that federal funding and resources are applied in the most effective manner to reduce vulnerability, deter threats, and minimize the consequences of attacks and other incidents.
- **National Preparedness Guidelines (NPG)**—implements the National Preparedness Goal called out in HSPD-8, National Preparedness (NPG, 2007). It introduces a number of capabilities-based planning tools, including⁹
 - National Planning Scenarios are a diverse set of 15 high-consequence threat scenarios for potential terrorist attacks and natural disasters that form the basis for coordinated federal planning, training, exercises, and grant investments needed to prepare for emergencies of all types. The scenarios include 12 chemical, biological, radiation, nuclear, and explosive weapons (CBRNE) threats; a cyber attack; a Category 5 hurricane; and an earthquake.
 - Target Capabilities List (TCL) defines 37 specific capabilities that communities, the private sector, nongovernment agencies, and all levels of government should collectively possess in order to respond effectively to disasters.
 - Universal Task List (UTL) is a series of 1,600 unique tasks that can facilitate efforts to prevent, protect against, respond to, and recover from the events represented by the National Planning Scenarios. It presents a common vocabulary and identifies key tasks that support development of essential capabilities among organizations at all levels. No entity will perform every task.

NOTE: These authorities—the documents and their requirements—are continually changing, some frequently, others over longer intervals. Results of the research team's 2008 survey of state transportation agencies show that 43% of respondents had difficulty keeping up with changing NIMS and National Response Plan/National Response Framework requirements from DHS. Even more (56%) indicated they had difficulty interpreting or understanding NIMS.

⁸The following text was adapted from several Annex documents. The list of annexes is included in the Appendix K description of the NRF.

⁹Descriptions adapted from the NPG. The NPG components are security-sensitive and are not available on the public website. Appendix K discusses how homeland security and EM personnel can access secure documents.

National Transportation Policy

There is considerable FHWA guidance on traffic incident management using an all-hazards approach. The following are two relevant transportation documents:

- The FHWA *Manual on Uniform Traffic Control Devices* (MUTCD). (MUTCD, 2003) The primary purpose of the MUTCD is to establish standardized signing, markings, signaling, traffic control for various facilities, and, more germane to this 2010 Guide, temporary traffic control devices. The relevance is that Chapter 6I of the MUTCD 2003 edition, “Control of Traffic Through Traffic Incident Management Areas,” requires that incident scenes must have maintenance of traffic (MOT), or temporary traffic control (TTC), as it is called in the MUTCD, deployed to ensure the safety of responders, victims, and the passing public. This applies to any incident that blocks any part of any roadway for more than 30 minutes, whether it is a traffic crash or other traffic incident, or another natural or human-made incident that affects the roadway.
- National Unified Goal (NUG) for Traffic Incident Management.¹⁰ Unlike the foregoing documents, the NUG is just that—a goal, but one increasingly adopted by the TIM community and by EM responders, as appropriate. The NUG for TIM is
 - Responder Safety;
 - Safe, Quick Clearance; and
 - Prompt, Reliable, Interoperable Communications.

The NUG for TIM was developed through a consensus process led by the National Traffic Incident Management Coalition (NTIMC) and it has been endorsed by over 18 national organizations. The major goals above have 18 strategies for achieving those goals. The challenge is to propagate the National Unified Goal *down* from the national association level to practicing responders.

The MUTCD is a transportation-agency document (required by law),¹¹ but its requirements are not widely known in some public safety agencies. In the process of participating in EM/ER planning with their counterparts, state and other transportation agencies should educate their colleagues in these requirements. Organizations like NTIMC have been successful in educating other agencies at the association level, particularly through creation and adoption of the National Unified Goal.

Institutional Architecture of Emergency Response

Two contexts explain the institutional architecture of EM/ER: the authorities for EM/ER and the organizational relationships.

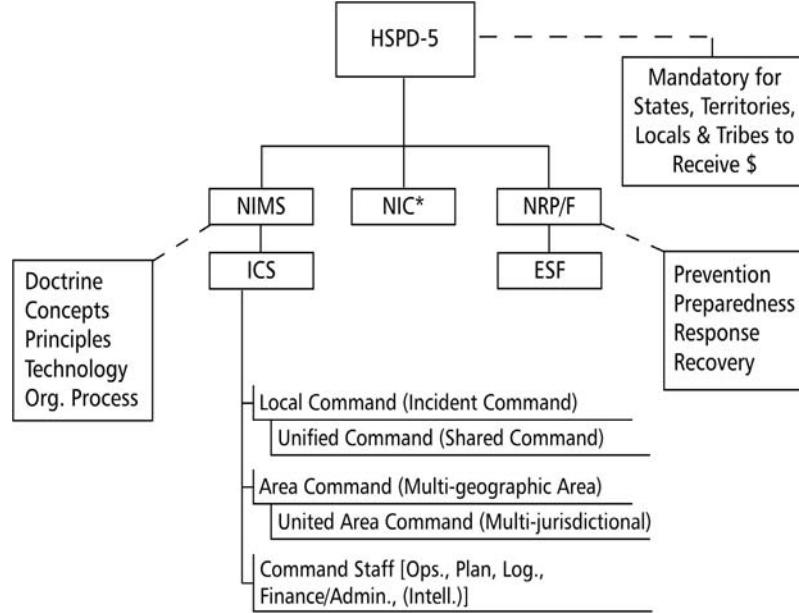
Institutional Authority Context

The underlying bases for this process are HSPD-5, -7, and -8. Figures 2 through 4 illustrate how DHS has implemented the three HSPDs. These documents are effectively mandatory for any agency wishing to receive Federal Disaster Relief funds. Many, if not all states have enacted legislation requiring the use of NIMS, and thus all other pertinent policies and guidelines within their states; this includes local governments.

¹⁰Available at <http://timcoalition.org/?siteid=41>.

¹¹The Highway Safety Act of 1966 decreed that traffic control devices on all streets and highways open to public travel in accordance with 23 U.S.C. 109(d) and 402(a) in each state shall be in substantial conformance with the Standards issued or endorsed by FHWA. Public Law 23 CFR 655.603 adopted the MUTCD as the national standard for any street, highway, or bicycle trail open to public travel in accordance with 23 U.S.C. 109(d) and 402(a). The *Uniform Vehicle Code* (UVC) is one of the publications referenced in the MUTCD. Adapted from MUTCD, 2003.

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*NIC = National Integration Center

Figure 2. Implementation of HSPD-5, Management of Domestic Incidents.

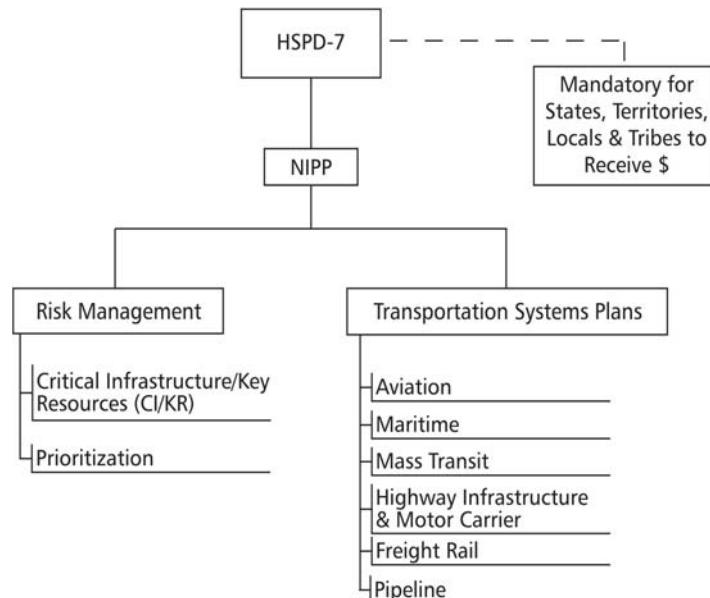


Figure 3. Implementation of HSPD-7, Infrastructure Identification, Prioritization, and Protection.

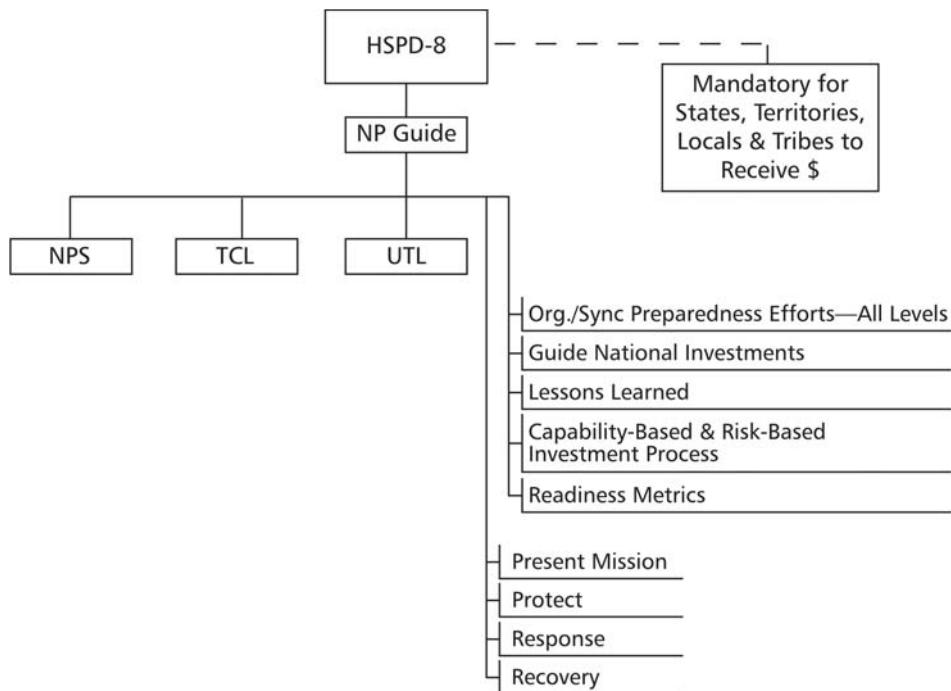


Figure 4. Implementation of HSPD-8, National Preparedness.

Figure 5 demonstrates how agencies can use the 2010 Guide in conjunction with CPG 101 to comply with federal policies and guidelines. The Guide provides a filter to help transportation agencies identify new or changed requirements for the EOP (EM and agency versions). Refer to CPG 101 for the actual updating steps.

Emergency response planning is an ongoing process for state transportation agencies. The first pass through it, which most state transportation agencies have largely accomplished, is the most challenging. The remainder of this 2010 Guide thus focuses on the ER planning process itself. Agencies should recognize, however, that there will never be a perfect, all-encompassing EOP. Rather, the 2010 Guide's primary intent is to help the agencies prioritize and implement their ER planning efforts. What is required is that the agencies, working together, be nimble to react to exigencies not expressly addressed in the EOP. The ability to adapt to a wide range of emergencies is probably more useful because the hazards/threat matrix is infinite, as are the turns an emergency can take as it unfolds.

Organizational Context

The state transportation agency is clearly an important player in the EM/ER arena. Table 1 summarizes the stakeholders. Appendix C further describes the roles and responsibilities of these entities.

Guiding Principles

The 2010 Guide is itself tempered by several overarching principles, or tenets, as follows:

- State transportation agencies should stay within principles of contemporary emergency management thinking unless there is good reason to do otherwise. These principles include that the agency will
 - Play a support role to the State Emergency Management Agency (SEMA), play an active role in developing and exercising the State EOP, and should be the lead agency for ESF #1—Transportation and play a significant role in other ESFs;

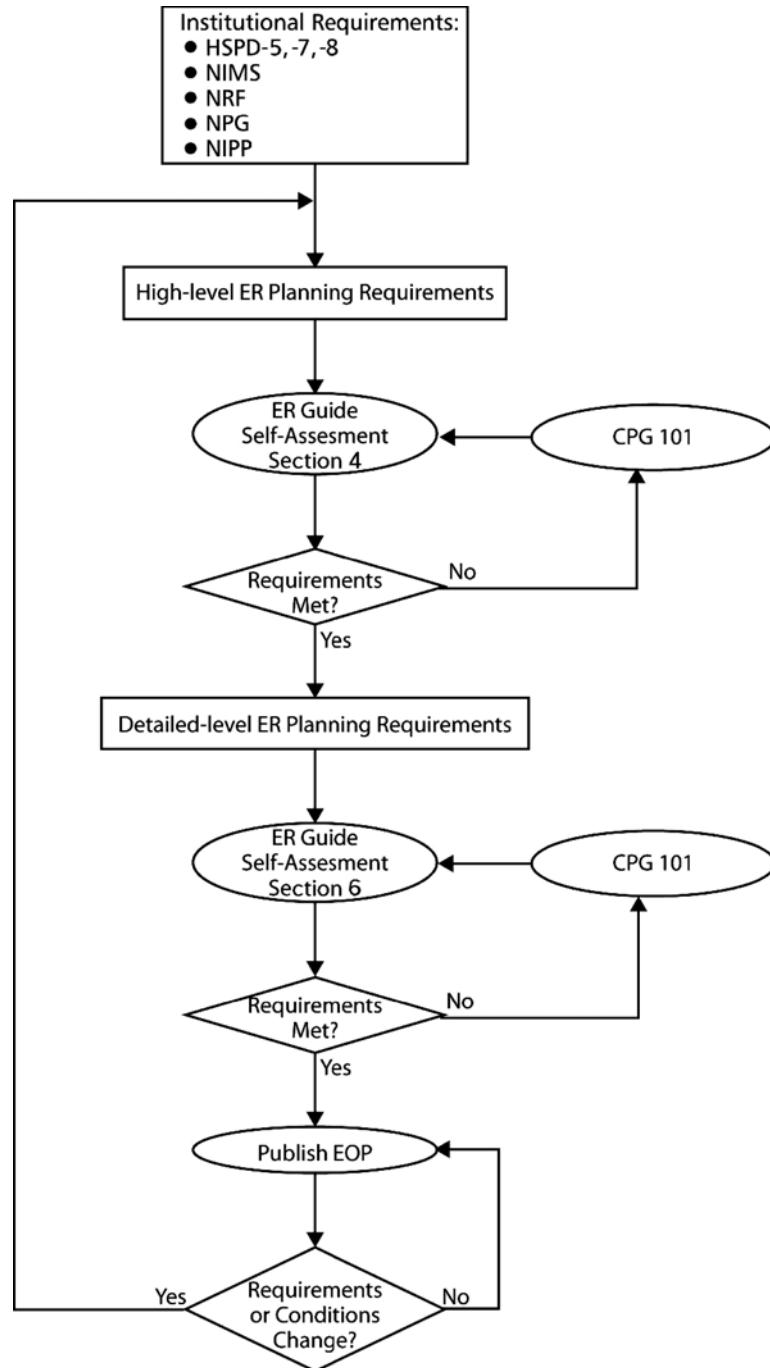
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Figure 5. State transportation agency emergency response planning process using CPG 101.

Table 1. Emergency management stakeholders.

Category	Stakeholder
Federal Agencies	U.S. Department of Transportation (U.S.DOT)
	Federal Highway Administration (FHWA)
	Federal Transit Administration (FTA)
	Other U.S.DOT modal administrations as appropriate
	Department of Homeland Security (DHS)
	Federal Emergency Management Agency (FEMA)
	Transportation Security Administration (TSA)
	Other DHS security agencies as appropriate
Regional Coalitions	Ad hoc regional coalitions; see Appendix C for details
State, Territorial, and Tribal Agencies (including statewide authorities)	State Transportation Agency or Territorial/Tribal Equivalent: Emergency Management Office Traffic Operations Office/ITS Section Planning Office Maintenance Office Safety Office Motor Vehicle Compliance Office
	State Emergency Management Agency (SEMA)
	State Patrol (SP)
	Department of Military or National Guard
	Department of Law Enforcement (DLE)
	Department of Environmental Protection (DEP)
	Emergency Operations Center (EOC)
	Intelligence Fusion Center (FC), also regional
	Joint Telecommunications Centers
	Authorities, such as Expressway Authorities
	Emergency Management Agency (EMA), EOC, and Public Safety Answering Points (PSAPs)
	Law Enforcement (Police and Sheriffs)
	Fire/Rescue
	Emergency Medical Services (EMS)
	Medical Examiner/Coroner
Local Agencies	City and County Public Works and Traffic Engineering
	Transit Agencies (public or private, including school buses)
	Towing and Recovery Operators
	HAZMAT Contractors
	Asset Maintenance/Management Contractors
	Motor Carrier Companies
Private Partners	Insurance Companies
	Traffic Media

(continued on next page)

Table 1. (Continued).

Category	Stakeholder
Associations	Volunteer Organizations (see Appendix C for details)
	Automobile Associations
	Technical Societies (ITS State Chapter, State Section ITE)
	Associations of Cities, Counties, Sheriffs, Police, EMS, etc.
	Community/Corridor Traffic Safety Teams (CTSTs)
	Chambers of Commerce
Other Organizations and People	Citizens for Better Transportation (state-by-state)
	Citizens' Groups
	Individuals and Families

- Have an agencywide emergency operations plan (which all agencies do not as yet have);
- Ensure plans and procedures complement the state's overall emergency structure and plan(s);
- Ensure plans adhere to an all-hazards approach;
- Use the CPG 101 emergency management planning cycle (plan, prepare, respond, recover), and within that framework, prepare for specific response activities; and
- Actively participate in Unified Command during incidents.
- Acknowledge that different state transportation agencies view their response roles differently and recognize these different perspectives and approaches.
- Recognize the need for transportation agencies to understand the basic concepts of the Incident Command System (ICS), including Unified Command (UC), as defined in NIMS.
- Encourage transportation agencies to be full players within their state emergency management community and their role in providing the support needed for all applicable functions, participating actively in unified command, and participating in multi-agency communications and coordination. In most major incidents, the state transportation agency will fulfill a support role in the emergency response effort and receive direction from the state or some higher government authority.

Using this 2010 Guide, a transportation agency can assess how well its existing agency protocols and procedures align with NIMS/NRF and within the context of transportation-accepted practices. Some of the issues addressed in the Guide include

- Part of the NIMS compliance regimen includes training. Do NIMS training requirements cover the needs of transportation agency responders? How should an agency training program be structured?
- What does NIMS compliance mean for state transportation agencies—beyond training?
- Transportation agencies operate within a complex of institutional relationships. How does an agency typically relate to, and interact with, other state agencies in an emergency, as well as with federal and local agencies?
- What are the response considerations between state transportation agencies in states that border one another? Or for agencies in states that border Canada or Mexico?
- How do the different modal interests in state transportation agencies coordinate within the agency and with their modal clients?
- What is the role of headquarters versus the districts or other nonheadquarters offices when it comes to response? Are senior headquarters staff sufficiently briefed and trained to understand the agency's response roles and responsibilities?

- Similarly, are the respective roles and responsibilities of the state/territorial/tribal transportation agency vis-à-vis local agencies clearly defined and accounted for in state and agency EOCs?
- Is a transportation agency's public information program adequate for appropriate response?
- Is the state and transportation agency level of communications interoperability adequate?
- How does the response program relate to a broader emergency transportation operations program or a traffic incident management program?
- Is evacuation/shelter-in-place/quarantine planning adequate?
- Is the response program properly correlated with the need to protect the agency's critical assets? How can a solid response program be part of the protection of critical assets?
- Where is the funding for emergency response? Is the funding adequate?
- Is the state agency internally aware, and are other agencies aware, of how transportation agencies can contribute to emergency response? Are assets inventoried?
- How can ITS, transportation management centers, and other functional equivalents be used for response?
- How can Traffic Incident Management Teams be effectively used for ER?

The importance of Unified Command is not to have a single Incident Commander, but rather to operate under a single Incident Action Plan (IAP).

(Paraphrased from NIMS)

Key Definitions

The various documents identified in Section 1, Introduction, generally contain glossaries. As these are mostly DHS or FEMA emergency management documents, they define terminology used in the Homeland Security (HS)/EM community. The terminology is not always consistent among the documents. See Appendix D for an annotated glossary of general HS/EM terminology. Key emergency management terms included in the Appendix D glossary follow:

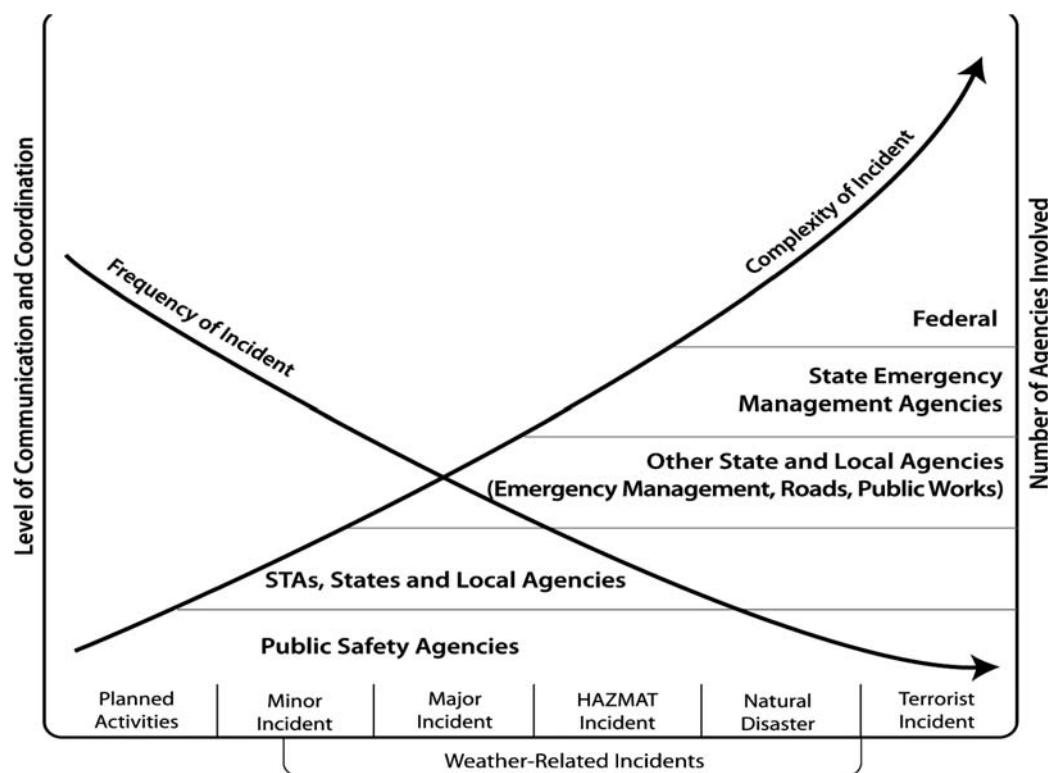
- | | |
|--|---|
| <ul style="list-style-type: none"> • Catastrophic incident • Emergency • Emergency management • Emergency Management Assistance Compact (EMAC) • Emergency management/response personnel • Emergency response • Emergency Transportation Operations (ETO) • Incident (see below) | <ul style="list-style-type: none"> • Incident, traffic • First responder • Fusion Center • Incident Command System (ICS) • Major disaster • Security countermeasures • Traffic incident • Traffic incident management • Unified Command (UC) |
|--|---|

Additionally, Appendix E contains a discussion of traffic incident terminology, including MUTCD definitions of minor, moderate, and major incidents.

Emergency Incident Characteristics and Terminology

The more severe categories of incidents are those more commonly associated with emergencies caused by nature or persons acting as terrorists. As the degree of complexity of an incident increases, so does the typical response. Figure 6 illustrates this point.

Table 2 summarizes the characteristics of these incident levels. The final category, *catastrophic*, was not included in Figure 6, but is added Table 2 because in EM, it is considered the highest level of incident, generally garnering the greatest response. Examples are 9/11, Hurricane Katrina, and the Asian tsunami.



Source: Adapted from NCHRP Report 525, Volume 6, 2005.

Figure 6. The complexity of emergencies and response.

Section 5, Nature and Degree of Hazards/Threats, details these incidents and the responses to them. The comments above also point out the scalability of the NIMS ICS. At a minor traffic incident, the Incident Commander could be a single police officer working the scene alone, but the principles of NIMS should be followed as appropriate. As the severity of incidents increases, the response in terms of ICS grows, including application of Unified Command and ultimately Multiagency Coordination (MAC). The key point is to use the ICS structure for all incidents. This is why all responders—including transportation personnel—are trained in NIMS/ICS.

Table 2. General incident characteristics.

Level	Definition	Typical Cause	Typical Duration	Comment
Planned Activities	Planned special events, recurring or nonrecurring	Entertainment, sports, social, political	Hours to weeks	Generally a controlled event, serious incidents may be a by-product becoming one of the next levels
Minor Incident	An incident generally resolved by local agencies	Minor-moderate traffic, minor flooding or fires	Minutes to several hours	ICS should be followed, albeit in these cases generally on a small-scale basis. This would include traffic incidents at the 1–2 levels.
Major Incident	An incident requiring multiple jurisdictions/agencies	Major traffic, suicide attempt, major non-HAZMAT spill	Hours to days	This would likely warrant a scaled-up response, including the formal creation of a command post and strict ICS/UC. This would include traffic incidents at levels 2–3
HAZMAT Incident	Any incident involving a HAZMAT-qualified response	HAZMAT spill	Hours to days	This is a special category and may have long-term effects if contamination is involved
Natural Disaster	Any naturally occurring major emergency	Weather, agricultural, earthquake, pandemic, wildfires	Days to months	These will generally require the full implementation of ICS with activation of EOC(s), perhaps even State EOC(s)
Terrorist Incident	A human-perpetrated major emergency	CBRNE	Days to months	Same as above.
Catastrophic	Extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions	Any of the foregoing on a massively destructive or threatening scale	Months to years	These may have any of the previous levels as the genesis. Multiple state EOC activations are probable as well as a highly populated ICS



SECTION 3

Assess Agency Status in Emergency Response Training

This section introduces the self-assessment process of the 2010 Guide. There are several tools that state transportation agencies and other agencies can use to establish the thoroughness of their planning and identify areas that could be improved in future updates of the EOP.

The two perspectives of this self-assessment are (1) the state transportation agency's role and involvement in the State EOP in the context of the responsibilities of the agency in ESF #1—Transportation and ESF #3—Public Works; and (2) the thoroughness of the agency's own EOP(s).

The next section, Develop an Emergency Preparedness Program, summarizes self-assessment tools. The section details all the steps recommended for this process; it is high-level information, based on the NIMS requirements and other documents, and generally follows the process laid out in CPG 101 (CPG 101, 2009). The 2010 Guide refers to the Plan-Prepare-Respond-Recover regimen as *stages*. The Full Emergency Response Requirements Matrix (Section 6) presents full details of the process.

Each stage consists of several Steps; each step is then composed of several Phases; all are labeled (for example, PLAN-01, PLAN-02, etc). Each phase has several Action Items associated with it, which in turn have several Supporting Actions. Collectively, these are all the actions and activities that would be included in an ideal EOP (see Figure 7). The Full Emergency Response Requirements Matrix includes columns where the agency can note the status as *not started*, *in progress*, or *completed*. This is the most detailed approach to self-assessment.

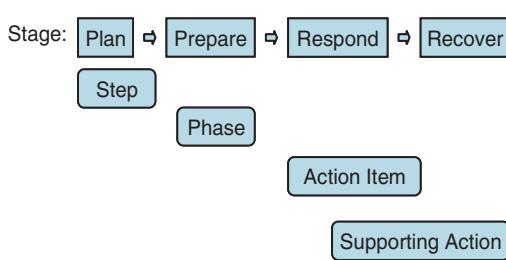


Figure 7. Actions and activities to be included in an ideal emergency operations plan.

These requirements are drawn from several sources, notably from NIMS. It is unlikely that any agency is fully compliant with all of these; however, agencies should give priority to those derived from NIMS, which are indicated by text enclosed between two single stars (*____*) in the matrix. Text between two sets of stars (**____**) is suggested by the NUG; these should be high-priority actions as well.

FEMA also has a compliance process that applies primarily to the State EOP. The current version is accessible on the FEMA website (FEMA-Compliance, 2009). Here, states can record their compliance using an online tool called NIMSCAST (National Incident Management System Capability Assessment Support Tool), which is generally exercised by the State EMA (NIMSCAST, 2008).



SECTION 4

Develop an Emergency Preparedness Program

This section explains the emergency planning process and the all-hazards approach to emergency management; it also emphasizes that the process is a continuous one, not something done once and then shelved. In the overall emergency management/risk management, all-hazards approach, the state transportation agency has two distinct roles: (1) developing and maintaining its own EOP and (2) supporting the State EOP. The state transportation agency also will work to mitigate consequences.

Executing the plan in actual emergencies is more significant than the plan itself. This notwithstanding, the approach taken in this section is to deal with the entire planning process from the perspective of the agency's own EOP. This includes four main phases: emergency planning, emergency preparedness, emergency response, and emergency recovery. Because the planning and preparedness phases are perhaps the best way to maximize the success and safety of the response and recovery efforts, these sections provide greater detail.

Finally, as agencies begin this process, it is important to reinforce that this is not a standard. This is a suggested process derived from the relevant national directives, policies, and guidelines introduced in Sections 1 and 2. Even the Comprehensive Preparedness Guideline 101 is just that—a guideline. The discussions below do not attempt to replace or unnecessarily duplicate CPG 101, although some reference and duplication are necessary. More significantly, the 2010 Guide attempts to fill in gaps unique to transportation that are not explicit in CPG 101 and provides a means for state transportation agencies to perform self-assessments of their own emergency planning, preparedness, response, and recovery processes.

Emergency Planning Phase

The planning phase is arguably the most important step in developing and administering an effective emergency preparedness program. Without proper planning, emergency response personnel can easily find themselves significantly hampered by the confusion and contradictory actions often encountered during complex emergency response activities. As state transportation agencies assume greater levels of responsibility for managing large-scale evacuations in response to natural disasters, as well as no-notice evacuations, shelter-in-place, or quarantine in response to biological outbreaks, large-scale hazardous chemical releases, and WMD threats, the need for planning at the agency level also increases. Consistent with National Incident Management System (NIMS) and National Response Framework (NRF) requirements, an all-hazards approach to emergency planning must be taken to ensure the agency's ability to respond appropriately to all emergency events.

FEMA's Comprehensive Preparedness Guide 101 (CPG 101, 2009), *Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans*, serves as the basis for much

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of the emergency planning process taking place in the United States today. The 2009 publication replaces State and Local Guide 101, *Guide for All-Hazards Emergency Planning* (SLG101) (SLG101, 1996) and emphasizes the following 12 principles of effective emergency planning:

1. Planning is an orderly, analytical, problem-solving process.
2. Plans guide preparedness activities.
3. Planning helps deal with complexity.
4. Emergency planning addresses all hazards.
5. Emergency planning does not need to start from scratch.
6. Planning depicts the anticipated environment for action.
7. Planning must involve all partners.
8. Planning assigns tasks, allocates resources, and establishes accountability.
9. Planning includes senior officials throughout the process to ensure both understanding and buy-in.
10. Time, uncertainty, risk, and experience influence planning.
11. Effective plans not only tell those within the planning community what to do (the task) and why to do it (the purpose), effective plans also inform those outside the jurisdiction about how to cooperate and provide support and what to expect.
12. Planning is fundamentally a risk management tool.

There also is a distinction between a state transportation agency managing its specific responsibilities, as directed, in large-scale evacuations as part of the larger EM activity versus actually managing large-scale evacuations, which is not typically the agency's role. Put another way, in relatively small incidents, the state transportation agency will play a proactive role in managing the incident, perhaps in a supporting role to law enforcement; however, in a major incident/evacuation/shelter-in-place/quarantine, while the agency's role might be a major one, it is expressly a supporting role.

With these fundamental principles in mind, the 2010 Guide's discussion of emergency planning begins by reviewing the steps necessary to create an effective emergency planning process, realizing that emergency planning does not need to start from scratch. This is especially true in today's post-9/11 and Hurricane Katrina environment in which most states have emergency planning processes in place.

This 2010 Guide also recognizes that there are numerous, acceptable planning processes that state transportation agencies can take that may not exactly match the processes discussed here. It is important to note, however, that regardless of the approach used, each planning process should address the key principles above and meet the requirements of NIMS and the NRF. Table 3, copied from CPG 101, depicts the relationships among different planning processes.

The following provides updated guidance to state transportation agencies pertaining to the most recent federal emergency planning policies and resources, including the all-hazards approach to emergency management required by NIMS and the NRF. The format encourages agencies to conduct self-assessments and is intended to assist them as they evaluate their current emergency planning processes and determine if these processes are consistent with recent federal requirements and guidelines. The discussion also provides resources to those agencies that find their emergency planning processes do need to be updated or modified. Being NIMS-compliant is important, as is developing workable emergency plans that meet all participants' expectations.

Step 1—Form a Collaborative Planning Team

CPG 101 states, "... planners achieve unity of purpose through horizontal coordination and vertical integration of plans among all levels and sectors." Simply put, planning is a continuous and ongoing process that requires the active participation of, involvement of, and coordination with all levels of government. The reason for using a multi-organizational and multidisciplinary

Table 3. Comparison of published planning processes.

Integrated Planning System	CPG 101	NIMS Preparedness	NIMS Incident Command
Form the planning team			
Understand the situation	Understand the situation • Conduct research • Analyze the information	Understand the situation	Gather information
Determine goals and objectives	Determine goals and objectives	Establish incident objectives and strategy	Estimate course and harm Determine appropriate strategic goals
Plan development (analyze courses of action)	Develop the plan • Develop and analyze courses of action • Identify resources	Develop the plan	Assess options and resource requirements
Plan preparation, review, approval	Plan preparation, review, approval • Write the plan • Approve and disseminate the plan	Prepare and disseminate the plan	Plan and implement actions

Source: CPG 101, 2009

planning team is clear—a broad range of expertise is necessary to effectively implement the all-hazards approach of emergency management prescribed by NIMS and Principle 4 (emergency planning addresses all hazards).

Given the number and complexity of the different hazards a community may face, it is exceptionally difficult for any one individual, or even an organization, to be fully versed in how to best prepare for, respond to, and recover from every hazard, particularly when the incident escalates. Forming a collaborative planning team enables all participants to gain a better understanding of the capabilities, needs, and response tactics of each organization involved in the response activities. Forming the team also addresses Principles 3 (planning helps deal with complexity) and 7 (planning must involve all partners) by enabling team participants to better understand how the decisions made by emergency managers and responders at all government levels may affect the ability of others to fulfill their response requirements. The four key phases in Step 1 are described below.¹²

¹²Recall that much of this information, including the supporting references, is summarized in tabular form in “Organizational, Staffing, and Position Guidance” in Section 6.

PLAN Phase 01: Identify and Designate a Lead Emergency Planning Coordinator (EPC) and Staff to Oversee the State Transportation Agency Emergency Planning Process

Purpose. Designate the best-qualified individuals and team to lead the state transportation agency's emergency planning function.

Actions. Designate a lead Emergency Planning Coordinator (EPC) and staff to oversee the agency's emergency planning process. Vest the EPC with adequate authority and resources to fulfill the goals and objectives of the agency's emergency management program.

Focus. Develop a comprehensive EOP and coordinate state transportation agency emergency planning and management activities with the state's NIMS coordinator. For the State EOP, the State Emergency Management Agency (SEMA) will likely have formed the team, with the transportation agency being a lead agency for ESF #1 (Transportation) and ESF #3 (Public Works) and supporting others. This team would typically include DHS and FEMA regional offices and personnel; state emergency management representatives; law enforcement personnel; public health officials; emergency fire, medical and rescue services personnel; and even some local EMAs.

For the state transportation agency's EOP, the team will tend more toward regional and local levels, including agencies that would be part of traffic incident and emergency response in the absence of State EOC (SEOC) activation. There should be total consistency between the state's and the transportation agency's EOPs from the top-down perspective, but the agency's EOP will have more details and probably a broader set of partners—more locally oriented—than the State EOP. Appendix C lists the typical stakeholders in TIM and ER and their typical roles and responsibilities. Delineation of roles and responsibilities is discussed further in a white paper (see Appendix L).

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Adopt NIMS for all departments and agencies, as well as promote and encourage NIMS adoption by associations, utilities, nongovernmental organizations (NGOs), and private-sector emergency management and incident response organizations.
- Establish and maintain a planning process to communicate, monitor, and implement all NIMS compliance objectives across the state/territory/tribe (including departments/agencies), to include local governments. This process must provide a means for measuring progress and facilitate reporting.
- Designate and maintain a single point of contact within government to serve as principal coordinator for NIMS implementation jurisdiction-wide (to include a principal coordinator for NIMS implementation within each department/agency).

Supporting Resources.

- *Guide for All-Hazard Emergency Operations Planning*, <http://www.fema.gov/pdf/plan/0-prelim.pdf>
- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs

PLAN Phase 02: Establish Authority of EPC and Planning Team

Purpose. Ensure the state transportation agency's Emergency Planning Coordinator (EPC) and Planning Team have adequate authority to perform the emergency planning function.

Actions. Demonstrate management's commitment and promote an atmosphere of cooperation by authorizing the agency EPC and Planning Team to take the steps necessary to develop/update the agency's emergency plans and response program. Support this action by participating in the State EOP process.

Establish a clear line of authority between team members and the state transportation agency EPC. Upper management should appoint participants to the planning team in writing. Participant job descriptions could also reflect this assignment.

Focus. Develop a comprehensive EOP and coordinate state transportation agency emergency planning and management activities with the state's NIMS coordinator.

National Incident Management System Compliance Issues. Establish and maintain a planning process to communicate, monitor, and implement all NIMS compliance objectives across the state/territory/tribal departments and agencies, to include local governments. This process must provide a means for measuring progress and facilitate reporting.

Supporting Resources.

- NRF Resource Center, <http://www.fema.gov/emergency/nrf/mainindex.htm>

PLAN Phase 03: Issue Mission Statement for the Planning Team

Purpose. Clarify the purpose of the state transportation agency's emergency planning function.

Actions. The state transportation agency Chief Executive Officer (CEO) should issue a mission and vision statement to demonstrate the agency's commitment to emergency planning.¹³ The statement should define and/or identify the following:

- Scope of activities to be performed by the EPC and Planning Team,
- The agency's high-level goals for the emergency planning process,
- Documents and/or programs to be developed by the agency's emergency planning team. The statement should emphasize that the entire organization should be involved in creating these documents and programs, and
- The authority and structure of the planning group.

Focus. Develop a comprehensive EOP and coordinate state transportation agency emergency planning and management activities with the state's NIMS coordinator.

National Incident Management System Compliance Issues. Establish and maintain a planning process to communicate, monitor, and implement all NIMS compliance objectives across the state/territory/tribal departments and agencies, to include local governments. This process must provide a means to measure progress and facilitate reporting.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm

PLAN Phase 04: Establish Planning Team Schedule and Budget

Purpose. Ensure the state transportation agency EPC and Planning Team have adequate resources and schedule to perform the emergency planning function.

Actions. The Emergency Management Team defines specific goals and objectives of the emergency management process and performance metrics. Establish a work schedule and planning deadlines. Modify timelines as priorities become more clearly defined. Develop an initial

¹³References to the Chief Executive Officer are not intended to imply that he or she performs the work indicated—staff typically does that—but it is important that the CEO strongly endorse the work.

budget for research, printing, seminars, consulting services, and other expenses that may be necessary during the development process.

Focus. Develop a comprehensive EOP and coordinate state transportation agency emergency planning and management activities with the state's NIMS coordinator.

National Incident Management System Compliance Issues. Ensure that Federal Preparedness Awards (to include, but not limited to, the DHS Homeland Security Grant Program and Urban Area Security Initiative Funds) to state/territorial/tribal departments and agencies, as well as local governments, support all required NIMS Compliance Objectives (requirements).

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *Emergency Management Guide for Business & Industry*, <http://www.fema.gov/business/guide/section1a.shtm>

Step Observations

CPG 101 provides significantly more detail pertaining to the emergency planning process and the potential members who can be included on a collaborative planning team.

Step Checklist

For the purposes of this 2010 Guide, state transportation agencies should evaluate the adequacy of their emergency planning processes by considering whether they have¹⁴

- Identified the overall agency lead EPC and team to lead the planning function.
- Provided the EPC and his/her staff with adequate authority to perform their duties.
- Established a mission statement to clarify the purpose of the agency's emergency preparedness functions.
- Established a schedule and budget to ensure the agency's EPC and team have adequate resources and sufficient time to perform the emergency planning function.
- Identified and formed relationships with each of the other federal, state, and local agencies that the agency may need to work with in response to an emergency event.

Step 2—Conduct Research to Identify Hazards and Threats and Analyze Gathered Data

Consistent with Principle 1 (planning is an orderly, analytical, problem-solving process), it is clear that some degree of research and analysis must be performed at the state transportation agency level to (1) identify the hazards and threats that may exist or occur in the agency's region and (2) determine the appropriate actions that can be taken to respond. Forming a collaborative team (per Step 1) is also essential to the research and analysis process for the same reason.

While emergency management planners may be able to draw from previous experiences and known facts, in many cases, assumptions will need to be made to analyze the risks, resources, needs, and capabilities required to respond to differing emergencies. Involving the planning team in the research and analysis process should help identify as many facts as possible and minimize assumptions. The eight key phases (05–12) within the research process are described below.

¹⁴The state transportation agency might not have the lead in all these actions. Often the SEMA will have the lead, particularly in tracking evacuees or those sheltered in place/quarantined; however, the agency may provide secondary support for such "requirements."

PLAN Phase 05: Identify Documents to be Developed, Reviewed, Approved, and/or Updated Regarding the State Transportation Agency's Emergency Response Plans and Programs

Purpose. Clarify the scope of the state transportation agency's emergency planning process and the expected deliverables and outcomes.

Actions. Identify the documents to be developed, reviewed, approved, and/or updated regarding the agency's emergency response plans and programs. This action would focus not only on the transportation-related elements of the State EOP, but also on any specific plans, guidance, overviews documents, standard operating procedures (SOPs), operating manuals, field operations guides (FOGs), handbooks, or job aids needed to support the capabilities of agency personnel to respond to emergencies.

In our complex free society, there is no perfect solution to address every security concern, but by **working together collectively** to analyze threats, understand our capabilities, and apply resources intelligently, **we can manage risk.**

Michael Chertoff, Secretary, Department of Homeland Security, April 1, 2005

Focus. The state transportation agency emergency planning process begins with the State EOP and the functional annexes and hazard-specific appendices. Specific plans, procedures, or other documents developed by the transportation agency and/or other agencies may support implementation of the State EOP, including the following:

- Overview and Primers—a brief concept summary of a function, team, or capability.
- Standard Operating Procedures (SOPs) or Operations Manuals—complete reference documents detailing the procedures for performing a single function (SOP) or a number of inter-dependent functions (Operations Manual).
- Field Operations Guide (FOGs) or Handbooks—durable pocket or desk guides, containing essential, basic information needed to perform specific assignments or functions.
- Job Aids—checklists or other aids useful in performing or training for a specific job to be performed in the EOP.

Other plans may be available for state transportation review, including the state's or agency's

- Continuity of Operations Plan (COOP);
- Continuity of Government Plan (COG);
- Critical Infrastructure/Key Resources (CI/KR) Protection Plans; and
- Pandemic Flu Plan.

Transportation-specific plans may include

- Transportation/Traffic Incident Management Plans; and
- Emergency Response Plans and Hazard-Specific Response Plans (e.g., snow/ice, hurricane, and responses like contraflow operations).

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and standard operating guidelines (SOGs) to incorporate NIMS and NRF components, principles, and policies, to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Include preparedness organizations and elected and appointed officials in the development of EOPs.

Supporting Resources.

- *Overview: ESF and Support Annexes Coordinating Federal Assistance In Support of the National Response Framework*, <http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>
- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs

- Final Report for the Application of Technology to Transportation Operations in Biohazard Situations, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm

PLAN Phase 06: Work with State NIMS Coordinator to Identify State Transportation Agency Requirements for Addressing Statewide Implementation of the National Incident Management System

Purpose. Ensure compliance and coordination with statewide initiatives to meet NIMS requirements.

Actions. Work with the State NIMS Coordinator to identify state transportation agency requirements for addressing statewide NIMS implementation. If necessary, provide NIMS training for the agency Emergency Planning Coordinator and team.

Focus. Develop relationships and capacity to determine and develop compliance actions to ensure state transportation agency actions comply with NIMS. The agency planning team should meet with the State NIMS Coordinator to establish a working relationship for addressing NIMS compliance issues and to determine if the agency should have a NIMS coordinator. If so, and if one is not already assigned, determine whether the agency Emergency Planning Coordinator should assume this role. This role may include the following:

- Receive and review a copy of the State's NIMS Implementation Plan.
- Obtain from the State NIMS Coordinator a clear list of NIMS requirements being addressed by the state and any outstanding corrective action plans (CAPs) filed with FEMA that may relate to the transportation agency.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Ensure that state adoption of NIMS through executive order, proclamation, resolution, or legislation applies to the state transportation agency and that the agency requires no additional action to formally adopt NIMS.
- Determine how the state has established its NIMS compliance baseline against the FY05 and FY06 NIMS implementation requirements and the specific actions required for the transportation agency in FY 2007 through FY 2009.
- Determine any specific NIMS training requirements applicable for the agency and obtain the status of the department in meeting these requirements.
- Determine if the state is implementing NIMS resource typing protocols for the inventory and tracking of transportation-related resources and what actions the agency should perform to ensure incorporation of these protocols into its planning activities.
- If not already occurring, determine if monthly or quarterly meetings should be conducted with the State NIMS Coordinator to ensure full implementation of NIMS in all transportation agency planning, training, and drilling activities.

