



U.S. Department of Transportation
Federal Highway Administration

Office of Operations

21st Century Operations Using 21st Century Technology



Common Issues in
Emergency Transportation Operations
Preparedness and Response

Results of the FHWA Workshop Series

ANNOTATED

U.S. Department of Transportation
Federal Highway Administration

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February 2007

Dear Colleague,

Emergencies can occur at any time and at any place. We must be prepared to take immediate action to move out of harm's way. The September 11 (or 9/11), 2001, attacks on the high-profile workplaces of the World Trade Center (WTC) in New York City and the Pentagon in the Washington, D.C. area, made real the impact of an unexpected, or "no-notice," event in a metropolitan setting. After those events, the Federal Highway Administration sponsored a series of workshops in 30 regions around the country to bring together the transportation community and first responders, to improve recognition of each other's role in emergency preparedness and response and to foster better working relationships among these vital partners. These workshops were part of FHWA's overall Emergency Transportation Operations (ETO) Initiative.

When a large-scale, damaging event has occurred or the imminent threat of one has become known, transportation agencies, working with public safety and emergency management officials, focus on two traditional, principal objectives:

- Minimize the time it takes to get an adequate force of emergency responders to the scene where they can help victims, provide assessments, and control access.
- Maximize the proportion of the population moved away from the hazardous area without being subjected to other risks (e.g., traffic accidents; prolonged exposure to the danger).

Once an event has occurred and the initial response has been completed, the transportation community can play an important role in the impacted community's return to normalcy.

The 30 workshops included a preparedness phase, a response phase, and a recovery phase. Participants were faced with a scenario of a terrorist attack on transportation systems in their community and they were asked to work together to identify what actions they would take in each phase and to identify any issues that arose from their discussion of the scenario and their recommended actions. In addition, they identified a series of follow-up actions they could take in their community to be better prepared when a real-life disaster occurred. This document describes a series of issues identified in the workshop discussions that are common to local, State, and Federal authorities and may assist them in planning and in preparing for their response to future disasters.

This document is one of a series of publications that FHWA has been producing to aid local, State, and Federal authorities in designing evacuation and other types of emergency transportation operations plans. While transportation authorities have responsibility for developing transportation-specific plans, we expect that they are being done in coordination with State and local emergency planning efforts. We encourage our transportation partners to share information in this and other ETO guides with emergency managers and first responders, and to watch for new publications in the Emergency Transportation Operations series, found on www.ops.fhwa.dot.gov/opssecurity or the ETO page on www.llis.dhs.gov.

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Technical Report Documentation Page

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16. Abstract Between May 2002 and June 2005, the Federal Highway Administration (FHWA) and Booz Allen Hamilton conducted workshops on Transportation Operations Preparedness and Response in 30 regions across the United States. The objectives of these workshops were to: 1. Increase participant awareness of the critical processes, issues, and activities that may arise during and following an emergency, and of the possible approaches for addressing them. 2. Enhance working relationships among personnel from multiple organizations responsible for emergency preparedness and response in each of the 30 regions. 3. Identify areas for improvement for transportation emergency response planning and readiness in each of the 30 regions. Determine next steps to address these areas. 4. Provide input to transportation emergency preparedness guidance material being prepared at the national level. This report consolidates the common issues identified during the 30 workshops. Issues are not presented in priority order, but rather have been grouped in common categories. The categories are as follows: • Interagency Coordination and Communication • Emergency Operations • Equipment • Intelligent Transportation Systems (ITS) • Mutual Aid • Threat Notification, Awareness, and Information Sharing • Policy • Threat and Vulnerability This is a companion document to the Best Practices in ETO Preparedness and Response: Results of the FHWA Workshop Series report (Dec. 2006) that identified potential solutions to issues that arose during the workshops and could be applied in other regions of the country. The Common Issues report highlights those issues that arose at several workshops but may not yet have had a solution, such as interoperable communications.			
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Executive Summary

Between May 2002 and June 2005, the Federal Highway Administration (FHWA) and Booz Allen Hamilton conducted workshops on Transportation Operations Preparedness and Response in 30 regions across the United States. The objectives of these workshops were to:

1. Increase participant awareness of the critical processes, issues, and activities that may arise during and following an emergency, and of the possible approaches for addressing them.
2. Enhance working relationships among personnel from multiple organizations responsible for emergency preparedness and response in each of the 30 regions.
3. Identify areas for improvement for transportation emergency response planning and readiness in each of the 30 regions. Determine next steps to address these areas.
4. Provide input to transportation emergency preparedness guidance material being prepared at the national level.