Supporting Resources.

- *Simplified Guide to the Incident Command System for Transportation Professionals*, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm
- *State NIMS Integration: Integrating the National Incident Management System into State Emergency Operations Plans and Standard Operating Procedures*, Version 1.0, http://www.fema.gov/pdf/nims/eop-sop_state_online.pdf
- NIMS Implementation and Compliance Guidance for Stakeholders, <http://www.fema.gov/emergency/nims/ImplementationGuidanceStakeholders.shtm>
- NIMS Training, http://www.fema.gov/emergency/nims/nims_training.shtm
- *National Incident Management System* (Draft, 2007), <http://www.fema.gov/pdf/emergency/nrf/nrf-nims.pdf>

PLAN Phase 07: Review State EOP and Supporting Annexes and Appendices and Other Documents for Transportation-Related Activities

Purpose. Determine how the State EOP and supporting annexes, appendices, and other documents address transportation issues, requirements, and needs.

Actions. Work with the State NIMS Coordinator to obtain a copy of State EOP and supporting annexes, appendices, and other documents. Ensure that state transportation agency plans and procedures are consistent with the State EOP.

Focus. Traditionally, State EOPs have not recognized the full capabilities of transportation agencies, particularly in the intelligent transportation systems (ITS) arena. Based on the information gathered from the State EOP, the transportation agency may find it necessary to update or modify its contributions to the State EOP (usually ESFs #1 and #3) and perhaps revise the emergency management and response procedures and protocols in the agency EOP to better mesh with those prescribed by the State EOP.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and SOGs to incorporate NIMS and NRF components, principles, and policies, to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Include preparedness organizations and elected and appointed officials in the development of EOPs.

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *The Public Transportation System Security and Emergency Preparedness Planning Guide*, <http://transit-safety.fta.dot.gov/publications/security/PlanningGuide.pdf>
- *TCRP Report 86: Public Transportation Security, Volume 7: Public Transportation Emergency Mobilization and Emergency Operations Guide*, search for title at www.TRB.org/SecurityPubs

PLAN Phase 08: Review Relevant Hazards Likely to Result in an Emergency Requiring Activation of State Emergency Operations Center

Purpose. Identify and analyze the potential hazards and threats in the state transportation agency's region to evaluate the full progression of how they will occur and be resolved by the region.

Actions. Beginning with an identified hazard, evaluate its impacts in terms of probability and severity. This action can be accomplished using CAPTA/CAPTool available as part of *NCHRP Report 525: Surface Transportation Security, Volume 15: Costing Asset Protection: An All Hazards Guide for Transportation Agencies* (CAPTA). Determine realistic response activities and the consequences of not being able to complete these activities.

Focus. The culmination of this process is development of hazard scenarios that form the foundation for writing or updating the state transportation agency's emergency preparedness plan and/or protocols. Analyzing the levels of probability and severity of each identified hazard helps agency emergency planners prioritize the actions necessary to prepare for such events and helps determine and communicate acceptable levels of risk.

National Incident Management System Compliance Issues. Plan for and/or participate in an all-hazards exercise program (for example, Homeland Security Exercise and Evaluation Program

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[HSEEP]) (FEMA-HSEEP, 2009) that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions.

Supporting Resources.

- National Infrastructure Protection Plan, http://www.dhs.gov/xprevprot/programs/editorial_0827.shtml
- *NCHRP Report 525: Surface Transportation Security, Volume 12: Making Transportation Tunnels Safe and Secure*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 11: Disruption Impact Estimating Tool—Transportation (DIETT): A Tool for Prioritizing High-Value Transportation Choke Points*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 10: A Guide to Transportation's Role in Public Health Disasters*, search for title at www.TRB.org/SecurityPubs

PLAN Phase 09: Gather Information Regarding Vulnerable Populations

Purpose. Identify the special dynamics of affected areas including knowing the best evacuation routes, shelter-in-place/quarantine locations, points of entry and exit, the demographics of seniors and vulnerable populations, and the special equipment and services necessary to evacuate, shelter-in-place, or quarantine these citizens safely.

Actions. Work with the State NIMS Coordinator and partner transportation agencies to identify transportation-disadvantaged and vulnerable populations. Develop plans and procedures, and assemble resources needed to safely evacuate, shelter-in-place, or quarantine these populations.

Focus. Improve emergency response capabilities and processes for evacuating transportation-disadvantaged and vulnerable populations.

National Incident Management System Compliance Issues. To achieve NIMS compliance, plan for vulnerable populations in the development of EOPs (to include, but not limited to individuals with limited English language proficiency, individuals with disabilities, children, the aged, etc.).

Supporting Resources.

- Emergency Preparedness and Individuals with Disabilities, <http://www.dotcr.ost.dot.gov/asp/emergencyprep.asp>
- G197—Emergency Planning & Special Needs Population, <http://training.fema.gov/EMIWeb/STCourses/crsdesc.asp?courseid=G197>

PLAN Phase 10: Determine Status of State Transportation Agency Emergency Planning Activities and Data to Identify Areas Needing Improvement

Purpose. Assess what still needs to be done.

Actions. Verify that the agency has completed procedures regarding how to work with the state to request federal assistance.

Focus. Improve emergency response capabilities and processes.

National Incident Management System Compliance Issues. Plan for and/or participate in an all-hazards exercise program (for example, HSEEP) that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions.

Supporting Resources.

- *National Preparedness Guidelines*, http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf
- *Emergency Support Function Annexes: Introduction*, <http://www.fema.gov/pdf/emergency/nrf/nrf-annexes-all.pdf>

PLAN Phase 11: Define Response Issues, Roles, and Tasks by Reviewing Universal Task List, Target Capabilities List, Resource Typing List, and National Planning Scenarios

Purpose. Ensure coordination with DHS and FEMA guidance.

Actions. Work with the State NIMS Coordinator and partner transportation agencies. Develop plans and procedures, and assemble resources needed to respond safely to emergency events.

Focus. Improve emergency response capabilities and processes.

National Incident Management System Compliance Issues. Plan for and/or participate in an all-hazards exercise program (for example, HSEEP) that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions.

Supporting Resources.

- *National Preparedness Guidelines*, http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf

PLAN Phase 12: Based on Activities Identified in State EOP and Supporting Annexes and Appendices, Develop/Update State Transportation Agency's Transportation Incident Management Organization to Ensure All Activities Conform to National Incident Management System and National Response Framework Requirements

Purpose. Ensure that an incident management organization, compliant with NIMS, has been established to integrate state transportation personnel into the Incident Command System (ICS) to be used during emergencies requiring activation of the State EOC.

Actions. Update organization charts and determine whether specific teams, groups, committees, and/or temporary organizations will be used to manage state transportation agency responses to emergencies identified in the State EOP. Review agency Traffic Incident Management (TIM) Plans and Protocols and specific emergency response plans to identify incident management structures currently used. Identify and train agency field personnel in charge of on-scene response in procedures to coordinate with the ICS established by the local or state emergency response agencies on scene.

Focus. Improve emergency response capabilities and processes.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and SOGs to incorporate NIMS and NRF components, principles, and policies to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Include preparedness organizations and elected and appointed officials in the development of EOPs.

Supporting Resources.

- *Simplified Guide to the Incident Command System for Transportation Professionals*, http://ops.fhwa.dot.gov/publications/ics_guide/ics_guide.pdf

Step Observations

Experience teaches that the range of possible threats should not be limited to the obvious or those with a relatively high probability. No one can foresee all possibilities, but, for example, preplanned evacuation and diversion routes for all Interstates and other freeways and expressways are certainly reasonable precautions. This process requires a broad range of expertise to limit the assumptions that may be made by personnel who are inexperienced with certain hazard and threat types and responses. FEMA Publication 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Loss*, is an excellent resource for state transportation agencies looking to become more familiar with the hazard and risk assessment process (FEMA, 2001).

Step Checklist

To evaluate the adequacy of their research and hazard analysis processes as they pertain to emergency planning, state transportation agencies should determine whether they have

- Identified the documents that need to be developed, reviewed, approved, and/or updated pertaining to the agency's emergency plans and programs to clarify the scope of the agency's emergency planning process and its desired or expected outcomes.
- Worked with the State NIMS Coordinator to identify transportation agency requirements for addressing statewide implementation of NIMS and ensured the agency's Emergency Planning Coordinator and team, as well as all agency emergency responders, received NIMS training.
- Reviewed the State EOP and supporting annexes/appendices and other documents for transportation-related activities to determine how these documents currently address transportation issues, requirements, needs, and assets.
- Reviewed the relevant hazards likely to result in an emergency requiring activation of the SEOC to identify and assess the relevant hazards for the agency and state.
- Ensured the state transportation agency's EOP deals similarly with incidents that do not rise to the severity that requires State (or Regional) EOC activation, particularly a clear understanding among partners of the ICS.
- Gathered information pertaining to vulnerable populations to identify issues or requirements that may exist with these populations.
- Determined the status of agency emergency planning activities to date and identified areas needing improvement to determine what still needs to be done.
- Defined response issues, roles, and tasks by reviewing the Target Capabilities List, Universal Task List, Resource Typing List, and the National Planning Scenarios to ensure coordination with DHS and FEMA guidance.
- Based on activities identified in the State EOP, the agency has developed/updated its incident management—including its TIM—organization to ensure all activities are conducted pursuant to NIMS and NRF requirements.

Step 3—Determine Goals and Objectives of Emergency Planning and Response Activities

CPG 101 defines goals as “... broad, general statements that indicated the intended solution to problems identified by planners during the previous step” [referring here to conducting research and analyzing data]. CPG 101 also defines objectives as being “... more specific and identifiable actions carried out during the response. They are the things that responders have to accomplish—the things that translate into activities, implementing procedures, or operating procedures by responsible organizations” (CPG 101, 2009).

Defining the goals and objectives of emergency planning and response activities involves just one phase, as described below.

PLAN Phase 13: Establish State Transportation Agency Operational Priorities, Response Goals, and Intermediate Objectives in Response to Hazards Identified in Existing State EOP and Supporting Documents, as well as New Challenges Identified during Analysis Process

Purpose. Clarify what constitutes *success* regarding the state transportation agency's response to the range of emergencies that could occur resulting from the hazards identified for the state.

Actions. Develop state transportation agency goals and objectives that build on the emergency response needs and demands of the agency and its partners, as determined through hazard analysis and risk assessment activities described above.

Focus. Complete the activity safely with as little impact as possible on the people, property, equipment, and infrastructure of the affected area.

Supporting Resources.

- NCHRP Report 525: *Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs

Step Observations

Goals and objectives establish the basis for performance measures against which the state transportation agency's emergency planning and preparedness activities can be measured.

Step Checklist

To evaluate the adequacy of the state transportation agency emergency response goals and objectives, the agency should consider whether it has

- Established agency operational priorities, response goals, and intermediate objectives in response to hazards identified in the existing State EOP, as well as new challenges identified during the analysis process to clarify what constitutes *success* regarding the agency's response to the range of hazards that could occur.
- Established performance metrics to measure how well the goals and objectives are being achieved.

Step 4—Develop and Analyze Courses of Action and Identify Resources

Once possible hazards and threats have been identified, the state transportation agency's planning team should analyze the courses of action necessary to respond to each hazard and/or threat. While the hazard and threat identification process may largely entail scenario-based planning, developing the courses of action to take in response to hazards and threats often requires functional and capabilities-based planning.

The objective of these planning processes is to force the planning team to imagine how response activities will unfold through the course of the response, beginning with the onset of the emergency and ending with a full return to normal operations. This includes identifying the actions that will be taken by the state transportation agency and all other response agencies, and the resources necessary to ensure the safety and success of response efforts. This process includes Phases 14 and 15, which follow.

Supporting Planning Concepts

Scenario-Based Planning: As the name implies, this planning process starts with building a scenario. The impact of the scenario is analyzed to determine appropriate response strategies.

Functional Planning: This planning process identifies the common tasks that the community must perform during emergencies. It is the basis for the all-hazards approach to planning described in State and Local Guide 101. It identifies lead and supporting agencies for response tasks.

Capabilities-Based Planning: A capability is the ability to take a course of action. Capability-based planning answers the question, "Do I have the right mix of TOPPLEF (training, organizations, plans, people, leadership and management, equipment, and facilities) elements to perform required response tasks?" The Target Capabilities List provides a definition; an outcome; and preparedness and performance activities, tasks, and measures for a predetermined set of capabilities. It combines aspects of scenario- and functional-based planning and uses the planning process described in CPG 101.

(CPG 101, 2009)

PLAN Phase 14: Use Scenario-Based, Functional, and Capabilities-Based Planning to Depict how the State Transportation Agency's Response to a Range of Emergency Situations May Unfold

Purpose. Employ an all-hazards approach to emergency management.

Actions. Use a formal process for building relationships among the occurrence of hazards, decision points, and response actions, including the following:

- Establish a timeline for the event and response actions, depending on the type of hazard or threat to be addressed.
- Develop a full-response scenario, keeping in mind the goals and objectives discussed above that are to be fulfilled during response activities.
- Identify critical decision points during the response efforts and how much time leaders will likely have to make these decisions during the response.
- Identify specific response actions, including what the action is and who is taking it; when it will be performed, how long it will take to complete and the time actually available; what prompted the action and what will be its result (both desired and undesired); and what resources are needed to complete the action.
- Assess progress made toward the end state; identify whether goals and objectives are being met and if any new needs or demands develop; identify tasks that, if not completed, would cause the response to fail; and check for omissions and gaps, inconsistencies in organizational relationships, and mismatches between the plans of the state transportation agency and other response parties and jurisdictions.

Focus. Identify and analyze all possible hazards and risks faced by the state transportation agency and develop response plans and procedures that can be used to safely mitigate and control these hazards and risks.

National Incident Management System Compliance Issues. Plan for and/or participate in an all-hazards exercise program (for example, HSEEP) that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions.

Supporting Resources.

- *A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents*, http://freight.transportation.org/doc/NCHRP_A.pdf
- *Emergency Management Guide for Business & Industry, Section 1: Step 2—Analyze Capabilities and Hazards*, <http://www.fema.gov/business/guide/section1b.shtm>
- *TCRP Report 86: Public Transportation Security, Volume 10: Hazard and Security Plan Workshop: Instructor Guide*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 4: A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 3: Incorporating Security into the Transportation Planning Process*, search for title at www.TRB.org/SecurityPubs

PLAN Phase 15: Identify Resources Needed to Support State Transportation Agency's Emergency Response Activities

Purpose. Ensure adequate resources are available for emergency response efforts.

Actions. Use a formal process to identify resource shortfalls including all facilities vital to emergency operations and how they may be affected by individual hazards or threats, and develop a list of alternative resources that may be obtained from neighboring states or jurisdictions, or private suppliers. Identify additional information needs to help drive decision-making and response actions.

The Emergency Management Assistance Compact (EMAC), administered by the National Emergency Management Association (NEMA), is a congressionally ratified organization that provides form and structure to interstate mutual aid (FEMA-EMAC, 2007) (NEMA, 2008). The EMAC should be a significant part of the State EOP, including the preparation, response, and recovery processes. Likewise, the EMAC should play a significant role in the state transportation agency's EOC structure and operations, especially if the state is authorized to use EMAC locally. Through EMAC, a disaster-impacted state can request and receive assistance from other member states quickly and efficiently, with liability and reimbursement terms and conditions already addressed and accepted at the state level. It is important in this regard that all involved in emergency management use NIMS resource typing to ensure consistency with standard resource definitions to receive timely responses to fulfill the request from other states or FEMA.

Focus. Identify and analyze all possible hazards and risks faced by the state transportation agency and develop response plans and procedures that can be used to safely mitigate and control these hazards and risks.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Ensure that Federal Preparedness Awards (to include, but not limited to, the DHS Homeland Security Grant Program and Urban Area Security Initiative Funds) to state/territorial/tribal departments and agencies, as well as local governments, support all required NIMS Compliance Objectives (requirements).
- Ensure inventory response assets conform to NIMS National Resource Typing Definitions, as defined by the FEMA Incident Management Systems Integration Division.
- Confirm that equipment, communications, and data systems acquired through state/territorial and local acquisition programs are interoperable.
- Use response asset inventory for intrastate/interstate mutual-aid requests (such as EMAC), training, exercises, and incidents/planned events.

Supporting Resources.

- *TCRP Report 86: Public Transportation Security, Volume 10: Hazard and Security Plan Workshop: Instructor Guide*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 4: A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 3: Incorporating Security into the Transportation Planning Process*, search for title at www.TRB.org/SecurityPubs

Step Observations

Through this process, state transportation agencies are able to consider alternative solutions to their emergency response needs and demands. In all cases, agencies should attempt to develop multiple solutions for each problem faced. This helps build the depth of the agency's response

capabilities and limits the risks that the agency will take actions that could actually hinder, rather than support response activities. This process also addresses virtually all planning principles emphasized by CPG 101.

Step Checklist

To evaluate the adequacy of the transportation agency's processes for developing and analyzing courses of action in response to specific hazards and threats, an agency should consider whether it has

- Used scenario-based, functional, and capabilities-based planning to depict how the agency's response to emergencies may unfold, using a formal process for building relationships among the occurrence of hazards, decision points, and response actions.
- Identified the resources needed to support the agency's response activities to ensure that adequate resources are available.

Step 5—Write the Plan

Each of the above activities sets the groundwork for writing or updating the state and/or state transportation agency Emergency Operations Plan(s); however, when discussing how best to write an EOP, agencies must consider two fundamentals of emergency planning. First, planning assigns tasks, allocates resources, and establishes accountability. This means that an effective EOP must clearly define the organizational roles and responsibilities of transportation agency personnel, as well as those of other emergency response agencies. Second, effective EOPs not only tell those within the planning community what to do (the tasks) and why to do them (the purposes), effective EOPs also inform those outside the jurisdiction about how to cooperate and provide support and what to expect. The best way to incorporate this principle in the plan development, review, and revision process is to use the state transportation agency's emergency planning team. Completion of the following two key phases will fulfill this step.

PLAN Phase 16: Develop and/or Update Transportation-Related Components of State EOP, Functional Annexes, and Hazard-Specific Appendices

Purpose. Complete state transportation planning inputs and deliverables for the State EOP and supporting documents.

Actions. Establish expectations regarding transportation functions during the range of potential incidents addressed in the State EOP. Develop/update transportation-related components of the State SOP, the functional annexes to the State EOP, and the hazard-specific appendices to the State EOP. Ensure that state transportation agency liaisons are available to support the State EOC and, if applicable, the county/municipal EOCs, TMC(s) and/or FC(s), during a state-declared emergency.

Focus. Although formats vary, many state transportation agencies choose to follow the State EOP format for their agency plans. This makes the plans more consistent and, when put to use, information is often easier for outside parties to find when the formats are similar or the same. At a minimum, CPG 101 states that the EOP should include the following sections (with suggested advice included):

- **Introductory Material** identifies producers of the plan.
- **Purpose Statement** sets the tone of the plan.
- **Scope** clearly identifies what jurisdictional, geographic, and functional boundaries are applicable in the plan.
- **Situation Overview** summarizes hazards faced by the state transportation agency and discusses how the agency fits into the regional response structure, including how other responders can use transportation in accomplishing their responsibilities.

- **Planning Assumptions** identifies what the planning team assumed to be facts for planning purposes, and perhaps more importantly, what uncertainties exist and how they might be mitigated.
- **Concept of Operation (ConOps)** explains the decisionmaker's or leader's intent with regard to operation. Recognize that ConOps has a somewhat different meaning in the transportation world, which the document must make clear.
- **Organization and Assignment of Responsibilities** establishes the emergency organization that will be relied on to respond to emergency situations, including the types of tasks to be performed, by position and organization.
- **Direction, Control, and Coordination** describes the framework for all direction, command and control, and coordination activities, and identifies who has strategic, tactical (as applicable), and operational command and control of response assets and services.
- **Information Collection and Dissemination** describes the essential information common to all emergencies identified during the planning process. Include coordination with the relatively new state and regional Fusion Centers (see Appendix F).
- **Communication** describes the response organization-to-response organization communication protocols and coordination procedures to be used during emergencies and disasters. If a common interagency communications center is not available, the plan must then cover how interagency communications will be achieved, including backup systems.
- **Administration, Finance, and Logistics** addresses the general support requirements and the availability of services and support for all types of emergencies. This should include references to EMAC and other mutual-aid agreements; authorities for and policies on augmenting staff by reassigning public employees and soliciting—and managing—volunteers; and general policies for maintaining financial records, reporting, tracking resource needs, and other information.
- **Plan Development and Maintenance** describes the planning process, participants, and how EOP revisions are coordinated during the preparedness phase. This should also include assigning responsibility for overall planning and coordination to a specific person and providing for a regular cycle of testing, reviewing, and updating the EOP. Make clear all processes for post-incident review and EOP adjustment.
- **Authorities and References** provides the legal basis for emergency operations and activities. This should (1) include a list of laws, statutes, ordinances, executive orders, mutual-aid and other agreements, etc.; (2) specify the extent and limits of the emergency authorities granted to the state transportation agency; and (3) pre-delegate emergency authorities and provisions for continuity of operations.
- Any necessary supporting annexes, appendices, plans, and/or procedures.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and SOGs to incorporate NIMS and NRF components, principles, and policies, to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Apply common and consistent terminology as used in NIMS, including establishment of plain language (clear text) communication standards.
- Include preparedness organizations and elected and appointed officials in development of EOPs.

Supporting Resources.

- *Guide for All-Hazard Emergency Operations Planning* <http://www.fema.gov/pdf/plan/slgl01.pdf>
- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *Emergency Management Guide for Business & Industry, Section 1: Step 3—Develop the Plan*, <http://www.fema.gov/business/guide/section1c.shtm>

PLAN Phase 17: Develop Supporting Materials; Include any Specific Plans, Guidance, Overviews, Documents, SOPs, Operating Manuals, FOGs, Handbooks, and Job Aids Needed to Support Capabilities of State Transportation Agency Personnel to Respond to Emergencies

Purpose. Ensure that sufficient reference materials exist to support the training and response activities of state transportation personnel during emergencies.

Actions. Identify needed state transportation agency plans or documents to be developed, including any agency-specific emergency response plans, COOP/COG plans, etc. Supporting actions may include developing the following:

- SOPs detailing the procedures for performing individual functions identified in the transportation-related component of the State EOP and hazard-specific annexes.
- If applicable, an Operations Manual detailing the performance of a number of interdependent functions specified in the transportation-related elements of the State EOP.
- A FOG or Handbook, such as a durable pocket or desk guide, containing essential, basic information needed to perform specific assignments or functions as specified in the transportation-related elements of the State EOP.
- Job Aids to provide detailed checklists or other aids for job performance or job training regarding the transportation-related elements specified in the State EOP and Hazard-Specific Annexes.
- Criteria for the reporting, and (particularly) verifying potential incidents by motorists or to the citizens, even from specially trained individuals, such as *road watch*, *volunteer spotter*, and other *probe* programs (including transit vehicle operators). TSA has First Observer, a watch program for highway security (the toll-free number for the call center—Information Sharing Analysis Center [ISAC]—is 1-888-217-5902).

Focus. Identify and analyze all possible hazards and risks faced by the state transportation agency and develop response plans and procedures that can be used to safely mitigate and control these hazards and risks.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and SOGs to incorporate NIMS and NRF components, principles, and policies to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Apply common and consistent terminology as used in NIMS, including establishment of plain language (clear text) communication standards.
- Include preparedness organizations and elected and appointed officials in the development of EOPs.

Supporting Resources.

- NRF Resource Center, Job Aids/SOPs, <http://www.fema.gov/emergency/nrf/jobaid.htm>
- *NCHRP Report 525: Surface Transportation Security, Volume 8: Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies*, search for title at www.TRB.org/SecurityPubs

Step Observations

Include the recommended contents outlined in CPG 101 in the state transportation agency's EOP.

Step Checklist

To evaluate the adequacy of a state transportation agency's EOP, the agency should consider whether its EOP has

- Developed and/or updated transportation-related components of the State EOP to provide state transportation planning inputs and deliverables for the State EOP and supporting documents.

- Developed supporting materials, including any specific plans, guidance, overview documents, operating procedures, etc., to ensure agency personnel can respond to emergencies and ensure that sufficient reference materials exist to support agency training and response activities.
- Verified whether its state is a member of EMAC and included the processes for obtaining EMAC resources during emergency response and recovery efforts in its EOP.
- Defined the purpose, scope of preparedness and incident management activities, and assumptions necessary for the agency.
- Described organizational structures, roles and responsibilities, policies, and protocols for providing emergency support and how these roles and responsibilities are assigned.
- Facilitated response and recovery activities and is flexible enough to use in all emergencies of any magnitude.
- Described the concept of operations.
- Described finance, administration, and logistics.
- Included a section covering the development and ongoing maintenance of the EOP.
- Included authorities and references.
- Contained functional annexes, hazard-specific appendices, a glossary, and a list of acronyms (the latter including those terms common to both the EM/ER and transportation communities).
- Pre-designated functional area representatives to the EOC and provided coordination links with the transportation management centers.
- Included pre-incident and post-incident public awareness, education, and communication plans and protocols.
- Provided for post-incident reviews to identify lessons learned and needed improvements.

Step 6—Approve and Implement the Plan

The fundamental principles of emergency planning dictate that the planning process includes senior officials throughout the process to ensure both understanding and buy-in. This is achieved most successfully when senior leadership has been involved from the onset of the state transportation agency's planning activities. Review and approval of the EOP involves only one phase, as described below.

PLAN Phase 18: Formally Approve and Implement Transportation-Related Provisions of the State and State Transportation Agency's EOPs and Supporting Annexes and Agency-Specific Supporting Materials

Purpose. Ensure adoption of the EOPs and supporting materials.

Actions. Ensure review by those at the state emergency management level to verify that State EOP transportation-related provisions have been appropriately adopted by the state transportation agency and addressed by its EOP or supporting materials. Approve both plans through a formal promulgation documentation process that establishes the authority required for making changes and revisions to the plans. Ensure the plans are signed by the agency's chief executive and his or her executive management team, particularly by regional/district leadership in decentralized agencies.

Focus. Identify where to improve the plans for clarity and usefulness.

Supporting Resources.

Emergency Management Guide for Business & Industry, Section 1: Step 3—Develop the Plan,
<http://www.fema.gov/business/guide/section1c.shtm>

Step Observations

Executive buy-in is essential to successful EM/ER planning.

Step Checklist

- Evaluate the adequacy of the state transportation agency's EOP by ensuring the agency has
 - Formally approved and implemented the transportation-related provisions of the State EOP to ensure adoption of the plan and supporting materials.
 - Established a connection between the State EOP and the agency EOP to ensure compatibility and consistency of common provisions.

Step 7—Exercise the Plan and Evaluate Its Effectiveness

Because plans guide the preparedness process, it is important that they are routinely tested through training, drills, and exercises. This is necessary not only to verify the accuracy of the EOP and its supporting procedures and to identify and address any potential gaps, but also to increase the state transportation agency's overall state of readiness, as well as that of its personnel and partners. Exercising the plan involves one phase, described below.

PLAN Phase 19: Develop Coordinated Plan of Training Drills and Exercises

Purpose. Ensure that state transportation personnel are trained to respond to emergencies.

Actions. Distribute the plan to all necessary parties, including all members of the state transportation agency's emergency planning team and any outside agencies or jurisdictions that may be involved in emergency response efforts within the agency's region or that could be expected to call upon the agency to support response efforts in their regions. The agency's EPC should keep a record of all of the individuals and agencies to whom the plan was provided.

It is recommended that the state transportation agency make a version of the Emergency Operations Plan publicly accessible. Such transparency is good for accountability, for sharing with seldom-used response partners, and for securing necessary resources to carry out assigned responsibilities. Indeed, Sunshine laws may require that a copy of the EOP be posted on the agency's website or placed in some other publicly accessible location. Obviously, sensitive information should be in annexes that, while referenced in the public version, are not available to the public.¹⁵

Focus. Exercise and evaluate the EOP to determine its adequacy, feasibility, acceptability, completeness, and compliance with applicable guidance or regulatory requirements. CPG 101 defines each of these measures as follows:

- **Adequacy:** A plan can be considered adequate if the
 - Scope and concept of planned response operations identify and address critical tasks effectively;
 - Assigned mission can be accomplished while complying with guidance; and
 - Assumptions are valid, reasonable, and comply with guidance.
- **Feasibility:** A plan can be considered feasible if the
 - Organization can accomplish the assigned mission and critical tasks by using available resources within the time contemplated by the plan; and
 - Available resources, including internal assets as well as those that can be gained through mutual-aid or existing state, regional, or federal assistance agreements, are allocated tasks and tracked by status (assigned, out of service, etc.).

¹⁵Certain information may be classified, such as lists of critical infrastructure and weak points in systems; these should be placed in a supporting document that is deemed exempt from the Sunshine law. The posted version would thus be a redacted version.

- **Acceptability:** A plan can be considered acceptable if it
 - Meets the needs and demands driven by the event, meets decisionmaker and public cost and time limitations, and is consistent with the law; and
 - Can be justified in terms of the cost of resources and if its scale is proportional to mission requirements.
- **Completeness:** A plan can be considered complete if it
 - Incorporates all tasks to be accomplished;
 - Includes all required capabilities;
 - Provides a complete picture of the sequence and scope of the planned response operation (i.e., what should happen, when, and at whose direction);
 - Includes time estimates for achieving objectives; and
 - Identifies success criteria and a desired end-state.
- **Compliance with Guidance and Doctrine:** A plan can be considered compliant with guidance and doctrine if it complies with all applicable guidance and regulatory requirements to the maximum extent possible.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Plan for and/or participate in an all-hazards exercise program (for example, HSEEP) that involves emergency management/response personnel from multiple disciplines and/or multiple jurisdictions.
- Incorporate corrective actions into preparedness and response plans and procedures.
- Promote the integration of Incident Command, Multiagency Coordination System, and Public Information into appropriate exercises and evaluate the integration against associated target capabilities (refer to HSEEP, Volume III and the Exercise Evaluation Guides) (FEMA-HSEEP, 2007). <https://hseep.dhs.gov/support/VolumeIII.pdf>
- Include nongovernmental organizations and the private sector in an all-hazards exercise program, when appropriate.

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees*, search for title at www.TRB.org/SecurityPubs
- NIMS training courses available online at <http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm>

Step Observations

The state transportation agency can begin to develop and administer training programs based on the degree to which the EOP meets each of these measures. Training, which is part of the preparedness process discussed in the next section, includes tabletop exercises and full-scale mock emergency drills that can be used to exercise the EOP at all levels and across all identified hazards and threats. The information and experience gained through such activities is often irreplaceable and the most effective means of preparing for actual response activities.

Step Checklist

To evaluate their processes for exercising the state transportation agency EOP and determine if additional effort is needed in this area, agencies should consider whether they have

- Developed a coordinated program of training, drills, and exercises to ensure that agency personnel are trained to properly respond to different types of emergencies.
- Ensured the agency and its partners revised their plan as a result of these exercises (if indicated by the results of the exercises).

Step 8—Review, Revise, and Maintain the Plan

The discussion of emergency planning concludes by further noting the importance of the plan review, revision, and overall maintenance process. Because emergency planning is a continuous process, and the participants involved in planning and preparing for, responding to, and recovering from emergencies often change from year to year, it is imperative that the state transportation agencies establish mechanisms for ongoing review and revision of their EOPs—both the State EOP and the agency internal one(s). Reviewing, revising, and maintaining the EOPs require one phase, as described below.

PLAN Phase 20: Establish Ongoing Review and Assessment Process for Transportation-Related Elements of State and State Transportation Agency EOPs and Supporting Materials

Purpose. Ensure that the state and state transportation agency EOPs, procedures, and supporting materials are up to date.

Actions. Establish minimum timeframes for review as well as the specific events (i.e., update of the State EOP, change of personnel, provision of new or additional resources, issuance of new regulatory requirements, change in regional demographics or hazard profile) that should prompt a review and possible revision of the EOP(s).

Focus. Maintain accurate, relevant, and immediately useful plans and procedures.

Supporting Resources.

- *Comprehensive Preparedness Guide 101* (CPG 101, 2009), http://www.fema.gov/pdf/about/divisions/npd/cpg_101_layout.pdf
- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs

Step Observations

CPG 101 recommends that agencies review plans *at least once every 2 years*. Periodic practice exercises should be designed to test, even stress, the established processes to identify improvements needed.

Step Checklist

To evaluate their review, revision, and plan maintenance processes, state transportation agencies should consider whether they have

- Established an ongoing review and assessment process for transportation-related elements of State and agency EOPs and supporting materials to ensure that the agency's plans, procedures, and supporting materials remain relevant and up to date.

Prepare for the Emergency

The discussion of emergency preparedness and its role in the state transportation agency emergency management process must begin by revisiting Homeland Security Presidential Directive 8, National Preparedness (HSPD-8).

HSPD-8 established

... policies to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies by requiring a **national domestic all-hazards preparedness goal**, establishing mechanisms for improved delivery of Federal pre-

paredness assistance to State and local governments, and outlining actions to strengthen preparedness capabilities of Federal, State, and local entities.

The top NPG priorities are to implement the NIMS and the NRF, expand regional collaboration, and implement a National Infrastructure Protection Plan (NIPP). It is also the priority of the NPG to strengthen

- Information sharing and collaboration capabilities;
- Interoperable communications capabilities;
- Chemical, biological, radiation, nuclear, and explosive weapons (CBRNE) detection, response, and decontamination capabilities; and
- Medical surge and mass prophylaxis (i.e., disease prevention) capabilities.

While strengthening medical surge and mass prophylaxis capabilities may appear to be beyond the scope of state transportation agencies, it is important to note that each of the other NPG priorities are directly applicable and imperative to improving transportation agency emergency preparedness capabilities. The previous discussion of emergency planning noted the importance of developing an EOP that is both workable and that meets all partners' expectations. This is best accomplished through information sharing and collaboration among a broad range of stakeholders and emergency management experts (i.e., the state transportation agency's emergency planning team). While the planning phase is designed to bring stakeholders together to create a collaborative planning team and an effective EOP, the preparedness phase of emergency management works to ensure the EOP can meet its objectives. As to medical surge and mass prophylaxis, it is not unusual for state transportation agencies to be involved in transportation and distribution plans for national stockpiles and personnel to administer them.

During the preparedness phase, the EOP guides and directs the development of supporting hazard- and threat-specific plans and procedures and serves to remind the state transportation agency planning team of the ultimate goals and objectives of the agency's emergency response activities. In this manner, the EOP continues to evolve, intrinsically linking planning and preparedness together through its implementation.

HSPD-8 defines national preparedness as "the existence of plans, procedures, policies, training, and equipment necessary at the Federal, State, [territorial,] and local level to maximize the ability to prevent, respond to, and recover from major events." At the state transportation agency level, preparedness is more simply described as the tasks and activities necessary to build, sustain, and improve the agency's operational capability to prevent, protect against, respond to, and recover from the hazards and threats that it may face. Based on this description, it is clear that emergency preparedness cannot end with the development and implementation of the state or transportation agency EOP, rather, it must instead include development, implementation, and testing of other support plans and procedures that define the specific tasks to be completed during emergency response activities. In doing so, the preparedness phase of emergency management seeks to answer three fundamental questions:

1. How prepared do we need to be?
2. How prepared are we?
3. How do we prioritize efforts to close the gap?

Answering these questions requires the state transportation agency to take an all-hazards approach to identifying the hazards and threats it may face and to develop tangible actions that can be taken to respond to these hazards and threats—the NIMS and the NRF approach to emergency management. It is also important to note that answering these questions requires the agency to evaluate and manage risks. This inherently involves development and application of

Vision of the National Preparedness Goal:

To engage Federal, State, [territorial,] local, and tribal entities, their private and nongovernmental partners, and the general public to achieve and sustain risk-based target levels of capability to prevent, protect against, respond to, and recover from major events in order to minimize the impact on lives, property, and the economy.

standards and measures to assess the current capabilities, performance, and overall preparedness of the agency.

Since HSPD-8 was first issued on December 17, 2003, states have worked to develop and implement required standards and metrics and have developed strategies consistent with the NPG to plan and prepare for, respond to, and recover from emergency events. In doing so, many states have established specific preparedness measures that state transportation agencies must meet (typically identified in the State EOP). The following has been developed to provide state transportation agencies with the tools necessary to evaluate the effectiveness of their own emergency preparedness processes against the standards and metrics required by NIMS and to provide additional detail on how best to implement the agency EOP. As with the discussion of emergency planning, the following discussions are presented in a format that encourages the transportation agency to conduct self-assessments.

Step 1—Develop Approaches to Implement State Transportation Agency Roles and Responsibilities During Emergencies

In order for state transportation agencies to implement their roles and responsibilities during emergency events, they must first know what their roles and responsibilities are. The research and data analysis phase of emergency planning recommended that agencies start the research process by reviewing the State EOP and its supporting annexes/appendices. This is necessary to identify any transportation-related activities, issues, requirements, and/or needs that the agency may be designated to complete or fulfill. Similarly, the state transportation agency should also review the EOPs and emergency transportation plans of local and regional transportation organizations and agencies to determine if the agency is being relied upon to provide support and resources at the local and regional level. Developing approaches to implement its roles and responsibilities during emergencies requires the agency to complete four phases.

PREPARE Phase 01: Establish Protocols for Heightened Homeland Security Advisory System (HSAS) Threat Levels

Purpose. Address DHS/TSA and FHWA/FTA recommendations for responding to elevated HSAS threat levels.

Actions. Clarify the threat warning and notification system the state transportation agency will use. Identify specific actions that the agency will take for each HSAS level. Where possible, coordinate the activities identified for each HSAS level with the transportation-related activities identified in the state's basic EOP and the Hazard-Specific Annexes.

Focus. Increase the readiness of state transportation agencies and improve their ability to respond appropriately to changing threat levels and conditions.

Supporting Resources.

- *Common Issues in Emergency Transportation Operations Preparedness and Response*, http://ops.fhwa.dot.gov/publications/etopr/common_issues/etop_compliance.htm
- *Transit Agency Security and Emergency Management Protective Measures*, <http://transitsafety.volpe.dot.gov/publications/security/ProtectiveMeasures/PDF/ProtectiveMeasures.pdf>
- Emergency Transportation Operations, Preparedness, <http://www.ops.fhwa.dot.gov/opssecurity/preparedness/index.htm>
- *NCHRP Report 525: Surface Transportation Security, Volume 14: Security 101: A Physical Security Primer for Transportation Agencies*, search for title at www.TRB.org/SecurityPubs
- *TCRP Synthesis 80: Transit Security Update*, search for title at www.TRB.org/SecurityPubs

PREPARE Phase 02: Develop Memorandum of Understanding/Agreement (MOU/A) with other Local and State Agencies Regarding Transportation-Related Elements Specified in State and Regional EOPs

Purpose. Ensure that formal plans and procedures are in place for mutual aid, as specified by FEMA in the NRF and NIMS and in the State EOP.

Actions. Promote intrastate and interagency mutual-aid agreements (to include agreements with the private sector and nongovernmental organizations [NGOs]). Develop MOU/As and notification/information-sharing protocols with local/regional and state partners regarding the transportation-related elements specified in the State EOP. Supporting actions may include the following:

- Use the state/territory response asset inventory for intra- and interstate mutual-aid (such as EMAC) requests, exercises, and actual events.
- Build relationships with local, regional, state, and federal Emergency Management Agencies (EMAs), Emergency Operation Centers (EOCs), Emergency Planning Committees, Emergency Response Commissions, TMCs, Fusion Centers (FCs), and Public Health and Agricultural organizations. Figure 8 illustrates the overlapping interests of the TMC (called Operations Center here), EOC, and the FC.
- Define key terms, roles, and responsibilities of individuals, and contact information. Include procedures for requesting and providing assistance.
- Include procedures, authorities, and rules for payment, reimbursement, and allocation of costs.
- Include notification procedures and protocols for interoperable communications. Explain relationships with other agreements among jurisdictions.
- Address workers' compensation and treatment of liability and immunity.
- Provide for recognition of qualifications and certifications.
- Share agreements, as required.
- Review, support, and adopt FEMA's ongoing efforts to develop a national credentialing system.
- Expand mutual-aid agreements beyond support services and equipment to include information sharing and interagency decision making.
- Establish MOUs with the owners of telecommunications, electrical power transmission trunk lines, pipelines, viaducts, etc., for monitoring these facilities, and include in the EOP appropriate responses to damage to them.

Focus. DHS recommends that basic MOU/As include protocols for requesting assistance, chain of command and control, compatibility of resources, and what level of assistance is to be expected. MOU/As developed by state transportation agencies should therefore define the transportation-related elements, activities, roles, responsibilities, and resources that the agency will supply during emergency response activities, as well as those the agency will receive from other response agencies and organizations. MOU/As should also incorporate the NIMS requirements, especially when the transportation agency enters into an agreement with private-sector companies or volunteer organizations that are not mandated to meet the NIMS requirements. Other information an agency may include in an MOU/A includes the following:

- Definitions of key terms used in the agreement;
- Definitions of participating agency jurisdictional boundaries;
- Procedures for requesting and providing assistance;
- Procedures, authorities, and rules for payment, reimbursement, and allocation of costs;
- Notification procedures;
- Protocols for interoperable communications;
- Relationships with other agreements among jurisdictions;



Source: FHWA, 2008

Figure 8. Overlapping interests.

- Treatment of liability, immunity, and workers' compensation;
- Recognition of qualifications and certifications;
- Future evaluation and modification of procedures and protocols;
- Training and joint exercise responsibilities; and
- Sharing agreements.

National Incident Management System Compliance Issues. To achieve NIMS compliance, promote and/or develop intrastate and interagency mutual-aid agreements and assistance agreements (to include agreements with the private sector and nongovernmental organizations).

Supporting Resources.

- *Catastrophic Hurricane Evacuation Plan Evaluation: A Report to Congress: Chapter 5: Findings and Recommendations*, <http://www.fhwa.dot.gov/reports/hurricanevacuation/chapter5.htm>
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

PREPARE Phase 03: Develop Approach to Provide State Transportation Agency Critical Services during Emergencies

Purpose. Develop Continuity of Operations (COOP) and Continuity of Government (COG) plans to define activities that must be performed if an emergency event affects access to essential operating and maintenance facilities, vehicle fleets, systems, and senior management and technical personnel.

Actions. Establish a common understanding with community, state, and federal jurisdictions of the capabilities and distinct types of emergency response equipment available. Develop a state transportation agency COOP. Supporting actions may require the agency to

- Develop a state transportation agency COG Plan.
- Acquire or pre-identify key equipment and supplies specified in the COOP.
- Identify response resources and develop an asset inventory conforming to NIMS resource typing standards, including DHS standards as identified by FEMA's National Integration Center (NIC). When feasible, propose modification or new resource definitions to the NIC to include in the resource typing effort.
- Identify strategies to obtain and deploy major equipment, supplies, facilities, and systems in sufficient quantities to perform assigned missions and tasks.
- Implement an effective logistics system to mobilize, track, use, sustain, and demobilize physical and human resources. The system must support both the residents in need and the teams responding to the incident.
- Develop Personnel Resource Lists that identify appropriate personnel available to support various incident types. Include contractor and NGO personnel.
- Develop Equipment/Materials Resource Lists that identify equipment and materials needed and available for various incident types. Include contractor and NGO resources.
- To the extent permissible by state and local law, ensure that relevant national standards and guidance to achieve equipment, communications, and data interoperability are incorporated into state and local acquisition programs. Share these lists with appropriate local, state, and regional EMAs.
- Develop extended/emergency staffing plans, including suspension of vacation and leave and overtime/compensatory time provisions, as warranted.

Focus. In many cases, the state may have also developed a COOP and/or COG Plan to define the activities that must be performed to respond to heightened DHS/TSA Homeland Security Advisory System (HSAS) threat levels and emergency events that affect access to essential operation and

maintenance facilities, vehicle fleets, systems, and senior management and technical personnel. The state transportation agency should also review these plans to determine what agency-critical services will be required to support COOP and COG activities.

Because state transportation agencies will likely be called upon to support mass evacuations of their regions (or in some cases, shelter-in-place or quarantine—the prevention of evacuation), it is important that they develop a formalized approach to evacuation management that includes plans, policies, and procedures for evacuations with or without notice.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Revise and update EOPs, SOPs, and SOGs to incorporate NIMS and NRF components, principles, and policies, to include planning, training, response, exercises, equipment, evaluation, and corrective actions.
- Apply common and consistent terminology as used in NIMS, including establishing plain language (clear text) communication standards.
- Include preparedness organizations and elected and appointed officials in the development of EOPs.

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 8: Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies*, search for title at www.TRB.org/ SecurityPubs

PREPARE Phase 04: Develop State Transportation Agency Approach to Evacuation/Shelter-in-Place/Quarantine Management

Purpose. Ensure the state transportation agency formalizes its approach to evacuation management, including plans, policies, and procedures for evacuations with *and* without notice, and its approach to shelter-in-place and quarantine management.

Actions. Convene stakeholders to develop and revise evacuation/shelter-in-place/quarantine plans. Include practitioners with previous experience. Supporting actions may include the following:

- Identify goals, objectives, and guidelines for evaluating and updating the plan.
- Identify the ultimate decisionmaker, Incident Commanders, organizations, and those with authority and responsibility for evacuation by position; ensure their tasks have been pre-defined.
- Identify roles and responsibilities of government agencies, including transportation and public safety, and how these agencies coordinate their efforts with each other.
- Identify variations in direction and control for different types of events that require evacuation/shelter-in-place/quarantine.
- Conduct practice exercises (at least tabletop) to test the plan for evacuation/shelter-in-place/quarantine of vulnerable populations.
- Identify the number and location of people and vehicles to be evacuated, sheltered-in-place, or quarantined.
- Identify primary and secondary evacuation/shelter-in-place/quarantine routes based on probability and feasibility of use, survivability, ease of restoration, functional service, and strategic location.
- Identify agencies and personnel who will report to the EOC and how they will be notified to report.
- Address shelters and in-place provisions.
- Document decision criteria to be monitored and evaluated prior to issuing an evacuation/shelter-in-place/quarantine order.

- Identify how and when the evacuation/shelter-in-place/quarantine order is communicated to the emergency management community and to the public.
- Define specific criteria for voluntary, recommended, or mandatory evacuation/shelter-in-place/quarantine events. Include pre-approved drafts of executive orders for evacuations or prevention of evacuation. Describe the time phasing of evacuation/shelter-in-place/quarantine execution (i.e., sequential and concurrent activities) for different levels of response.
- Plan for communicating with limited English-speaking individuals and people with special needs (e.g., hearing, physical, mental, vision impairments).
- Address the use of public transit vehicles, school buses, paratransit, trains, ferries, aircraft, and other publicly or privately owned vehicles that may be used during the evacuation. (Note: hereinafter, all of these vehicles are referred to generically as *transit vehicles*.)
- Designate routes and locations for ingress traffic and pre-staged equipment, materiel, and personnel along the evacuation/shelter-in-place/quarantine routes, including fuel and personal relief facilities for emergency staff and those affected populations. Include a strategy for restricting and securing access to evacuated, sheltered-in-place, or quarantined areas.
- Determine policies for rescue and possible evacuation/shelter in-place/quarantine care for pets and livestock.
- Determine policies for containing agricultural emergencies, such as traffic control if stop-movement or shelter-in-place/quarantine operations are necessary because of the deliberate or accidental introduction of foreign plant or animal diseases into the U.S. food supply system.

Supporting Resources.

- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm
- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- Managing Pedestrians During Evacuation of Metropolitan Areas, <http://www.ops.fhwa.dot.gov/publications/pedevac/index.htm>
- *TRB Special Report 294: The Role of Transit in Emergency Evacuation*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Synthesis 392: Transportation's Role in Emergency Evacuation and Reentry*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency*, search for title at www.TRB.org/SecurityPubs
- *ACRP Report 5: Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs*, search for title at www.TRB.org/SecurityPubs

Step Observations

Based on the information gathered through these activities, the state transportation agency can begin to update and modify its own emergency management and response procedures and plans, as necessary, to better coordinate with those at the state/territorial/tribal, regional, and local levels. This may also require that these other agencies and organizations update their own plans and procedures when the state transportation agency has determined that (1) it is not capable of providing the support specified in those plans, or (2) it is capable of providing support and resources in excess of those currently stated in the State EOP, and in local and regional emergency management documents. In all cases, the transportation agency should work with these agencies and organizations (through its emergency planning team) to develop a consistent and unified approach to emergency management.

Step Checklist

To evaluate the state transportation agency's processes for implementing its roles and responsibilities during emergencies, an agency should consider whether it has

- Developed EMACs and/or MOU/As with other state, regional, and local agencies regarding the transportation-related elements specified in the State and transportation agency EOPs to ensure that formal plans and procedures are in place for mutual aid, as specified by FEMA in the NRF and NIMS, and in the state's and agency's EOPs.
- Developed an approach to providing transportation agency critical services during emergencies to support COOP and COG plans that define activities that must be performed if an emergency event affects access to essential operations and maintenance facilities, vehicle fleets, systems (e.g., communications, CCTV, DMS, signals), specialized technical personnel, and senior management.
- Established protocols for heightened HSAS threat levels to address DHS/TSA and FHWA/FTA recommendations for responding to elevated HSAS threat levels.
- Developed and formalized an approach to evacuation management that includes plans, alternative routes, policies, and procedures for evacuations—including contraflow plans if applicable—for both with and without notice emergencies.
- Developed a coordinated program of training, drills, and exercises to ensure that transportation agency personnel are trained in how to properly respond to different types of emergencies and to ensure all other emergency response and recovery participants recognize the agency's roles and responsibilities in these efforts.
- Developed and distributed checklists, job aids, and the like to assist responders in performing their response and recovery duties.
- Conducted regular tabletop exercises and ensured they include discussion of transportation issues.
- Participated in tabletop and field drills and exercises conducted by other emergency response agencies and organizations and ensured the state transportation agency asserts its roles and responsibilities and offers its full range of assets during these exercises.
- Ensured appropriate agency personnel have received NIMS-ICS-UC training.

Step 2—Establish Communication Protocols and Mechanisms for Public Outreach

The concept of communications interoperability requires states to ensure that all emergency response participants, including the general public, can be notified of imminent hazards or threats, and the actions to be taken to prepare for, protect against, respond to, and recover from such events. To accomplish this task, the state transportation agency should work through its emergency planning team to establish communication systems that are consistent across the state and region. Such systems should include 24/7 event notification calling trees, shared radio channels to foster information flow during response and recovery efforts, back-up communication systems to mitigate single-point failures of the primary systems, and shared data management systems and/or programs. It is important to note that some TMC software systems have notification subsystems that could be used for this purpose. There are also commercial applications available that provide such capabilities.

As stated in the *Simplified Guide to the Incident Command System for Transportation Professionals* (FHWA, 2006a), effective communication is based on two broad principles:

1. Common Operating Picture to achieve a broad view of the overall situation in order for Incident Command and ICS staff at all levels and jurisdictions to make effective, consistent, and timely decisions.

2. Common Communications and Data Standards to ensure voice and data communications flow efficiently through a commonly accepted architecture using clear text and ICS terminology.

With these principles in mind, this portion of the preparation process involves the following two key phases.

PREPARE Phase 05: Establish Internal State Transportation Agency Communications Protocols

Purpose. Ensure that calling trees and notification systems, including 24/7 event notification protocols, are established to notify state transportation employees regarding emergencies, to communicate with them during emergencies, and to distribute emergency materials in advance of events.

Actions. Evaluate use of radio channels, frequencies, trunked radio systems, and use of cellular phones during events likely to result in *emergencies* requiring activation of the State and/or Regional EOC(s). Establish predetermined frequency assignments, lists of agency channel access, and interagency communication protocols. Supporting actions may include the following:

- Determine how agencies and specific traffic management team personnel will communicate with each other in the field and on which channels.
- Coordinate and support emergency incident and event management through development and use of integrated multiagency coordination systems.
- Develop and maintain connectivity capability between local Incident Command Posts, local 9-1-1 centers, local EOCs, the SEOC, and regional and federal EOCs, FCs, and NRF organizational elements.
- Develop systems, tools, and processes to present consistent and accurate information to incident managers at all levels.
- Specify agency and interagency contact information.
- Establish calling trees and notification systems, including 24/7 event notification protocols.
- Prepare an employee communication strategy, including emergency communication systems and materials for distribution in advance of events. Incident response communications (during exercises and actual incidents) should feature plain language commands so transportation employees will be able to function in a multi-jurisdiction environment. Revise field manuals and training to reflect the plain language standard.
- Identify single points of contacts, with back-ups, in all jurisdictions and agencies for communications, including the protocols for which to contact under what conditions.
- Define when evacuation personnel are to be notified of a possible evacuation/shelter-in-place/quarantine order prior to its execution.
- Identify contingency plans for use if normal means of communication fail or are unavailable. Include provisions for keeping the public informed of the estimated travel times to safe havens under current and forecast conditions.
- Identify who needs to be informed to begin opening shelters.
- Identify specific contingency plans to be used if conditions change during the course of the evacuation.
- Institutionalize, within the framework of the ICS, the Public Information System, comprising the Joint Information System (JIS) and a Joint Information Center (JIC). The Public Information System will ensure an organized, integrated, and coordinated mechanism to perform critical emergency information, crisis communications, and public affairs functions that are timely, accurate, and consistent. This includes training for designated participants from the

governor's office and key state agencies. The state transportation agency's Public Information Office (PIO) will generally represent the agency in the JIC and should not issue separate public announcements.

- Standardize incident reporting and documentation procedures to enhance situational awareness and provide emergency management/response personnel with access to critical information.

Focus. The planning team represents the key agencies and organizations with which the state transportation agency will need to communicate during emergency response and recovery activities. Given the diverse nature of the planning team, it is likely that many of these agencies and organizations will be using different types of communications and information technology equipment, programs, and systems. While identifying these differences is a key step in the planning process, developing and implementing ways to effectively mitigate these differences to ensure interoperability of communications during emergency response and recovery activities is a key—and often very difficult—step in the preparedness process.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Apply common and consistent terminology as used in NIMS, including the establishment of plain language (clear text) communications standards.
- Use systems, tools, and processes to present consistent and accurate information (e.g., common operating picture) during an incident/planned event.
- Institutionalize public information (e.g., JIS and a JIC) within the framework of the ICS during an incident/planned event.
- Ensure that public information procedures and processes can gather, verify, coordinate, and disseminate information during an incident/planned event.
- Develop procedures and protocols for communications (to include voice, data, access to geospatial information, Internet/Web use, and data encryption), where applicable, to use or share information during an incident/planned event
- Institute procedures and protocols for operational and information security during an incident/planned event.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs

PREPARE Phase 06: Develop Media Interface and Public Notification Systems

Purpose. Ensure that the state transportation agency has the capability to provide traveler and evacuation information quickly and accurately to media outlets and the public, generally through the JIC during major incidents.

Actions. Develop Media Interface Guidelines to ensure traveler information is provided quickly and accurately to media outlets and the public. Ensure these guidelines include appropriate instructions to discourage unnecessary or unnecessarily lengthy evacuation/shelter-in-place/quarantine situations. Supporting actions—and these are generally not the state

transportation agency's PIO during major incidents, but rather are though the JIC created by the state/local EOP—may include the following:¹⁶

- Designate (preferably) a single spokesperson to provide information to the media and the public.
- Identify communication tools to be used to ensure the community receives information regarding the steps to be taken to prepare for evacuation, the evacuation zone, the routes of evacuation, and location of nearby shelters.
- Develop agreements with traffic reporting services.
- Provide protocols and guidance to these services for involving them in informing the public.
- Establish Broadcast Radio Agreements to ensure that information is provided in a preestablished format within specific timeframes.
- Develop pre-scripted public service announcements and messages and inform the media on their use.
- Establish Cable Television Cooperative Agreements to provide information to targeted populations (e.g., local government channels).
 - Establish a process for using Highway Advisory Radio (HAR) AM stations to provide traveler information in the immediate vicinity of the transmitter.
 - Establish a process for using mass faxing capability or email to send road closure information to trucking associations, truck stops, inspection and weigh stations, media outlets, and others.
 - Establish processes for using Advanced Traveler Information Systems (ATIS), including Internet, kiosk facilities, 5-1-1, and other publicized public information services to inform the public of travel conditions.
 - Establish a process for using Dynamic Message Signs (DMSs) to provide timely, accurate information in advance of, and at the scene of an incident.
 - Identify foreign language speakers and outlets to communicate with citizens and visitors who may not understand English.
 - Establish times for public officials to provide updates and inform the public of when they can expect such updates.
- Ensure the state/territorial Public Information System can gather, verify, coordinate, and disseminate information during an incident. Accomplish this through exercises and drills of the system.
- Use existing Public Information System and/or other communication systems for effective practices and technical aids.

Focus. As has been stated, the general public must be included in the communication of emergency preparedness, response, and recovery efforts, particularly evacuation/shelter-in-place/quarantine orders. In this latter case, the information provided must be clear as to the need for evacuation/shelter-in-place/quarantine, if appropriate. This is most often performed through media interfaces and notification systems that provide emergency information quickly and accurately through television, radio, Internet, emergency call numbers, DMSs, other ATIS subsystems, and media outlets. It is important to note that the state transportation agency is likely to be carrying out these communication activities while providing support to the Public Information System within the framework of NIMS. As appropriate, the agency should define its public communication protocols in a separate plan or procedure that is maintained as an appendix or annex to its EOP. These plans should also address how emergency information will be communicated to freight haulers and other travelers and tourists in the region.

During the disastrous Hurricane Rita exodus 'part of the problem was that for every five people who evacuated, four of them probably didn't need to,' TranStar spokeswoman Dinah Martinez said at a . . . town hall meeting . . .

Burke, 2008

¹⁶Those resources for public outreach controlled by the state transportation agency, such as TMCs, DMSs, etc., would be activated by the agency, but they should be closely coordinated with the JIC, as appropriate.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Apply common and consistent terminology as used in NIMS, including establishment of plain language (clear text) communications standards.
- Use systems, tools, and processes to present consistent and accurate information (e.g., common operating picture) during an incident/planned event.
- Institutionalize public information (e.g., JIS and a JIC) within the ICS framework during an incident/planned event.
- Ensure that public information procedures and processes can gather, verify, coordinate, and disseminate information during an incident/planned event.
- Develop procedures and protocols for communications (to include voice, data, access to geospatial information, Internet/Web use, and data encryption), where applicable, to use or share information during an incident/planned event
- Institute procedures and protocols for operational and information security during an incident/planned event.

Supporting Resources.

- *Communicating With the Public Using ATIS During Disasters: A Guide for Practitioners*,
<http://www.ops.fhwa.dot.gov/publications/atis/index.htm>

Step Observations

To support state transportation agencies in completing this task, in April 2007, FHWA released *Communicating with the Public Using ATIS during Disasters, A Guide for Practitioners* (FHWA, 2007). This document is an excellent resource for transportation agencies for determining how to best use ATIS during emergency events and disasters to communicate with the public. It offers guidance to transportation, emergency operations, and public information managers who may be called to support emergency preparation, response, and recovery efforts.

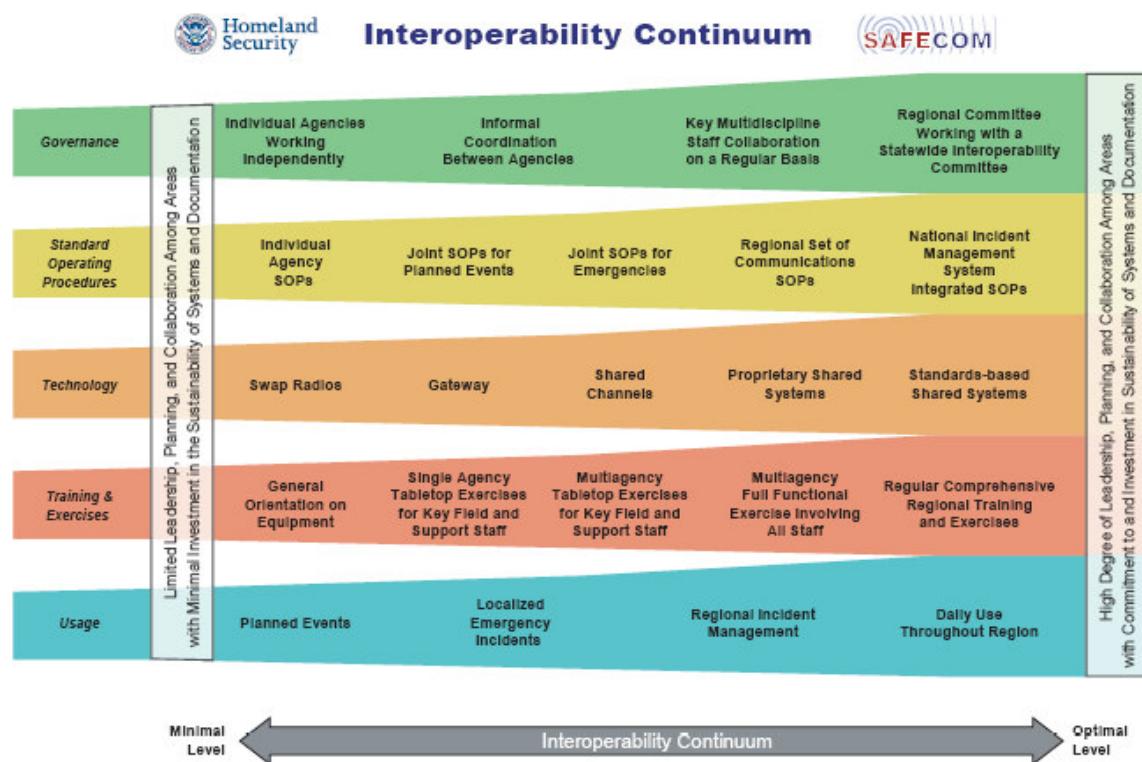
To assist state and other governments and the overall emergency management community in addressing this matter, DHS created Safe Communication (SAFECOM)—a communications program that provides research, development, testing and evaluation; guidance, tools; and templates on interoperable communications-related issues.¹⁷ As a primary initiative, SAFECOM has developed the *Statewide Communications Interoperability Planning (SCIP) Methodology*. As the title implies, this document provides a methodology for state, regional, and local governments to create a SCIP that establishes the “vision for communications interoperability and aligns emergency response agencies with that vision, and the goals, objectives, and initiatives for achieving that vision across the state” (DHS, 2007b).

SAFECOM has also developed the Interoperability Continuum, presented in Figure 9, to help the emergency response community “plan and implement interoperability solutions.” The Continuum addresses five interdependent factors involved in developing a successful interoperability solution—governance, SOPs, technology, training and exercises, and use of interoperable communications. Progress across each of these factors should be made jointly.

This resource is mentioned here because many states are at different stages of development in improving their statewide emergency response communications interoperability. DHS reports that a 2006 survey¹⁸ of response agencies across the nation revealed that about two-thirds have interoperable communications, which is a great improvement over that of pre-9/11; however, transportation agencies were not included in the survey, and, more significantly, are not believed to be routinely included in these networks. It is therefore important for state transportation

¹⁷Visit <http://www.safecomprogram.gov/SAFECOM/>.

¹⁸Visit http://www.dhs.gov/xnews/releases/pr_1165603330445.shtml.



Source: DHS, 2007b

Figure 9. SAFECOM interoperability continuum.

agencies to determine if their states have established a SCIP, and if so, to comply with the requirements of the plan. If the agency determines that the state has not yet developed a SCIP, it is recommended that this resource be used during its development process.

State transportation agencies should also ensure that their communication protocols include receiving intelligence and threat information from federal agencies and other state, regional, and local agencies. The state and regional Fusion Centers (see Appendix F) would be a key point of contact for this.

Step Checklist

To evaluate the state transportation agency's processes for establishing communication protocols and mechanisms for public outreach, the agency should consider whether it

- Has established communication protocols to ensure that calling trees and notification systems, including 24/7 event notification protocols, exist to notify transportation agency employees regarding emergencies, to communicate with them during emergencies, and to distribute emergency materials in advance of events.
- Has developed media interface and notification systems to ensure the state transportation agency has the capability to provide traveler and evacuation information quickly and accurately to media outlets and the public.
- Knows and routinely works with emergency response and first responder decisionmakers, transportation professionals in adjacent jurisdictions, and transportation professionals in other modes.
- Has participated in discussions pertaining to interoperable communications issues, and the agency is included in the distribution of intelligence and threat information.

- Has ensured that computer-aided dispatch (CAD) systems generally used by emergency response agencies and either CAD or TMC operations software systems used by transportation agencies are capable of working together and sharing/overlaying data.
- Has developed mechanisms to be able to communicate with other responders at the scene, including the use of designated radio channels, intercom, phone systems, or other means.
- Has developed communications protocols for distributing information to the public (including freight haulers and tourists) preceding and following an emergency event.
- Has designed ITS subsystems for redundancy and to reduce single points of failure.

Step 3—Emergency Evacuation/Shelter-in-Place/Quarantine Plans and Traffic Control and Management Protocols and Procedures

FHWA's primer, *Using Highways During Evacuation Operations for Events with Advance Notice*, states that "... the most important activity to ensure successful evacuations is development of an evacuation plan that complements a jurisdiction's emergency response plans" (FHWA, 2006c). With this in mind, this portion of the preparation process involves the following four phases.

PREPARE Phase 07: Establish Applicable State Transportation Agency Response Management Teams

Purpose. Establish traffic management teams to manage and direct traffic on highways, at critical intersections lacking active signalization, and contraflow operations, as needed.

Actions. Establish traffic management teams to manage and direct traffic on highways, at critical intersections lacking active signalization, and contraflow operations, as needed.

Focus. Deployment of traffic management teams during emergency evacuations/shelter-in-place/quarantine situations to assist in managing and directing traffic on highways, at critical intersections lacking active signalization, and during contraflow operations can improve the efficiency of evacuation/shelter-in-place/quarantine efforts. If the state transportation agency chooses to develop such teams, then it should also develop plans and procedures detailing when and how the teams will be deployed, how to maintain communications with the traffic management teams, and when and how to withdraw traffic management teams from the affected area to ensure their safety.

Supporting Resources.

- NCHRP Report 525: *Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *Final Report for the Application of Technology to Transportation Operations in Biohazard Situations*, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm
- NCHRP Report 525: *Surface Transportation Security, Volume 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency*, search for title at www.TRB.org/SecurityPubs

PREPARE Phase 08: Prepare Traffic Management Performance Measures

Purpose. Perform traffic flow analyses to support emergency evacuation/shelter-in-place/quarantine and response planning.

Actions. Perform traffic flow analyses, evaluating speed, vehicle occupancy, traveler behavior, contraflow, etc., and include in evacuation/shelter-in-place/quarantine route adjustments. Supporting actions may include the following steps:

- Analyze traffic flow of evacuation/shelter-in-place/quarantine routes focusing on all freeways and major arterial roadways serving the route. Focus on egress and ingress operations sepa-

rately. Avoid left-turn movements across traffic flow. Divert traffic flow from critical locations (e.g., Points of Dispensing sites in support of the strategic National Stockpile) and bottlenecks that could cause congestion.

- Develop multiple local flow (feeder) routes connected to the main evacuation/shelter-in-place/quarantine routes, as necessary to achieve optimum efficiency.
- Test contraflow operations, including full set up and breakdown of traffic controls, safety equipment, and materials.
- Identify the distances those evacuated/sheltered-in-place/quarantined must travel to reach a point of safety for each of the hazards identified.
- Identify user groups potentially affecting egress and ingress operations (e.g., regional through traffic, truckers, other interstate travelers).
- Review applicable passive (e.g., traveler information dissemination only) and aggressive (e.g., physical traffic control) operations strategies.
- Develop freeway interchange operations tactics to maximize ramp capacity and prevent evacuation route mainline congestion.
- Increase intersection traffic handling capacity by simplifying traffic movements and minimizing the number of traffic signal phases.
- Analyze potential bottlenecks, barriers, scheduled work zones, and other potential problems in advance to determine an evacuation/shelter-in-place/quarantine route.
- Plan for shutting down highway work zones, nonessential commercial vehicle traffic restrictions (including oversized loads), hazardous materials, etc.
- Implement processes to suspend toll collections on public and private toll roads.
- Adjust or remove ramp metering as necessary.
- Adjust traffic signal timing as necessary. Use FHWA's Arterial Management Program¹⁹ for arterial management, traffic signal timing, and access management. Use highway contractors to secure highway construction work zones.
- Control traffic and respond to traffic incidents through joint efforts among transportation, law enforcement, and emergency medical personnel.
- Review/modify/suspend timing of drawbridge openings and lock downs.

Focus. Regional evacuation/shelter-in-place/quarantine events are supported by effective traffic signal timing plans and through real-time monitoring of evacuation routes. State transportation agencies should develop procedures for monitoring evacuation/shelter-in-place/quarantine routes and coordinating traffic signals and timing to facilitate the effective flow of individuals to and from the region—done through the support of the Traffic Management Center.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm

PREPARE Phase 09: Develop Traffic Management Plans and Protocols to be Used During Evacuation/Shelter-in-Place/Quarantine and to Respond to Emergency Events

Purpose. Ensure the state transportation agency has plans and procedures in place for managing traffic during emergencies requiring activation of the State EOC (e.g., predesignated traffic control points (TCPs) for intersections along the transportation corridor, alternative

¹⁹Visit http://ops.fhwa.dot.gov/arterial_mgmt/.

emergency response access routes, emergency turnarounds, protocols for communicating and coordinating with construction crews to support traffic control, equipment storage sites for pre-staging anticipated equipment, travel-on-shoulder guidelines, closure and alternate route guidelines, rapid vehicle and debris removal guidelines, contraflow plans).

This phase currently addresses roadway aspects. Additional guidance that addresses all modes of transportation under state control or influence is under development through NCHRP Project 20-59(32), “A Transportation Guide for All-Hazards Emergency Evacuation.” Related work is under development through TCRP Project A-33, “Communication with Vulnerable Populations: A Transportation and Emergency Management Toolkit.”

Actions. Develop predesignated TCPs for intersections along the transportation corridor. Supporting actions may include the following:

- Coordinate the designation of these TCPs with state and local law enforcement. Develop alternative emergency response access routes.
- Identify emergency turnarounds, including median breaks/crossovers, to allow emergency response and highway operations personnel to turn around between interchanges.
- Identify emergency access for transit operations, including locations for access to the transit rail lines for emergency response.
- Develop protocols for communicating and coordinating with construction crews to support traffic control.
- Identify equipment storage sites for pre-staging anticipated equipment.
- Establish predetermined staging areas for each segment of the transportation corridor.
- Develop travel-on-shoulder guidelines to ensure that highway shoulders are available for emergency use for response vehicles and general traffic, if necessary.
- Establish closure and alternate route guidelines to guide implementation of closures and alternate routes using predetermined routes.
- Establish rapid vehicle and debris removal guidelines to ensure a process for clearing roadways.
- Establish landing zone guidelines and predetermined landing sites for MedEvac helicopters and traffic surveillance aircraft.
- Develop traffic signal control plans to quickly implement alternative routes and close impacted lanes on the transportation corridor.
- Identify traffic control techniques to provide clear guidance for incident traffic control and allow safe and efficient deployment of closures, detours, and alternative routes.
- Identify corridors equipped with traffic signal preemption for use by emergency vehicles.

Focus. Evacuation/shelter-in-place/quarantine events begin at the local level on small roadways and neighborhood streets and progress to the state’s major arterials and interstates. As a result, while it may not be possible to finalize the specific evacuation/shelter-in-place/quarantine routes until the geographic scope and nature of the emergency event is known, emergency planners must remain cognizant of the fact that the design capacity of these thoroughfares may be exceeded during large-scale evacuation/shelter-in-place/quarantine of the region.

Planners should identify primary and alternate evacuation/shelter-in-place/quarantine routes that have a high probability of use considering their ease of restoration, functional service, and strategic location. Identify these routes in the state’s Emergency Evacuation Plan, recognizing that their use may change once the scope and nature of the emergency event is known or as the evacuation/shelter-in-place/quarantine progresses. The traffic control and management portion of the Emergency Evacuation Plan (and shelter-in-place/quarantine plans) should address how these changes and other real-time adjustments to defined evacuation routes will be made to ensure the evacuation/shelter-in-place/quarantine continues unimpeded. This includes how the state transportation agency will coordinate changing evacuation/shelter-in-place/quarantine route needs with local, regional, territorial, and tribal agencies.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- I-95 Corridor Coalition, Projects & Reports: Coalition Publications, <http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx>
- Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm
- Research and Innovative Technology Administration (RITA) Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *Simplified Guide to the Incident Command System for Transportation Professionals*, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

PREPARE Phase 10: Coordinate with Neighboring Jurisdictions

Purpose. Coordinate traffic management plans with neighboring jurisdictions that may be affected by evacuation and response operations.

Actions. Coordinate plans with neighboring jurisdictions that may be affected by evacuation/shelter-in-place/quarantine and response operations. Share plans with higher government levels, as requests for additional resources may be necessary. Coordinate state plans with neighboring states, as evacuees may travel to another state to seek shelter or mutual aid may be requested from another state. States should look into creating interstate compacts that encompass all local jurisdictions.²⁰ Use the capabilities of regional organizations, such as the I-95 Corridor Coalition, to assist in such coordination.

Focus. The state transportation agency should also work with its neighboring jurisdictions to develop access management and corridor management programs to improve traffic flow and alleviate congestion issues that may occur during the evacuation/shelter-in-place/quarantine. Emergency Evacuation Plans (shelter-in-place/quarantine plans), or separate supporting traffic control and management plans and procedures, should describe or be developed as separate supporting traffic control and management plans and procedures, including predesignated TCPs along the evacuation/shelter-in-place/quarantine corridor, alternate access routes for emergency responder access, emergency turnarounds, protocols for communicating and coordinating with construction crews to support traffic control, equipment storage sites for pre-staging anticipated equipment, travel-on-shoulder guidelines, closure and alternate route guidelines, and rapid vehicle and debris removal guidelines.

National Incident Management System Compliance Issues. Coordinate and support emergency management and incident response objectives through development and use of the integrated Multiagency Coordination System (MACS) (i.e., develop/maintain connectivity capability between local Incident Command Posts [ICPs], local 9-1-1 Centers, and EOCs, as well as NRF organizational elements) (FEMA-MACS, 2009).

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice Routes: Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm

²⁰This is possible through EMAC.

- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

Step Observations

The state transportation agency's EOP should support and be coordinated with the state's Emergency Evacuation Plan (or shelter-in-place/quarantine plans). Because the state's highway infrastructure will likely be the primary means of evacuation/shelter-in-place/quarantine, the state's Emergency Evacuation Plan (and shelter-in-place/quarantine plans) should define the specific details and activities the state will take through its transportation agency to manage and control traffic flow during emergency evacuation/shelter-in-place/quarantine, response, and recovery efforts. The agency should verify that the traffic control and management portion of the state's Emergency Evacuation Plan (and shelter-in-place/quarantine plans) identifies the placement locations of DMSs, CCTV cameras, barricades, warning lights, portable signs, and HAR, including planned messages.

Traffic control and management protocols should also consider potential bottlenecks or problems that could occur along the primary and alternate evacuation/shelter-in-place/quarantine routes, and the Emergency Evacuation Plan (and shelter-in-place/quarantine plans) should reflect how these problems will be resolved if they occur. The plan should also define when and how contraflow operations will be implemented and any alternate signal timing plans that can be used to control traffic flow. If possible, develop separate traffic management plans for predefined incident severity levels and locations.

The FHWA's *Simplified Guide to the Incident Command System for Transportation Professionals* discusses the usefulness of developing an Operations Manual or *unified response* manual that focuses on ICS implementation and specifies the concept of operations, agency capabilities, and procedures necessary for initiating and maintaining a coordinated response (FHWA, 2006a). The development of such a manual can greatly benefit emergency preparedness and response capabilities, especially if state transportation personnel are unfamiliar with the ICS structure. For state transportation agencies, the operations manual should discuss specific ICS implementation issues, such as the Unified Command structure and command methods, participating agencies, and resources. The manual would also include specific traffic management plans and procedures for predefined incident severity levels and locations, including each of the traffic control and management considerations previously discussed in this section. As with the state transportation agency's EOP, the agency's Operations Manual should be developed through the Emergency Planning Team.

Periodically update all plans and procedures according to a set schedule, implemented, and tested in the form of a drill or exercise at least once a year. There should also be an after-action review associated with all drills, exercises, and particularly after actual events to incorporate lessons learned to all plans and procedures from the event. As long as the National Incident Management System is a somewhat *new* concept, a standing exercise goal or After-Action Report (AAR) item of consideration should be NIMS compatibility and successful implementation of its principles and terminology.

Operational procedures should contain a variety of job aids and orientation materials to ensure that support personnel have the tools they need to complete their assigned tasks. This is also useful when support personnel arrive from other departments and agencies to augment state staffing.

Step Checklist

To evaluate the state transportation agency's traffic control and management plans and procedures, the agency should consider whether it has

- Established applicable response and management teams to manage and direct traffic on highways at critical intersections lacking active signalization, and contraflow operations, as needed.
- Prepared traffic management performance measures to perform traffic flow analysis in support of emergency evacuation and response planning.
- Developed traffic management plans and protocols to be used during evacuation/shelter-in-place/quarantine events requiring activation of the SEOC, including at least:
 - Traffic control points for intersections along the transportation corridor,
 - Alternative emergency response routes,
 - Emergency crossovers and turnarounds,
 - Protocols for communicating and coordinating with construction and maintenance crews to support traffic control,
 - Equipment storage sites for pre-staging,
 - Anticipated equipment,
 - Travel-on-shoulder guidelines,
 - Closure and alternate route guidelines,
 - Special access provisions,
 - Rapid vehicle and debris removal guidelines,
 - Contraflow plans,
 - Traffic management centers,
 - Surveillance and control subsystems,
 - Traveler information subsystems, and
 - Information service providers.
- Coordinated traffic management plans with neighboring jurisdictions that may be affected by evacuation and response operations.
- Established provisions for using transit and school system assets to support evacuations/shelter-in-place/quarantine and emergency response and recovery efforts.
- Coordinated the agency EOP and emergency transportation plan with state, regional, and local transportation agencies and organizations.
- Coordinated the agency EOP and emergency transportation plan with emergency responders, and ensured it is part of the overall region emergency response plan.
- Ensured the state Emergency Evacuation Plan (and shelter-in-place/quarantine plans) includes redundancy of routes and systems.
- Prepare signal-timing plans for evacuation/shelter-in-place/quarantine and response scenarios.
- Established procedures and policies to share camera control, signal control, use of officers/troopers at intersections, websites, and DMS control.

Step 4—Develop Mobilization Plans for State Transportation Agency Personnel and Resources

Impending emergency events such as hurricanes and wildfires provide some advance notice to emergency responders. This advance notice provides additional time to stage personnel and equipment and fully mobilize response teams prior to the storm’s or fire’s impact. Unfortunately, many emergency events, such as a large-scale terrorist attack, earthquake, or hazardous materials release, occur without notice, and require emergency responders to react quickly and efficiently with minimal information to mobilize and deploy personnel and resources to the affected areas. In doing so, emergency responders must not only work to fulfill their response duties, but they must also strive to do so while keeping themselves and others safe. To ensure that emergency responders are capable of meeting these demands, it is critical that Mobilization Plans be developed and exercised for both notice and no-notice emergency events. Developing Mobilization Plans for state transportation agency personnel and resources requires the completion of two phases.

PREPARE Phase 11: Prepare to Mobilize Response Teams, Equipment, and Resources

Purpose. Ensure readiness to mobilize transportation agency response teams, including activation of all necessary personnel, testing of all communications equipment, fueling of all vehicles, pre-staging of supporting equipment (cones, barriers, signs, etc.), and implementing established field capabilities to coordinate with local, regional, state, and federal agencies through the NIMS/Incident Command System.

Actions. Test all primary and backup wire communications and radio frequencies expected to be used during the event, including remote communications, and evaluate contingencies. Ensure response vehicles are fueled and in proper working order. Supporting actions could include the following steps:

- Place equipment and resources at predetermined locations, including portable changeable message signs, food and water, gasoline tankers, mechanics crews, port-a-potties, and other items that may be staged along the predesignated routes.
- Bring all EOCs to fully functional status.
- Activate mobilization plans for emergency personnel.
- Activate reception plans, sites, and support capabilities with public and/or volunteer organizations.
- Establish field capabilities through the ICS.
- Use inter-jurisdictional and interagency information flow and coordination.
- Notify all response personnel of evacuation/shelter-in-place/quarantine orders according to established calling trees and communication protocols. Response personnel should report to staging areas and await order to begin response and evacuation efforts.
- Ensure all responsible agencies understand joint priorities and restrictions.
- Prior to activation, afford staff an opportunity to ensure the safety of their loved ones and personal property.
- Manage timely communication of instructions to prepare people in advance of the order to evacuate, shelter-in-place, or quarantine.
- Ensure sufficient resources are available to protect responders and those evacuated/sheltered-in-place/quarantined. Assemble, transport, and install cones, barriers, barricades, etc.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice Routes: Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- I-95 Corridor Coalition, Projects & Reports: Coalition Publications, <http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx>
- Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm
- Research and Innovative Technology Administration (RITA) Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *Simplified Guide to the Incident Command System for Transportation Professionals*, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

PREPARE Phase 12: Administer Training Programs

Purpose. Establish employee and contractor training and exercise programs, participate in joint multi-agency training and exercises, and identify and provide additional training or support response and evacuation activities.

Actions. Develop interagency training programs to provide a common understanding of the transportation ICS and program guidelines. Establish professional qualifications, certifications, and/or performance standards for individuals and teams, whether paid or volunteer. Ensure that content and methods of training comply with applicable standards and produce required skills and measurable proficiency. Supporting actions may include the following:

- Incorporate NIMS/ICS into all state/territorial and regional training and exercises.
- Establish employee and contractor training and exercise programs.
- Participate in joint multi-agency training and exercises; this should include an all-hazards exercise program based on NIMS that involves responders from multiple disciplines and multiple jurisdictions.
- Identify what additional training resources may be needed in the community to support response and evacuation/shelter-in-place/quarantine activities.
- Identify through exercises and simulations the estimated time needed to complete an evacuation/shelter-in-place/quarantine for each of the catastrophic hazards identified and provide this information to highway, public safety, and transit agencies for coordination purposes.
- Identify through training exercises the time it takes to have field personnel and equipment in place to support the evacuation/shelter-in-place/quarantine.
- Conduct post-exercise debriefings to determine lessons learned during the exercise.
- Incorporate results of training exercises, including corrective actions, into preparedness response plans and procedures.
- Leverage training facilities to coordinate and deliver NIMS training requirements in conformance with the NIMS National Standard Curriculum.
- Ensure that all personnel with a direct role in emergency preparedness and incident management or response complete the designated FEMA training.

Focus. Improve response capabilities and coordination between emergency responders.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Use existing resources such as programs and training facilities to coordinate and deliver NIMS training requirements to personnel (as appropriate to equivalent training courses).
- Complete ICS-400 Advanced ICS training or equivalent.²¹
- Complete IS-700 NIMS: An Introduction or equivalent.
- Complete IS-800 NRF: An Introduction or equivalent.
- Complete ICS-100 Introduction to ICS training or equivalent.
- Complete ICS-200 ICS for Single Resources and Initial Action Incidents training or equivalent.
- Complete ICS-300 Intermediate ICS training or equivalent.
- Complete Emergency Management Framework Course—Awareness Training.²²
- Incorporate NIMS concepts and principles into all appropriate state, territorial, and tribal training and exercises.
- Initiate development of a state-/territory-wide system to credential emergency management/response personnel to ensure proper authorization and access to an incident, including those involving mutual-aid agreements and/or assistance agreements.

Supporting Resources.

- Emergency Management Institute (EMI) Courses & Schedules, <http://training.fema.gov/EMICourses/>
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs

²¹All referenced ICS/IS training refers to the Five-Year NIMS Training Plan, February 2008, available at http://www.fema.gov/emergency/nims/nims_training.shtml#1.

²²Ibid.

- NCHRP Report 525: *Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees*, search for title at www.TRB.org/SecurityPubs
- National Transit Institute (NTI) Courses, Workplace Safety and Security, <http://www.ntionline.com/topic.asp?TopicArea=5>

Step Observations

Resource management is a key component of any Mobilization Plan. Successful resource management coordinates and manages the deployment of emergency response tools, equipment, personnel, supplies, and facilities in a manner that optimizes their use. This means supplying incident managers and emergency responders with the resources they need, when and where they are needed, without delay. The first step in this process is to define the specific resources needed to respond appropriately to the event. The state transportation agency's Mobilization Plan should recognize that each emergency is different and therefore will likely require different resources to control. For example, supporting the evacuation or shelter-in-place of a region as a result of an approaching hurricane will require different resources than responding to a large-scale hazardous chemical release. In this example, the former may require mass evacuations of the region, while the latter may require citizens to shelter-in-place or quarantine.

As described in FHWA's *Simplified Guide to the Incident Command System for Transportation Professionals*, optimal resource management requires "systems for describing, inventorying, requesting, and tracking resources over the life cycle of an incident" (FHWA, 2006a). Because of the recognized differences between emergencies, the state transportation agency—using the all-hazards approach—should therefore identify, to the extent possible, the resources that are needed to respond to each type of emergency identified during the planning process. The agency's Mobilization Plan should clearly state the location of these resources and how they can be obtained and/or transported to appropriate staging areas.

The state transportation agency should also develop a resource inventory management system to be used for deploying and tracking resources during emergency response efforts. These processes help incident managers and personnel protect the safety of staff and the security of supplies and equipment, while enabling them to better direct the movement of personnel, equipment, and supplies to the areas of most need.

Next, the state transportation agency's Mobilization Plan should identify the staging areas and rallying points for agency response teams, personnel, and resources. Identify both primary and alternate locations, and the Mobilization Plan should clearly define how changes to these locations will be communicated to transportation agency personnel and other emergency responders during emergency response efforts. It is important to note that during no-notice events, the agency may need to issue real-time instructions to its personnel stating the location of rallying points and when personnel should arrive.

Once all personnel arrive at the staging area, brief them on their assignments and the expected duration for which they will be needed. Mobilization Plans should also identify how transportation agency personnel and resources will be transported (if necessary) from the staging areas and rallying points to the emergency scene. As emergency response efforts progress, the agency will need to communicate the estimated arrival times of its personnel and resources to the Incident Commander.

Mobilization also requires that the state transportation agency ensures all personnel and resources are fully prepared and capable of meeting the response needs. This means verifying that all equipment and vehicles are fully fueled and operable, confirming emergency equipment is fully operational, and establishing processes and testing communication systems to ensure information can be shared with and received from the TMC, Incident Command, and other emergency responders. It also means verifying personnel have the appropriate training and qual-

ifications to support response efforts; coordinating traffic signal systems across jurisdictions to support evacuation/shelter-in-place/quarantine efforts as needed; clearing all work zones along evacuation/shelter-in-place/quarantine routes; verifying that traveler information systems are operational and prepared for use; ensuring evacuation/shelter-in-place/quarantine routes have appropriate signage; and verifying that adequate food, water, and other support supplies are available for response personnel if it appears the response effort will last for an extended period of time. The state transportation agency's Mobilization Plan should address each of these issues.

Finally, the state transportation agency Mobilization Plan should address how the agency will maintain the security of its staging areas. This includes emergency and security provisions and procedures to ensure protection of TMCs, Traffic Control Centers (TCCs), EOCs, the personnel staffing these facilities, and their functionality. As with all other plans and procedures discussed in this 2010 Guide, it is also imperative that the agency train its personnel and exercise the plans through emergency drills and simulations.

Step Checklist

To evaluate the state transportation agency's Mobilization Plans and procedures, the agency should consider whether it has

- Prepared for mobilization of response teams, equipment, and resources to ensure readiness, including activation of all necessary personnel, testing of all emergency and communications equipment, fueling of all vehicles, pre-staging of supporting equipment (cones, barriers, signs, etc.), and implementing established field capabilities to coordinate with local, regional, territorial, tribal, state, and federal agencies through NIMS/ICS.
- Administered training programs consistent with NIMS for employees and contractors, participated in joint multi-agency training and exercises, and identified and provided additional training to support response and evacuation activities.
- Established processes to ensure information (i.e., data, voice, images) from TMCs is integrated and shared with emergency management centers and/or first responders.
- Established necessary contracts and/or contracting provisions to provide for construction and major maintenance work under emergency conditions.
- Ensured construction contracts on key alternate or evacuation routes, including provisions for rapid clearance of work zones in an emergency.
- Confirmed that asset maintenance contracts include necessary preparation, response, and recovery operations by the contractor.
- Coordinated traffic signal systems across jurisdictions on key evacuation and response/recovery routes.
- Verified that traveler information systems are available and prepared for use to communicate emergency transportation information.
- Verified that predetermined routes are appropriately signed and support traffic signal timing plans and information signing.
- Made certain TMCs and TCCs include emergency and security provisions and procedures to ensure protection of the center, center personnel, and center functionality.
- Exercised the transportation agency's Mobilization Plan through emergency drills and simulations.
- Developed state transportation agency after-action reports for these drills and simulations and modified the Mobilization Plan and other documents as necessary to ensure their accuracy and effectiveness.