The locations and dates for the workshops were as follows:

1. Baltimore, Maryland—May 8 – 9, 2002
2. Raleigh, North Carolina—May 23 – 24, 2002
3. Omaha, Nebraska/Council Bluffs, Iowa—May 29 – 30, 2002
4. Cincinnati, Ohio/Northern Kentucky—June 19 – 20, 2002
5. Milwaukee, Wisconsin—July 16 – 17, 2002
6. Dover, Delaware—July 23 – 24, 2002
7. Salem, Virginia (I-81 corridor)—July 31 – August 1, 2002
8. Kansas City, Missouri/Kansas—August 13 – 14, 2002
9. Honolulu, Hawaii—August 21 – 22, 2002
10. Spokane, Washington—August 27 – 28, 2002
11. Oakland, California—June 25 – 26, 2003
12. Portland, Oregon—August 13 – 14, 2003
13. Nashville, Tennessee—September 17 – 18, 2003

14. Chicago, Illinois—September 23 – 24, 2003
15. St. Louis, Missouri—October 7 – 8, 2003
16. Pittsburgh, Pennsylvania—October 21 – 22, 2003
17. Seattle, Washington—November 18 – 19, 2003
18. Minneapolis/St. Paul, Minnesota—December 3– 4, 2003
19. Santa Fe, New Mexico—March 3 – 4, 2004
20. Los Angeles, California—March 16 – 17, 2004
21. Boise, Idaho—July 27 – 28, 2004
22. Detroit, Michigan—August 31 – September 1, 2004
23. San Diego, California—October 20 – 21, 2004
24. Hampton Roads, Virginia—October 26 – 27, 2004
25. Columbus, Ohio—November 3 – 4, 2004
26. Memphis, Tennessee—November 9 – 10, 2004
27. Reno, Nevada—December 7 – 8, 2004
28. Charlotte, North Carolina—December 14 – 15, 2004
29. Phoenix, Arizona—March 29 – 30, 2005
30. Houston, Texas—June 7 – 8, 2005

The purpose of this report is to consolidate the common issues identified at the workshops. Issues are not presented in priority order, but rather have been grouped in common categories. The categories were as follows:

- Interagency Coordination and Communication
- Emergency Operations
- Equipment
- Intelligent Transportation Systems
- Mutual Aid
- Threat Notification, Awareness, and Information Sharing
- Policy
- Threat and Vulnerability

For additional information on these issues, please contact the FHWA project manager at the e-mail address provided at the end of this report.

Acronyms

ATTF	Anti-Terrorism Task Force
DHS	Department of Homeland Security
DOT	Department of Transportation
EOC	Emergency Operations Center
ER	Emergency Relief
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HOV	High Occupancy Vehicle
HSAS	Homeland Security Advisory System
ITS	Intelligent Transportation Systems
JTTF	Joint Terrorism Task Force
MPO	Metropolitan Planning Organization
PPE	Personal Protective Equipment
TMC	Transportation Management Center
VMS	Variable Message Sign

Interagency Coordination and Communication

Coordination for Anti-Terrorism and Emergency Preparedness

- **Transportation Agency Participation in Regional Anti-Terrorism and Emergency Response Planning Initiatives**—There are multiple groups coordinating anti-terrorism and emergency response activities for most major metropolitan areas, including Federal Anti-Terrorism Task Forces (ATTF) and Joint Terrorism Task Forces (JTTF), State Protection Working Groups, emergency management agencies, and various local working groups. However, transportation agency participation in these groups is not universal or representative of all modes or jurisdictions. This is in part due to resource challenges of assigning personnel to participate in these activities and awareness that the activities are taking place.
- **Understanding of Incident and Unified Command Systems**—Department of Transportation (DOT) staff in many regions are unfamiliar with Incident and Unified Command structures and operations. Although agency personnel involved in first response are generally well versed in its principles, others who may be critical during a major emergency are not. These personnel require training if they are to operate as first responders. In February 2006, the U.S. DOT published the “Simplified Guide to the Incident Command System for Transportation Professionals” which can be accessed at www.ops.fhwa.dot