Step 5—Ensure Cost Tracking and Accountability

Cost tracking and accountability are not only an important part of the Incident Command System structure, but in most cases, mutual-aid agreements and resource-sharing provisions and

programs such as EMAC also require that such costs be fully accounted for in order for the state transportation agency to be reimbursed. Ensuring cost tracking and accountability involves the final phase of the preparation process, as described below.

PREPARE Phase 13: Prepare for Cost Accounting and Tracking of Expenditures

Purpose. Ensure processes have been developed to track resources, making certain of applicable reimbursement and accountability for compliance with mutual-aid provisions.

Actions. Costs should include all response, scene-management, debris-removal, and other incident-related costs. These costs should also include compensation claims for all forms of workers' compensation, tort claims against responders, and daily wage reimbursement claims; procurement costs associated with vendor contracts and equipment purchases or rental; and equipment and infrastructure damage costs claims. It is important to stress conformance to FEMA/FHWA record-keeping requirements because this is the only substantial source for reimbursement. Federal audits can and have resulted in reclaiming funds when exact adherence to their guidance is not achieved.

Focus. Recoup monies expended during the response effort.

Supporting Resources.

- FEMA Resource Management (Mutual Aid), <http://www.fema.gov/emergency/nims/FAQ.shtm#item2>

Step Observations

In the ICS structure, the Incident Commander or Unified Command post/center will likely establish accounting processes for monitoring costs, personnel hours, and reimbursement. This is done not only for reimbursement purposes, but also to evaluate the cost-effectiveness of emergency response activities. Through financial analysis of the cost data, emergency planners may find that greater funding is needed to improve certain response capabilities or equipment. Alternatively, they may find ways to reduce emergency response costs. In either case, the state transportation agency should maintain its own cost-accounting policies and records to ensure it receives reimbursement in a timely manner.

Step Checklist

To evaluate the state transportation agency's cost-tracking and accounting processes and procedures, the agency should

- Prepare for cost accounting and tracking of expenditures to ensure applicable reimbursement and accountability for compliance with EMAC and other mutual-aid provisions.
- Ensure the agency's cost accounting and tracking methods are consistent with the ICS structure, capturing all cost data necessary for reimbursement.
- Develop processes for performing cost analysis of emergency response efforts to determine if additional funding is necessary to improve response capabilities and/or to improve the cost-effectiveness of emergency response efforts.

Respond to the Emergency

Achieving NIMS compliance requires state transportation agencies to become familiar with and understand the NIMS/ICS and NRF structure and their roles and responsibilities in that structure. During the PLAN step, state transportation agencies seek to identify the possible hazards and risks to which their regions may be exposed; they work to form collaborative relationships with other emergency response agencies and personnel; they begin developing plans and

procedures that will guide emergency response activities and minimize risks; and they begin to identify the resources needed to adequately respond to different types of emergencies.

During the PREPARE step, state transportation agencies also develop and begin to implement supporting plans and procedures; they begin testing response capabilities through emergency drills and simulations; and they establish processes for managing resources and tracking costs. Regardless of the amount of planning and preparation that takes place, however, actual emergency response activities are the truest test of the state transportation agency's readiness and ability to respond to an emergency, as it places each of the preceding plans, procedures, and supporting activities into action.

To pass this test and to be successful in the emergency response effort, state transportation agencies must not only fulfill their roles and responsibilities within the National Incident Management System/Incident Command System structure, but they must also do so safely. Indeed, successful emergency response emphasizes safety at all levels. Thus, the goal of emergency response is not only to protect the affected region and its citizens from harm, but also to do so without injury or loss of life to emergency response personnel. All too often, the services that emergency responders provide are taken for granted as response activities focus on saving the lives of those affected by the emergency event. And, all too often the risks that emergency responders face, placing themselves in harm's way, to perform their duties and maintain public safety, are neglected. It is the responsibility of every emergency response participant—from responders to managers and executives—to remain cognizant of these risks and to perform their duties in a manner that maximizes the safety of response personnel throughout all response activities.

The NIMS/ICS structure is designed to provide a systematic, shared tool with which to command, control, and coordinate emergency response activities that are consistent across all response agencies. It is therefore the most useful and effective means of minimizing response risks and of maintaining safety during all emergency response activities, at all levels of the emergency response effort.

It is recognized that the size and location of the emergency event will greatly affect the number and types of agencies involved in the response effort. A crash involving an overturned tractor-trailer that blocks traffic on one of the state's main interstates, for example, will obviously require different response actions than in response to a large-scale terrorist attack or the threat of an impending hurricane. It is also recognized that the state transportation agency's role in the response effort will also vary greatly depending on the size and type of emergency event. Given these uncertainties, a generalized approach is taken within this section of the 2010 Guide to discuss a state transportation agency's emergency response roles and responsibilities. It has also been assumed that the agency will always fulfill a support role in the emergency response effort—not serving as the lead emergency response agency, but instead receiving direction from the state or some higher government authority.

These assumptions are made for two reasons: (1) state transportation agencies already have a high degree of familiarity with small-scale emergency response activities such as those required by the tractor-trailer example cited above, and (2) these assumptions present the scenario most likely to be faced by a transportation agency.

The following has been developed to provide state transportation agencies with the tools necessary to evaluate the effectiveness of their own emergency response processes against the standards and metrics required by the National Incident Management System and to provide additional detail on how to best implement and work within the Incident Command System structure. Again, the following discussions are presented in a format that encourages the state transportation agencies to conduct self-assessments.

Step 1—Initiate Emergency Response

Initiating emergency response from the state transportation agency perspective involves three phases.

RESPOND Phase 01: Detect and Verify Emergencies

Purpose. Monitor the performance of the transportation network using surveillance systems, field personnel, manual or automated information sharing with local Emergency Communications Centers (ECCs)/9-1-1 Centers (also called Public Safety Answering Points [PSAPs]), and regional transportation organizations.

Actions. Use surveillance systems to detect indicators of a potential emergency, an emergency that is occurring, or an emergency that has occurred. Coordinate with and alert other agencies to recognize an emergency event in progress that may affect the regional transportation system. Activate manual or automated information sharing with local ECCs/9-1-1 Centers. Coordinate with field personnel and equipment to verify that an emergency event is occurring or has occurred and communicate relevant information to all responding agencies. Where they exist, use regional networks, such as the I-95 Corridor Coalition’s Incident Exchange Network, for such notifications.

Focus. Once the state transportation agency has been notified of the emergency event, it must take the necessary response actions to support the Incident Command System structure. This means activating its Mobilization Plan by notifying transportation agency personnel and response teams of the event and directing these staff to report to the appropriate staging areas or control centers. The agency should also mobilize all other resources, such as vehicles and equipment necessary to support emergency-response activities. Once state transportation agency response personnel arrive at the designated staging area or command center, they should be briefed fully on the situation and begin to take the response actions that have been developed and exercised during the emergency planning and preparedness phases. This includes activating the applicable operating procedures, traffic control, and management protocols, and other plans and procedures that guide the agency’s response activities.

Supporting Resources.

- FHWA Emergency Transportation Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm
- National Traffic Incident Management Coalition, <http://timcoalition.org/?siteid=41&pageid=590>
- Traffic Incident Management Committee, <http://www.trafficincident.org/>

RESPOND Phase 02: Assess Status of Transportation Infrastructure

Purpose. Receive reports from automated systems, field personnel, law enforcement, and/or a Fusion Center regarding the status of the transportation infrastructure.

Actions. Receive cell phone calls from motorist(s) to report incidents and conditions directly to the state transportation agency. Receive reports from *road watch*, *first observer*, *volunteer spotter*, and other *probe* programs to enable specially trained individuals (including transit vehicle operators) to provide information by radio or cell phone. If available/applicable, use automated vehicle location (AVL) identifiers in vehicles that travel a transportation corridor regularly to track vehicle movement and compare it against anticipated travel times to identify delays and potential incidents. Where available, use cell phone tracking data to obtain near real-time travel time information. Supporting actions may include the following:

- Coordinate with/manage 24-hour law enforcement patrols to enhance detection, response, and site management with dedicated officers available at all times in the transportation corridor.

- Coordinate with/manage specialty patrols (motorcycle, aircraft) to provide surveillance of roadway conditions for incident detection, verification, response, clearance, and recovery.
- Operate dedicated incident response patrols to provide early detection, verification, response, clearance, and recovery.
- Ensure patrol vehicles are equipped to help stranded motorists and some are equipped to quickly remove a disabled vehicle or debris from the roadway.
- Use automated detection systems, including loops, microwave, radar, and video, to detect congestion on the highway.
- Use video surveillance equipment, mounted within the transportation corridor, to provide incident detection. Video equipment can be combined with automated detection and reporting systems. Video can also be used to verify the occurrence of an incident and to identify the appropriate response equipment needed.

Focus. Ensure the safety of transportation infrastructure elements that may be used to support evacuation of the affected area or response efforts. In its support role, the state transportation agency should provide the Incident Commander with updates as to the continued viability of emergency access and emergency evacuation routes to and from the affected area. The agency's Emergency Planning Coordinator should attend, or assign an agency representative to attend, all incident briefings held by the Incident Commander to gather and share any additional information that may be necessary to support the response effort.

Supporting Resources.

- FHWA Traffic Incident Management Program, Major Initiatives and Current News, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm
- National Traffic Incident Management Coalition, <http://timcoalition.org/?siteid=41&pageid=590>
- Traffic Incident Management Committee, <http://www.trafficincident.org/>

RESPOND Phase 03: Gain and Maintain Situation Awareness

Purpose. Receive notification of all declared emergencies and ensure that situation reports contain verified information and explicit details (who, what, where, when and how) related to the incident/emergency.

Actions. The state transportation agency should receive notification of all declared emergencies and then continuously monitor relevant sources of information regarding actual incidents and developing hazards. The scope and type of monitoring varies based on the type of incident being evaluated and needed reporting thresholds. Supporting actions may include ensuring critical information is passed through preestablished reporting channels according to established security protocols and ensuring situation reports contain verified information and explicit details (who, what, where, when and how) related to the incident. Status reports, which may be contained in situation reports, relay specific information about resources. Based on an analysis of the threat(s), issue warnings to the public and provide emergency public information.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Coordinate and support emergency management and incident response objectives through development and use of integrated MACS (i.e., develop/maintain connectivity capability between local ICPs, local 9-1-1 Centers, EOCs, as well as NRF organizational elements).
- Institute multidisciplinary and/or multi-jurisdictional procedures and protocols for standardizing data collection and analysis to use or share information during an incident/planned event.

Supporting Resources.

- *State NIMS Integration: Integrating the National Incident Management System into State Emergency Operations Plans and Standard Operating Procedures*, Vol. 1.0, http://www.fema.gov/pdf/nims/eop-sop_state_online.pdf

Step Observations

Emergency response begins first with incident detection, at which point the nature and scope of the emergency must be evaluated to determine the degree of response capabilities needed to appropriately respond to the event. For the purpose of this discussion, it is assumed that the State EMA will be the lead agency in making this evaluation for major emergencies (i.e., those beyond *routine* traffic incidents). Once made, the state will then begin to implement the ICS structure by establishing a Unified Command Center and notifying the response agencies with the appropriate functional capabilities and responsibilities necessary to respond to, manage, control, and recover from the event. Typically, the larger the emergency event, the larger the ICS structure and the more agencies involved in the response effort. The location of the emergency event will also determine what jurisdiction(s) have authority over the affected area(s).

During most large-scale emergency events, the state transportation agency will serve as the lead transportation representative in the ICS structure. The agency should therefore monitor the performance of the transportation network using available surveillance and ITS systems and equipment, field personnel, manual or automated information sharing and communication systems, and regional transportation organizations and partner agencies.

The state transportation agency should exert its broader role of the transportation desk to communicate to the Incident Command Team. For example, NCHRP Project 20-59(19) produced *NCHRP Report 525: Surface Transportation Security, Volume 10: Transportation's Role in Public Health Disasters*; it also produced software to support transportation planning for essential services in order to avoid cascading effects across sectors—and mass care. For more information, see Appendix G for a description of the Transportation Emergency Response Effects Tracking (TERET) software.

Step Checklist

To evaluate the state transportation agency's processes for initiating and responding to emergencies, the agency should consider whether it

- Established processes for detecting and verifying emergencies and for monitoring the performance of the transportation network using surveillance systems, field personnel, manual or automated information sharing with local emergency management agencies, 9-1-1 Centers, and regional transportation organizations.
- Understands the NIMS/ICS and NRF structure, and its roles and responsibilities in that structure.
- Assessed status of transportation infrastructure and received reports from automated systems, field personnel, and law enforcement.
- Is able to gain and maintain situation awareness during emergencies, including the ability to receive notification of all declared emergencies and to ensure that situation reports contain verified information and explicit details related to the emergency.
- Can provide accurate information related to the status of the region's transportation infrastructure to the Incident Commander.

Step 2—Address Emergency Needs and Requests for Support

As emergency response efforts progress, the state transportation agency may be called upon to provide additional information and resources as necessary to support ongoing response oper-

ations. Fulfilling unexpected and ongoing requests for support requires the agency to maintain a high degree of readiness and sufficient resources, or the ability to obtain such resources with limited notice. This requires the completion of two phases.

RESPOND Phase 04: Coordinate Response to the Emergency

Purpose. Activate appropriate plans, procedures, and protocols and mobilize available personnel, equipment, facilities, devices, and information to support emergency response. As appropriate and/or as requested, provide field support for emergency responders at the scene, integrated through the ICS and communicated and coordinated with the TMC.

Actions. Activate appropriate plans, procedures, and protocols based on the type of emergency. Activate Incident Management Teams in accordance with NIMS. Activate Specialized Response Teams, including search and rescue teams, crime scene investigators, public works teams, hazardous materials response teams, public health specialists, or other personnel, as appropriate. Supporting actions may require the agency to do the following:

- Mobilize pre-positioned assets and supporting equipment.
- Manage all emergency incidents and preplanned special events in accordance with ICS organizational structures, doctrine and procedures as defined by NIMS.
- Coordinate requests for additional support.
- As appropriate and/or as requested, provide field support for emergency responders at the scene, integrated through the ICS, and communicated and coordinated with the TMC.
- Activate logistics systems and venues to receive, stage, track, and integrate resources into ongoing operations. ICS should continually assess operations and scale and adapt existing plans to meet evolving circumstances.
- Address emergency responder transportation needs and scene access support and staging requirements.
- Identify available transportation equipment, facilities, personnel, devices, and information to support emergency response.
- Assign transportation agency resources to move materials, personnel, and supplies as requested by responders.
- Track resource status.
- If appropriate, support hazardous materials containment response and damage assessment by using available capabilities coordinated with on-scene field response through the ICS.
- Ensure that nonhazardous materials, particularly small vehicle fluid spills, are removed from the transportation facility—initially travel lanes/tracks—as quickly as possible.
- Attend regular briefings at the incident site regarding the situation, incident action plan, response objectives, and strategy, with full opportunity for transportation contributions and identification of resources and capabilities to support the response effort and action plan.
- Perform damage assessment responsibilities for affected transportation system elements.
- Make/recommend decisions regarding closures, contraflow operations, restrictions, and priority repairs.
- Coordinate assessments and decisions made regarding the operational capabilities of the transportation system with affected parties (emergency responders; local, state, and federal government; etc.).
- Initiate priority clean-up, repair, and restoration activities, including the use of contractors and emergency procurement authorities.
- Review and, as necessary, terminate existing work zone activities and/or closures to the extent possible.
- Obtain incident status briefings and anticipate changing conditions (wind direction, weather, plume direction, etc.).

- Based on all available information, develop detours and diversions (as necessary) to direct traffic safely away from the affected area and/or damaged infrastructure.
- Prioritize and clearly communicate incident requirements so resources can be efficiently matched, typed, and mobilized to support emergency operations. Initiate traffic management operations and control strategies.
- Provide public information/traveler alerts on the status of the transportation system.
- Assign personnel to Regional and State EOCs to coordinate with and assist public safety agencies and other agencies involved in disaster response and recovery efforts.
- Support communications between transportation personnel and their families/friends.

Focus. Improve emergency response capabilities.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Manage all incidents, including planned special events, in accordance with ICS organizational structures, doctrine, and procedures. ICS implementation must include consistent application of Incident Action Planning (IAP), common communications plans; implementation of area command to oversee (1) multiple incidents that are handled by separate ICS organizations or (2) the management of a very large or evolving incident that has multiple incident management teams engaged; and implementation of Unified Command (UC) in multi-jurisdictional or multi-agency incident management, as appropriate.
- Coordinate and support emergency management and incident response objectives through the development and use of integrated MACS.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- I-95 Corridor Coalition, Projects & Reports: Coalition Publications, <http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx>
- Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm
- Research and Innovative Technology Administration (RITA) Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *Simplified Guide to the Incident Command System for Transportation Professionals*, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

RESPOND Phase 05: Evaluate Need for Additional Assistance from Neighboring States, Jurisdictions, and/or Federal Government

Purpose. Coordinate requests for additional support with appropriate jurisdictions following previously established mutual-aid plans.

Actions. Evaluate the need for additional resources and whether to request assistance from other states using interstate mutual-aid and assistance agreements, such as the EMAC. If the incident overwhelms state and mutual-aid resources, then the governor should request federal assistance and/or deploy the State Department of Military/National Guard.

Focus. Determine whether to enact MOU/As to gain additional assistance as necessary to respond to the emergency event.

National Incident Management System Compliance Issues. Institute mechanisms to deploy, track, recover, demobilize, and provide reimbursement for resources used during response and recovery.

Supporting Resources.

- TR News, May–June 2007 “All-Hazards Preparedness, Response, and Recovery,” search for title at www.TRB.org/SecurityPubs
- NCHRP Report 525: *Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- NCHRP Web-Only Document 73: *Emergency Transportation Operations: Resources Guide for NCHRP Report 525, Volume 6*, search for title at www.TRB.org/SecurityPubs

Step Observations

The preceding discussions of emergency planning and preparedness noted that state transportation agencies should identify and develop on-call contracts with potential vendors and/or contractors that may be called upon to support emergency response and recovery efforts beyond the scope or capabilities of the agency. During such occurrences, the agency should also be prepared to exercise mutual-aid agreements and the EMAC provisions discussed previously.

A benefit of the ICS is that information pertaining to emergency response activities and progress is shared consistently across the response team. This means that state transportation agencies, through active participation in the ICS structure, are better able to predict the changing transportation-related needs of the continuing response effort. With this information, agencies are able to activate the mutual-aid agreements and on-call support services contracts as necessary to ensure response activities continue to operate efficiently and with minimal delay. The agency should therefore be fully capable not only of effectively monitoring and contributing to the response effort, but also of coordinating and adjusting its own response activities as needs change. ICS implementation must include the consistent application of an Incident Action Plan (IAP) and a Common Communications Plan (CCP), as appropriate. As the incident unfolds, on-scene ICS should update incident action plans and revise courses of action based on changing circumstances, typically on a 15-minute review cycle.

Step Checklist

To evaluate the state transportation agency’s processes and capabilities for addressing emergency needs and ongoing requests for support, an agency should consider whether it has

- Coordinated its response to the emergency, including activation of appropriate plans, procedures, and protocols to mobilize available personnel, equipment, facilities, devices, and information to support emergency response. This includes providing field support (as appropriate and/or as requested) to emergency responders at the scene, integrated through the ICS, and communicated and coordinated with the TMC.
- Evaluated the need for additional assistance from neighboring states, jurisdictions, and/or the federal government through established EMAC and/or mutual-aid plans.

Step 3—Manage Evacuations, Shelter-in-Place, or Quarantine

Once ordered, all parties must support the decision to evacuate, shelter-in-place, or quarantine an affected area. Perhaps the most significant role a state transportation agency will play during the emergency response effort is that of helping to manage the evacuation/shelter-in-place/quarantine of the affected region(s). Once the decision is made and the state

has activated its Emergency Evacuation Plan, the agency must begin implementing its traffic control and management roles and responsibilities as stated in the Plan. This may include working and coordinating with local, state, and regional TMCs and TCCs to manage traffic signal timing, message signs, and other public information systems; deploying response teams, equipment, and other resources as necessary to direct and facilitate traffic flow and remove debris; activating and coordinating contraflow activities along evacuation/shelter-in-place/quarantine routes; and monitoring progress and providing the Incident Command Team with updates regarding the continued viability of primary routes and the need to begin using alternate routes. Managing an evacuation/shelter-in-place/quarantine requires the completion of two phases.

RESPOND Phase 06: Make and/or Support Decision to Evacuate, Shelter-In-Place, or Quarantine

Purpose. Coordinate with appropriate local, regional, and state officials regarding evacuation/shelter-in-place/quarantine orders and routes.

Actions. Determine the probability of impact (depending on the nature of the event). Estimate the effects on the geographic area and types of people and materials to be evacuated, sheltered-in-place, or quarantined. In terms of the decision made, consider the timing of the event and the lead time to initiate the action; weather conditions and their potential effects on evacuation/shelter-in-place/quarantine. Evaluate the economic impacts of such a decision on the public and private sectors. Supporting actions may include the following:

- Determine the condition and availability of evacuation/shelter-in-place/quarantine routes or controls points.
- Determine whether neighboring jurisdictions have made an evacuation/shelter-in-place/quarantine decision.
- Determine the population potentially affected by the action, including jurisdictions that will be hosting those evacuated, sheltered-in-place, or quarantined.
- Determine the availability and safety of personnel to support the action.
- Determine whether to deploy separate teams to notify residents and ensure their evacuation, or other means to notify people of the shelter-in-place or quarantine decision.
- Also, consider the personal needs of those evacuated, sheltered-in-place, or quarantined and the needs for vehicle servicing, particularly fuel, and whether power and other utilities should be terminated for safety.

Focus. Implement the unified command structure.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm
- TR News, “Evacuation Planning, Human Factors, and Traffic Engineering: Developing Systems for Training and Effective Response,” search for title at www.TRB.org/SecurityPubs
- Transportation Emergency Response Effects Tracking (TERET) software. See Appendix G of this report for a description. TERET is a tool developed under NCHRP Project 20-59(19), which was published as *NCHRP Report 525: Surface Transportation Security, Volume 10: A Guide to Transportation’s Role in Public Health Disasters*. TERET is available by download and can be accessed at <http://www.TRB.org/SecurityPubs>; search for *A Guide to Emergency Response Planning at State Transportation Agencies*.
- *NCHRP Report 525: Surface Transportation Security, Volume 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency*, search for title at www.TRB.org/SecurityPubs

- *ACRP Report 5: Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs*, search for title at www.TRB.org/SecurityPubs

RESPOND Phase 07: Issue and/or Support Evacuation/Shelter-in-Place/Quarantine Order

Purpose. Mobilize the state transportation agency activation team to coordinate evacuation, shelter-in-place, or quarantine operations.

Actions. Issue evacuation/shelter-in-place/quarantine orders through established communication systems and protocols. Notify service organization, local, regional, state, and federal stakeholders, including sheltering organizations, as applicable.

Focus. Implement the Incident Command System structure.

National Incident Management System Compliance Issues. Use access control measures during an incident, as appropriate.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

Step Observations

Fulfilling these duties requires close coordination with other response agencies and stakeholders through the ICS structure. This is especially true during large-scale events in which the state transportation agency may be called upon to support the evacuation, shelter-in-place, or quarantine of a neighboring state or region. The agency's involvement in the evacuation/shelter-in-place/quarantine event will also likely evolve as the incident itself evolves. The agency must therefore be capable of not only working within the ICS structure, but also be capable of adapting quickly and efficiently to the changing conditions and demands of the incident.

In the case of shelter-in-place or quarantine, the state transportation agency could be called upon to provide supporting assets and to transport responders.

Again, consider the safety of emergency response personnel during the evacuation/shelter-in-place/quarantine effort. As a result, the state transportation agency must also realize that at some point it will have to either order the evacuation of its own personnel and response teams from the region, or order that they shelter-in-place or remain in the quarantine area (if shelters and resources are available to do so). While a number of factors must be considered to make this difficult decision, including how the emergency event is evolving (e.g., is it diminishing or growing stronger), maintaining the safety of emergency response personnel must remain a primary objective of the response effort.

A key part of the emergency evacuation effort—and an important lesson learned through Hurricane Katrina—is providing transportation to those individuals of the affected area who are unable to evacuate, shelter-in-place, or quarantine themselves. In many cases, this will require that the state transportation agency coordinate and work closely with local, state, and regional public transit and school agencies, hospitals, and private transportation companies to provide the vehicles and equipment necessary to evacuate these individuals from the affected area or to assist in shelter-in-place or quarantine areas. In doing so, be sure to consider the special medical needs that may be presented by these individuals and the medical resources and equipment that may be required at their final destinations.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for managing and supporting evacuation/shelter-in-place/quarantine events, the agency should consider whether it is able to

- Make/support a decision to evacuate, shelter-in-place, or quarantine and coordinate with local, regional, and state officials regarding orders and routes.
- Issue/support an evacuation/shelter-in-place/quarantine order and mobilize the agency activation team to coordinate decision activities.
- Communicate evacuation/shelter-in-place/quarantine orders and incident management measures to disseminate appropriate information to employees and travelers and provide updates in a timely manner.
- Issue orders to evacuate, shelter-in-place, or quarantine its own emergency response teams and personnel as necessary to maintain their safety.
- Ensure there are sufficient resources to guarantee the safety of agency emergency response teams and personnel if the agency chooses to have them shelter-in-place.
- Support evacuated/sheltered-in-place/quarantined/vulnerable populations, including those individuals with special medical needs.

Step 4—Implement Emergency Response Actions

To support implementation of emergency response efforts, the state transportation agency may be called upon to identify access routes to the emergency scene and to monitor these routes as response efforts progress to ensure routes remain viable options for responder entry and exit. The agency must be prepared to communicate all changes to entry and exit routes to the Incident Command Team through the ICS structure. The agency may also be required to deploy its own response teams and personnel to manage traffic flow and debris removal along emergency responder entry and exit routes. Implementing emergency response actions requires completion of three phases.

RESPOND Phase 08: Take Response Actions

Purpose. Implement emergency transportation operations activities as required (e.g., open/close routes, manage traffic flow, deploy debris-removal teams, activate contraflow operations, coordinate to ensure that unmet transportation resource needs are identified and requests for additional support are made, provide and receive briefings, and support those with special needs).

Actions. Implement the Incident Command System and chain of command and/or Unified Command to create an integrated team of multidisciplinary and multi-jurisdictional stakeholders. Implement primary and (as needed) secondary command posts. Supporting actions may require the transportation agency to

- Deploy transit resources to support evacuation, including accommodating vulnerable populations, as well as resources to accommodate pets on transit vehicles and/or in shelters.
- Enforce evacuation/shelter-in-place/quarantine orders. The Emergency Operations Team should engage public safety officials in going door-to-door to ensure residents know of and comply with the order.
- Place services at intervals along evacuation route(s). Arrange for emergency services within a shelter-in-place or quarantine area, as needed.
- Open evacuation/shelter-in-place/quarantine routes to maximize throughput (e.g., close toll operations, work zones).
- Activate mutual-aid agreements.
- Determine the need for and deploy emergency medical and other support staff staged along the emergency routes or attached to those working with vulnerable populations, or within or near a shelter-in-place or quarantine area.

- Determine the need for and deploy debris-removal crews to clear blocked highways and/or other transportation facilities.
- Determine the need for and, as needed, deploy sanitation crews with mobile comfort stations (e.g., portable toilets, wash areas).
- Coordinate local evacuation/shelter-in-place/quarantine incident action plans with the designated incident commander in the field and the EOC/TMC. Field and EOC commanders should coordinate incident action plans with neighboring jurisdictions and the state or neighboring state(s). The EOC should obtain updated information frequently and communicate this information to those evacuated/sheltered-in-place/quarantined throughout the event.
- Set up and monitor contraflow operations to ensure traffic is flowing safely and efficiently. Use shoulders, HOV lanes, reversible lanes, and frontage roads for evacuation traffic.
- Coordinate and communicate contraflow and other special operations with neighboring jurisdictions.
- Coordinate with the next higher level of government to ensure unmet transportation resource needs are identified and requests for additional support are made.
- Control access to evacuation routes and manage traffic flow.
- Control access to shelter-in-place/quarantine areas to prevent unauthorized entry. Include strategies for emergency responders, transit vehicles, and other essential equipment to move inbound against the predominant outbound flow of traffic.
- Provide trained personnel to support the evacuation route or shelter-in-place/quarantine area (e.g., food, first aid, fuel, information).

Focus. Respond within the unified command structure.

National Incident Management System Compliance Issues. Use access control measures during an incident, as appropriate.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm
- *Managing Pedestrians During Evacuation of Metropolitan Areas*, <http://www.ops.fhwa.dot.gov/publications/pedevac/index.htm>
- FHWA Emergency Transportation Operations, Response, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm
- *NCHRP Synthesis 392: Transportation's Role in Emergency Evacuation and Reentry*, search for title at www.TRB.org/SecurityPubs

RESPOND Phase 09: Deploy Response Teams

Purpose. Deploy personnel and field equipment to implement emergency transportation operations.

Actions. Ensure that field personnel make frequent contact with the EOC through the ICS. Address activation of the TMC if it is not already operational (e.g., during normally inactive periods).

Supporting Resources.

- *NCHRP Web-Only Document 73: Emergency Transportation Operations: Resources Guide for NCHRP Report 525: Volume 6*, search for title at www.TRB.org/SecurityPubs
- *Overview: ESF and Support Annexes Coordinating Federal Assistance In Support of the National Response Framework*, <http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>

- *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, search for title at www.TRB.org/SecurityPubs
- *Final Report for the Application of Technology to Transportation Operations in Biohazard Situations*, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm

Software:

- *NCHRP Report 525: Surface Transportation Security, Volume 10: A Guide to Transportation's Role in Public Health Disasters*, search for title at www.TRB.org/SecurityPubs to access the TERET software
- *NCHRP Report 525: Surface Transportation Security, Volume 11: Disruption Impact Estimating Tool—Transportation (DIETT): A Tool for Prioritizing High-Value Transportation Choke Points*, search for title at www.TRB.org/SecurityPubs

RESPOND Phase 10: Communicate Evacuation/Shelter-in-Place/Quarantine Order and Incident Management Measures

Purpose. Disseminate appropriate information to employees and travelers, and provide updates in a timely manner.

Actions. Brief national, state, and local authorities and personnel (such as transit and health agencies and Fusion Centers) at regular intervals to ensure all parties are provided with accurate, timely, and comprehensive information. Hold regular media briefings to inform the media about evacuation routes and shelter-in-place and quarantine locations, traffic and road conditions, and other pertinent information to communicate to the public in a timely manner. Supporting transportation agencies may

- Disseminate accurate information pertaining to evacuation orders in a clear fashion and timely manner to avoid *shadow* or unnecessary evacuations or unnecessarily lengthy evacuation trips.
- Implement a briefing schedule with ranking representatives from each stakeholder agency participating in the event.
- Inform evacuees of available transport modes, how to access them, and if there are any restrictions on what evacuees may carry with them.
- Inform evacuees of when transportation assistance will begin and end and the frequency of departure at designated pick-up locations.
- Inform evacuees of their destination before they board public transport.
- Inform the public and/or family members of the evacuees' destinations.
- Identify established websites, hotlines, text messaging groups, etc., where people can get answers to their questions and concerns. In the event of a shelter-in-place or quarantine situation, inform people of the nature of the danger and actions they should take.
- Communicate security measures to the public.
- Identify support services for those with special needs.
- Communicate critical operational changes to the EOC and the public.
- Communicate information to evacuees on the availability of nonpublic shelters, such as hotels. Keep shelter operations informed of the location and status of other shelters.
- Communicate information to those to be sheltered-in-place or quarantined.
- Regularly reinforce, internally and externally, that persons involved in any way with the evacuation/shelter-in-place/quarantine event must direct all but the most basic inquiries to the JIC. Personnel working on the event must maintain effective communications at all times to coordinate movements, share real-time information, and track deployments.
- Establish processes to ensure redundant communications systems are available during the evacuation/shelter-in-place/quarantine because the event may damage or disable primary communication systems.

- Program DMSs (permanent and portable) as necessary to provide accurate, up-to-date information.
- Program HAR subsystems to provide accurate, up-to-date information.
- Program 5-1-1 systems to provide accurate, up-to-date information.
- Relay traffic condition information to the EOC.
- Ensure 9-1-1 operators are fully informed of conditions so they can respond to callers with accurate, up-to-date information.
- Use ITS resources during an evacuation to collect data and as a tool to communicate and coordinate with evacuees, evacuation operations personnel, partners, and other stakeholders. In shelter-in-place/quarantine areas, use ITS to detect unnecessary movements that might result in innocent people being further jeopardized.

National Incident Management System Compliance Issues. To achieve NIMS compliance,

- Institutionalize (within the framework of ICS) the Public Information System (e.g., JIS and a JIC), during an incident/planned event.
- Ensure that public information procedures and processes can gather, verify, coordinate, and disseminate information during an incident/planned event.

Supporting Resources.

- *Communicating With the Public Using ATIS During Disasters: A Guide for Practitioners*, <http://www.ops.fhwa.dot.gov/publications/atis/index.htm>

Step Observations

Emergency responders may also require additional vehicles and equipment for transportation to the emergency scene. In such cases, the state transportation agency will likely be called upon to coordinate with local, state, and regional public transit agencies and private transportation companies to obtain the necessary transportation resources to respond to the event.

Depending on the nature of the event, the Incident Command Team may also establish an on-site emergency operations or command center to facilitate hands-on response efforts. The state transportation agency, at the direction of the Incident Commander, may deploy its own personnel to this location to support the response.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for implementing and supporting emergency response actions, the agency should consider its ability to

- Take response actions to implement emergency transportation operational activities as required to
 - Open/close routes,
 - Manage traffic flow,
 - Deploy debris-removal teams,
 - Activate contraflow operations,
 - Coordinate to ensure that unmet transportation resource needs are identified and requests for additional support are made, and
 - Provide and receive briefings.
- Deploy response teams and field equipment to implement emergency transportation operations.

Step 5—Continue Response Requirements

As the emergency response effort progresses, the state transportation agency's roles and responsibilities will likely change and evolve. As discussed throughout this section, the agency must be capable of monitoring the response effort, including ongoing traffic conditions and

adjusting to changes as they occur. This is best done through the ICS structure and close coordination with other emergency response agencies and stakeholders. Continuing response requirements involves two phases.

RESPOND Phase 11: Monitor Response Efforts

Purpose. Monitor traffic conditions and make operational adjustments.

Actions. Monitor traffic conditions on evacuation/reentry routes and adjust operations to maximize throughput. Monitor how the event that triggered the evacuation/shelter-in-place/quarantine is progressing and if there are any changes to earlier predictions of its effects. Monitor the conditions of the roadway (e.g., for debris or flooding) during the evacuation/shelter-in-place/quarantine so those affected can be prepared and rerouted if necessary. Monitor evacuation/reentry operations of motorized transport, rail, air, waterway, and other transportation modes to determine the adequacy of available resources. State transportation agencies may

- Track the destination of vulnerable populations evacuated/sheltered-in-place/quarantined to notify friends and family of their location and to develop a plan to return them their original locations once the area has been deemed safe for reentry.
- Monitor the number of evacuees moved by means other than personal vehicles to ensure that additional equipment and operators (such as buses and drivers or helicopters and pilots) are requested and supplied quickly, if needed. This information should also aid in developing the reentry plan, as the same transportation resources will likely be required for that operation.
- Monitor traffic counters and cameras, pipelines, viaducts, etc., for potential damage.

Supporting Resources.

- FHWA Emergency Transportation Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm
- National Traffic Incident Management Coalition, <http://timcoalition.org/?siteid=41&pageid=590>
- Traffic Incident Management Committee, <http://www.trafficincident.org/>

RESPOND Phase 12: Prepare for Next Operational Period

Purpose. Mobilize personnel and resources for next operational period.

Actions. Mobilize personnel and resources for next operational period.

Supporting Resources.

- NCHRP Web-Only Document 73: *Emergency Transportation Operations: Resources Guide for NCHRP Report 525: Volume 6*, search for title at www.TRB.org/SecurityPubs
- NCHRP Report 525: *Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- NCHRP Report 525: *Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees*, search for title at www.TRB.org/SecurityPubs
- TCRP Report 86: *Public Transportation Security, Volume 7: Public Transportation Emergency Mobilization and Emergency Operations Guide*, search for title at www.TRB.org/SecurityPubs

Step Observations

The severity of the emergency and length of time over which it occurs will dictate many of the ongoing and continuing response actions and requirements needed to safely bring the event under control. The greater the event severity and the longer the event and emergency response effort lasts, the greater are the numbers and range of resources needed. This requires the state transportation agency to have sufficient resources on hand to replace and support exhausted or injured personnel, as well as damaged tools and equipment. The agency must again be capable of monitoring the response effort to determine if or when it should deploy additional resources.

This may include activating support contracts and services in advance of a predicted shortage of resources. Interstate support agreements can help considerably in this regard. For example, a hurricane might destroy hundreds of traffic signal assemblies, but if multiple states in commonly threatened areas stockpile replacement assemblies, they can be deployed more quickly than buying new ones from the vendors.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for providing continuing response support, the agency must consider its ability to

- Monitor response efforts and traffic conditions and make operation adjustments as necessary.
- Assess the capability to prepare for the next operational period to mobilize personnel and resources during continuing response efforts.
- Maintain sufficient resource stocks, or have the ability to obtain additional resources as necessary, to continue supporting the response effort.

Step 6—Conclude Response Actions

As the emergency response effort concludes, state transportation agencies must prepare to demobilize emergency responders and equipment and restore normal operations. This requires not only transporting emergency responders back from the emergency scene, but also preparing for the recovery process (discussed in the next section). The final phase of the RESPOND step is described below.

RESPOND Phase 13: Prepare for Demobilization

Purpose. Plan for restoration to normal operations.

Actions. Prepare to restore normal activities. Ensure that provisions exist to address and validate the safe return of resources to their original locations. Develop processes for tracking resources and ensuring applicable reimbursement. Develop plans to ensure responder safety during demobilization efforts. Ensure accountability for compliance with mutual-aid provisions.

Supporting Resources.

- *NCHRP Web-Only Document 73: Emergency Transportation Operations: Resources Guide for NCHRP Report 525, Volume 6:* search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises,* search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees,* search for title at www.TRB.org/SecurityPubs
- *ACRP Report 22: Helping Airport and Air Carrier Employees Cope with Traumatic Events,* search for title at www.TRB.org/SecurityPubs

Step Observations

To support demobilization of emergency response teams and equipment, the state transportation agency must again be capable of identifying exit routes from the scene and ensuring sufficient transportation resources are provided to complete the demobilization effort.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for supporting the conclusion of response activities, the agency should consider whether it could

- Prepare for demobilization efforts and restore normal operations.

Recover from the Emergency

In many respects, once the emergency has ended, the most difficult part of the emergency management process—recovering from the event—begins. Assessments must be made of damage caused by the emergency event; utilities such as power and water must often be restored; debris and other potential hazards must be removed from the affected area; and security provisions must be implemented to prevent criminal activities such as looting and theft. Additionally, medical treatment must be provided to those injured during the event; those who perished during the emergency must be identified and removed from the scene, and arrangements must be made to notify their next of kin; and transportation infrastructure elements must be examined to ensure their continued integrity and viability of use. Each of these activities can be costly, requiring the use of specialized personnel and equipment to prevent further losses. Each activity must also be completed before those evacuated/sheltered-in-place/quarantined are permitted to return to their homes and businesses.

As with each of the other emergency management phases, it is important to take every precaution to ensure the safety of personnel involved in the recovery operations. This is, again, best achieved through the NIMS/ICS structure and the continued coordination with other emergency response agencies and stakeholders. In many cases, additional resources may also be available from neighboring jurisdictions and regions, as well as the state and federal government in the form of the National Guard. The ICS structure provides a simplified means through which these resources can be obtained and managed.

The following has been developed to provide state transportation agencies with (1) the tools necessary to evaluate the effectiveness of their own recovery processes against the standards and metrics required by the National Incident Management System and (2) additional detail on how to best implement and work within the Incident Command System structure during recovery operations. Again, the following presentation format encourages state transportation agencies to conduct self-assessments.

Step 1—Restore Traffic to Affected Areas

During recovery operations, the state transportation agency—along with partner agencies, such as transit systems—will likely be called upon to assess, restore, and manage the essential transportation services and infrastructure elements of the affected area, as necessary, to complete the recovery effort. This may require deploying specialized teams to (1) conduct damage assessments of transportation infrastructure, (2) remove debris and hazardous materials from primary and alternate reentry routes, and (3) repair any roadways or other transportation facilities needed to support the recovery effort and the phased return of those evacuated/sheltered-in-place/quarantined to their homes. Restoring traffic to affected areas requires completion of four phases.

RECOVER Phase 01: Restore Essential Services

Purpose. Conduct damage and recovery assessments.

Actions. Conduct damage assessments, debris removal, hazardous materials disposal, and repair of roads and other transportation facilities, and restore essential services to the affected area.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

RECOVER Phase 02: Reestablish Traffic Management in Affected Area

Purpose. Establish routes to move traffic into, out of, and/or around affected areas.

Actions. Designate routes to move traffic into, out of, and/or around the affected area. Coordinate traffic management with restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs.

Supporting Resources.

- *Best Practices in Emergency Transportation Operations Preparedness and Response*, http://www.ops.fhwa.dot.gov/publications/etopr/best_practices/etopr_workshop.htm
- Transportation Emergency Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm
- National Traffic Incident Management Coalition, <http://timcoalition.org/?siteid=41&pageid=590>
- Traffic Incident Management Committee, <http://www.trafficincident.org/>

RECOVER Phase 03: Reentry into Evacuated, Shelter-in-Place, or Quarantined Area

Purpose. Implement a phased approach to bring evacuated, sheltered-in-place, or quarantined residents and others into the affected area.

Actions. Define specifically who makes the decision to return or remove shelter-in-place/quarantine restrictions. Identify what factors will influence the decision. Begin developing, coordinating, and executing service and site restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs. Supporting actions may include the following:

- In short-term recovery, assist other agencies to provide essential public health and safety services; restore interrupted utility and other essential services (as soon as safely possible); reestablish transportation routes; and provide food, shelter, and other essential services to those displaced by the event.
- Long-term recovery may include complete redevelopment of damaged areas. Prioritize activities to conduct damage assessments, debris removal, hazardous materials disposal, and repair of roads and other transportation facilities. Restore transportation support facilities to enable them to receive evacuees when it is safe to do so, and secure critical assets.
- Estimate the transportation-related damage to the areas to which those evacuated/sheltered-in-place/quarantined will return.
- Determine if there is, as a result or consequence of an evacuation, an outbreak of disease or any other health or medical issue that should be mitigated, and the consequent impact on transportation.
- Determine if hazardous materials spills need to be cleaned up.
- Determine if utilities co-located on transportation facilities are functioning (i.e., running water, electricity).
- Ensure evacuation/shelter-in-place/quarantine routes are clear of debris and safe for travel.
- Determine if public transit systems are operational. Identify any populations who should not be allowed to return because of medical, health, or public safety concerns.
- Verify that injured or diseased people and animals have been attended to and recovered from the area; or if not, determine how to transport them.
- Develop a strategy for how to communicate transportation-related reentry instructions to the public.
- Determine if mutual-aid reentry should be accomplished in phases.
- Transport those who did not self-evacuate/shelter-in-place/quarantine back to their place of residence or longer-term shelters if homes are uninhabitable.

- Identify personnel, equipment, and resources necessary to support reentry.
- Inspect the affected area and provide transportation aid to survivors who did not evacuate, shelter-in-place, or quarantine.
- Ensure reentry plans address those people who were unable to evacuate, shelter-in-place, or quarantine themselves.
- Ensure a clear strategy exists for how, when, and where to transport those evacuated/sheltered-in-place/quarantined and how they may reach their final destinations.
- Ensure that communication with evacuees who may be scattered among shelters, families' homes, and other areas outside of the immediate jurisdiction can be accomplished effectively.
- Coordinate with other authorities as to the start and end times of reentry operations, including the days of the week, geographic areas covered, picture identification (ID) required to reenter, security checkpoints are in place, available routes and maps, vehicle restrictions, and available services.
- Determine whether to update ITS subsystems (e.g., DMS, HAR, and 5-1-1) to provide information to individuals reentering the area.
- Assist in providing traveler services, such as fuel, food, safe water, relief, and medical care, which should be available along the highway routes as they were during the evacuation.
- Establish alternative plans for return in case the evacuation lasts for days, weeks, or possibly longer.
- Ensure that operators and passengers have picture IDs to get back to their points of origin.
- Coordinate reentry plans with other transportation and public safety officials to adequately staff reentry routes.
- Coordinate operations to identify missing persons who might not have evacuated, sheltered-in-place, or quarantined and been lost in the event or failed to return after the event, particularly children separated from their families.

Supporting Resources.

- *Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
- *Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series*, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm
- *NCHRP Synthesis 392: Transportation's Role in Emergency Evacuation and Reentry*

RECOVER Phase 04: Conduct Emergency Repairs

Purpose. Develop an approach to infrastructure repair/replacement and decontamination.

Actions. Develop the approach to infrastructure repair/replacement and decontamination, determining what can be done quickly and what will require more time.

Supporting Resources.

- Accelerated Bridge Construction Technologies, 2007 Conference, <http://www.fhwa.dot.gov/bridge/accelerated/index.cfm>
- TMC Pooled Fund Study: Current Projects, http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=79&%20new=3
- The National Homeland Security Research Center, <http://www.epa.gov/nhsrcc/>

Step Observations

Once the state transportation agency has made its assessment of the affected area, it should communicate the status of key transportation infrastructure elements to the Incident Command Team, including the time and resources necessary to repair and restore these elements to a degree that can safely support the return of individuals to the area. The agency, in concert with other

transportation partners, should next begin the repair process, tracking all associated costs as necessary for future reimbursement.

Similar to the evacuation/shelter-in-place/quarantine processes, the state transportation agency will also be called upon for traffic control and management of those returning to the affected area. This will again require the agency to work and coordinate with local, state, and regional TMCs and TCCs to manage traffic signal timing, message signs, and other public information systems; to deploy personnel, equipment, and other resources as necessary to direct and facilitate traffic flow, including contraflow activities (although less likely for recovery); and to monitor traffic congestion during the return of those evacuated/sheltered-in-place/quarantined, providing the Incident Command Team with updates regarding the need for additional resources or for limiting/phasing the number of those who can enter the affected area at any one time.

Because many of the area's hospitals, nursing homes, or other special needs facilities, may have been damaged during the emergency event, those evacuated/sheltered-in-place/quarantined should not be transported back to those facilities until all necessary repairs have been made and all necessary systems and equipment are up and running. Once acceptable conditions have been verified, the state transportation agency, or appropriate local authority, can begin coordinating the transport of those evacuated/sheltered-in-place/quarantined back to these facilities. Again, this may require working with local, state, and regional public transit agencies, hospitals, and private transportation providers to ensure the special medical or other needs of these individuals are met during transport.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for restoring traffic to affected areas, the agency should consider its capability to

- Develop plans, procedures, and protocols for restoring essential services. This should include conducting damage assessments, debris removal, and hazardous materials disposal, and repair of roads and other transportation facilities.
- Develop plans, procedures, and protocols to reestablish traffic management to the affected area. This includes establishing routes to move traffic into, out of, and/or around the affected area. This also includes coordinating traffic management with restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs.
- Prepare to implement a phased approach to bring evacuated/sheltered-in-place/quarantined residents and others back into the affected area.
- Prepare to conduct emergency repair, replacement, and decontamination processes by identifying what can be done quickly and what will require more time.

Step 2—Identify and Implement Lessons Learned

Many of the most useful practices and recommendations presented in this and other guides have been developed by evaluating the emergency management processes of previous events to identify what could have been done better or more efficiently. These lessons learned are an essential tool for continually improving the emergency management capabilities of state transportation agencies and other response agencies. Moreover, as presented in this 2010 Guide's discussion of the emergency planning process, emergency planning never ends; rather, it evolves as emergency planners and response teams continue to learn from new experiences. As such, following any emergency event, the agency should actively participate in developing lessons learned from the event. Identifying and implementing lessons learned requires the completion of two phases.

RECOVER Phase 05: Perform After-Action Reviews

Purpose. Assess response activities to determine what went well and where improvements are needed.

Actions. Identify who is responsible for conducting After-Action Reviews and for ensuring necessary changes are made to EOPs, SOPs, SOGs, etc., and communicated to staff. Conduct a review of how the evacuation/shelter-in-place/quarantine was executed and determine how it could have been improved. Each agency should review its actions. When multiple agencies are involved in an operation, conduct a joint After-Action Review to address how well agencies worked together and what improvements can be made in future joint operations. Share each After-Action Review with decisionmakers and agency personnel and include recommendations for which improvements should be considered and implemented quickly.

Conduct an After-Action Review, a formal meeting of operation participants to assess actions, determine follow-up items, and develop recommendations for improving future operations. Include results of the After-Action Review in an After Action Report (AAR) and use results to determine if changes should be made to plans and procedures.

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees*, search for title at www.TRB.org/SecurityPubs

RECOVER Phase 06: Return to Readiness

Purpose. Incorporate recommendations from the After-Action Review into existing emergency response plans and procedures.

Actions. Establish a policy for the evacuation/shelter-in-place/quarantine team members' home organizations regarding recovery time and time to participate in After-Action Reviews and other return-to-readiness activities. Agencies may

- Determine what equipment and supplies need to be restocked, what infrastructure needs to be repaired or replaced, and what new information needs to be communicated to the public to maintain their awareness to be prepared.
- Begin transitioning the system from an operations cycle back to a state of planning and preparedness.
- Continue data collection and begin analyses of response activities.
- Identify evacuation costs and reimbursable expenditures. Account for services such as equipment rehabilitation, restocking of expendable supplies, transportation to original storage or usage locations, overtime costs for public safety and transportation officials, materials used in support of evacuation, and contract labor and equipment.
- Begin request for reimbursement processes from state and federal governments, as applicable.
- Continue to track personnel, supplies, and equipment costs to meet the requirements of the reimbursing agencies.
- Work with FEMA and FHWA to ensure proper documentation is used for submitting reimbursement requests.

Supporting Resources.

- *NCHRP Report 525: Surface Transportation Security, Volume 9: Guidelines for Transportation Emergency Training Exercises*, search for title at www.TRB.org/SecurityPubs
- *NCHRP Report 525: Surface Transportation Security, Volume 7: System Security Awareness for Transportation Employees*, search for title at www.TRB.org/SecurityPubs

- *ACRP Report 22: Helping Airport and Air Carrier Employees Cope with Traumatic Events*, search for title at www.TRB.org/SecurityPubs

Step Observations

Develop an AAR immediately following the out-brief to identify the lessons learned and the actions to be taken by each agency and stakeholder involved in the emergency response effort to incorporate these lessons learned into their plans, procedures, protocols, and future training activities.

Develop debrief teams, including representatives of the key emergency response parties, to walk through the emergency event, from its inception through final recovery, to identify the following:

- Specific issues and challenges presented by the event.
- Resource shortcomings that may have occurred and how they hindered response capabilities.
- Actions taken during the response and what could have been done differently to improve the response.
- Any occurrences in which communication breakdowns between response agencies impaired or prevented response capabilities.
- Causes of any injuries or fatalities to emergency responders or citizens and what can be done in the future to prevent recurrences.
- What plans, procedures, and protocols worked and did not work and what revisions should be made to correct any missteps.
- The effectiveness of contracted support teams and personnel to meet their contractual requirements and quickly provide the equipment and resources needed to effectively respond to the emergency when called upon.
- Any other changes that should be made to improve future emergency response efforts.

It is important to conduct these reviews in a blameless environment; the objective is to make improvements, not to point fingers at anyone or any agency.

Step Checklist

To evaluate the state transportation agency's processes and capabilities for identifying and implementing lessons learned from the emergency, the agency should consider whether it can perform an After-Action Review to assess response activities to determine what went well and where improvements are needed.



SECTION 5

Nature and Degree of Hazards/Threats

State transportation agencies across the nation face different types of hazards. Coastal states are at risk from tropical storms, hurricanes, and tsunamis, while states bordering large lakes and bays have some similar weather threats, including seiches.²³ Several wide corridors are *tornado alleys*, with a far higher probability of these storms occurring. The central and southwestern states have dust storms. Numerous rivers, large and small, are potential flooding disasters. Earthquakes are not restricted to the west coast; there are seismic faults in many states. States throughout the nation are prone to forest and grassland wildfires.

On the security side, states with large population centers, military or other security-sensitive facilities, and ports are more likely targets of terrorism than the more agricultural states. Yet experience has shown that religious and antisocial extremists can plan to attack the *safest* of states.

While many emergency response actions are similar, there are clear differences as well, requiring different human and materiel assets. No state can afford to be totally prepared for every threat; thus, each state needs to assess its vulnerability to each type of threat and assess the potential risks and plan accordingly.

Range of Hazards

CPG 101 summarizes the typical hazards facing state transportation agencies and others, as shown in Table 4. The authors of this study have added several additional hazards, shown in italic type.

Impact on and of the Transportation System

Table 5 indicates the typical impacts of each hazard on the transportation system when the system itself is the target of the hazard (second column) and its role in response in all cases (third column).

Each ER planner should try to anticipate the most likely incidents as the top priority, while continually updating the plans as experiences of others are shared. A good source of such shared

²³A seiche is a disturbance or wave that oscillates in lakes, bays, or gulfs from a few minutes to a few hours, usually because of seismic or atmospheric disturbances; also called seiche waves.

Table 4. Sample hazards list.

Natural Hazards	Technological Hazards	Human-Caused Hazards
<ul style="list-style-type: none"> • Avalanche • Drought • Earthquake • Epidemic • Flood • Hurricane (<i>tropical cyclone</i>) • Landslide or mudslide • Tornado • Tsunami (<i>or seiche</i>) • Volcanic eruption • Wildfire or facility fire • Winter storm • Wind or dust storm 	<ul style="list-style-type: none"> • Airplane crash • Bridge collapse • CBRNE • Dam or levee failure • Electromagnetic pulse • HAZMAT release • Power failure • Radiological release • Train derailment • Urban conflagration • Loss of Internet connectivity • Loss of telecommunications • Equipment failure 	<ul style="list-style-type: none"> • Civil disturbance • School violence • Terrorist or <i>criminal</i> act • Sabotage • War related

Original source: CPG 101, 2009; indicates others added by the research team or from other transportation sources.

Table 5. Impact of various hazards on transportation.

Hazard	Transportation is Target	Transportation's Role in Response
Natural Hazards		
Avalanche	Roads might be blocked.	Transport first responders in their vehicles and snow-removal equipment.
Drought	Generally not an issue.	Transport caregivers and relief supplies.
Earthquake	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment.
Epidemic	Generally not an issue	Transport caregivers and relief supplies. Transportation human resources will be adversely affected leading to shortage in operating staff. In addition, quarantines may affect routes.
Flood	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment. Remove debris. Clear roads.
Hurricane (<i>tropical cyclone</i>)	Infrastructure might be damaged or destroyed.	Major evacuation—provide alternative routing, and transport first responders in their vehicles and equipment. Remove debris.
Landslide (or mudslide)	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment. Remove debris.
Tornado	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment. Remove debris.
Tsunami (<i>or seiche</i>)	Infrastructure might be damaged or destroyed.	Provide alternative routing and transport first responders in their vehicles and equipment.
Volcanic eruption	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment.
Wildfire (or facility fire)	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles and equipment.
Winter storm	Infrastructure might be covered or iced over.	Transport first responders in their vehicles and equipment. Clear roads.

(continued on next page)

Table 5. (Continued).

Hazard	Transportation is Target	Transportation's Role in Response
Technological Hazards		
Airplane crash	Generally not an issue unless crash is into the infrastructure.	Transport first responders in their vehicles and equipment.
Bridge collapse	Destroyed infrastructure.	Provide alternative routing and transport first responders in their vehicles and equipment.
CBRNE	Generally not an issue.	Transport caregivers and relief supplies. Temporary inability to use sections of infrastructure possible.
Dam or levee failure	Infrastructure might be damaged or destroyed.	Transport first responders in their vehicles, materials, and equipment.
Electromagnetic pulse	Electronic controls/systems lost.	Arrange human resources to operate critical intersections.
HAZMAT release	Generally not an issue.	Establish policy and/or guidelines for handling non-HAZMAT spills and procedures for activating HAZMAT mitigation.
Power failure	Electronic controls/systems lost.	Arrange human resources to operate critical intersections.
Radiological release	Generally not an issue.	Transport first responders in their vehicles and equipment. Temporary inability to use sections of infrastructure possible. May especially complicate evacuations.
Train derailment	Generally not an issue unless crash blocks infrastructure.	Transport first responders in their vehicles, materials, and equipment.
Urban conflagration	Infrastructure might be damaged.	Transport first responders in their vehicles, materials, and equipment.
Human-Caused Hazards		
Civil disturbance	Infrastructure might be denied.	Transport first responders in their vehicles and equipment.
School violence	Generally not an issue, unless on buses.	Transport first responders in their vehicles.
Terrorist or criminal act	Infrastructure might be denied or destroyed.	Transport first responders in their vehicles and equipment.
Sabotage	Infrastructure might be denied or destroyed.	Transport first responders in their vehicles and equipment.
War related	Infrastructure might be denied or destroyed.	Transport first responders in their vehicles, materials, and equipment.

information is the DHS's Lessons Learned Information Sharing (LLIS) website (LLIS, 2009). Appendix K lists other resources.

Example: Escalation of Incidents and Response

One of the most challenging responsibilities of emergency responders is to anticipate the escalation of incidents in severity and scope. A good example is an incident in Florida in January 2008. Table 6 chronicles the sequence of significant events occurring in this incident.

Table 6. Florida I-4 Reduced-visibility incident.

Date (2008)	Time	Event
Jan. 8	10:00 AM	Florida Fish and Wildlife Conservation Commission (FWC) began a controlled burn of 10 acres at the Osprey Preserve, just off I-4 near Polk City. As the morning progressed, the humidity began to fall and the fire became difficult to control.
	~Noon	FWC requested assistance from the Florida Division of Forestry and Polk County Fire Rescue.
	Afternoon	The fire burned throughout the day, jumped several fire lines, and grew to approximately 500 acres. As the fire was escalating, Polk County's Emergency Management Division responded and set up its mobile command post (MCV-1) for the various agencies to use. The MCV-1 is outfitted with an array of radios and other communications equipment, a remote video camera and several televisions, and a large generator to keep the unit self-sufficient. All interior wall space is covered with material similar to a dry erase board, so every vertical surface in the unit is a place to write information.
	Evening–Night	MCV-1 was used throughout the day and night to coordinate various operations, including a tactical <i>back burn</i> . The fire never penetrated into the muck area at the Osprey fire. The surface fire did however continue to smolder throughout the night. Forestry notified the Florida Highway Patrol (FHP) about concerns with the smoke later in the day and the Florida DOT placed Smoke/Fog warning signs with flashing lights on the Interstate.
Jan. 9	4:56 AM	First report of a vehicle crash on I-4, FHP arrived by 5:11 AM.
	5:00 AM	Polk Co. Fire Engine 22, ALS 20, and Battalion 4 were dispatched to the reported vehicle accident on I-4 near Exit 48. According to the lieutenant on Engine 22, they arrived in relatively clear conditions and began giving aid.
	Morning	While responders were loading a patient, a heavy fog quickly rolled in. Responders began hearing the sound of vehicles crashing into one another. By this time, the fog/smoke was so thick that the lieutenant ordered a firefighter to walk ahead of the apparatus and the lieutenant walked just in front of the truck and slowly moved toward what they thought was the scene of the other incident. The crews reported later that the visibility was so poor they could not even see their feet. (Other FHP and the Fire Department eyewitnesses said they could not see flames only feet away, but could feel the heat.) Unknown to the fire and EMS responders, a Polk Sheriff's deputy had been dispatched to a separate vehicle accident and was on scene when he witnessed a multi-vehicle accident. The lieutenant on Engine 22 reported multiple vehicles with patients trapped and several vehicles on fire. He then began requesting additional units and gave the responding battalion chief additional updates. The 3-person crew simultaneously pulled a line for fire control and began rapid extrication of trapped patients. During this time, additional crashes were taking place and the on-scene units repeatedly asked that the Interstate be shut down. Within minutes, additional units were dispatched and off-duty senior management personnel were notified. Polk County Sheriffs Office sent its MCV as well, and while it was recognized that this was the preferred Command Post (PC), it was time-consuming for Incident Command (IC) to relocate because of reduced visibility. Meanwhile, the Polk Co. EOC was coordinating interagency notifications and assistance calls.
	10:30 AM	The area was now clear of fog/smoke and all but one trapped patient had been treated and transported from the scene. The Interstate was closed to traffic in both directions. Multiple units from a number of agencies were working the scene. Command shifted from Fire Rescue to law enforcement.
	11:46 AM	The last patient was removed and transported.

(continued on next page)

Table 6. (Continued).

Date (2008)	Time	Event
	Afternoon	Recovery work continued. Removal of the burned truck revealed pavement damage, which delayed reopening the highway.
Jan. 9–10	Night	FDOT crews worked around the clock to repair the damaged surface and I-4 was reopened and normal operations quickly resumed.
Summary Stats		<ul style="list-style-type: none"> • Four separate vehicle crash scenes, two with major fires. • 70 vehicles, including about 20 tractor-trailers and tankers, involved in crashes. • 4 fatalities and 38 injured (5 seriously).
Lesson Learned		<ul style="list-style-type: none"> • Joint exercises paid off, but more are needed, especially with law enforcement and FDOT. • 100% interagency communication is needed (about 95% of responders were on a common link). • EOC needed to be the central CP. • Strengthen Unified Command. • Thermal imaging cameras proved very useful. • Visibility impaired triage, better methods are needed. • All responders need personal protective equipment (PPE); not all were so equipped. • Full notification, including cessation of tolls on alternative routes, was needed.
Primary Cause	Zero-visibility fog: It is uncertain whether the smoke from the controlled burning, which got out of control, was a contributing factor, but the fog was sufficient in itself.	

Source: adapted from Linkins, 2008, news reports, and eyewitness accounts.

This incident demonstrates that traffic incidents can and do rise to the level of major incident. Despite intense planning and preparation, sometimes conditions are so unpredictable that no amount of preparation can prevent tragedy. As noted, the fog was so heavy that morning that responders literally could not see their hands and feet (see Figure 10). The fog forced firefighters to walk vehicles off the interstate, guided more by feel than vision. The application of Unified Command worked well, but the visibility hindered the relocation of the Incident Command Post, and ultimately responders realized that they needed a centralized CP at the EOC.

While this might be an unusual example, it illustrates that what started out as a routine incident—in this case, a controlled burn and an apparently unrelated crash—can rapidly escalate into a major incident.

The specific matter of incident escalation is the subject of a separate white paper included as Appendix L (Wallace et al., 2009). For purposes of this 2010 Guide, the summary table illustrating escalating roles (repeated here as Table 7) is included for ease of reference. Readers should refer to the white paper for more details. Note that a *catastrophic incidents* category was added to the incident types in the white paper table.



a) Vehicle fires burning through the fog



b) A burning vehicle in the heavy fog



c) A firefighter's helmet in the fog



d) One of the crash scenes after fires extinguished

Photo credits: (a) TBO.com, News Channel 8, image by Peter Masa; (b-c) Polk County, Florida, Fire Rescue; and (d) Florida Highway Patrol.

Figure 10. Florida I-4 reduced-visibility crash scenes.

Table 7. Stakeholder roles in varying incidents.

Agency Type					
Incident Type	Federal	SEMA	Other State/Local EMA, etc.	State Transportation Agencies/Local Transportation	Public Safety
Planned Event	Not generally	Not generally	Not generally	If transportation system impacted	Generally traffic management and security
Minor Incident	Not generally	Not generally	Not generally	As needed in jurisdiction	Generally Incident Commander
Major Incident	Not generally	If regional impact and GDE*	If Authority-declared emergency	As needed in jurisdiction	Generally Incident Commander
HAZMAT Incident	If nuclear or other federally controlled waste	If regional impact and GDE	HAZMAT mitigation, generally Incident Commander	As needed in jurisdiction	As needed in jurisdiction
Natural Disaster	Coordination/compensation (FEMA)	Any GDE, generally Incident Commander	Any GDE	As needed in jurisdiction	As needed in jurisdiction
Terrorist Incident	Coordination/compensation (DHS, TSA, USCG, FBI, USACE)	Any GDE, generally Incident Commander	Any GDE	As needed in jurisdiction	As needed in jurisdiction
Catastrophic Incident	Coordination/compensation (DHS, TSA, USCG, FBI, USACE, USM), generally Incident Commander	Any GDE	Any GDE	As needed in jurisdiction	As needed in jurisdiction

Key to acronyms not introduced previously:

GDE = Governor-declared emergency

USACE = United States Army Corps of Engineers

USM = United States Military (multiple branches)

List of Acronyms

4-Cs	Of TIM: communication, cooperation, coordination, and consensus (in some places, commitment replaces consensus. Also, sometimes referred to as only three, omitting the last C, and some have even suggested five, adding compromise)
9/11	September 11, 2001
24/7	Continuous 24 hours per day, 7 days per week operation of some function, such as a TMC, generally for 365 days per year unless otherwise specified; non-full-time operations may be expressed similarly, such as 16/5 for weekday prime travel period
AAR	After-Action Report
ATIS	Advanced Traveler Information Systems
AVL	Automated Vehicle Location
CAD	Computer-Aided Dispatch
CAP	Corrective Action Plan
CAPTA	Costing Asset Protection (An All Hazards Guide for) Transportation Agencies
CAPTool	CAPTA (software) Tool
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosive (threats)
CCP	Common Communications Plan
CCTV	Closed-Circuit Television
CEMP	Comprehensive Emergency Management Plan (another name used for EOP)
CEO	Chief Executive Officer
CI/KR	Critical Infrastructure and Key Resources
COG	Continuity of Government
ConOps	Concept of Operation
COOP	Continuity of Operations Plan
CTST	Community/Corridor Traffic Safety Teams

CPG	Comprehensive Preparedness Guide
DEM	Department of Emergency Management
DEP	Department of Environmental Protection
DIETT	Disruption Impact Estimating Tool—Transportation
DLE	Department of Law Enforcement
DOD	Department of Defense (U.S.)
DOI	Department of the Interior
DOT	Department of Transportation
DMS	Dynamic (also called Changeable or Variable) Message Sign
EAS	Emergency Advisory System
ECC	Emergency Communications Centers, also called Public Safety Answering Points (PSAP)
EDO	Emergency Duty Officer
EM	Emergency Management
EMA	Emergency Management Agency
EMAC	Emergency Management Assistance Compact
EMS	Emergency Medical Services
EOC	Emergency Operations Center (may be state [SEOC] or regional/local [LEOC])
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency (U.S. and state)
EPC	Emergency Planning Coordinator
EPZ	Emergency Planning Zone
ER	Emergency Response
ESF	Emergency Support Function
ETO	Emergency Transportation Operations
FAH	Federal Aid Highway
FBI	Federal Bureau of Investigation
FC	Fusion Center
FEMA	Federal Emergency Management Agency (of DHS)
FIA	Federal Insurance Administration
FOG	Field Operations Guide
GDE	Governor-Declared Emergency
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HEIED	Hand-Emplaced Improvised Explosive Device
HS	Homeland Security
HSAS	Homeland Security Advisory System
HSEEP	Homeland Security Exercise and Evaluation Program
HSOC	Homeland Security Operations Center
HSPD	Homeland Security Presidential Directive
IAP	Incident Action Plan
ID	Identification (card or other)
(I)CP	(Incident) Command Post
IC(S)	Incident Command(er) (System)
IRP	Incident Response Patrol
ISAC	Information Sharing and Analysis Center
ITS	Intelligent Transportation Systems
JFO	Joint Field Office
JIC	Joint Information Center
JIS	Joint Information System

LEOP	Local Emergency Operations Plan (county, region, etc.)
LEPC	Local Emergency Planning Committee
LLIS	Lessons Learned Information Sharing (DHS Web site)
M&O	Management and Operations (in this context, Operations and Maintenance are both included in the 'O' here)
MAC(S)	Multiagency Coordination (System) (of NIMS)
MOA	Memorandum of Agreement
MOT	Maintenance of Traffic
MOU/A	Memorandum of Understanding/Agreement
MUTCD	Manual on Uniform Traffic Control Devices
NEMA	National Emergency Management Association
NGO	Nongovernmental Organization
NIC	National Integration Center (the Incident Management Systems Integration Division of FEMA)
NIMS	National Incident Management System
NIMSCAST	NIMS Capability Assessment Support Tool
NIPP	National Infrastructure Protection Plan
NOC	National Operations Center (of the U.S. Department of Justice)
NPG	National Preparedness Guidelines
NPS	National Planning Scenarios
NRF	National Response Framework
NRP	National Response Plan (replaced by the NRF)
NTIMC	National Traffic Incident Management Coalition
NUG	National Unified Goal (for Traffic Incident Management)
NWS	National Weather Service
O&M	Operations and Maintenance
PIO	Public Information Officer
PPE	Personal Protective Equipment
PSAP	Public Safety Answering Point, also called Emergency Communication Center (ECC)
QC	Quick Clearance
RRCC	Regional Response Coordinating Center
S&L	State and Local (governments)
SAFECOM	Safe Communications (DHS program)
SARS	Severe Acute Respiratory Syndrome
SCIP	Statewide Communications Interoperability Planning (DHS methodology)
SCOTSEM	Special Committee on Transportation Security and Emergency Management (of AASHTO)
SEMA	State Emergency Management Agency
SEOP	State(wide) Emergency Operations Plan
SHRP II	Strategic Highway Research Program, second generation
SOG	Standard Operating Guidelines
SOP	Standard Operating Procedure
SSOM	Subcommittee on Systems Operations and Management (of AASHTO)
SSP	Sector-Specific Plan or Safety Service Patrol
STIX	Southern Traffic Incident eXchange
TCC	Traffic Control Center
TCL	Target Capabilities List
TCP	Traffic Control Point
TERET	Transportation Emergency Response Effects Tracking
TIM	Traffic Incident Management
TMC	Transportation (or Traffic) Management Center

TOPPLEF	Training, Organizations, Plans, People, Leadership and Management, Equipment, and Facilities
TRANSCOM	Transportation Operations Coordinating Committee
TTC	Temporary Traffic Control
TWIC	Transportation Workers Identification Credential
USA PATRIOT	Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism
UC	Unified Command
URL	Universal (or Uniform) Resource Locator (Web site address)
U.S.C.	United States Code (Public Law)
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard (of DHS)
USGS	U.S. Geological Service
USM	U.S. Military (multiple branches)
UTL	Universal Task List
UVC	Uniform Vehicle Code
WMD	Weapons of Mass Destruction

References

- A Guide to Emergency Response Planning at State Transportation Agencies*, Technical Memorandum: Summary of Task 4 Survey Responses. NCHRP Project 29-59(23), TRB, Washington, DC, March 2008 (NCHRP-23, 2008).
- A Guide to Updating Highway Emergency Response Plans for Terrorist Incidents*, NCHRP Project 20-07/Task 151A, TRB, Washington, DC, May 2002 (NCHRP, 2002).
- Boyd, A., et al. *NCHRP Report 525: Surface Transportation Security, Volume 8; Public Transportation Security Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies*, TRB, Washington, DC, 2005 (NCHRP-8, 2005).
- Burke, D., "TranStar Brings Emergency Management Together," *Bay Area The Citizen*, Houston, TX, June 26, 2008. (Burke, 2008)
- Costing Asset Protection: An All Hazards Guide for Transportation Agencies*, CAPTA, Final Report, NCHRP Project 20-59(17), TRB, Washington, DC, January 2009 (NCHRP-17, 2008).
- DHS, National Preparedness Guidelines, Washington, DC, September 2007 (NPG, 2007).
- . Lessons Learned Information Sharing (LLIS), Washington, DC (LLIS, 2009) [Online]. Available: <https://www.llis.dhs.gov/index.do> (accessed January 2009).
- . National Infrastructure Protection Plan, Washington, DC, October 2007 (DHS, 2007).
- . National Strategy for Homeland Security, Washington, DC, October 2007 (DHS, 2007a).
- . One Team, One Mission, Security Our Homeland, U.S. Department of Homeland Security Strategic Plan, Fiscal Years 2008–2013, Washington, DC, 2008 (DHS, 2008) [Online]. Available: <http://www.dhs.gov/xabout/strategicplan/> (accessed March 2009).
- . SAFECOM, Statewide Communications Interoperability Planning (SCIP) Methodology v2.0, Washington, DC (DHS, 2007b) [Online]. Available: <http://www.safecomprogram.gov/NR/rdonlyres/DD91CD2C-FD2E-4BBC-AFEA-E620B4BBB891/0/SCIPMethodologyv20FINAL.pdf> (accessed January 2009).
- Emergency Management Assistance Compact (EMAC), National Emergency Management Association, Lexington, KY, 2008 (EMAC, 2008) [Online]. Available: <http://www.emacweb.org/> (accessed January 2009).
- FEMA, *Comprehensive Preparedness Guide (CPG) 101: Developing and Managing State, Territorial, Tribal, and State Government Emergency Plans*, U.S. Department of Homeland Security, Washington, DC, March 2009 (CPG 101, 2009), [Online]. Available: <http://www.fema.gov/about/divisions/cpg.shtm> (accessed January 2010).
- . Emergency Management Assistance Compact (EMAC), U.S. Department of Homeland Security, Washington, DC, 2007 (FEMA-EMAC, 2007) [Online]. Available: <http://www.fema.gov/pdf/emergency/nrf/EMACoverviewForNRF.pdf> (accessed January 2009).
- . Homeland Security Exercise and Evaluation Program (HSEEP), U.S. Department of Homeland Security, Washington, DC (FEMA-HSEEP, 2009) [Online]. Available: https://hseep.dhs.gov/pages/1001_HSEEP7.aspx and <https://hseep.dhs.gov/support/VolumeIII.pdf> (accessed January 2009).
- . Multiagency Coordination System (MACS), U.S. Department of Homeland Security, Washington, DC (FEMA-MACS, 2009) [Online]. Available: <http://www.fema.gov/emergency/nims/FAQ.shtm#item2> (accessed January 2009).

- _____. National Incident Management System, U.S. Department of Homeland Security, Washington, DC, December 2008 (NIMS, 2008).
- _____. National Response Framework, U.S. Department of Homeland Security, Washington, DC, January 2008 (NRF, 2008).
- _____. NIMS Capability Assessment Support Tool (NIMSCAST), U.S. Department of Homeland Security, Washington, DC (NIMSCAST, 2008) [Online]. Available: <http://www.fema.gov/nimscast/index.jsp> (accessed January 2009).
- _____. NIMS Compliance and Technical Assistance, U.S. Department of Homeland Security, Washington, DC (FEMA-Compliance, 2009) [Online]. Available: http://www.fema.gov/emergency/nims/Implementation_GuidanceStakeholders.shtml (accessed February 2010).
- _____. *State and Local Guide (SLG) 101: Guide for All-Hazard Emergency Operations Planning*, Department of Homeland Security, Washington, DC, (SLG101, 1996) [Online]. Available: <http://www.fema.gov/pdf/plan/slgl01.pdf> (accessed March 2009).
- _____. *Understanding Your Risks: Identifying Hazards and Estimating Loss*, FEMA Publication 386-2, U.S. Department of Homeland Security, Washington, DC, August 2001 (FEMA, 2001) (accessed August 2009).
- FHWA, *Communicating With the Public Using ATIS During Disasters: A Guide for Practitioners*, U.S. Department of Transportation Publication No. FHWA-HOP-07-068, Washington, DC, April 2007 (FHWA, 2007) [Online]. Available: http://www.ops.fhwa.dot.gov/publications/atis/atis_guidance.pdf (accessed 2009).
- _____. *Information Sharing Guidebook for Transportation Management Centers, Emergency Operations Centers, and Fusion Centers*, U.S. Department of Transportation, Washington, DC, draft November 2008²⁴ (FHWA, 2008).
- _____. *Manual on Uniform Traffic Control Devices* (MUTCD), 2003 Edition, including Revision 1, U.S. Department of Transportation, Washington, DC, November 2004 (MUTCD, 2003).
- _____. *Simplified Guide to the Incident Command System for Transportation Professional*, U.S. Department of Transportation, Publication No. FHWA-HOP-06-004, Washington, DC, February 2006 (FHWA, 2006a).
- _____. *Using Highways During Notice Evacuations Operations: Routes to Effective Evacuation Planning Primer Series*, Report No. FHWA-HOP-06-109, U.S. Department of Transportation, Washington, DC, December 2006 (FHWA, 2006c) [Online]. Available: http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm (accessed January 2009).
- _____. *2010 Traffic Incident Management Handbook Update*, FHWA Publication No. HOP-10-013, U.S. Department of Transportation, Washington, DC, January 2010 (FHWA, 2010) [Online]. Available: http://ops.fhwa.dot.gov/eto_tim_pse/publications/timhandbook/toc.htm (accessed June 2010).
- _____. *Traffic Incident Response—Practices in Europe*, FHWA in association with the American Association of Highway and Transportation Officials (AASHTO), Publication No. FHWA-PL-06-002 HPIP/1-06(3.5)EW, February 2006 (FHWA, 2006b) [Online]. Available: http://www.international.fhwa.dot.gov/tir_eu06/index.cfm (accessed January 2009).
- Friedman, D., et al., *NCHRP Report 525: Surface Transportation Security, Volume 10: A Guide to Transportation's Role in Public Health Disasters*, TRB, Washington, DC, 2005 (NCHRP-10, 2005).
- Linkins, M., January 9, 2008, 70 Vehicle Crash on Interstate 4, Polk County (Florida) Fire Rescue, Bartow, FL, March 25, 2008 (Linkins, 2008).
- Lockwood, S., J. O'Laughlin, D. Keever, and K. Weiss, *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations*, TRB, Washington, DC, 2005 (NCHRP-6, 2005).
- National Emergency Management Association (NEMA), Lexington, KY, 2008 (NEMA, 2008) [Online]. Available: <http://www.nemaweb.org/> (accessed January 2009).
- National Unified Goal for Traffic Incident Management, National Traffic Incident Management Coalition, AASHTO, Washington, DC (NUG, 2009) [Online]. Available: <http://timcoalition.org> (accessed January 2009).
- O'Laughlin, J., C. A. Macaulay, and J. Schuh, *Supplemental Resource Guide to the National Incident Management System (NIMS) for Transportation Management Center Professionals*, I-95 Corridor Coalition, College Park, MD, August 2008 (I-95CC, 2008) [Online]. Available http://www.i95coalition.net/i95/Portals/0/Public_Files/pm/reports/I95CC%20NIMS%20Guide%20-%202011-3B.pdf
- Quick Clearance Toolkit, I-95 Corridor Coalition, College Park, MD, 2007 (I-95CC, 2007) [Online]. Available: <http://i95coalition.org/i95/Training/QuickClearanceWorkshop/tabid/188/Default.aspx> (accessed August 2009).
- Rollins, J., *Fusion Centers: Issues and Options for Congress*, Order Code RL34070, Congressional Research Service, Washington, DC, 2008 (Rollins, 2008).
- Wallace, C. E., A. Boyd, and J. Sergent, *Identification and Delineation of Incident Management and Large-Scale Emergency Response Functions*, a White Paper prepared for NCHRP Project 20-59(23), TRB, Washington, DC, January 2009 (Wallace, et al., 2009).

²⁴This document is being updated as of the 2010 Guide publication date.

- Wallace, C. E., and J. O'Laughlin, I-95 Corridor Coalition Coordinated Incident Management Program Track Toolkit for Quick Clearance, I-95 Corridor Coalition, College Park, MD, 2007 (I-95CC, 2009). Updated 2009 [Online]. Available <http://www.i95coalition.net/i95/Training/QuickClearanceWorkshop/tabid/188/Default.aspx>
- Wallace, C. E., S. Lockwood, and D. Yohanan, *National Needs Assessment for Ensuring Transportation Infrastructure Security (2009–2015)*, NCHRP Project 20-59(26), TRB, Washington, DC, August 2008 (NCHRP-26, 2008).

Other Resources

Department of Homeland Security Lessons Learned Information Sharing (LLIS) Web site and Newsletter: <https://www.llis.dhs.gov/index.do>. Qualified registration is required, but anyone involved in homeland security and/or emergency management, public or private sector, can qualify. (As of January 2009)

FEMA (Federal Emergency Management Agency) Daily Digest Bulletin, <http://www.fema.gov/emergency/nrf/>; select Briefings and Training, then select Briefings. To subscribe to receive e-mail bulletins, go to <http://www.fema.gov/help/getemail.shtml>, and then select Sign up via our free e-mail subscription service and enter your preferences. (As of January 2009)

Federal Highway Administration CD-ROM, Best of Public Safety and Emergency Transportation Operations (FHWA-JPO-08-037). To request a copy, send an e-mail to ITSPUBS@dot.gov. (As of February 2010)

Transportation Research Board Website, <http://www.trb.org/SecurityPubs>; download ancillary products that are companions to published documents, such as the appendices of this report and many of the TRB documents identified in the Bibliography. Also see TRB E-Newsletter Search, Transportation Research Board, Washington, DC, <http://www.trb.org/Publications/Public/PubsTRBENewsletter.aspx>. (As of January 2009)

A useful companion resource for this report is the **glossary and list of acronyms** in *NCHRP Report 525: Surface Transportation Security, Volume 14: Security 101: A Physical Security Primer for Transportation Agencies*, October 2009. Visit <http://www.TRB.org/SecurityPubs>, and search for the title.



SECTION 6

Resource Guide

Introduction

This part of the 2010 *Guide to Emergency Response Planning at State Transportation Agencies* (the 2010 Guide, the Guide) includes key resource issues primarily regarding surface (generally highway-based) transportation and provides more detailed guidance and samples of ER policies and practices. This material will be useful to those directly involved in ER planning and operations at all levels.

For ease of reference, the contents of this Section are:

- Organizational, Staffing, and Position Guidance.
- Decision-Making Sequences.
- Detailed Self-Assessment Tool that supplements Section 4, Develop an Emergency Preparedness Program.
- Purpose and Supporting Resources for Action Items reference matrix.

Organizational, Staffing, and Position Guidance

There is no standard, one-size-fits-all organization or staffing guide for state transportation agency emergency response planning process—and this 2010 Guide does not offer such guidance. It does, however, offer some guiding principles for state transportation agencies to consider as they establish their ER planning process and how an agency might position itself for preparation, response, and recovery.

One issue surrounding emergency response planning in the past has been the *closed-shop* nature of it—that specialists responsible for developing the Emergency Operations Plan (EOP) do ER planning, specialists who might not be expert in the transportation field itself. This is fine for the leadership of the ER planning staff—certainly, someone intimately knowledgeable in ER planning is key; however, transportation ER planning requires the domain expertise of individuals experienced in all facets of the transportation process and system as well. This is particularly true beyond the PLAN phase.

Accordingly, state transportation agencies will find the following guidelines helpful (note, emergency management [EM] and Traffic Incident Management [TIM] are closely aligned in this discussion).

Planning-Level Organizational Principles

The following apply to creating and conducting the emergency management planning process in the transportation agency, ensuring that the agency does the following:

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- Creates an EM Executive Committee or group that makes decisions regarding allocation of resources for emergency response policy and planning, staffing, resources, and interagency agreements and understandings.
- Thoroughly commits to the general concept of Emergency Transportation Operations (ETO) throughout the agency—headquarters and regional/district levels (*NCHRP Report 525, Volume 6*, 2005).
- Relies on a core emergency management team that has domain expertise in EM/ER. This might be one person (called the state transportation agency Emergency Planning Coordinator [EPC] herein) or a small group, depending on the level of activity in both State EOP development and agency EOP development. The leader of this team should report to an individual (position) as high in the organization as possible, given the culture of the organization. This person/group should work closely with the State Emergency Management Agency (SEMA) State National Incident Management System (NIMS) Coordinator to ensure NIMS compliance within the agency.
- At a minimum, the broader EM Team should include representatives from the following divisions:
 - Planning—to ensure that infrastructure planning considers EM (and TIM) operations in the high-level investment process.
 - Design—to ensure that infrastructure and operations support designs, such as intelligent transportation systems (ITS), fully account for the needs of EM/ER and TIM.
 - Construction and Maintenance—to ensure that appropriate attention is given to ER/TIM requirements during construction and major maintenance activities, including the use of ITS to support TIM and ER in work zones.
 - Operations—to ensure that TIM and ER are high-priority functions in all aspects of highway and transit operations.
 - The Traffic/Transportation Incident Management Organization (also called TIM Team)—whether separate or an integral part of Operations (or other), to form a seamless process that transitions from managing routine traffic incidents into the appropriate response level for major incidents, disasters, and catastrophes.
 - Administration—particularly emergency procurement personnel, to be able to issue emergency contracts or other instruments to facilitate restoring infrastructure and other transportation services.
 - Liaisons to/from major stakeholder partners—to ensure full exercise of the 4-Cs (communication, cooperation, coordination, and consensus) among agencies. If the region has multi-agency TIM Teams, then expand these to include EM.

PREPARE for Emergencies

The foregoing organizational principles apply here as well, but in addition, the agency should ensure that a full complement of training and exercises is developed and undertaken.

It is particularly important to test notification channels, including back-ups, if the primary channel becomes inoperative. The following are examples of areas of the country that have regional incident alert networks in place:

- GCM (Gary-Chicago-Milwaukee) ITS Corridor encompasses Interstates 55, 57, 90, 94, 290, and 355 in this tri-city corridor;
- STIX (Southern Traffic Incident eXchange) covers Florida, Georgia, and the Carolinas; and
- TRANSCOM primarily covers the New York, New Jersey, and Connecticut metropolitan region, but notifications extend as far south as Northern North Carolina.

EOPs should include such networks if available in the region.

Similarly, there should be open communications among Transportation Management Centers (TMCs), Emergency Operations Centers (EOCs), Fusion Centers (FCs), and other responder agencies.

None of this, however, has any further direct impact on organization and staffing.

RESPOND to Emergencies

When emergencies occur, the EM/TIM Teams discussed previously go into action. Depending on the level of incident, EOCs may be activated, and state transportation agency personnel assigned to them will relocate to the facility.

The only additional organizational suggestion made is that the state transportation agency should adopt a practice used in the military and by many public safety agencies—have a standing, rotating Emergency Duty Officer (EDO) who is available 24/7 and whose contact information is known to TMCs, EOCs, and FCs, as well as to public safety dispatch centers. Designate an EDO at both the state (central office) level and local/regional (e.g., district) levels; the EDO would be able to quickly launch all needed notifications within the transportation agency, depending on the nature and severity of the incident. This practice is probably most effective when the EDO is a leader of the EM Team at the state level, and someone associated with a TMC if local/regional.

RECOVER from Emergencies

There are no special organizational or staffing needs associated with this phase. Of course, if restoring transportation services will be required, the EM Team must be fully conversant with the emergency power available to the agency in terms of issuing emergency contracts, task orders, and modifications to contractors to perform needed services.

Decision-Making Sequences

In emergencies there are literally thousands of decisions that might need to be made by everyone from the individual responder, up through the ranks to the Incident Commander (IC), and even higher. These decisions have to do with protective or rescue actions by the responder at the immediate level to decisions regarding such major issues as allocation of resources, activation of EOCs and similar facilities, calling out special forces such as the National Guard, and activating contraflow operations.

The former are issues of good TIM/EM practices and training, but the EOPs should cover the latter, at least in terms of designation of authorities. The key is speed—decisions must be made quickly and competently. While all possibilities are impossible to foresee—as we found out on 9/11—the mechanisms for decision making should be clearly laid out so there is no question as to who has the authority to act. FEMA’s Comprehensive Preparedness Guide (CPG 101) to Producing Emergency Plans, in the second sentence of the text, reads, “[CPG 101] promotes a common understanding of the fundamentals of planning and decision making to help emergency planners examine a hazard and produce integrated, coordinated, and synchronized plans” (emphasis added) (CPG 101, 2009). This aspect is repeated throughout the document, and it stresses that the EOP needs to identify decision points. These can be guided by this excerpt from the document:

A response action is correctly identified when planners can answer the following questions about it:

- What is the action?
- Who does it?

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- When do they do it?
- How long does it take/how much time is actually available to do it?
- What has to happen before it?
- What happens after it?
- What resources does it need?

All of these are decisions that someone must make and the EOP should point to the appropriate authority—explicitly by positions or even names.

Much can be learned after an incident (or even an exercise) by answering these questions (again from CPG 101):

- Did an action, a process, a decision, or the response timing identified in the plan make the situation worse or better?
- Were new alternate courses of action identified?
- What aspects of the action, process, decision, or response timing make it something to keep in the plan?
- What aspects of the action, process, decision, or response timing make it something to avoid or remove from the plan?
- What specific changes to plans and procedures, personnel, organizational structures, leadership or management processes, facilities, or equipment can improve response performance?

While these questions speak more about the plan than decisions per se, decisions made the actions successful—or not.

As *NCHRP Report 525: Surface Transportation Security, Volume 6: Guide for Emergency Transportation Operations* stresses:

Executive-level support is crucial to the development of a more formal program approach and to ensure that the responsibilities and resources are mobilized and targeted. Raising what is now a part-time, fragmented set of responsibilities to the level of a resourced, managed program must overcome bureaucratic traditions and inertia, compete for resources, support new approaches, and forge new external relationships. These challenges require top executive leadership—starting at the policy level in agency headquarters and executed under the responsibility of the district and regional management levels. Such executive initiative and oversight is essential to ensure:

- Fostering of an interagency focus on the complete array of incidents and emergencies;
- Establishment of a formal program with senior responsibility, organization, and reporting;
- Allocation of adequate resources;
- Establishment of objectives with related performance measures and accountability; and
- Development of agency policy, laws, regulations, and interagency agreements.

In short, emergency management is for everyone in leadership positions in the state transportation agency, not just those bearing titles alluding to emergency management responsibilities.

Detailed Self-Assessment Tools

The more detailed agency self-assessment for state transportation agencies is contained in the first of two matrices—the full emergency response matrix. The second matrix, purpose and supporting resources for action reference, is a compressed version of the first and is a useful reference tool.

Full Emergency Response Matrix

The term requirements is used in a figurative sense, not literal; these are not absolute requirements; rather, they are guidelines. The exception is that NIMS requirements are mandatory for agencies (both state and local level) that wish to receive FEMA compensation from DHS.

The matrix follows the Plan-Prepare-Respond-Recover regimen discussed previously in Section 4, Develop an Emergency Preparedness Program. In the way of explanation, the following columns make up the matrix:

- **Steps** are the major sequence of activities that complete the Plan-Prepare-Respond-Recover process.

- **Phases** are the Plan-Prepare-Respond-Recover processes named and numbered sequentially for ease of reference.
- **Action Item(s)** are the significant activities the state transportation agency would take for each phase. Ideally, each one of these should be an objective of any state agency's EOP.
- **Supporting Actions** are the one-to-many separate activities that the state transportation agency would undertake to achieve success for each phase. While ideally all of these are desirable, it is unlikely that most agencies will be able to accomplish each one. At a minimum, however, those identified by (* ____ *) are NIMS requirements and are of high priority. Those identified by (** ____ **) are suggested by the National Unified Goal (NUG) for Traffic Incident Management (TIM), promulgated by the National Traffic Incident Management Coalition (NTIMC), and are highly desirable. The rest are important, but an agency would need to assess how much of its resources it can afford to expend to achieve them.
- **Status** provides space to record the state transportation agency's current actions, indicating not started, in progress, or completed. The Full Response Requirements Matrix, formatted as a spreadsheet, includes these categories.

The following is an overview of the four steps in Table 8, Full Emergency Response Requirements Matrix:

Plan

- Form a collaborative planning team.
- Conduct research and analyze the data.
- Determine goals and objectives.
- Develop and analyze courses of action and identify resources.
- Write the plan.
- Approve and implement the plan.
- Exercise the plan and evaluate its effectiveness.
- Review, revise, and maintain the plan.

Prepare

- Develop approaches to implement state transportation agency roles and responsibilities during emergencies, as specified in the State EOP (SEOP) and supporting annexes and referenced materials.
- Establish protocols to communicate with employees and the general public.
- Develop plans and procedures to manage traffic under emergency conditions.
- Develop mobilization plans to ensure readiness to deploy state transportation agency personnel and resources.
- Ensure cost tracking and accountability.

Respond

- Initiate emergency response.
- Address emergency needs and requests for support.
- Manage evacuation/shelter-in-place/quarantine.
- Implement emergency response actions.
- Continue response.
- Conclude response.

Recover

- Restore traffic to affected area.
- Identify and implement lessons learned.

Note that the applicability of these *requirements* is primarily directed at the agency's own EOP. Each agency will have to determine to what extent similar actions are included in the state transportation agency's component(s) of the State EOP (SEOP). Ideally, the SEOP should include the full resources and capabilities of the state transportation agency in particular, and the transportation community in general.

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Table 8. Full Emergency Response Matrix.

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
1. Form a collaborative planning team.	PLAN-01	Identify and designate lead Emergency Planning Coordinator and team for the state transportation agency.	<ul style="list-style-type: none"> 1.1. Select an Emergency Planning Coordinator (EPC) for the agency and supporting team members. 1.2. The size of the planning team will depend on the scope of the agency's operations, requirements, and resources. <ul style="list-style-type: none"> • The planning team should be of sufficient size to encourage participation and investment in the process. • Design the planning team to enhance the visibility and stature of the planning process and to provide a broad perspective on the issues. • The planning team should include active members and advisory members. • In most cases, a small group (5 to 7 people) will do the bulk of the work; however, identify other members to review planning documents, coordinate input, identify resources and needs, and assess outcomes. • Structure the planning group to receive input from all agency functional areas. 			
	PLAN-02	Establish authority.	<ul style="list-style-type: none"> 2.1. Demonstrate management's commitment and promote an atmosphere of cooperation by <i>authorizing</i> the state transportation agency EPC and planning team to take the steps necessary to develop/update the agency's emergency plans and response program. 2.2. Executive management should strongly support EPC's participation in the State Emergency Operations Plan (EOP) process and define authority. 2.3. Establish a clear line of authority between team members and the agency Emergency Planning Coordinator. 2.4. Upper management should appoint participants, in writing, to the planning group. Participant job descriptions could also reflect this assignment. 			
	PLAN-03	Issue a Mission Statement.	<ul style="list-style-type: none"> 3.1. The agency Chief Executive Officer should issue a mission and vision statement to demonstrate a commitment to emergency planning. 3.2. The statement should <ul style="list-style-type: none"> • Define the scope of activities to be performed by the emergency management coordinator and planning team. • Identify the agency's high-level goals for the emergency planning process. • Identify the documents and/or programs the agency emergency planning team is to develop. • Indicate that creation of these documents and programs will involve the entire organization. • Define the authority and structure of the planning group. 			
	PLAN-04	Establish a schedule and budget.	<ul style="list-style-type: none"> 4.1. Emergency Management Team should define specific goals and objectives of the emergency management process and performance metrics. 4.2. Establish a work schedule and planning deadlines. Modify timelines as priorities are more clearly defined. 4.3. Develop an initial budget for such things as research, printing, seminars, consulting services, and other expenses that may be necessary during the development process. 			
2. Conduct research and analyze data.	PLAN-05	Identify documents to be developed, reviewed, approved, and/or updated regarding the state transportation agency's emergency response plans and programs.	<ul style="list-style-type: none"> 5.1. The agency emergency planning process should begin with the State Emergency Operations Plan (SEOP) and the functional annexes and hazard-specific appendices. 5.2. The State EOP may be supported by specific plans, procedures or other documents developed by the state transportation agency and/or other agencies to support implementation of the SEOP, including the following: <ul style="list-style-type: none"> • **Overview and Primers** provide a brief concept summary of a function, team, or capability.** • **Standard Operating Procedures (SOPs) or Operations Manuals** provide a complete reference document, detailing the procedures for performing a single function (SOP) or a number of interdependent functions (Operations Manual).** • **Field Operations Guides (FOGs) or Handbooks** provide durable pocket or desk guides, containing essential basic information needed to perform specific assignments or functions. • **Job Aids** include checklists or other aids useful in performing or training for a specific job to be performed in the EOP. 			

Table 8. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Conduct research and analyze data (continued).	PLAN-06	Work with the State National Incident Management System (NIMS) Coordinator to identify state transportation agency requirements for addressing statewide NIMS implementation.	5.3. Other plans may be available for agency review, including <ul style="list-style-type: none"> • **State or agency Continuity of Operations Plan (COOP).** • State or agency Continuity of Government Plan (COG). • State or agency Critical Infrastructure/Key Resources (CI/KR) Protection Plans. • State or agency Pandemic Flu Plan. • Agency Transportation/Traffic Incident Management Plans. • Agency Emergency Response Plans and Hazard-Specific **Response Plans (i.e., snow/ice, hurricane, and responses like contraflow operations).** 			
			6.1. **Meet with the state's NIMS Coordinator to establish a working relationship for addressing NIMS compliance issues**. 6.2. **Determine if the agency should have a NIMS coordinator. If so, and if one has not already been assigned, determine whether the agency Emergency Planning Coordinator should assume this role.** 6.3. **Receive and review a copy of the State's NIMS Implementation Plan.** 6.4. **Obtain from the state's NIMS Coordinator a clear list of NIMS requirements being addressed by the state and any outstanding Corrective Action Plans (CAPs) filed with FEMA that may relate to the agency.** 6.5. *Ensure that state adoption of NIMS through executive order, proclamation, resolution, or legislation applies to the transportation agency and that no additional action is required by the agency to formally adopt NIMS.** 6.6. *Determine how the state has established its NIMS compliance baseline against the FY05 and FY06 NIMS implementation requirements and the specific actions required for the agency in FY 2007 through FY 2009. * 6.7. *Determine any specific NIMS training requirements applicable for the transportation agency and obtain the status of the department in meeting these requirements. * 6.8. *Determine whether the state is implementing NIMS resource typing protocols for the inventory and tracking of transportation-related resources and what actions the agency should perform to ensure incorporation of these protocols into its planning activities. * 6.9. *If not already occurring, determine if monthly or quarterly meetings should be conducted with the state's NIMS Coordinator to ensure full implementation of NIMS in all transportation agency planning, training, and drilling activities. *			
	PLAN-07	Review State EOP and supporting annexes and appendices and other documents for transportation-related activities.	7.1. Ensure documents accurately reflect transportation-related resources and authorities. 7.2. Ensure the SEOP clearly defines leadership roles and responsibilities for transportation-related issues and clearly articulates the decisions that need to be made, who will make them, when they will be made, and to whom they should be disseminated. 7.3. Ensure the SEOP facilitates response and short-term recovery activities required from a transportation perspective. 7.4. Ensure the SEOP includes strategies for both no-notice and forewarned evacuations, with particular considerations for assisting vulnerable (e.g., mobility disabled/disadvantaged) populations and for dealing with animal populations. 7.5. Verify that specific procedures and protocols have been developed to augment the SEOP to guide rapid implementation of transportation requirements—both to provide the emergency services needed by the population in general and for the transportation department(s) itself. 7.6. Verify that the situations and assumptions identified in the State EOP are appropriate from a transportation perspective. 7.7. Verify that the concept of operations in the State EOP adequately addresses transportation roles, responsibilities, capabilities, and concerns. 7.8. Verify that the organization and assignment of responsibilities in the State EOP and supporting annexes and appendices is adequate for transportation-related activities.			

(continued on next page)

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Table 8. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Conduct research and analyze data (continued).			<p>7.9. Verify that administration, communications, and logistics sections of the SEOP accurately reflect transportation general support requirements and availability of support services from other agencies, including general policies for managing resources and activating mutual-aid agreements, liability provisions, and policies for reassigning public employees and soliciting and using volunteers. Also, make sure that general policies on financial record keeping, tracking resources, and compensation of private property owners are appropriate for the agency.</p> <p>7.10. Verify that the State EOP contains authorities and references appropriate for transportation response, including any laws, statutes, ordinances, executive orders, regulations, policies, and formal agreements relevant to providing transportation during emergencies.</p> <p>7.11. Verify that coordination processes are in place to share information and any necessary command and control with the regional Transportation Management Center (TMC), if present.</p> <p>7.12. Verify that coordination processes are in place to share information with the regional Intelligence Fusion Center (FC), if present.</p> <p>7.13. Verify that the functional annexes and hazard-specific appendices identify activities to be performed by all agencies and organizations with responsibilities under transportation functions. Functional annexes also should clearly define actions before, during, and after an emergency event. Hazard-specific appendices should identify specific transportation activities to take in unique circumstances beyond the basic approach detailed in the State EOP.</p> <p>7.14. Verify that transportation terms are included and correctly defined in the State EOP glossary.</p> <p>7.15. Verify that the SEOP pre-designates transportation representatives to the State Emergency Operations Center (SEOC)/Multiagency Coordination System (MACS).</p> <p>7.16. Verify that the State EOP includes pre-incident and post-incident public awareness, education, and communications plans and protocols related to transportation.</p> <p>7.17. Verify that the State EOP includes local post-incident debriefings and after-action reporting (see federal coordination later).</p> <p>7.18. Verify that the State EOP includes provisions for notifying regional and national authorities if the event would not ordinarily rise to the level of a major disaster in itself, but could have widespread indirect impacts (e.g., a traffic incident that creates congestion sufficient to delay airline crews from reaching a major airport, thus widely disrupting flight schedules).</p>			
	PLAN-08	Review relevant hazards likely to result in an <i>emergency</i> requiring activation of the State Emergency Operations Center.	<p>8.1. Determine if the hazards identified in the State EOP are appropriate and complete from a transportation perspective.</p> <p>8.2. Ensure that the SEOP addresses all hazards that the state may reasonably expect to occur and all the preparedness and incident management activities necessary to ensure an effective response to those hazards from a transportation perspective.</p> <p>8.3. Determine if the SEOP clearly indicates which types of hazards would likely require mobility restriction measures (shelter-in-place/quarantine) as part of the response (e.g., earthquake, pandemic flu) and which ones would require enhanced mobility (evacuation) (e.g., hurricanes).</p> <p>8.4. Determine if the hazard-specific annexes adequately address the transportation-related aspects of the identified hazards or additional elements should be considered to address the hazard.</p> <p>8.5. Ensure that pipelines, viaducts, etc., are included in the EOP.</p> <p>8.6. NOTE: Hazard maps are available in compilations of hazard information made by FEMA and state emergency management agencies, the U.S. Geological Survey (USGS) and state geological surveys, and the National Weather Service (NWS)</p>			

Table 8. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Conduct research and analyze data (continued).	PLAN-09	<p>Gather information regarding vulnerable populations.</p> <p>Note: Vulnerable populations typically include individuals with disabilities, children, senior citizens, pregnant women, people with pets, low-income, transit-dependent, hospitalized and institutionalized (including incarcerated persons); those with limited English proficiency or who are non-English speaking; individuals lacking transportation; those with chronic medical disorders; and people with pharmacological dependency.</p>	<p>and its local offices. Maps from the Federal Insurance Administration (FIA), maps of 10- and 50-mile emergency planning zones (EPZs) around nuclear power plants, and any maps of hazardous materials (HAZMAT) sites prepared by Local Emergency Planning Committees (LEPCs) may also be useful.</p> <p>9.1. Identify issues and requirements associated with vulnerable populations.</p> <p>9.2. Identify potential assets to deploy for these populations in an emergency, as needed, and have contact information readily available.</p> <p>9.3. Identify appropriate destinations for evacuation or restriction measures (shelter-in-place/quarantine) for vulnerable populations and have contact information readily available, or a path to locate such facilities.</p>			
	PLAN-10	<p>Determine status of state transportation agency emergency planning activities to date and identify areas in need of improvement.</p>	<p>10.1. Has the agency completed procedures regarding how to work with the state to request federal assistance?</p> <p>10.2. Does the agency have written procedures on how to secure assistance through mutual-aid agreements that may exist?</p> <p>10.3. Does the agency have established orders of succession or a COOP plan?</p> <p>10.4. Does the agency have established, documented procedures for tracking action items and mission assignments?</p> <p>10.5. Does the agency have established, documented procedures for requesting and tracking requests for resources?</p> <p>10.6. Does the agency have established, documented procedures for participating in the SEOC, to include levels of activation based on the event(s) in progress?</p> <p>10.7. Are there written processes for administrative functions that agency representatives may perform within the EOC, such as computer protocols, e-mail conventions, telephone use, security, logging hours, and reporting procedures?</p> <p>10.8. Does the agency have documented procedures for tracking expenditures?</p> <p>10.9. Are there written procedures for involving and orienting private-sector interests that may be participating in emergency activities managed by the agency?</p> <p>10.10. Are there written procedures for involving and orienting volunteers and volunteer organizations participating in emergency activities if managed by the agency?</p> <p>10.11. Do written agency procedures comply with legal statutes for risk-based, hazard-specific programs that require them to accept, or to the contrary reject, volunteers (e.g., volunteer fire fighters who are not on duty and/or properly attired and equipped)?</p>			

(continued on next page)

110 A Guide to Emergency Response Planning at State Transportation Agencies**Table 8. (Continued).**

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Conduct research and analyze data (continued).			10.12. Are there written agency procedures for communicating timely and accurate information to the public? 10.13. Are there written agency procedures for issuing public warnings via sirens, Emergency Advisory System (EAS), and/or other warning mechanisms? 10.14. Do agency procedures identify coordination points with other operational agencies, teams, or sections? 10.15. Has the agency developed overview documents outlining qualifications of their personnel? 10.16. Has the agency developed overview documents that describe general tasks and responsibilities and hazard-specific tasks and responsibilities? 10.17. Has the agency developed procedures that translate tasking into specific actions that describe how the organization will accomplish assigned tasks? 10.18. Does the agency have or use one or more of the following: <ul style="list-style-type: none"> • **Checklists?** • **Resource listings?** • **Related maps and charts?** • **Other pertinent data?** 10.19. Does the agency address: <ul style="list-style-type: none"> • **Notification mechanisms?** • **Staff/ing of positions three levels deep?** 10.20. Does the agency identify components in field operating manuals or desk handbooks for support personnel unfamiliar with this jurisdiction's emergency operations? 10.21. Has the agency developed checklists and/or job aids to assist personnel to complete their tasks? 10.22. Does the agency have documented procedures for rapid needs assessment and coordinating with the federal damage assessment teams after an event? 10.23. Does the agency have documented procedures for requesting post disaster assistance from the federal government, including public assistance and individual assistance from FEMA? 10.24. Does the agency have documented procedures in place to coordinate the distribution of mass prophylaxis, such as the National Strategic Stockpile, if applicable? 10.25. Does the agency have documented procedures in place to support evacuations (including contraflow operations if appropriate) or shelter-in-place/quarantine and mass care, if applicable? 10.26. Does the agency have documented procedures to support the management of casualties and mass fatalities, including animals?			
	PLAN-11	Define response issues, roles, and tasks by reviewing the Universal Task List (UTL), Target Capabilities List (TCL), Resource Typing List, and the National Planning Scenarios (NPS).	11.1. Ensure coordination with DHS and FEMA guidance.			
	PLAN-12	Based on activities identified in the State EOP and supporting annexes and appendices, develop/update the state transportation agency's Transportation	12.1. *Update organization charts and determine if specific teams, groups, committees, and/or temporary organizations will be used to manage agency responses to emergencies identified in the State EOP.* 12.2. *Be sure to review agency TIM Plans and Protocols and specific emergency response plans to identify incident management structures currently used.* 12.3. *Identify and train agency field personnel in charge of on-scene response to coordinate with the ICS established by the local or state emergency response agencies on-scene. Points of			

Table 8. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Conduct research and analyze data (continued).		Incident Management Organization to ensure all activities conducted conform to NIMS and National Response Framework (NRF) requirements.	<p>interface with the ICS established by local/state agencies may include*</p> <ul style="list-style-type: none"> • **Incident Command Posts (ICPs) and staging areas, for reporting and resource management.** • **ICS and Unified Command or even Area Command (if needed) to guide incident action planning.** • **State, local, and private-sector EOCs.** • **Coordination with TMC and/or FCs.** • **Participation in Joint Information Center (JIC) to manage public information.** • **Participation in a Joint Field Office (JFO) to coordinate federal response and resources.** • **Possible coordination with Regional Response Coordination Center (RRCC) and Homeland Security Operations Center (HSOC) in events of national significance.** <p>12.4. **Consider preparing an overview document/primer and a FOG on the agency's Incident Management Organization, including how this organization may change depending on the type of emergency being managed.**</p>			
3. Determine goals and objectives.	PLAN-13	Establish operational priorities, response goals, and intermediate objectives for the state transportation agency in response to the hazards identified and the existing State EOP and supporting documents, as well as new challenges identified during the analysis process.	13.1. Clarify what constitutes <i>success</i> regarding the agency's response to the range of emergencies that could occur resulting from the hazards identified for the state.			
4. Develop and analyze courses of action and identify resources.	PLAN-14	Use scenario-based, functional, and capabilities-based planning to depict how the state transportation agency's response to a range of emergency situations may unfold.	14.1. Use a formal process for building relationships among the occurrence of hazards, decision points, and response actions.			
	PLAN-15	Identify the resources needed to support the state transportation agency's response activities.	15.1. Ensure that adequate resources are available.			
5. Write the plan.	PLAN-16	Develop and/or update transportation-related components of the State EOP, functional annexes, and hazard-specific appendices.	<p>16.1. Complete state transportation planning inputs and deliverables for the State EOP and supporting documents.</p> <p>16.2. Establish expectations regarding transportation functions during the range of potential incidents addressed in the State EOP.</p> <p>16.3. Develop/update transportation-related components of the State SOP, the functional annexes to the State EOP, and the hazard-specific appendices to the State EOP.</p> <p>16.4. Ensure that agency liaisons are available to support the SEOC *and, if applicable, the county/municipal EOCs, TMC(s), and/or FC(s) during a state-declared emergency.*</p>			

(continued on next page)

112 A Guide to Emergency Response Planning at State Transportation Agencies**Table 8. (Continued).**

STEPS	PHASE: PLAN	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Com-pleted
5. Write the plan (continued).	PLAN-17	Develop supporting materials, including any specific plans, guidance, overviews documents, SOPs, operating manuals, FOGs, handbooks, and job aids needed to support state transportation agency personnel capabilities to respond to emergencies.	<ul style="list-style-type: none"> 17.1. Ensure that sufficient materials exist to support the training and response activities of agency personnel during emergencies. 17.2. Identify needed agency plans or documents to be developed, including any agency-specific emergency response plans, COOP/COG plans, etc. 17.3. Develop SOPs detailing the procedures for performing individual functions identified in the transportation-related component of the State EOP and Hazard-Specific Annexes. 17.4. If applicable, develop an Operations Manual detailing the performance of a number of interdependent functions specified in the transportation-related elements of the State EOP. 17.5. Develop a FOG or Handbook, such as a durable pocket or desk guide, containing essential basic information needed to perform specific assignments or functions as specified in the transportation-related elements of the State EOP. 17.6. Develop Job Aids to provide detailed checklists or other aids for job performance or job training regarding the transportation-related elements specified in the State EOP and Hazard-Specific Annexes. 17.7. Develop criteria for the reporting, and (particularly) verification of a potential incident by motorists or citizens, even from specially trained individuals, such those involved in <i>road watch</i>, <i>first observer</i>, <i>transit watch</i>, <i>volunteer spotter</i>, and other probe programs (including transit vehicle operators). 			
6. Approve and implement the plan.	PLAN-18	Formally approve and implement the transportation-related provisions of the State and transportation agency EOPs and supporting annexes and agency-specific supporting materials.	<ul style="list-style-type: none"> 18.1. Ensure adoption of the plan and supporting materials. 			
7. Exercise the plan and evaluate its effectiveness.	PLAN-19	Develop a coordinated program of training, drills, and exercises.	<ul style="list-style-type: none"> 19.1. Ensure state transportation agency personnel are trained in how to respond to emergencies. 			
8. Review, revise, and maintain the plan.	PLAN-20	Establish an ongoing review and assessment process for the transportation-related elements of the state and state transportation agency EOPs and supporting materials.	<ul style="list-style-type: none"> 20.1. Ensure that the agency plans, procedures, and supporting materials include the latest information. 20.2. Design periodic exercises to test, even stress, established processes to identify needed improvements. 			

Table 8. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
1. Develop approaches for implementing state transportation agency roles and responsibilities during emergencies, as specified in the State EOP and supporting annexes and references.	PREPARE-01	Establish protocols for heightened Homeland Security Advisory System (HSAS) threat levels.	1.1. Clarify the threat warning and notification system to be used by the state transportation agency. 1.2. Identify specific actions that the agency will take for each level in the HSAS. 1.3. Where possible, coordinate the activities identified for each level of the HSAS with the transportation-related activities identified in state's basic Emergency Operations Plan and the Hazard-Specific Annexes.			
	PREPARE-02	Develop a Memorandum of Understanding/Agreement (MOU/A) with other local and state agencies regarding the transportation-related elements specified in the State and Regional EOPs.	2.1. *Promote intrastate and interagency mutual-aid agreements (to include agreements with private and nongovernmental organizations). 2.2. *Develop Mutual-Aid Agreements and notification/information sharing protocols with local/regional and state partners regarding the transportation-related elements specified in the State EOP. 2.3. *Use the state/territory response asset inventory for Intra- and Interstate Mutual Aid [such as Emergency Management Assistance Compact (EMAC)] requests, exercises, and actual events. 2.4. *Build relationships with local, regional, State, and Federal Emergency Management Agencies (EMAs), Emergency Operation Centers, Emergency Planning Committees, Emergency Response Commissions, TMCs, Fusion Centers, and Public Health and Agricultural organizations.* 2.5. *Define key terms, roles and responsibilities of individuals, and contact information.* 2.6. *Include procedures for requesting and providing assistance.* 2.8. *Include procedures, authorities, and rules for payment, reimbursement, and allocation of costs.* 2.9. *Include notification procedures and protocols for interoperable communications.* 2.10. *Explain relationships with other agreements among jurisdictions.* 2.11. *Address workers' compensation and treatment of liability and immunity.* 2.12. *Provide for recognition of qualifications and certifications. 2.13. *Share agreements, as required.* 2.14. *Review, support, and adopt FEMA's ongoing efforts to develop a national credentialing system.* 2.15. *Expand mutual aid agreements beyond support services and equipment to include information sharing and interagency decision making.* 2.16. *Establish MOUs with the owners of electrical power transmission trunk lines, pipelines, viaducts, etc., for monitoring of these facilities and include in the EOP appropriate responses to damage to them.*			
	PREPARE-03	Develop an approach to provide state transportation agency critical services during emergencies.	3.1. **Establish a common understanding with community, state, and federal jurisdictions of the capabilities and distinct types of emergency response equipment available. 3.2. **Develop an agency Continuity of Operations Plan (COOP).** 3.3. **Develop an agency Continuity of Government Plan (COG).** 3.4. **Acquire or pre-identify key equipment and supplies specified in the COOP.** 3.5. **Identify response resources and develop an asset inventory conforming to NIMS resource typing standards, including DHS standards as identified by the National Integration Center (NIC). When feasible, propose modification or new resource definitions to the NIC for inclusion in the resource typing effort.** 3.6. **Identify and have strategies to obtain and deploy major equipment, supplies, facilities, and systems in sufficient quantities to perform assigned missions and tasks. 3.7. **Implement an effective logistics system to mobilize, track, use, sustain, and demobilize physical and human resources. The system must support both the residents in need and the teams that are responding to the incident.** 3.8. **Develop Personnel Resource Lists identifying appropriate personnel available to support various incident types. Include contractor personnel.**			

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Table 8. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
1. Develop approaches for implementing state transportation agency roles and responsibilities during emergencies, as specified in the State EOP and supporting annexes and references (continued).	PREPARE-04	Develop a state transportation agency approach to evacuation/shelter-in-place/quarantine management.	<p>3.9. **Develop Equipment/Materials Resource Lists identifying equipment and materials needed and available for various incident types. Include contractor resources.**</p> <p>3.10. **To the extent permissible by state and local law, ensure relevant national standards and guidance to achieve equipment, communications, and data interoperability are incorporated into state and local acquisition programs.**</p> <p>3.11. **Share these lists with appropriate local, state, and regional EMAs.**</p> <p>3.12. **Develop extended/emergency staffing plans, including the suspension of vacation and leave and overtime/compensatory time provisions as warranted.**</p> <p>4.1. Convene stakeholders to develop and revise evacuation/shelter-in-place/quarantine plans. Include practitioners with past experience.</p> <p>4.2. Identify goals and objectives, and guidelines for plan evaluation and updating.</p> <p>4.3. Identify ultimate decisionmakers, Incident Commanders, organizations, and those with authority and responsibility for evacuation/shelter-in-place/quarantine, by position, and ensure their tasks have been pre-defined.</p> <p>4.4. Identify the roles and responsibilities of government agencies, including transportation and public safety, and how these agencies coordinate their efforts with each other.</p> <p>4.5. Identify variations in direction and control for different types of events that require evacuation/sheltering-in-place/quarantine.</p> <p>4.6. Perform practice exercises (at least tabletop) to test the plan to evacuate/shelter-in-place/quarantine vulnerable populations.</p> <p>4.7. Identify the number and location of people and vehicles to be evacuated, sheltered-in-place, or quarantined.</p> <p>4.8. Identify primary and secondary evacuation/shelter-in-place/quarantine routes based on probability and feasibility of use, survivability, ease of restoration, functional service, and strategic location.</p> <p>4.9. Identify agencies and personnel who will report to the EOC and how they will be notified to report.</p> <p>4.10. Address shelters and in-place provisions.</p> <p>4.11. Document decision criteria to be monitored and evaluated prior to issuing an evacuation/shelter-in-place/quarantine order.</p> <p>4.12. Identify how and when to communicate the evacuation/shelter-in-place/quarantine order to the emergency management community and to the public.</p> <p>4.13. Define specific criteria for voluntary, recommended, or mandatory evacuation/shelter-in-place/quarantine.</p> <p>4.14. Include pre-approved drafts of executive orders for evacuation/shelter-in-place/quarantine.</p> <p>4.15. Describe the time phasing of evacuation/shelter-in-place/quarantine execution (i.e., sequential and concurrent activities) for different levels of response.</p> <p>4.16. Account for communicating with limited English-speaking individuals and people with special needs (i.e., hearing, physical, mental, or vision impairments).</p> <p>4.17. Address the use of public transit vehicles, school buses paratransit, trains and other publicly or privately owned vehicles that could be used during the evacuation/shelter-in-place/quarantine. (NOTE: hereinafter all of these vehicles are generically referred to as <i>transit vehicles</i>.)</p> <p>4.18. Designate routes and locations for ingress traffic and pre-staged equipment materiel and personnel along the evacuation/shelter-in-place/quarantine routes, including fuel and personal relief facilities.</p> <p>4.19. **Include a strategy for restricting and securing access to evacuated, sheltered-in-place, or quarantined areas.**</p>			

Table 8. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Establish protocols to communicate with employees and the general public.	PREPARE-05	Establish internal state transportation agency communications protocols.	<p>5.1. Evaluate the use of radio channels, frequencies, trunked radio systems, and cellular phones during events likely to result in emergencies requiring activation of the State EOC.</p> <p>5.2. Establish predetermined frequency assignments, lists of agency channel access, and interagency communication protocols.</p> <p>5.3. Determine how agencies and specific traffic management team personnel will communicate with each other in the field and on what channels.</p> <p>5.4. Coordinate and support emergency incident and event management through development and use of integrated multi-agency coordination systems.</p> <p>5.5. Develop and maintain connectivity capability between local Incident Command Posts, local 9-1-1 centers, local EOCs, the State EOC, and regional and federal EOCs and NRF organizational elements.</p> <p>5.6. Develop systems, tools, and processes to present consistent and accurate information to incident managers at all levels.</p> <p>5.7. Specify agency and interagency contact information.</p> <p>5.8. Establish calling trees and notification systems, including 24/7 event notification protocols.</p> <p>5.9. Prepare an employee communication strategy, including emergency communication systems and materials for distribution in advance of events.</p> <p>5.10. Incident response communications (during exercises and actual incidents) should feature plain language commands so they can function in a multi-jurisdiction environment. Revise field manuals and training to reflect the plain language standard.</p> <p>5.11. Identify single points of contacts, with back-ups, in all jurisdictions and agencies for communications, including the protocols for which to contact under what conditions.</p> <p>5.12. Identify when to notify individuals to be evacuated/sheltered-in-place/quarantined prior to executing the order.</p> <p>5.13. Identify contingency plans for use if normal means of communication fail or are unavailable.</p> <p>5.14. Include provisions for keeping the public informed of the estimated travel times to safe haven under current and forecast conditions.</p> <p>5.15. Identify who must be informed to begin opening shelters.</p> <p>5.16. Identify specific contingency plans to be used if conditions change during the course of the evacuation/shelter-in-place/quarantine.</p> <p>5.17. Institutionalize, within the framework of ICS, the Public Information System comprising the Joint Information System (JIS) and a Joint Information Center (JIC). The Public Information System will ensure an organized, integrated, and coordinated mechanism to perform critical emergency information, crisis communications, and public affairs functions that are timely, accurate, and consistent. This includes training for designated participants from the Governor's office and key state agencies.</p> <p>5.18. **Standardize incident reporting and documentation procedures to enhance situational awareness and provide emergency management/response personnel with access to critical information.**</p>			
	PREPARE-06	Develop media interface and public notification systems.	<p>6.1. Develop Media Interface Guidelines to ensure traveler information is provided quickly and accurately to media outlets and the public. Include in these guidelines appropriate instructions to discourage unnecessary or unnecessarily lengthy evacuations.</p> <p>6.2. Designate (preferably) a single spokesperson to provide information to the media and the public.</p> <p>6.3. Identify communication tools to be used to ensure the community receives information regarding the steps to be taken to prepare for evacuation, the evacuation zone, the routes of evacuation, and location of nearby shelters.</p>			

(continued on next page)

116 A Guide to Emergency Response Planning at State Transportation Agencies**Table 8. (Continued).**

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Establish protocols to communicate with employees and the general public (continued).			6.4. Develop agreements with traffic reporting services. Provide protocols and guidance to these services for involving them in informing the public. 6.5. Establish Broadcast Radio Agreements to ensure that information is provided in a preestablished format within specific time frames. 6.6. Develop pre-scripted public service announcements and messages and inform the media on their use. 6.7. Establish Cable Television Cooperative Agreements to provide information to targeted populations (e.g., local government channels). 6.8. Establish a process for using Highway Advisory Radio (HAR) AM stations to provide traveler information in the immediate vicinity of the transmitter. 6.9. Establish a process for using mass faxing capability or email to send road closure information to trucking associations, truck stops, inspection and weigh stations, media outlets, and others. 6.10. Establish processes for using Advanced Traveler Information Systems (ATIS), including Internet, kiosk facilities, 5-1-1, and other publicized public information services to inform the public of travel conditions. 6.11. Establish a process for using Dynamic Message Signs (DMSs) to provide timely, accurate information in advance of and at the scene of an incident. 6.12. Identify foreign language speakers and outlets to communicate with citizens and visitors who may not understand English. 6.13. Establish times for public officials to provide updates and address informing the public of when they can expect such updates. 6.14. Ensure that the state/territorial Public Information System can gather, verify, coordinate, and disseminate information during an incident. Accomplish this through exercises and drills of the system. 6.15. *Use existing Public Information System and/or other communication systems for effective practices and technical aids.* 			
3. Develop plans and procedures to manage traffic under emergency conditions.	PREPARE-07	Establish applicable transportation agency response and management teams.	7.1 Establish traffic management teams to manage and direct traffic on highways, at critical intersections lacking active signalization, and contraflow operations, as needed.			
	PREPARE-08	Prepare traffic management performance measures.	8.1. Perform traffic flow analyses, evaluating speed, vehicle occupancy, traveler behavior, contraflow, etc., and include in evacuation/shelter-in-place/quarantine route adjustments. 8.2. Analyze traffic flow of evacuation routes focusing on all freeways and major arterial roadways serving the evacuation route. 8.3. Focus on egress and ingress operations separately. 8.4. Avoid left-turn movements across traffic flow. 8.5. Divert traffic flow from critical locations and bottlenecks that could cause congestion. 8.6. Develop multiple local flow (feeder) routes connected to the main evacuation routes, as necessary to achieve optimum evacuation efficiency. 8.7. Test contraflow operations, including full set-up and break down of equipment and materials. 8.8. Identify the distances those evacuated/sheltered-in-place/quarantined must travel to reach a point of safety for each of the catastrophic hazards identified. 8.9. Identify user groups potentially affecting egress and ingress operations (e.g., regional through traffic, truckers, other interstate travelers). 8.10. Review applicable passive (e.g., traveler information dissemination only) and aggressive (e.g., physical traffic control) operations strategies. 8.11. Develop freeway interchange operations tactics to maximize ramp capacity and prevent evacuation/shelter-in-place/quarantine route mainline congestion.			

Table 8. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
3. Develop plans and procedures to manage traffic under emergency conditions. (continued).	PREPARE-09	Develop traffic management plans and protocols to use during evacuation/shelter-in-place/quarantine and to respond to emergency events.	8.12. Increase intersection traffic handling capacity by simplifying traffic movements and minimizing the number of traffic signal phases. 8.13. Analyze potential bottlenecks, barriers, scheduled work zones, and other potential problems in advance to determine an evacuation/shelter-in-place/quarantine route. 8.14. Plan for shutting down highway work zones and nonessential commercial vehicle traffic restrictions, including oversized loads, hazardous materials, etc. 8.15. Implement a process to suspend toll collections on public and private toll roads. 8.16. Adjust ramp metering as necessary. 8.17. Adjust traffic signal timing as necessary. 8.18. Use FHWA's Arterial Management Program for arterial management, traffic signal timing, and access management. 8.19. Use highway contractors to secure highway construction work zones. 8.20. Control traffic and respond to traffic incidents through joint efforts among transportation, law enforcement, and emergency medical personnel. 8.21. Review/modify/suspend timing of drawbridge openings and lock downs.			
			9.1. Develop pre-designated traffic control points (TCPs) for intersections along the transportation corridor. Coordinate the designation of these TCPs with state and local law enforcement. 9.2. Develop Alternative Emergency Response Access Routes. 9.3. Identify emergency turnarounds, including median breaks/crossovers, to allow emergency response and highway operations personnel to turn around between interchanges. 9.4. Identify emergency access for transit operations, including locations for access to transit rail lines for emergency response. 9.5. Develop protocols for communicating and coordinating with construction crews to support traffic control. 9.6. Identify equipment storage sites for pre-staging anticipated equipment. 9.7. Establish predetermined staging areas for each segment of the transportation corridor. 9.8. Develop travel-on-shoulder guidelines to ensure that highway shoulders are available for emergency use for response vehicles and general traffic if necessary. 9.9. Establish closure and alternate route guidelines to guide implementation of closures and alternate routes using predetermined routes. 9.10. Establish rapid vehicle and debris removal guidelines to ensure a process for clearing roadways. 9.11. Establish landing zone guidelines and predetermined landing sites for MedEvac helicopters and traffic surveillance aircraft. 9.12. Develop traffic signal control plans to quickly implement alternative routes and close impacted lanes on the transportation corridor. 9.13. Identify traffic control techniques to provide clear guidance for incident traffic control and allow safe and efficient deployment of closures, detours, and alternative routes. 9.14. Identify corridors equipped with traffic signal preemption for use by emergency vehicles.			
	PREPARE-10	Coordinate with neighboring jurisdictions.	10.1. Coordinate plans with neighboring jurisdictions that may be affected by evacuation/shelter-in-place/quarantine and response operations. 10.2. Share plans with higher government levels, as requests for additional resources may be necessary. 10.3. Coordinate state plans with neighboring states, as those evacuated/sheltered-in-place/quarantined may travel to another state to seek shelter or mutual aid may be requested from another state. 10.4. States should look into creating interstate compacts that encompass all local jurisdictions. 10.5. Use the capabilities of regional organizations, such as the I-95 Corridor Coalition, to assist in such coordination.			

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Table 8. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
4. Develop mobilization plans to ensure readiness to deploy state transportation agency personnel and resources.	PREPARE-11	Prepare to mobilize response teams, equipment, and resources.	11.1. Test all primary and backup wire communications and radio frequencies expected to be used during the event. 11.2. Test the function of remote communications and evaluate contingencies. 11.3. Ensure response vehicles are fueled and in proper working order. 11.4. Place equipment and resources at pre-determined locations, including portable DMS equipment, food and water, gasoline tankers, mechanics crews, and others that may be staged along the pre-designated routes. 11.5. Bring all emergency operation centers up to fully functional status. 11.6. Activate mobilization plans for emergency personnel. 11.7. Activate reception plans, sites, and support capabilities with public and/or volunteer organizations. 11.8. Establish field capabilities through the ICS/Unified Command System. 11.9. Use inter-jurisdictional and interagency information flow and coordination. 11.10. Notify all response personnel of evacuation/shelter-in-place/quarantine orders according to established calling trees and communication protocols. 11.11. Response personnel should report to staging areas and await orders to begin response and evacuation efforts. 11.12. Ensure all responsible agencies understand joint priorities and restrictions. 11.13. Prior to activation, afford staff an opportunity to ensure the safety of their loved ones and personal property. 11.14. Manage timely communication of evacuation/shelter-in-place/quarantine instructions to prepare people in advance of the order to evacuate, shelter-in-place, or quarantine. 11.15. Ensure sufficient resources are available to protect responders and those evacuated/sheltered-in-place/quarantined. 11.16. Assemble, transport, and install cones, barriers, barricades, etc.			
	PREPARE-12	Administer training programs.	12.1. **Develop interagency training programs to provide a common understanding of the transportation ICS and program guidelines.** 12.2. **Establish professional qualifications, certifications, and/or performance standards for individuals and teams, whether paid or volunteer.** 12.3. **Ensure content and methods of training comply with applicable standards and produce required skills and measurable proficiency.** 12.4. **Incorporate NIMS/ICS into all state/territorial and regional training and exercises.** 12.5. **Establish employee and contractor training and exercise programs.** 12.6. **Participate in joint multi-agency training and exercises. This should include an all-hazards exercise program based on NIMS that involves responders from multiple disciplines and multiple jurisdictions.** 12.7. **Identify what additional training resources may be needed in the community to support response and evacuation/shelter-in-place/quarantine activities.** 12.8. **Identify through exercises and simulations, the estimated time needed to complete an evacuation for each of the catastrophic hazards identified and provide this information to highway, public safety, and transit agencies for coordination purposes.** 12.9. **Identify through training exercises, how long it takes to have field personnel and equipment in place to support an evacuation/shelter-in-place/quarantine.** 12.10. **Conduct post-exercise debriefings to determine lessons learned during the exercise.** 12.11. **Incorporate results of training exercises, including corrective actions into preparedness response plans and procedures.** 12.12. **Leverage training facilities to coordinate and deliver NIMS training requirements in conformance with the NIMS National Standard Curriculum.** 12.13. **Ensure that all personnel with a direct role in emergency preparedness, incident management or response, complete the designated FEMA training.** 			
5. Ensure cost tracking and accountability.	PREPARE-13	Prepare for cost accounting and tracking of expenditures.	13.1. Ensure processes have been developed to track resources, ensuring applicable reimbursement and accountability for compliance with mutual-aid provisions.			

Table 8. (Continued).

STEPS	PHASE RESPOND	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
1. Initiate emergency response.	RESPOND-01	Detect and verify emergencies.	1.1. **Use surveillance systems to detect indicators of a potential emergency, an emergency that is occurring, or an emergency that has occurred.** 1.2. **Coordinate with and alert other agencies to recognize an emergency event in progress that may affect the regional transportation system.** 1.3. **Activate manual or automated information sharing with local Emergency Communications Centers (ECCs)/9-1-1 Centers/Public Safety Answering Points (PSAPs).** 1.4. **Coordinate with field personnel and equipment to verify that an emergency event is occurring or has occurred and communicate relevant information to all responding agencies.** 1.5. *Where they exist, use regional networks, such as the I-95 Corridor Coalition's Incident Exchange Network, for such notifications.*			
	RESPOND-02	Assess the status of transportation infrastructure.	2.1. **Receive cell phone calls from motorists to report incidents and conditions directly to the transportation agency.** 2.2. **Receive reports from <i>road watch</i> , <i>volunteer spotter</i> , <i>first observer</i> , <i>transit watch</i> , and other <i>probe</i> programs to enable specially trained individuals (including transit vehicle operators) to provide information by radio or cell phone.** 2.3. **If available/applicable, use automated vehicle location (AVL) identifiers in vehicles that travel a transportation corridor regularly to track vehicle movement and compare it against anticipated travel times to identify delays and potential incidents.** 2.4. **Where available, use cell phone tracking data to obtain near real-time travel time information.** 2.5. **Coordinate with/manage 24-hour law enforcement patrols to enhance detection, response, and site management with dedicated officers available at all times in the transportation corridor.** 2.6. **Coordinate with/manage specialty patrols (motorcycle, aircraft) to provide surveillance of roadway conditions for incident detection, verification, response, clearance, and recovery.** 2.7. **Operate dedicated service/incident response patrols to provide early detection, verification, response, and clearance. Patrol vehicles are equipped to help stranded motorists and some are equipped to quickly remove a disabled vehicle or debris from the roadway.** 2.8. **Use automated detection systems, including loops, microwave, radar, and video, to detect congestion on the transportation corridor.** 2.9. **Use video surveillance equipment, mounted along the transportation corridor, to provide incident detection and verification. Video equipment can be combined with automated detection and reporting systems. Video can also be used to verify the occurrence of an incident and to identify the appropriate response equipment needed.** 			
	RESPOND-03	Gain and maintain situational awareness.	3.1. **Continuously monitor relevant sources of information regarding actual incidents and developing hazards. The scope and type of monitoring varies based on the type of incident being evaluated and needed reporting thresholds.** 3.2. **Ensure critical information is passed through preestablished reporting channels according to established security protocols.** 3.3. **Ensure situation reports contain verified information and explicit details (who, what, where, and how) related to the incident. Status reports, which may be contained in situation reports, relay specific information about resources.** 3.4. **Based on an analysis of the threat(s), issue warnings to the public and provide emergency public information.** 3.5. **Receive notification of all declared emergencies.** 			
2. Address emergency needs and requests for support.	RESPOND-04	Coordinate response to emergency.	4.1. Activate appropriate plans, procedures, and protocols based on the type of emergency. 4.2. Activate Incident Management Teams in accordance with NIMS. 4.3. Activate Specialized Response Teams including search and rescue teams, crime scene investigators, public works teams, hazardous materials response teams, public health specialists, or other personnel as appropriate.			

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Table 8. (Continued).

STEPS	PHASE RESPOND	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
2. Address emergency needs and requests support (continued).			<p>4.4. Mobilize pre-positioned assets and supporting equipment.</p> <p>4.5. *Manage all emergency incidents and preplanned (recurring/special) events in accordance with Incident Command System organizational structures, doctrine and procedures as defined by NIMS.*</p> <p>4.6. ICS implementation must include the consistent application of Incident Action Planning (IAP) and Common Communications Plans (CCP), as appropriate.</p> <p>4.7. As the incident unfolds, on-scene ICS should update incident action plans and revise courses of action based on changing circumstances, typically on a 15-minute review basis.</p> <p>4.8. Coordinate requests for additional support. As appropriate and/or as requested, provide field support for emergency responders at the scene that is integrated through the ICS and communicated and coordinated with the TMC.</p> <p>4.9. Activate logistics systems and venues to receive, stage, track, and integrate resources into ongoing operations. ICS should continually assess operations and scale and adapt existing plans to meet evolving circumstances.</p> <p>4.10. Address emergency responder transportation needs and scene access support and staging requirements.</p> <p>4.11. Identify available transportation equipment, facilities, personnel, devices, and information to support emergency response.</p> <p>4.12. Assign transportation agency resources to move materials, personnel, and supplies as requested by responders. Track resource status.</p> <p>4.13. If appropriate, support hazardous materials containment response and damage assessment using available capabilities, and coordinate with on-scene field response through the ICS.</p> <p>4.14. Ensure that nonhazardous materials, particularly small vehicle fluid spills, are removed from the transportation facility—initially travel lanes/tracks—as quickly as possible.</p> <p>4.15. Attend regular briefings at the incident site on the situation, incident action plan, response objectives, and strategy, with full opportunity for transportation contributions and identification of resources and capabilities to support the response effort and action plan.</p> <p>4.16. Perform damage assessment responsibilities for affected transportation system elements.</p> <p>4.17. Make/recommend decisions regarding closures, contraflow operations, restrictions, and priority repairs.</p> <p>4.18. Coordinate assessments and decisions made regarding the operational capabilities of the transportation system with affected parties (emergency responders; local, state, and federal government; etc.).</p> <p>4.19. Initiate priority clean-up, repair, and restoration activities, including the use of contractors and emergency procurement authorities.</p> <p>4.20. Review and, as necessary, terminate existing work zone activities and/or closures to the extent possible.</p> <p>4.21. Obtain incident status briefings and anticipate changing conditions (wind direction, weather, plume direction, etc.).</p> <p>4.22. Based on all available information, develop detours and diversions (as necessary) to direct traffic safely away from the affected area and/or damaged infrastructure.</p> <p>4.23. Prioritize and clearly communicate incident requirements so that resources can be efficiently matched, typed, and mobilized to support emergency operations.</p> <p>4.24. Initiate traffic management operations and control strategies.</p> <p>4.25. Provide public information/traveler alerts on the status of the transportation system.</p> <p>4.26. Assign personnel to local/regional and State EOCs to coordinate with and assist public safety agencies and other agencies involved in disaster response and recovery efforts.</p> <p>4.27. Support communications between transportation personnel and their families/friends.</p>			
	RESPOND-05	Evaluate the need for additional assistance from neighboring states, jurisdictions, and/or the federal government.	<p>5.1. **Evaluate the need for additional resources and if assistance should be requested from other states using interstate mutual-aid and assistance agreements, such as the EMAC.**</p> <p>5.2. **If the incident overwhelms state and mutual-aid resources, the governor should request federal assistance and/or deploy the State Department of Military/National Guard.**</p>			

Table 8. (Continued).

STEPS	PHASE RESPOND	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
3. Manage evacuation/shelter-in-place/quarantine.	RESPOND-06	Make/support the decision to evacuate/shelter-in-place/quarantine people within an area, the latter for a pandemic.	<ul style="list-style-type: none"> 6.1. Determine the probability of impact (depending on the nature of event). 6.2. Estimate the effects on the geographic area and classes of people and materials to be evacuated/sheltered-in-place/or quarantined. 6.3. Consider the timing of the event and lead time to initiate evacuation, shelter-in-place, or quarantine. 6.4. Consider weather conditions and their potential impacts on evacuation/shelter-in-place/quarantine. 6.5. Evaluate the economic impacts of evacuation/shelter-in-place/or quarantine to the public and private sectors. 6.6. Determine the condition and availability of evacuation routes or shelter-in-place or quarantine control points. 6.7. Determine whether neighboring jurisdictions have made evacuation/shelter-in-place/quarantine decisions. 6.8. Determine the population potentially affected by the evacuation, shelter-in-place, or evacuation, including jurisdictions that will host those evacuated or quarantined. 6.9. Determine the availability and safety of personnel to support the evacuation/shelter-in-place/quarantine. 6.10. Determine whether to deploy separate teams to notify residents and ensure their evacuation/shelter-in-place, or use other means to notify people in quarantined areas. 6.11. Consider the personal needs of those evacuated/sheltered-in-place/quarantined and the need for vehicle servicing, particularly fuel. 6.12. Consider whether to terminate power and other utilities for safety. 			
4. Implement emergency response actions.	RESPOND-07	Issue evacuation/shelter-in-place/quarantine order.	<ul style="list-style-type: none"> 7.1. Issue evacuation/shelter-in-place/or quarantine order through established communication systems and protocols. 7.2. Notify service organizations, local, regional, state, and federal stakeholders, including sheltering organizations, as applicable. 			
	RESPOND-08	Take response actions.	<ul style="list-style-type: none"> 8.1. Implement ICS and chain of command and/or UC to create an integrated team of multidisciplinary and multi-jurisdictional stakeholders. 8.2. Implement primary and (as needed) secondary command posts. 8.3. Deploy transit resources to support evacuation including accommodating vulnerable populations evacuated/sheltered-in-place/quarantined. 8.4. Deploy resources to accommodate pets on transit vehicles and/or in shelters. 8.5. Enforce evacuation/shelter-in-place/quarantine order. The Emergency Operations Team should engage public safety officials in going door-to-door to ensure residents know of an evacuation/shelter-in-place/quarantine order and are complying. 8.6. Place en route services along evacuation/shelter-in-place/quarantine route. 8.7. Arrange for emergency services within the shelter-in-place/quarantine area as needed 8.8. Open evacuation routes to maximize throughput (i.e., close toll operations, work zones). 8.9. Activate mutual-aid agreements. 8.10. Determine the need for and deploy emergency medical and other support staff staged along the evacuation routes or attached to those working with vulnerable populations, or within or near the shelter-in-place/quarantine area. 8.11. Determine the need for and deploy debris-removal crews to clear blocked highways and/or other transportation facilities. 8.12. Determine the need for and as needed deploy sanitation crews with mobile comfort stations (e.g., portable toilets, wash areas). 8.13. Coordinate local evacuation/shelter-in-place/quarantine incident action plans with the designated incident commander in the field and the EOC/TMC. 8.14. Field and EOC commanders should coordinate evacuation/shelter-in-place/quarantine incident action plans with neighboring jurisdictions and the state or neighboring state(s). 8.15. EOC should obtain updated information frequently and communicate this information to those evacuated/sheltered-in-place/quarantined throughout the event. 8.16. Set up contraflow operations and continue to monitor contraflow operations to ensure evacuation traffic is flowing safely and efficiently. 			

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Table 8. (Continued).

STEPS	PHASE RESPOND	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
4. Implement emergency response actions. (continued).			8.17. Use HOV lanes, reversible lanes, and frontage roads for evacuation traffic. 8.18. Coordinate and communicate contraflow and other special operations with neighboring jurisdictions. 8.19. Coordinate with the next higher level of government to ensure unmet transportation resource needs are identified and requests for additional support are made. 8.20. Control access to evacuation/shelter-in-place/quarantine routes and manage traffic flow. 8.21. Control access to a confinement area to prevent unauthorized entry. 8.22. Include strategies for emergency responders, transit vehicles, and other essential equipment to move inbound against the predominant outbound flow of traffic. 8.23. Provide trained personnel to support the evacuation route or shelter-in-place/quarantine area (e.g., food, first aid, fuel, information).			
	RESPOND-09	Deploy response teams.	9.1. Deploy personnel and field equipment. 9.2. Ensure field personnel make frequent contact with the EOC through the ICS. 9.3. Address activation of the TMC if it is not already operational (e.g., during normally inactive periods).			
	RESPOND-10	Communicate evacuation/shelter-in-place/quarantine order and incident management measures.	10.1. Brief national, state, and local authorities and personnel (such as transit and health agencies and FCs) at regular intervals to ensure all parties are provided with accurate, timely, and comprehensive information. 10.2. Hold regular media briefings to inform the media about evacuation routes, traffic and road conditions, shelter/shelter-in-place/quarantine locations, and other pertinent information to communicate to the public in a timely manner. 10.3. Disseminate accurate information pertaining to evacuation/shelter-in-place/quarantine orders in a clear fashion and timely manner to avoid <i>shadow</i> or unnecessary evacuations or unnecessarily lengthy evacuation trips. 10.4. Implement a briefing schedule with ranking representatives from each stakeholder agency participating in the event. 10.5. Inform evacuees of available transport modes, how to access them and if there are any restrictions on what evacuees may carry with them. 10.6. Inform evacuees of when transportation assistance will begin, end, and the frequency of departure at designated pick-up locations. 10.7. Inform evacuees of their destination before they board public transport. 10.8. Inform the public and/or family members of the evacuees' destinations. 10.9. Identify established websites, hotlines, text messaging groups, etc., where people can get answers to their questions and concerns. 10.10. In the event of a shelter-in-place or quarantine, inform people of the nature of the danger and actions they should take. 10.11. Address communicating security measures to the public. 10.12. Identify support services for vulnerable populations. 10.13. Communicate critical operational changes to the EOC and the public. 10.14. Communicate information to evacuees on the availability of nonpublic shelters, such as hotels. 10.15. Keep shelter operations informed of the location and status of other shelters. 10.16. Regularly reinforce, internally and externally, that persons involved in any way with the evacuation/shelter-in-place/quarantine must direct all but the most basic inquiries to the JIC. 10.17. Personnel working on the evacuation/shelter-in-place/quarantine must maintain effective communications at all times to coordinate movements, share real-time information, and track deployments.			

Table 8. (Continued).

STEPS	PHASE RESPOND	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
4. Implement emergency response actions. (continued)			10.18. Establish processes to ensure redundant communications systems are available during the evacuation/shelter-in-place/quarantine because the event may damage or disable primary communication systems. 10.19. Program DMSs, permanent and portable, as necessary to provide accurate, up-to-date information. 10.20. Program HAR subsystems to provide accurate, up-to-date information. 10.21. Program 5-1-1 systems to provide accurate, up-to-date information. 10.22. Relay traffic condition information to the EOC. 10.23. Ensure 9-1-1 operators are fully informed of conditions so they can respond to callers with accurate, up-to-date information. 10.24. Use ITS resources during an evacuation/shelter-in-place/quarantine to collect data and as a tool to communicate and coordinate with those evacuated/sheltered-in-place/quarantined, evacuation operations personnel, partners, and other stakeholders. 10.25. In a shelter-in-place or quarantine area, use ITS to detect unnecessary movements that might result in innocent people being further jeopardized.			
5. Continue response.	RESPOND-11	Monitor response efforts.	11.1. Monitor traffic conditions on evacuation/shelter-in-place/quarantine reentry routes and make operational adjustments to maximize throughput. 11.2. Monitor how the event that triggered the evacuation/shelter-in-place/quarantine is progressing and if there are any changes to earlier predictions of its effects. 11.3. Monitor the conditions of the roadway (e.g., for debris or flooding) so that those evacuated/sheltered-in-place/quarantined can be prepared and rerouted if necessary. 11.4. Monitor evacuation/reentry operations of motorized transport, rail, air, waterway, and other modes of transportation to determine the adequacy of available resources. 11.5. Track the destination of vulnerable populations evacuated/sheltered-in-place/quarantined to notify friends and family of their location and to develop a plan to return them to their original locations once the area has been deemed safe for reentry 11.6. Monitor the number of those evacuated/sheltered-in-place/quarantined and those moved by means other than personal vehicles to ensure that additional equipment and operators (such as buses and drivers or helicopters and pilots) are requested and supplied quickly if needed. This information should also aid in developing the reentry plan, as the same transportation resources will likely be required for that operation. 11.7. Monitor traffic counters and cameras. 11.8. Monitor pipelines, viaducts, etc., for potential damage.			
	RESPOND-12	Prepare for next operational period.	12.1. Mobilize personnel and resources for the next operational period.			
6. Conclude response.	RESPOND-13	Prepare for demobilization.	13.1. *Prepare for restoration of normal activities.* 13.2. *Ensure provisions to address and validate the safe return of resources to their original locations exist.* 13.3. *Develop processes for tracking resources and ensuring applicable reimbursement.* 13.4. *Develop plans to ensure responder safety during demobilization efforts.* 13.5. *Ensure accountability for compliance with mutual-aid provisions.*			

(continued on next page)

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Table 8. (Continued).

STEPS	PHASE: RECOVER	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				<i>Not Started</i>	<i>In Progress</i>	<i>Completed</i>
1. Restore traffic to affected area.	RECOVER-01	Restore essential services.	1.1. Conduct damage assessments, debris removal, hazardous materials disposal, repair of roads and other transportation facilities to restore essential services to the affected area.			
	RECOVER-02	Reestablish traffic management in affected area.	2.1. Establish routes to move traffic into, out of and/or around the affected area. Coordinate traffic management with restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs.			
	RECOVER-03	Allow reentry into affected area and/or remove shelter-in-place or quarantine restrictions.	3.1. Define specifically who makes the decision to return or remove shelter-in-place or quarantine restrictions. 3.2. Identify what factors will influence the decision. 3.3. Begin developing, coordinating, and executing service and site restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs. 3.4. In short-term recovery, provide essential public health and safety services; restore interrupted utility and other essential services (as soon as safely possible); reestablish transportation routes, and provide food, shelter, and other essential services to those displaced by the event. 3.5. Long-term recovery may include the complete redevelopment of damaged areas. 3.6. Prioritize activities to conduct damage assessments, debris removal, hazardous materials disposal, repair of roads and other transportation facilities, restoration of transportation-support facilities to enable them to receive evacuees when it is safe to do so, and secure critical assets. 3.7. Estimate the damage to the areas to which the evacuees will return or shelter-in-place/quarantine restrictions were placed. 3.8. Determine if there is, as a result or consequence of an evacuation/shelter-in-place/quarantine, an outbreak of disease or any other health or medical issue that should be mitigated. 3.9. Determine if hazardous materials spills need to be cleaned up. 3.10. Determine if utilities are functioning (i.e., running water, electricity). 3.11. Ensure evacuation routes are clear of debris and safe for travel. 3.12. Determine if public transit systems are operational. 3.13. Identify any populations that should not be allowed to return because of medical, health, or public safety concerns. 3.14. Verify that injured or diseased people and animals have been attended to and recovered from the area. 3.15. Develop a strategy for to communicate reentry instructions to the public. 3.16. Determine if mutual-aid reentry should be done in phases. 3.17. Transport those who did not self-evacuate/shelter-in-place/quarantine back to their place of residence or longer-term shelters if homes are uninhabitable. 3.18. Identify personnel, equipment and resources necessary to support reentry. 3.19. Inspect the impacted area and aid any victims who did not evacuate, shelter-in-place, or quarantine. 3.20. Ensure reentry plans address those people who were unable to evacuate themselves. Ensure a clear strategy exists for how, when, and to where these evacuees will be transported and how they may reach their final destination. 3.21. Ensure communication with those evacuated/sheltered-in-place/quarantined, who may be scattered among shelters, families' homes, and other areas outside of the immediate jurisdiction, can be accomplished effectively. 3.22. Communicate start and end times of reentry operations, including the days of the week, geographic areas covered, photo ID required to reenter, security checkpoints that are in place, available routes and maps, vehicle restrictions, and available services. 3.23. Determine whether ITS equipment, DMS, HAR, and 5-1-1 subsystems should be updated to provide information to evacuees reentering the area. 3.24. Traveler services, such as fuel, food, safe water, relief, and medical care, should be available along the highway routes as they were during the evacuation. 3.25. Attempt to return those evacuated/sheltered-in-place/quarantined to their points of origin using the same operator and same vehicle.			

Table 8. (Continued).

STEPS	PHASE: RECOVER	ACTION ITEM	SUPPORTING ACTIONS	STATUS		
				Not Started	In Progress	Completed
1. Restore traffic to affected area (continued).			3.26. Establish alternative plans for return in case the evacuation/shelter-in-place/quarantine lasts for days, weeks, or possibly longer. 3.27. Ensure operators and passengers have picture identifications to return to their points of origin. 3.28. Coordinate reentry plans with transportation and public safety officials to staff reentry routes adequately. 3.29. Coordinate operations to identify missing persons who might not have evacuated/sheltered-in-place/ quarantined and been lost in the event or failed to return after the event, particularly children separated from their families.			
	RECOVER-04	Conduct emergency repairs.	4.1. Develop an approach to infrastructure repair/replacement and decontamination, determining what can be done quickly and what will require more time.			
2. Identify and implement lessons learned.	RECOVER-05	Perform After-Action Review and After-Action Reports.	5.1. Identify who is responsible for conducting After-Action Reviews and for ensuring necessary changes are made to plans and SOPs and communicated to staff. 5.2. Conduct a review of how the evacuation/shelter-in-place/quarantine was executed and determine how it could have been improved. Each agency should review its actions. When multiple agencies are involved in an evacuation/shelter-in-place/quarantine, conduct a joint After-Action Review to address how well agencies worked together and what improvements can be made in future joint operations. 5.3. Each After-Action Review should be shared with decisionmakers and agency personnel and should include recommendations for improvements that should be considered and implemented quickly. 5.4. Conduct an after-action review, a formal meeting of operation participants to assess actions, determine follow-up items, and develop recommendations for improving future operations. 5.5. Results of the after-action review and individually submitted After-Action Reviews should be combined for a jurisdiction's or agency's final report. 5.6. Use After-Action Reviews and After-Action Reports to determine if changes should be made to plans and procedures.			
	RECOVER-06	Return to readiness.	6.1. Establish a policy for the evacuation/shelter-in-place/quarantine team members' home organizations regarding recovery time and time to participate in After-Action Reviews and other return-to-readiness activities. 6.2. Determine what equipment and supplies need to be restocked. 6.3. Determine what infrastructure needs to be repaired or replaced. 6.4. Determine what new information needs to be communicated to the public to maintain their awareness to be prepared. 6.5. Begin transitioning the system from an operations cycle back to a state of planning and preparedness. 6.6. Continue data collection and begin analyses of response activities. 6.7. Identify evacuation costs and reimbursable expenditures. Account for services such as equipment rehabilitation, restocking of expendable supplies, transportation to original storage or usage locations, overtime costs for public safety and transportation officials, materials used in support of evacuation, and contract labor and equipment. 6.8. Begin request for reimbursement processes from state and federal governments as applicable. 6.9. Implement a system to track personnel, supplies, and equipment costs to meet the requirements of the reimbursing agencies. 6.10. Work with FEMA and FHWA to ensure proper documentation is being used before submitting reimbursement requests.			

Purpose and Supporting Resources for Action Reference Matrix

Table 9 is the same as the Detailed Self-Assessment Matrix above for the first three columns, but the following columns replace the rest of the full matrix:

- Purpose: a brief objective-oriented statement of the supporting actions from above.
- Supporting Resources: links to websites for additional information. **NOTE:** all links accessed April 2010.

Table 9. Purpose and supporting resources for action reference matrix.

STEPS	PHASE: PLAN	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
1. Form a collaborative planning team.	PLAN-01	Identify and designate a lead Emergency Planning Coordinator (EPC) and team for the state transportation agency.	Designate the best-qualified individual and team to lead the agency's emergency planning function.	Comprehensive Preparedness Guide, CPG 101, Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans, http://www.fema.gov/about/divisions/cpg.shtml NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs
	PLAN-02	Establish authority.	Ensure the agency's EPC and team have adequate authority to perform the emergency planning function.	FEMA National Response Framework Resource Center, http://www.fema.gov/emergency/nrf/mainindex.htm
	PLAN-03	Issue a Mission Statement.	Clarify the purpose of the agency's emergency planning function.	Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
	PLAN-04	Establish a schedule and budget.	Ensure the agency's EPC and team have adequate resources and schedule to perform the emergency planning function.	NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs FEMA, Step 1—Establish a Team, http://www.fema.gov/business/guide/section1a.shtml
2. Conduct research and analyze data.	PLAN-05	Identify documents to be developed, reviewed, approved, and/or updated regarding the state transportation agency's emergency response plans and programs. Include not only the transportation-related elements of the State Emergency Operations Plan (SEOP), but also any specific plans, guidance, overviews documents, standard operating procedures (SOPs), operating manuals, field operations guides (FOGs), handbooks, or job aids needed to support the capabilities of agency personnel to respond to emergencies.	Clarify the scope of the agency's emergency planning process and the expected deliverables and outcomes.	Overview: ESF and Support Annexes: Coordinating Federal Assistance in Support of the National Response Framework, http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs Final Report for the Application of Technology to Transportation Operations in Biohazard Situations, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm
	PLAN-06	Work with the State National Incident Management System (NIMS) Coordinator to identify state transportation agency requirements for addressing statewide implementation of NIMS. If necessary, provide NIMS training for the agency Emergency Planning Coordinator and team.	Ensure compliance and coordination with statewide initiatives to meet NIMS requirements.	Simplified Guide to the Incident Command System for Transportation Professionals, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm State NIMS Integration: Integrating the National Incident Management System into State Emergency Operations Centers and Standard Operating Plans, http://www.fema.gov/pdf/nims/eop-sop_state_online.pdf NIMS Implementation and Compliance Guidance for Stakeholders, http://www.fema.gov/emergency/nims/ImplementationGuidance_Stakeholders.shtml NIMS Resource Center, Training, http://www.fema.gov/emergency/nims/nims_training.shtml National Incident Management System, http://www.fema.gov/pdf/emergency/nrf/nrf-nims.pdf
	PLAN-07	Review the State EOP and supporting annexes and appendices and other documents for transportation-related activities.	Determine how the State EOP/supporting documents currently address transportation issues, requirements, and needs.	NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations: search for title at www.TRB.org/SecurityPubs The Public Transportation System Security and Emergency Preparedness Planning Guide, http://transit-safety.volpe.dot.gov/publications/security/PlanningGuide.pdf TCRP Report 86, Vol. 7, Public Transportation Emergency Mobilization and Emergency Operations Guide, search for title at www.TRB.org/SecurityPubs

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Table 9. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
2. Conduct research and analyze data (continued).	PLAN-08	Review the relevant hazards likely to result in an <i>emergency</i> requiring activation of the State Emergency Operations Center (EOC).	Identify and assess the relevant hazards for the agency and state. NOTE: Hazard maps are available in compilations of hazard information made by FEMA and state emergency management agencies, the U.S. Geological Survey (USGS) and State geological surveys, and the National Weather Service (NWS) and its local offices. Maps from the Federal Insurance Administration (FIA), maps of 10- and 50-mile emergency planning zones (EPZs) around nuclear power plants, and any maps of hazardous materials (HAZMAT) sites prepared by Local Emergency Planning Committees (LEPCs) may also be useful.	National Infrastructure Protection Plan, http://www.dhs.gov/files/programs/editorial_0827.shtml NCHRP Report 525, Vol. 12: Making Transportation Tunnels Safe and Secure, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 11, Disruption Impact Estimating Tool—Transportation (DIETT): A Tool for Prioritizing High-Value Transportation Choke Points, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 10, A Guide to Transportation's Role in Public Health Disasters, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Volume 15, Costing Asset Protection: An All Hazards Guide for Transportation Agencies (CAPTA), search for title at www.TRB.org/SecurityPubs
	PLAN-09	Gather information regarding vulnerable populations.	Identify issues and requirements associated with vulnerable populations.	Emergency Preparedness and Individuals with Disabilities, http://www.dotcr.ost.dot.gov/asp/emergencyprep.asp EMI Course G197, Emergency Planning & Special Needs Population, http://training.fema.gov/EMIWeb/STCourses/crsdesc.asp?courseid=G197
	PLAN-10	Determine the status of state transportation agency emergency planning activities to date and identify areas in need of improvement.	Assess what still needs to be done.	National Preparedness Guidelines, 2007, http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf Emergency Support Functions: Introduction, http://www.fema.gov/pdf/emergency/nrf/nrf-annexes-all.pdf
	PLAN-11	Define response issues, roles, and tasks by reviewing the Universal Task List (UTL), Target Capabilities List (TCL), Resource Typing List, and the National Planning Scenarios (NPS).	Ensure coordination with DHS and FEMA guidance.	National Preparedness Guidelines, 2007, http://www.fema.gov/pdf/emergency/nrf/National_Preparedness_Guidelines.pdf
	PLAN-12	Based on the activities identified in the State EOP and supporting annexes and appendices, develop/update the state transportation agency's Transportation Incident Management Organization to ensure all activities are conducted pursuant to NIMS and NRF requirements.	Ensure that an incident management organization, compliant with NIMS, has been established to integrate state transportation personnel into the Incident Command System (ICS) to be used during emergencies requiring activation of the state EOC.	Simplified Guide to the Incident Command System for Transportation Professionals, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm
3. Determine goals and objectives.	PLAN-13	Establish operational priorities, response goals, and intermediate objectives for the state transportation agency in response to the hazards identified and the existing State EOP and supporting documents, as well as new challenges identified during the analysis process.	Clarify what constitutes <i>success</i> regarding the agency's response to the range of emergencies that could occur resulting from the hazards identified for the state.	NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs

Table 9. (Continued).

STEPS	PHASE: PLAN	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
4. Develop and analyze courses of action and identify resources.	PLAN-14	Use scenario-based, functional, and capabilities-based planning to depict how the state transportation agency's response to a range of emergency situations may unfold.	Use a formal process for building relationships among the occurrence of hazards, decision points, and response actions.	Guide for Updating Highway Emergency Response Plans for Terrorist Incidents, http://freight.transportation.org/doc/NCHRP_A.pdf Section 1: Step—2 Analyzing Capabilities and Hazards http://www.fema.gov/business/guide/section1b.shtm TCRP Report 86, Vol. 10, Hazard and Security Plan Workshop: Instructor Guide, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 4, A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 3, Incorporating Security into the Transportation Planning Process, search for title at www.TRB.org/SecurityPubs
	PLAN-15	Identify the resources needed to support the state transportation agency's response activities.	Ensure that adequate resources are available.	TCRP Report 86, Vol. 10, Hazard and Security Plan Workshop: Instructor Guide, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 4, A Self-Study Course on Terrorism-Related Risk Management of Highway Infrastructure, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 3, Incorporating Security into the Transportation Planning Process, search for title at www.TRB.org/SecurityPubs
5. Write the plan.	PLAN-16	Develop and/or update transportation-related components of the State EOP, functional annexes, and hazard-specific appendices.	Complete state transportation planning inputs and deliverables for the State EOP and supporting documents.	Guide for All-Hazard Emergency Operations Planning, http://www.fema.gov/pdf/plan/0-prelim.pdf NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs Step 3—Develop the Plan, http://www.fema.gov/business/guide/section1c.shtm
	PLAN-17	Develop supporting materials, including any specific plans, guidance, overviews documents, SOPs, operating manuals, FOGs, handbooks, or job aids needed to support the capabilities of state transportation agency personnel to respond to emergencies.	Ensure that sufficient reference materials exist to support the training and response activities of agency personnel during emergencies.	NRF Resource Center, http://www.fema.gov/emergency/nrf/job aids.htm
6. Approve and implement the plan.	PLAN-18	Formally approve and implement the transportation-related provisions of the state and state transportation agency EOPs supporting annexes and the agency-specific supporting materials.	Ensure adoption of plan and supporting materials.	Step 3—Develop the Plan, http://www.fema.gov/business/guide/section1c.shtm
7. Exercise the plan and evaluate its effectiveness.	PLAN-19	Develop a coordinated program of training, drills, and exercises.	Ensure state transportation personnel are trained in how to respond to emergencies.	NCHRP Report 525, Vol. 9, Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 7, System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs
8. Review, revise, and maintain the plan.	PLAN-20	Establish an ongoing review and assessment process for the transportation-related elements of the state and state transportation agency EOPs and supporting materials.	Ensure that agency plans, procedures, and supporting materials are up-to-date.	Comprehensive Preparedness Guide, CPG 101, Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans, http://www.fema.gov/about/divisions/cpg.shtm NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs

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Table 9. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
1. Develop approaches for implementing state transportation agency roles and responsibilities during emergencies, as specified in the State EOP and supporting annexes and references.	PREPARE-01	Establish protocols for heightened Homeland Security Advisory System (HSAS) threat levels.	Address DHS/TSA and FHWA/FTA recommendations for responding to elevated HSAS threat levels.	NCHRP Report 525, Vol. 14, Security 101: A Physical Security Primer for Transportation Agencies, search for title at www.TRB.org/SecurityPubs Common Issues in Emergency Transportation Operations Preparedness and Response, http://ops.fhwa.dot.gov/publications/etopr/common_issues/eto_p_compliance.htm Transit Security and Emergency Management Protection Measures, http://transit-safety.volpe.dot.gov/publications/security/ProtectiveMeasures/PDF/ProtectiveMeasures.pdf Preparedness, http://www.ops.fhwa.dot.gov/opssecurity/preparedness/index.htm
	PREPARE-02	Develop Memoranda of Understanding/Agreement (MOU/A) with other local and state agencies regarding the transportation-related elements specified in the State EOP.	Ensure that formal plans and procedures are in place for mutual aid, as specified by FEMA in the National Response Framework and NIMS and in the State EOP.	Catastrophic Hurricane Evacuation Plan Evaluation: A Report to Congress, Chapter 5: Findings and Recommendations, http://www.fhwa.dot.gov/reports/hurricanevacuation/chapter5.htm Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm
	PREPARE-03	Develop an approach to provide state transportation agency critical services during emergencies.	Develop Continuity of Operations (COOP) and Continuity of Government (COG) plans to define activities that must be performed if an emergency event affects access to essential operating and maintenance facilities, vehicle fleets, systems, and senior management and technical personnel.	NCHRP Report 525, Vol. 8, Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies, search for title at www.TRB.org/SecurityPubs
	PREPARE-04	Develop a state transportation agency approach to evacuation/shelter-in-place/quarantine management.	Ensure that the agency formalizes its approach to evacuation management, including plans, policies, and procedures for evacuation/shelter-in-place/quarantine with and without notice.	Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm Managing Pedestrians during Evacuations of Metropolitan Areas, http://ops.fhwa.dot.gov/publications/pedevac/
	PREPARE-05	Establish internal state transportation agency communications protocols.	Ensure that calling trees and notification systems, including 24/7 event notification protocols, are established to notify state transportation agency employees regarding emergencies, to communicate with them during emergencies, and to distribute emergency materials in advance of events.	Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs NCHRP Report 525, Vol. 9, Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs

Table 9. (Continued).

STEPS	PHASE: PREPARE	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
2. Establish protocols to communicate with employees and the general public (continued).	PREPARE-06	Develop media interface and public notification systems.	Ensure that the agency has the capability to provide traveler and evacuation/shelter-in-place/quarantine information quickly and accurately to media outlets and the public.	Communicating With the Public Using ATIS During Disasters: A Guide for Practitioners, http://www.ops.fhwa.dot.gov/publications/atis/index.htm
3. Develop plans and procedures for managing traffic under emergency conditions	PREPARE-07	Establish applicable state transportation agency response and management teams.	Establish traffic management teams to manage and direct traffic on highways, at critical intersections lacking active signalization, and contraflow operations, as needed.	NCHRP Report 525, Vol. 6, Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs Final Report for the Application of Technology to Transportation Operations in Biohazard Situations, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm
	PREPARE-08	Prepare traffic management performance measures.	Perform traffic flow analyses to support emergency evacuation and response planning.	Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm
	PREPARE-09	Develop traffic management plans and protocols to be used during evacuations/shelter-in-place/quarantines and to respond to emergency events.	Ensure the agency has plans and procedures in place for managing traffic during emergencies requiring activation of the State EOC (e.g., pre-designated traffic control points [TCPs] for intersections along the transportation corridor, alternative emergency response access routes, emergency turnarounds, protocols for communicating and coordinating with construction crews to support traffic control, equipment storage sites for pre-staging anticipated equipment, travel-on-shoulder guidelines, closure and alternate route guidelines, rapid vehicle and debris removal guidelines, contraflow plans).	Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm I-95 Corridor Coalition, http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs Simplified Guide to the Incident Management System for Transportation Professionals, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm NCHRP Report 525, Vol. 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency, search for title at www.TRB.org/SecurityPubs
	PREPARE-10	Coordinate with neighboring jurisdictions.	Coordinate traffic management plans with neighboring jurisdictions that may be affected by evacuation and response operations.	Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm

(continued on next page)

132 A Guide to Emergency Response Planning at State Transportation Agencies**Table 9. (Continued).**

STEPS	PHASE: PREPARE	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
4. Develop mobilization plans to ensure readiness to deploy state transportation agency personnel and resources.	PREPARE-11	Prepare for mobilization of response teams, equipment and resources.	Ensure readiness to mobilize agency response teams, including activating all necessary personnel, testing all communications equipment, fueling all vehicles, pre-staging supporting equipment (cones, barriers, signs, etc.), and implementing established field capabilities to coordinate with local, regional, state, and federal agencies through NIMS/ICS.	<p>Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>I-95 Corridor Coalition, http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx</p> <p>Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm</p> <p>Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm</p> <p>NCHRP Report 525, Vol. 9, Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>Simplified Guide to the Incident Command System for Transportation Professionals, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p> <p>NCHRP Report 525, Vol. 13: A Guide to Traffic Control of Rural Roads in an Agricultural Emergency, search for title at www.TRB.org/SecurityPubs</p>
	PREPARE-12	Administer training programs.	Establish employee and contractor training and exercise programs, participate in joint multi-agency training and exercises, and identify and provide additional training to support response and evacuation activities.	<p>Emergency Management Institute, http://training.fema.gov/EMICourses/</p> <p>NCHRP Report 525, Vol. 9, Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 7, System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs</p> <p>National Transit Institute Courses, Workplace Safety and Security, http://www.ntonline.com/topic.asp?TopicArea=5</p>
5. Ensure cost tracking and accountability	PREPARE-13	Prepare for cost accounting and tracking of expenditures.	Ensure processes have been developed to track resources and ensure applicable reimbursement and accountability for compliance with mutual-aid provisions.	Mutual Aid Agreements and Assistance Agreements, http://www.fema.gov/emergency/nims/FAQ.shtm#item2

Table 9. (Continued).

STEPS	PHASE: RESPOND	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
1. Initiate emergency response.	RESPOND-01	Detect and verify emergencies.	Monitor the performance of the transportation network using surveillance systems, field personnel, manual or automated information sharing with local Emergency Communications Centers (ECCs)/911 Centers, and regional transportation organizations.	<p>Emergency Transportation Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm</p> <p>National Traffic Incident Management Coalition, http://timcoalition.org/?siteid=41&pageid=590</p> <p>ITE Traffic-Incident Management Committee, http://www.trafficincident.org/</p>
	RESPOND-02	Assess the status of the transportation infrastructure.	Receive reports from automated systems, field personnel, and law enforcement regarding the status of the transportation infrastructure.	<p>Emergency Transportation Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm</p> <p>National Traffic Incident Management Coalition, http://timcoalition.org/?siteid=41&pageid=590</p> <p>ITE Traffic-Incident Management Committee, http://www.trafficincident.org/</p>
	RESPOND-03	Gain and maintain situational awareness.	Receive notification of all declared emergencies and ensure that situation reports contain verified information and explicit details (who, what, where, and how) related to the incident/emergency.	<p>State NIMS Integration: Integrating the National Incident Management System into State Emergency Operating Plans and Standard Operating Procedures, http://www.fema.gov/pdf/nims/eop-sop_state_online.pdf</p>
2. Address emergency needs and requests for support.	RESPOND-04	Coordinate response to emergency.	Activate appropriate plans, procedures, and protocols and mobilize available personnel, equipment, facilities, devices, and information to support emergency response. As appropriate and/or as requested, provide field support for emergency responders at the scene, integrated through the ICS, and communicated and coordinated with the Traffic/Transportation Management Center (TMC).	<p>Using Highways During Evacuation Operations for Events with Advance Notice: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>I-95 Corridor Coalition, http://www.i95coalition.org/i95/Library/tabid/84/Default.aspx</p> <p>Work Zone Safety and Mobility Rule, http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm</p> <p>Emergency Management Systems, http://www.its.dot.gov/evaluation/docs_ems.htm</p> <p>NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>Simplified Guide to the Incident Command System for Transportation Professionals, http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p>
	RESPOND-05	Evaluate the need for additional assistance from neighboring states, jurisdictions, and/or the federal government.	Coordinate requests for additional support with appropriate jurisdictions following previously established mutual-aid plans.	<p>TR News May-June 2007 All-Hazards Preparedness, Response, and Recovery, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 6: Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs</p>
3. Manage evacuation /shelter-in-place/ quarantine.	RESPOND-06	Make/support decision to evacuate/shelter-in-place/ quarantine.	Coordinate with appropriate local, regional and state officials regarding evacuation/shelter-in-place/quarantine orders and routes.	<p>Routes to Effective Evacuation Planning Primer Series: Using Highways during Notice Evacuations Operations, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p> <p>TR News, May—June 2005 Evacuation Planning, Human Factors, and Traffic Engineering: Developing Systems for Training and Effective Response, search for title at www.TRB.org/SecurityPubs</p>
	RESPOND-07	Issue/support evacuation order.	Mobilize agency activation team to coordinate evacuation operations.	<p>Routes to Effective Evacuation Planning Primer Series: Using Highways during Notice Evacuations Operations, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p>

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Table 9. (Continued).

STEPS	PHASE: RESPOND	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
4. Implement emergency response actions.	RESPOND-08	Take response actions.	Implement emergency transportation operations activities as required (e.g., opening/closing routes, managing traffic flow, deploying debris-removal teams, activating contraflow operations, coordination to ensure that unmet transportation resource needs are identified and requests for additional support are made, providing and receiving briefings, and supporting those with special needs).	<p>Routes to Effective Evacuation Planning Primer Series: Using Highways during Notice Evacuations Operations, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p> <p>Managing Pedestrians during Evacuations of Metropolitan Areas, http://www.ops.fhwa.dot.gov/publications/pedevac/index.htm</p> <p>FHWA, Emergency Transportation Operations, http://www.ops.fhwa.dot.gov/opssecurity/response/index.htm</p>
	RESPOND-09	Deploy response teams.	Deploy personnel and field equipment to implement emergency transportation operations.	<p>NCHRP Report 525, Vol. 6: Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs</p> <p>Overview: ESF and Support Annexes, Coordinating Federal Assistance in Support of the National Response Framework, http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf</p> <p>Final Report for the Application of Technology to Transportation Operations in Biohazard Situations, http://www.its.dot.gov/eto/docs/transops_biohazard/executive.htm</p>
	RESPOND-10	Communicate evacuation/shelter-in-place/quarantine order and incident management measures.	Disseminate appropriate information to employees and travelers, and provide updates in a timely manner.	Communicating With the Public Using ATIS During Disasters: A Guide for Practitioners, http://www.ops.fhwa.dot.gov/publications/atis/index.htm
5. Continue response.	RESPOND-11	Monitor response efforts.	Monitor traffic conditions and make operational adjustments.	<p>Emergency Transportation Operations, http://ops.fhwa.dot.gov/incidentmgmt/index.htm</p> <p>National Traffic Incident Management Coalition, http://timcoalition.org/?siteid=41&pageid=590</p> <p>ITE, Traffic Incident-Management Committee, http://www.trafficincident.org/</p>
	RESPOND-12	Prepare for next operational period.	Mobilize personnel and resources for next operational period.	<p>NCHRP Report 525, Vol. 6: Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 7: System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs</p> <p>TCRP Report 86, Vol. 7: Public Transportation Emergency Mobilization and Emergency Operations Guide, search for title at www.TRB.org/SecurityPubs</p>
6. Conclude response.	RESPOND-13	Prepare for demobilization.	Plan to restore normal operations.	<p>NCHRP Report 525, Vol. 6: Guide for Emergency Transportation Operations, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 7: System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs</p>

Table 9. (Continued).

STEPS	PHASE: RECOVER	ACTION ITEM	PURPOSE	SUPPORTING RESOURCES
1. Restore traffic to affected area.	RECOVER-01	Restore essential services.	Conduct damage assessments, debris removal, and hazardous materials disposal, and repair roads and other transportation facilities to restore essential services to the affected area.	<p>Routes to Effective Evacuation Planning Primer Series: Using Highways during Notice Evacuations Operations, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p>
	RECOVER-02	Reestablish traffic management in affected area.	Establish routes to move traffic into, out of and/or around the affected area. Coordinate traffic management with restoration plans for affected communities and resumption of government operations and services through individual, private-sector, nongovernmental, and public assistance programs.	<p>Best Practices in Emergency Transportation Operations Preparedness and Response: Results of the FHWA Workshop Series, http://www.ops.fhwa.dot.gov/publications/etopr/best_practices/etopr_workshop.htm</p> <p>Emergency Transportation Operations, http://ops.fhwa.dot.gov/eto_tim_pse/index.htm</p> <p>National Traffic Incident Management Coalition, http://timcoalition.org/?siteid=41&pageid=590</p> <p>ITE, Traffic-Incident Management Committee, http://www.trafficincident.org/</p>
	RECOVER-03	Reentry into evacuated/sheltered-in-place/quarantined area.	Implement a phased approach to bring evacuated/sheltered-in-place/quarantined residents and others into the affected area.	<p>Routes to Effective Evacuation Planning Primer Series: Using Highways during Notice Evacuations Operations, http://www.ops.fhwa.dot.gov/publications/evac_primer/00_evac_primer.htm</p> <p>Using Highways for No-Notice Evacuations: Routes to Effective Evacuation Planning Primer Series, http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/index.htm</p>
	RECOVER-04	Conduct emergency repairs.	Develop an approach to infrastructure repair/replacement and decontamination, determining what can be done quickly and what will require more time.	<p>Accelerated Bridge Construction Technologies, http://www.fhwa.dot.gov/bridge/accelerated/index.cfm</p> <p>TCM Pooled-Fund Study, Current Projects, Recovery and Mitigation for Transportation Management Centers, http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=79&%20new=3</p> <p>EPA: Homeland Security Research, http://www.epa.gov/nhsr/</p>
	RECOVER-05	Perform After-Action Reviews.	Assess response activities to determine what went well and where improvements are needed.	<p>NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 7: System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs</p>
	RECOVER-06	Return to readiness.	Incorporate recommendations from the After-Action Review into existing emergency response plans and procedures.	<p>NCHRP Report 525, Vol. 9: Guidelines for Transportation Emergency Training Exercises, search for title at www.TRB.org/SecurityPubs</p> <p>NCHRP Report 525, Vol. 7: System Security Awareness for Transportation Employees, search for title at www.TRB.org/SecurityPubs</p>



Appendices

The following appendices are contained herein:

- A. Guide to Using Portions of the 2002 Guide
- B. Emergency Response Legal Authorities
- C. Emergency Response Stakeholder Responsibilities
- D. Key Emergency Response Definitions
- E. Key Traffic Incident Definitions
- F. Intelligence Fusion Centers
- G. Transportation Emergency Response Effects Tracking (TERET)
- H. Model Emergency Operations Plans
- I. Policy and Procedural Memoranda and Memoranda of Understanding
- J. Training/Exercise Plans

The following appendices are available on line on the TRB website:

- K. Annotated Bibliography
- L. Identification and Delineation of Incident Management and Large-Scale Emergency Response Functions
- M. NCHRP Project 20-59/Task 23 PowerPoint Presentation

APPENDIX A

Guide to Using Portions of the 2002 Guide

As noted in the 2010 Guide, much of the original 2002 *Guide to Updating Highway Emergency Response Plans for Terrorist Incidents* (NCHRP, 2002) remains valid today. This appendix identifies those still-valid portions and those that are not. (NOTE: a word-for-word review of the 2002 Guide was not conducted, so take these as high-level comments.)

2002 Guide Section	Remains Valid	No Longer Valid	Comments
General	The 2002 Guide refers to <i>variable message signs</i> , while the 2010 Guide uses the (now) more popular <i>dynamic message signs</i> (DMSs); they are the same thing. Similarly, the 2002 Guide refers to <i>Emergency Management Plans</i> , while the 2010 Guide uses <i>Emergency Operations Plans</i> .	References to the <i>Office of Homeland Security</i> should now read as the <i>Department of Homeland Security</i> (DHS), and the Federal Emergency Management Agency (FEMA) (also called <i>Administration</i> in the report) is now under DHS.	References to Departments of Transportation (DOTs) should now be considered as State Transportation Agencies. Websites listed in the 2002 Guide have not been revalidated.
Executive Summary	Mostly still valid, but the 2010 Guide covers all hazards.		
1. Introduction	All		
2. Existing State and DOT Emergency Response		In Section 2, Planning replaces the first of the four EM components, but the purpose remains the same.	
		In Section 2, <i>Institutional Context for Emergency Response</i> , the Comprehensive Preparedness Guide replaces the FEMA-established Federal Response Plan, but the former is not mandatory. Also, ESFs #13–15 have been added.	Table 2 suggests that state transportation agencies should have a secondary role in ESFs #6 (to transport mass-care victims) and #12 (providing fuel to other caregivers). The agencies have secondary roles in the new ESFs #13 and #14 as well.

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2002 Guide Section	Remains Valid	No Longer Valid	Comments
3. The Expanded Terrorist Threat	While FEMA is still the primary federal emergency agency, it is now under the <i>Department of Homeland Security</i> .	In Section 3.3, Presidential Decision Directives have been replaced by Homeland Security Presidential Directives (HSPDs), as discussed in the 2010 Guide.	In general, the threats posed have expanded since 2002.
4. Thinking Through Highway Emergency Response Strategies.	Mostly still valid. The National Incident Management System (NIMS) has replaced earlier guidance.		Now we would recommend more emphasis on coordination with Emergency Operations Centers and the new Fusion Centers.
	4.1.11, ConOps, is still valid, but should be coordinated/integrated with the Intelligent Transportation Systems (ITS) Concept of Operations.		
	4.2, Costing is still valid, but state transportation agencies must recognize that incident scene maintenance of traffic and high-visibility apparel are now required.		
	4.2.1, Transportation funding should refer to the most current authorization act, but the concept remains valid.		
Appendix A, NCHRP Contact	Replace the reference to PB Farradyne with: NCHRP 500 Fifth Street, NW Washington, DC 20001		
Appendix E, Bibliography		Replace all references to <i>PB Farradyne</i> (PBF) with <i>Telvent Farradyne</i> . (PB alone remains valid.) The FEMA State and Local Guide (SLG) 101 has been replaced by the Comprehensive Preparedness Guide (CPG) 101. (CPG 101, 2009) The Bill listed for the 107 th Congress, dated 9/25/2001, is no longer valid.	There are numerous additional resources to supplement those listed here; see the Bibliography to the 2010 Guide.

APPENDIX B

Emergency Response Legal Authorities

Name	Description
Public Laws	
Homeland Security Act of 2002 (6 U.S.C. 101)	This Act created the Department of Homeland Security and, among other things, defined <i>first responder</i> (see definitions in Appendix D). This is the primary authority for Homeland Security Presidential Directive (HSPD) Number 5 (these are discussed in the next subsection) and a major supporter of HSPD-8.
Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122)	Established the authority for federal assistance to state, [territorial,] tribal, and local governments affected by a major disaster or emergency. This is another authority for HSPD-8 and for other emergency assistance policies and procedures.
USA PATRIOT Act of 2001 (42 U.S.C. 5195c(e))	Created the authority to protect and defend critical infrastructure and other security authorities and is a basis for HSPD-7.
PL-104-321, 1996	Law ratified the Emergency Management Assistance Compact (EMAC) national interstate mutual-aid agreement that provides supplemental support to that provided by federal agencies (mainly FEMA and FHWA for transportation). All 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands have adopted by law EMAC. EMAC support is also available to local agencies if the state has passed intrastate laws permitting as much.
Homeland Security Presidential Directives	
HSPD-5, Management of Domestic Incidents	Purpose: “To enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive national incident management system.” It created the National Incident Management System and the National Response Plan; the latter has been replaced by the National Response Framework.
HSPD-7, Infrastructure Identification, Prioritization, and Protection	“This directive establishes a national policy for Federal departments and agencies to identify and prioritize United States critical infrastructure and key resources and to protect them from terrorist attacks.” This led to the National Infrastructure Protection Plan.
HSPD-8, National Preparedness	“This directive establishes policies to strengthen the preparedness of the United States to prevent and respond to threatened or actual domestic terrorist attacks, major disasters, and other emergencies by requiring a national domestic all-hazards preparedness goal, establishing mechanisms for improved delivery of Federal preparedness assistance to State and local governments, and outlining actions to strengthen preparedness capabilities of Federal, State, and local entities.” This led to creation of a National Preparedness Goal, which was implemented in the form of the National Preparedness Guidelines (NPG) document and several other guidelines.



APPENDIX C

Emergency Response Stakeholder Responsibilities²⁵

Stakeholder	Emergency Management Responsibilities
Federal Agencies	
U.S. Department of Transportation (U.S.DOT)	Serves as head of federal ESF#1.
Federal Highway Administration (FHWA)	While FHWA does not own or operate roads (except on federal property), it is tasked with aiding the intelligent operation of those facilities by the agencies that do own and operate them. FHWA publishes <i>accepted practices</i> and planning documents to demonstrate what is being done around the country, including regarding traffic incident and emergency management.
Other U.S.DOT Administrations	Depending on the mode affected by an incident, other Administrations may be stakeholders responsible for coordinating their agencies' activities.
Department of Homeland Security (DHS)	DHS is responsible overall for homeland security and EM/ER, as articulated in its mission statement: We will lead the unified national effort to secure America. We will prevent and deter terrorist attacks and protect against and respond to threats and hazards to the Nation. We will secure our national borders while welcoming lawful immigrants, visitors, and trade. (DHS, 2008)
Federal Emergency Management Agency (FEMA)	As a major department of DHS, FEMA leads the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration. FEMA is a major provider of EM policy and financial support for emergency operations.
Transportation Security Administration (TSA)	TSA, also a major part of DHS, is primarily responsible for the security of airports and the flying public, highways, commercial vehicle operations, and other modes.

²⁵Most of this material was adapted from the TIM/Quick Clearance Toolkit, by the same principal author. (I-95CC, 2009).

Stakeholder	Emergency Management Responsibilities
Regional Organizations	
Regional Coalitions	<p>While there are many multi-state regional organizations in the nation, one of particular interest is the I-95 Corridor Coalition. Of most immediate concern to the 2010 Guide is the set of four Highway Operations Groups (HOGs) of the Coalition. These provide information exchange, promote standardization of practices, and provide training. A second very significant regional organization in the Coalition is TRANSCOM, which is a multi-state/agency operation that serves as the communications hub for the Corridor. The Corridor is currently operating a similar system called STIX (Southern Traffic Incident eXchange) for the four southern states (FL, GA, NC, and SC), with the hub located in the Atlanta NaviGATOR TMC.</p>
State, Territorial, and Tribal Agencies	
State Transportation Agency or Territorial/Tribal Equivalent	<p>The state transportation agency (usually a DOT) is responsible for the operations and maintenance of the highway system. It normally conducts overall planning and implementation of traffic incident management programs. In some regions they are also involved in developing, implementing, and operating traffic management centers (TMCs); providing intelligent transportation systems (ITS); as well as managing incident response patrols. Specific responsibilities—particularly maintenance forces (including Asset Maintenance/Management Contractors) and/or incident response patrols for on-scene activities—are as follows:</p> <ul style="list-style-type: none"> Clear minor incidents, Coordinate and provide for vehicle and spilled cargo removal, Mitigate incidental vehicle fluid spills, Create interagency agreements and open roads policies, Promote quick clearance laws and policies for vehicle/cargo removal, Promote public information campaigns on quick clearance, Support public-private towing agreements, Construct vehicle relocation areas, such as crash investigation sites, Set traffic incident clearance performance goals, Coordinate incident management and responder training, Assume a leadership role in traffic incident management in general and quick clearance in particular, and Work with emergency management departments to provide transportation services in ER.
Department of Emergency Management (DEM)	<p>The DEM (often called by other names) has the statutory responsibility for overall emergency management at the state level. The State DEM ensures that the state is prepared to respond to emergencies, recover from them, and mitigate their impacts. It typically operates a State Emergency Operations Center (SEOC), which is activated for Governor-declared emergencies (GDE) in response to any major hazard. A number of other state agencies take part in both developing State Emergency Operations Plans (EOPs) and helping staff the SEOC when it is activated.</p>

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Stakeholder	Emergency Management Responsibilities
State Patrol (SP)	The State Patrol is generally the state's largest traffic law enforcement agency, except for large metropolitan police forces. SPs are typically responsible for managing the majority of incidents on all state routes. They are involved in all aspects of TIM from incident detection to clearance and in ER from response to recovery.
Department of Military (DM) or National Guard	The National Guard is generally called up by the governor to keep order, protect life and property, and otherwise assist in emergencies, particularly in evacuations and recovery operations. In some very serious catastrophes, the DM or National Guard may be federalized and operate under the U.S. Department of Defense.
Department of Law Enforcement (DLE)	DLE's role in TIM/ER is generally confined to criminal investigations.
Department of Environmental Protection (DEP)	The state DEP is the state's lead agency for environmental management. The department administers regulatory programs and issues permits for air, water, and waste management.
Emergency Operations Center (EOC)	<p>EOCs are the organizations primarily charged with managing emergencies. They are typically operated at the state level (SEOC) for major disasters, as well as at the regional (usually county) level (LEOC) for more locally focused incidents or to coordinate with other EOCs for larger incidents. EOCs may be organized in a number of ways, but most tend to follow the guideline outlined in the National Response Framework and CPG 101, namely the 15 Emergency Support Functions, or ESFs.</p> <p>Typically, the SEOC is only activated for a GDE. Regional EOCs may be partially or fully activated by designated local authorities, generally the board of county commissioners (for a general state of emergency), mayor or county administrator (for local emergencies), and so forth. Each EOP should make clear what the activation levels are, who is activated for each level, and who has the authority to direct the activation.</p>
Intelligence Fusion Center (FC)	<p>Fusion Centers are fairly new players on the national scene. Following 9/11, it was realized that better collection, analysis, and dissemination of intelligence data and information was needed. At this writing, there are 43 FCs nationwide (see Appendix F for the current locations), some at the state level, but most actually acting as regional centers. The FCs were already linked to (primarily) security organizations. Indeed, some are co-located with Federal Bureau of Investigation (FBI) offices, while others are in EOCs or in standalone locations. The U.S.DOT has realized that this resource is valuable to TIM and ER as well, and a study was under way at this writing to define how best FCs, as well as EOCs, can be linked to TMCs. Appendix F also illustrates these linkages graphically.</p> <p>In Kentucky, the FC is co-located with the TMC.</p>
Joint Telecommunications Centers	Many states have joint communications groups that operate the state law enforcement radio system or some common telecommunications system. In some states, this group participates in the state law enforcement dispatch centers. Ideally, these should be linked to TMCs as well. In Florida, and probably elsewhere, several are co-located with TMCs.

Stakeholder	Emergency Management Responsibilities
Authorities	Transportation authorities operate much like states or territories and perform similar functions; however, they are semi-autonomous.
Local Agencies	
Law Enforcement (Police and Sheriffs)	<p>Generally, limited-access and state highways are part of the national transportation system and are primarily patrolled and responded to by the State Patrol; however, some limited-access routes and most state roads within local municipality city limits are the responsibility of the city police. General law enforcement TIM/ER responsibilities are</p> <ul style="list-style-type: none"> Assist in incident detection; Secure the incident scene; Serve as incident commander; Clear minor incidents quickly; Assist disabled motorists; Provide emergency medical assistance until help arrives; Direct traffic through/around the incident; Conduct crash investigations; Maintain private towing contracts; Ensure rapid response of recovery and towing contractors; Safeguard personal property in all emergencies; and Promote laws, policies, practices, and public awareness campaigns to promote quick clearance and recovery.
Fire Rescue	<p>Fire and rescue services are provided by local fire departments and by surrounding fire departments through mutual-aid agreements. The fire department is the primary emergency response incident command agency for fire suppression, hazardous materials spills, rescue, and extrication of trapped crash victims. Typical fire department TIM/ER responsibilities include</p> <ul style="list-style-type: none"> Protect the incident scene, Serve as incident commander during fire-related stages, Provide traffic control until police or state transportation agency arrival, Provide emergency medical care, Provide initial HAZMAT response and containment, Fire suppression, Rescue crash victims from wrecked vehicles, Rescue crash victims from contaminated environments, Arrange transportation for the injured, and Assist in incident clearance and emergency recovery.
Emergency Medical Services (EMS)	<p>The primary responsibility of EMS is the triage, treatment, and transport of crash victims. Private companies often provide patient transport under contract. Typical TIM/ER roles and responsibilities assumed by EMS can include</p> <ul style="list-style-type: none"> Provide emergency medical care; Serve as incident commander for medical emergencies; Determine destination and transportation requirements for the injured; Coordinate victim evacuation with fire, police, and ambulance or airlift;

Stakeholder	Emergency Management Responsibilities
	<p>Determine approximate cause of injuries for the trauma center; and Remove medical waste from incident scenes.</p> <p>In some locations, EMS is an integral part of Fire Departments; indeed, some fire fighters are dual certified as fire fighters and EMS paramedics.</p>
Medical Examiner/ Coroner	<p>By law, Medical Examiners (or Coroners) are responsible for investigating deaths that result from anything other than natural causes. As such, they play an important role in investigating fatal accidents that occur on roadways and in other emergencies. They can cooperate with other responders by enabling those responders to remove deceased persons from the roadway, and even from the scene—under mutually agreeable circumstances, of course.</p>
City and County Public Works and Traffic Engineering	<p>City and county transportation agencies have roles similar to the state transportation agencies, but at the local level. They are responsible for the highways not included under the state's highway system.</p>
Transit Agencies (public or private, including school buses)	<p>Transit vehicles are a critical component for moving large groups of people to be evacuated, sheltered-in-place, or quarantined. It is important to have agreements in place to activate fleets to carry out this function. Operators need to be trained in fundamental care for disabled and transportation-disadvantaged persons.</p>
Private Partners	
Towing and Recovery Operators	<p>Towing and recovery service providers are responsible for the safe and efficient removal of wrecked or disabled vehicles and debris from the incident scene. Their typical responsibilities include</p> <ul style="list-style-type: none"> Remove vehicles from incident scene, Protect victims' property and vehicles, Remove debris from the roadway, and Provide transportation for uninjured vehicle occupants. <p>Towing and recovery companies that respond to highway incidents are indispensable components of all traffic incident management programs. Even programs that include incident response patrols with relocation capability depend on towing and recovery service providers. Challenges facing the towing and recovery industry are unique.</p> <p>A recent state-of-the-practice scanning tour offers some good ideas for innovative towing and wrecker operations (I-95CC, 2007b).²⁶</p>
HAZMAT Contractors	<p>Hazardous materials contractors are hired by emergency or transportation authorities to clean up and dispose of toxic or hazardous materials. Their traffic incident management role and responsibilities include</p> <ul style="list-style-type: none"> Determine proper/prudent method of hazardous material cleanup and disposal, Dispose of hazardous materials or provide on-site cleanup, and Participate in the unified command at HAZMAT scenes.
Asset Maintenance/ Management Contractors	<p>When used by the state transportation agency, these contractors serve in the same role as the agency's maintenance forces. It is important in drafting these contracts to clearly define contractor responsibilities for ER and TIM.</p>

²⁶Visit <http://www.i95coalition.org/i95/Projects/ProjectDatabase/tabid/120/agentType/View/PropertyID/109/Default.aspx>

Stakeholder	Emergency Management Responsibilities
Motor Carrier Companies	Motor carriers, particularly through their professional and trade associations, can improve awareness of good TIM practices to their drivers, such as assisting in quick clearance, which can lead to better incident management overall.
Insurance Companies	These insure people, vehicles, and property, but they can also promote safe practices in incident response.
Traffic Media	The media report on incidents, alert motorists, provide alternate route information, and provide other critical information. They are a close partner, and the relationships with incident and emergency management officials must be based on mutual trust.
Associations	
Volunteer Organizations	The American Red Cross and many other associations are vital partners in emergency response. Their specific role and responsibilities should be well defined in the EOPs.
Automobile Associations	These organizations assist agencies, support TIM/EM programs, and inform motorists of good practices.
Technical Societies (e.g., ITS State Chapter, State Section ITE)	These assist agencies, support (mainly) TIM programs, and provide training.
Associations of Cities, Counties, Sheriffs, Police, EMS, etc.	Same as the foregoing, but more generally involved in EM.
Community/Corridor Traffic Safety Teams (CTSTs)	While only present in a few states, CTSTs assist agencies, support TIM programs, and provide safety programs. They could be useful in ER as well.
Chambers of Commerce	These could assist agencies by supporting TIM/EM programs and engaging businesses in good preparedness practices.
Other Organizations and People	
Citizens for Better Transportation (state-by-state)	These groups can assist agencies, support TIM/EM programs, and, most importantly, lobby for favorable legislation.
Citizens Groups	These could be useful channels for outreach, both through speaking engagements as well as programmatic undertakings by the organizations.
Individuals and Families	All should be encouraged to practice good preparedness, such as having generators, adequate emergency supplies and equipment; making escape and evacuation plans and arrangements for pets; stocking up on fuel and food and medicines; and identifying vital papers in advance of impending emergencies.



APPENDIX D

Key Emergency Response Definitions

Below is a list of key terms that the authors perceive to be particularly germane to state transportation agencies and their counterparts at the other levels of government. Most definitions are nearly exact quotes, but in some cases, words in brackets were added for further clarification or expansion. The sources used for the definitions are indicated in parentheses. Further explanatory notes are in the third column.

Note that the National Incident Management System and most other policy and guidance documents referred to in this 2010 Guide contain definition lists as well.

Term	Definition	Comment
Catastrophic incident	Any natural or man-made incident, including terrorism, that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions. A catastrophic incident could result in sustained regional or national impacts over a prolonged time period; almost immediately exceeds resources normally available to state, [territorial,] local, tribal, and private-sector authorities in the affected area; and significantly interrupts governmental operations and emergency services to such an extent that national security could be threatened. (All Hazards Consortium, draft definition)	
Emergency	Any incident, whether natural or man-made, that requires responsive action to protect life or property. Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, an emergency means any occasion or instance for which, in the determination of the president, federal assistance is needed to supplement state and local efforts and capabilities to save lives and to protect property and public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States. (Stafford Act and NIMS)	In this 2010 Guide, an emergency can exist at a local, regional, or state level once declared by appropriate authority, even if not a Stafford Act incident.

Term	Definition	Comment
Emergency management	[Paraphrased] The broad class of agencies or people involved in the practice of managing emergencies and other incidents of all kinds. (NIMS, 2008)	Emergency response is a subset of emergency management.
Emergency Management Assistance Compact (EMAC)	A national interstate mutual-aid agreement that enables states to share resources during times of disaster. EMAC has grown to become the nation's system for providing mutual aid through operational procedures and protocols that have been validated through experience. EMAC is administered by NEMA, the National Emergency Management Association, headquartered in Lexington, KY. EMAC acts as a complement to the federal disaster response system, providing timely and cost-effective relief to states requesting assistance from assisting member states. [Adapted from FEMA-EMAC, 2007]	The 2010 Guide includes guidance on the appropriate application of the EMAC network. It is also available for local mutual-aid assistance in states that have passed enabling legislation.
Emergency management/response personnel	Includes federal, state, territorial, tribal, sub-state regional, and local governments, private-sector organizations, critical infrastructure owners and operators, nongovernmental organizations (NGOs), and all other organizations and individuals who assume an emergency management role. Also known as Emergency Responder. (See Section 2 (6), Homeland Security Act of 2002, Pub. L. 107-296, 116 Stat. 2135 (2002). (NIMS, 2008)	The 2010 Guide uses <i>emergency responder</i> and <i>emergency response personnel</i> for the generic references. These represent a broader community than <i>first responders</i> .
Emergency response	The planned and actual response by multiple agencies to incidents that can include acts of terrorism, wildland and urban fires, floods, hazardous material spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies. [Adapted from (NIMS, 2008). The phases of ER are <i>plan, prepare, respond, and recover</i> . (NRF, 2008)]	Traffic incidents are assumed to be included.
Emergency Transportation Operations (ETO)	A coordinated, performance-oriented, all-hazard approach to support the development of a formal program for the improved management of traffic incidents, natural disasters, security events, and other emergencies on the highway system. Focuses on an enhanced role for state departments of transportation (DOTs) as participants with the public safety community in an interagency process. [Adapted from NCHRP Report 525, Volume 6, 2005.]	

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Term	Definition	Comment
First responder	<p>Refers to those individuals who, in the early stages of an incident, are responsible for protecting and preserving life, property, evidence, and the environment, including emergency response providers as defined in Section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101), as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators) who provide immediate support services during prevention, response, and recovery operations (HSPD-8).</p>	<p>When used generically in the 2010 Guide, <i>first responder</i> is not capitalized. In this generic sense, state DOT and counterpart employees may be considered first responders.</p>
Fusion Center	<p>Centers that integrate various streams of information and intelligence, including that flowing from the federal government, state, [territorial,] tribal, and local, governments, as well as the private sector, providing a more accurate picture of risks to people, economic infrastructure, and communities that can be developed and translated into protective (e.g., preventative or responsive) actions. The ultimate goal of fusion is to prevent man-made (terrorist) attacks and to respond to natural disasters and man-made threats quickly and efficiently should they occur.</p> <p>[Paraphrased from Rollins, 2008.]</p>	<p>FCs are referred to differently in the various states, see Appendix F for the current centers. FHWA is preparing a guideline for Fusion Center/TMC/EOC linkages/integration.</p>
Incident	<p>An occurrence or event, natural or man-made, that requires a response to protect life or property. Incidents, for example, can include major disasters, emergencies, terrorist attacks, terrorist threats, civil unrest, wildland and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, tsunamis, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.</p> <p>(NIMS, 2008)</p>	<p>Traffic incidents are considered as included, even if minor.</p>
Incident, traffic	<p>See <i>traffic incident</i>.</p>	
Incident Command System (ICS)	<p>A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during</p>	<p>The core of the National Incident Management System. Also see Unified Command.</p>

Term	Definition	Comment
	incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations. (NIMS, 2008)	
Major disaster	Any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought) or, regardless of cause, any fire, flood, or explosion in any part of the United States, which in the determination of the president causes damage of sufficient severity and magnitude to warrant major disaster assistance under [the Stafford] Act to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby. (Stafford Act)	The 2010 Guide actually treats <i>catastrophic event</i> as a more severe event than a <i>major disaster</i> . For example, Hurricane Rita might be considered as a major disaster while Katrina was, and continues to be, catastrophic.
Security counter-measures	Actions that can be taken to avoid or mitigate security threats, the cornerstones of which are <i>detect</i> , <i>deter</i> , <i>deny</i> , and <i>defend</i> .	Some security countermeasures can actually impede emergency response, for example the security need to have secure, qualified identifications of responders entering an incident scene, might delay or even bar responders. This should be considered in the EOPs.
Traffic incident	Any nonrecurring event that reduces roadway capacity or an abnormal increase in demand. Such events include traffic crashes, disabled vehicles, spilled cargo, highway maintenance and reconstruction projects, and special nonemergency events (e.g., ball games, concerts, or any other event that significantly affects roadway operations). (FHWA, 2010)	Although emergencies are not mentioned, they are included.
Traffic incident management	A tool to achieve and maintain public safety, travel efficiency, and air quality standards by reducing the impacts of traffic incidents. (I-95CC, 2009)	TIM should be a subset of emergency management.
Unified Command (UC)	An application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the UC, often the senior person from agencies and/or disciplines participating in the UC, to establish a common set of objectives and strategies and a single Incident Action Plan (IAP). (NIMS, 2008)	UC is thus one form of ICS that engages a cooperative command structure with shared authority.



APPENDIX E

Key Traffic Incident Definitions

Traffic incidents are all too common in the transportation world. As stated in the 2010 Guide, these are the more frequent challenges to state transportation agencies and their public safety—and other responder—colleagues. With the exception for minor traffic incidents, they are subject to National Incident Management System requirements. This appendix discusses two facets of traffic incidents, (1) the level of incident, and (2) the timeline of an incident.

Incident Level

The MUTCD defines three levels of incidents—minor, moderate, and major, sometimes referred to as levels 1, 2, and 3, respectively. Table E.1 summarizes the characteristics of these.

To distinguish these from emergency-type incidents, the 2010 Guide refers to these as *traffic incidents*. It is important to understand that a major traffic incident could become a major incident in the EM manner, for example, the reduced-visibility major incident on I-4 in Florida.

Incident Timeline²⁷

Figure E.1 illustrates the timeline of a typical incident that might be a crash affecting one or more travel lanes. Not all of these steps might occur in a particular incident, and there may be other interwoven relationships, but this represents the typical sequence for most moderate to serious incidents. The steps are shown in a staggered fashion simply to illustrate that the incident timeline is not uniform; however, the time increments are purely relative. In the discussions below, the duration of particular events will be noted as letter pairs. For example, the actual incident duration would be A–M, as shown in Figure E.1(a), while the total influence time of the incident is A–N, as shown in Figure E.1(b).

The durations of the common phases of an incident would thus be as follows:

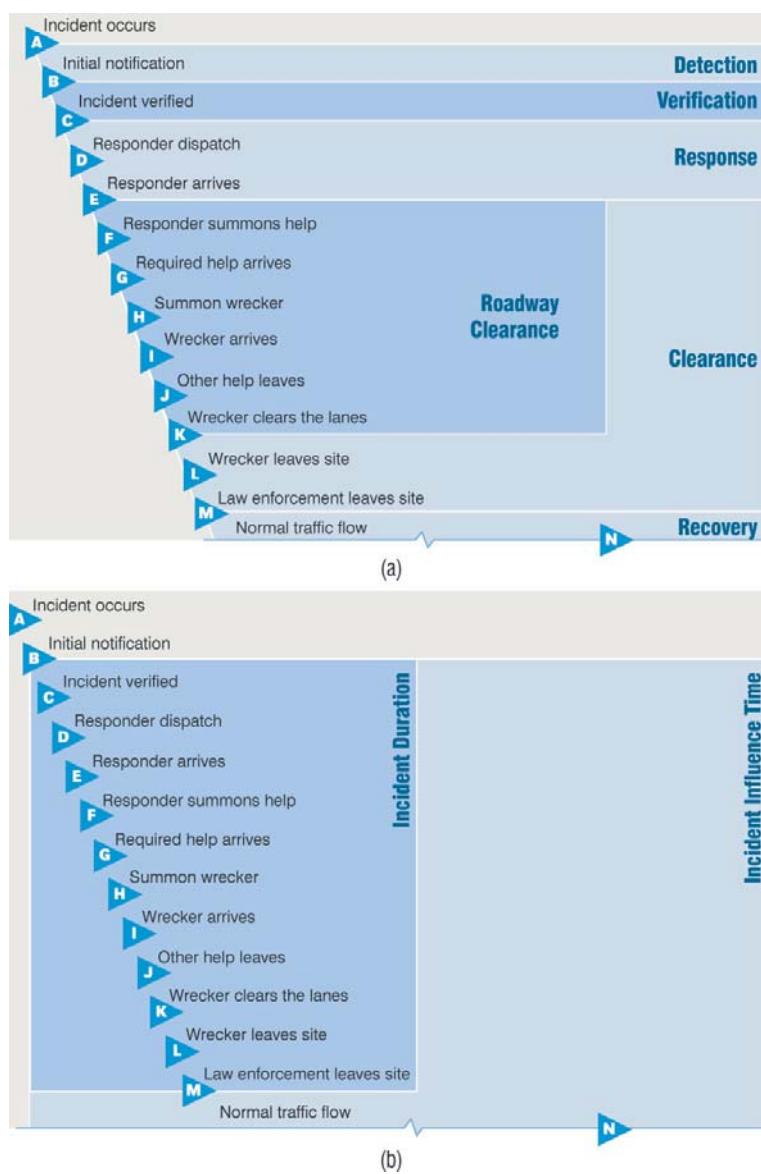
- Detection that an incident has occurred: A–B;
- Verification that the incident has occurred, determining its location, and having sufficient information to enable an appropriate response: B–C;
- Response by dispatching appropriate assets to resolve the incident: C–E;

²⁷This subsection was adapted using almost the same text from the TIM/Quick Clearance Toolkit, by the same principal author. (I-95CC, 2009)

Table E.1. Traffic incident characteristics.

Level	MUTCD Duration	Common Cause	Frequency
Minor (1)	< ½ hour	Fender bender, disablement, debris	Many per day
Moderate (2)	½ to 2 hours	Single vehicle crash, minor spills	Many per week
Major (3)	> 2 hours	Collisions, injuries, fatalities, large spills	Occasional

Source: Adapted from NCHRP Report 525, Volume 6, 2005



Source: (I-95CC, 2009)

Figure E.1. Typical traffic incident timeline.

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- Clearance, or the removal of the vehicles, damaged property, and victims from the incident scene, and complete reopening of any blocked lanes: E–M (with roadway clearance as a subset, E–K); and Recovery to normal traffic flow: M–N.

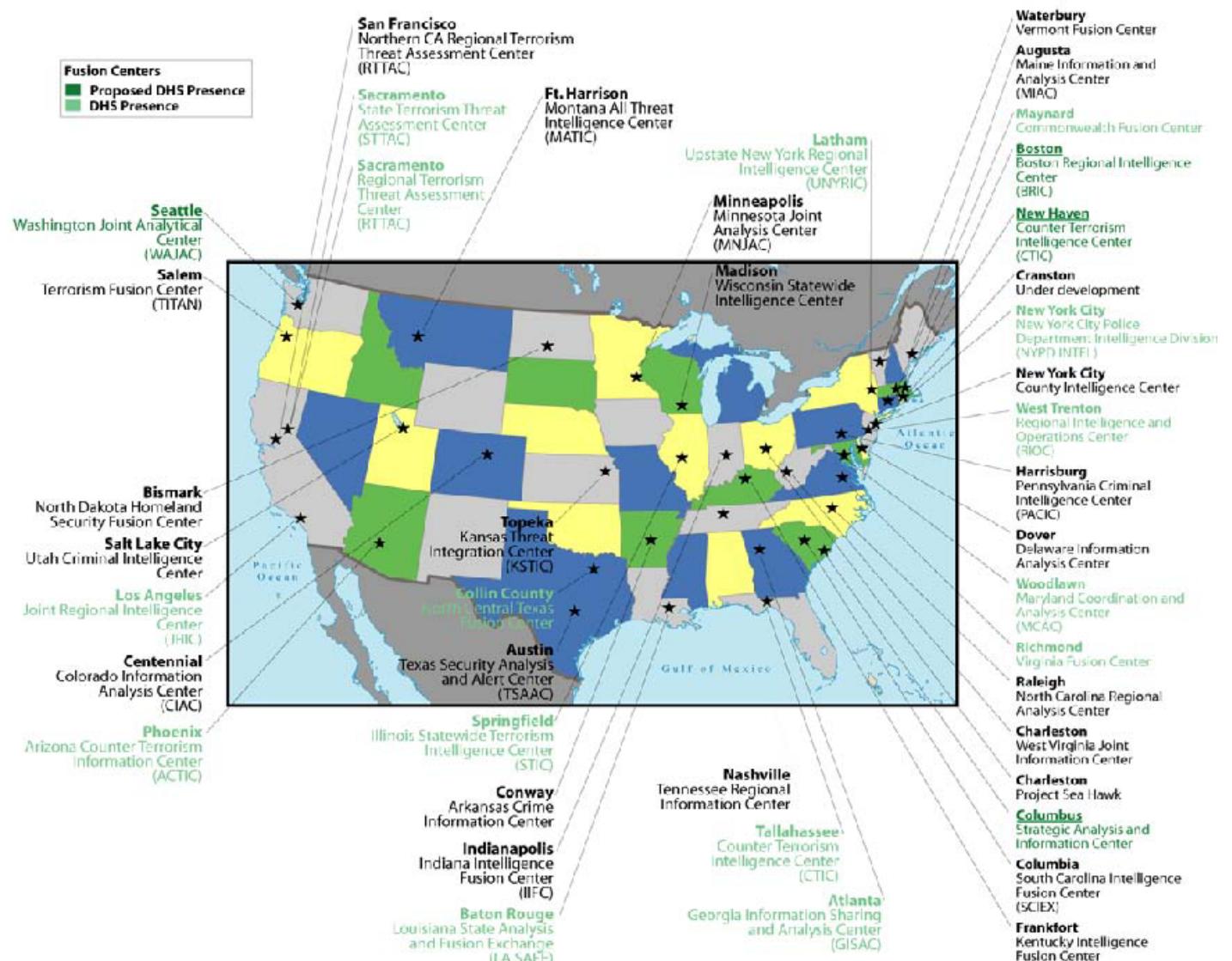
The actual time of an incident is generally difficult to determine with certainty, so durations are generally started with initial notification, or point B. In terms of actual duration, the recovery time (the difference between the total incident influence time and the actual duration) can be 4–5 times longer than the incident duration itself.

Note that at points D and E, the first responder has not been explicitly identified. This is often law enforcement; however, in areas with service patrols, it is often the latter, and law enforcement would be one of the *secondary* responders (in time, not importance).

Further, this graphic presumes a sufficiently serious incident and that a full range of incident management services will be required, almost certainly law enforcement; possibly fire rescue, emergency medical, and hazardous material handling; and wrecker(s). Thus, it likely represents a moderate or major traffic incident. Minor traffic incidents generally do not require most of these responses and services.

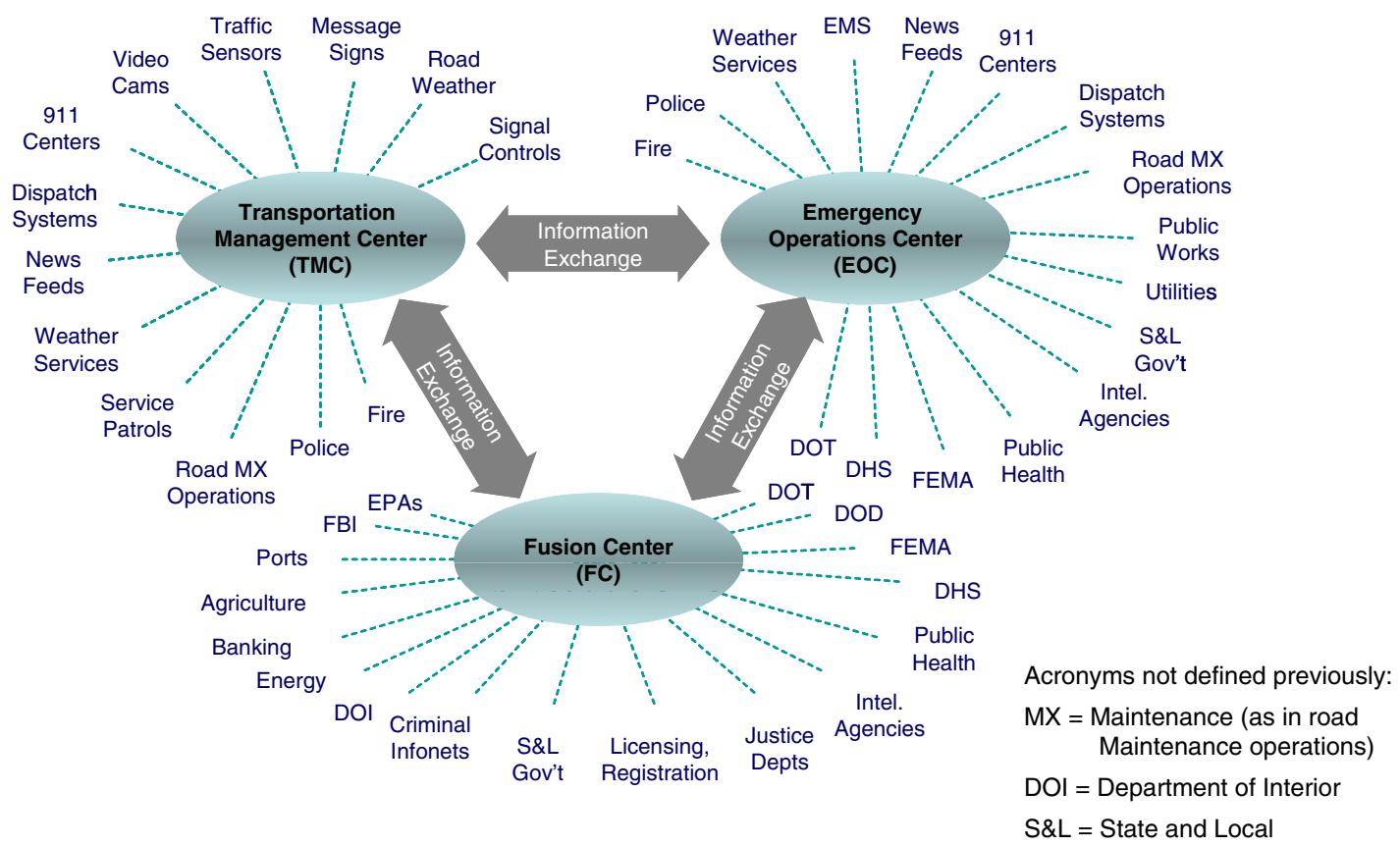
APPENDIX F

Intelligence Fusion Centers



Source: CRS, 2008

Figure F.1. Map of current and planned Fusion Centers.



Source: FHWA, 2008

Figure F.2. Information flows between TMCs, EOCs, and FCs.



APPENDIX G

Transportation Emergency Response Effects Tracking (TERET)²⁸

Transportation Emergency Response Effects Tracking (TERET) is a tool developed under NCHRP Project 20-59(19), which was published as *NCHRP Report 525: Surface Transportation Security, Volume 10: A Guide to Transportation's Role in Public Health Disasters*. TERET is designed to assist transportation and emergency managers in projecting potentially critical conditions that may develop because of changes in transportation services caused by a large emergency event. During both response and recovery from an emergency event, emergency response actions can alter traffic patterns that cause traffic detours and lane redirections, restricted access, reduced or suspended service, equipment and personnel reallocations, etc. These changes or disruptions in traffic patterns may have critical effects on deliveries and worker transport for essential services that must be continuously maintained despite emergency events. Altered traffic patterns may also influence, and be influenced by, the use of the transportation system for mass care needs associated with an emergency event.

TERET is a Microsoft Excel™ workbook designed to help managers and planners assess the effects of emergency response actions on transportation at state and local levels. TERET has two separate components. These components and their objectives are

- Essential Services Transportation—Use of the transportation system to provide essential services for community health and sustenance. TERET’s objective is to (1) assist in identifying criticalities that may arise in essential services as a result of traffic pattern changes and associated delays in deliveries and services and (2) facilitate identification of solutions to prevent or mitigate these criticalities.
- Mass Care Transportation—Use of the transportation system to (1) transport people to decontamination, triage, and medical service/hospital sites, and (2) provide supplies needed for populations in shelter-in-place, temporary shelter, and quarantine shelter. TERET’s objective is to provide a list of some of the types of transportation that may be needed for these actions and to calculate the remaining time these transportation services will be needed based on command chain estimates of the overall duration of these needs.

²⁸This text was adapted from the cited report. (NCHRP Report 525, Volume 10, 2005)



APPENDIX H

Model Emergency Operations Plans

- H-1. COMPREHENSIVE EMERGENCY MANAGEMENT PLAN (CEMP), Kitsap County (Washington) Department of Emergency Management, December 2003.
http://www.kitsapdem.org/pdfs/kc_plans/KCemp04.pdf (As of April 2009)
- H-2. EMERGENCY MANAGEMENT PLANNING FOR TEXAS TRANSIT AGENCIES: A GUIDEBOOK, TxDOT, Report FHWA/TX-00-1834-4), February 2000.
<http://tti.tamu.edu/documents/1834-4.pdf> (As of April 2010)
- H-3. EMERGENCY OPERATIONS PLAN (EOP) [TEMPLATE], Montgomery County (PA) Department of Public Safety.
<http://dps.montcopa.org/dps/cwp/fileserver,Path,DPS/OEP/Worddocs/EOP.doc,assetguid,db0dadbe-308b-49c3-baac1ff342bbe9ec.doc> (As of April 2009)
- H-4. MODEL LOCAL EMERGENCY OPERATIONS PLAN, Connecticut Department of Emergency Management and Homeland Security, 2006
http://www.ct.gov/demhs/lib/demhs/emergmgmt/local_eop_apr_2006.doc (As of April 2009)
- H-5. OREGON STATE EMERGENCY MANAGEMENT PLAN
http://www.oregon.gov/OMD/OEM/plans_train/plans_training.shtml (As of April 2009)
- H-6. REGIONAL EMERGENCY COORDINATION PLAN, Metropolitan Washington Council of Governments, September 2002.
<http://www.mwcog.org/security/security/plan.asp> (As of April 2009)
- H-7. VIRGINIA BASIC EMERGENCY OPERATIONS PLAN, statewide
<http://www.vdem.state.va.us/library/plans/index.cfm>
- H-8. VIRGINIA DOT EMERGENCY TRANSPORTATION PLAN AND HURRICANE TRAFFIC CONTROL PLAN
http://www.virginiadot.org/about/emer_response.asp (As of April 2009)
- H-9. WisDOT EMERGENCY TRANSPORTATION OPERATIONS PLAN
www.dot.wisconsin.gov/projects/state/docs/2030-chapter11.pdf (As of April 2009)



APPENDIX I

Policy and Procedural Memoranda and Memoranda of Understanding

I-1. AGREEMENT BETWEEN AMERICAN COACH LINES INC. AND MONROE COUNTY

<https://www.remtac.org/LinkClick.aspx?fileticket=GvEjzUQMlw8%3D&tabid=106&mid=561> (As of April 2009)

I-2. MEMORANDUM OF UNDERSTANDING FOR THE METROPOLITAN TRANSPORTATION PLANNING PROCESS FOR THE LOUISVILLE URBANIZED AREA, 1999

[http://www.indianampo.com/Handbook/INDOT-MPO-%20Transit%20Memorandum%20of%20Understanding%20\(MOU\).pdf](http://www.indianampo.com/Handbook/INDOT-MPO-%20Transit%20Memorandum%20of%20Understanding%20(MOU).pdf) (As of April 2009)

I-3. MEMORANDUM OF UNDERSTANDING ON METROPOLITAN TRANSPORTATION PLANNING RESPONSIBILITIES FOR THE NATIONAL CAPITAL REGION

<http://www.mwcog.org/uploads/committee-documents/uFZWX1o20071130120648.pdf>
(As of April 2009)

I-4. Virginia Department of Emergency Management, Statewide Mutual Aid Operations Manual, September 2006.

www.vaemergency.com/programs/sma/092006_SMA_ops_manual.pdf (As of April 2010)



APPENDIX J

Training/Exercise Plans

J-1. I-95 CORRIDOR COALITION TRAFFIC INCIDENT MANAGEMENT/QUICK CLEARANCE TOOLKIT WORKSHOPS

<http://www.i95coalition.org/i95/Training/QuickClearanceWorkshop/tabid/188/Default.aspx> (As of April 2010)

J-2. MULTI-YEAR TRAINING AND EXERCISE PLAN, State of Montana

http://dma.mt.gov/DES/Training/MT%20TEP%202008-2010_FINAL.pdf (As of April 2009)

J-3. VIRGINIA LANE REVERSAL EXERCISES AND LESSONS LEARNED

http://www.virginiadot.org/travel/hurricane_default.asp (As of April 2010)

http://www.vdem.state.va.us/library/outreach/PSOConf/2007/Chappell_Snead_Evacuation_Sheltering.pdf (As of April 2010)

http://www.virginiadot.org/images/slideshows/lane_reversal/index.htm (As of April 2010)

J-4. WisDOT EMERGENCY TRAFFIC CONTROL AND SCENE MANAGEMENT GUIDELINES

<http://www.dot.wisconsin.gov/travel/stoc/docs/emer-tc-sm-guidelines.pdf>
<http://www.dot.wisconsin.gov/travel/stoc/time.htm> (As of April 2010)

Abbreviations and acronyms used without definitions in TRB publications:

AAAEE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International—North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation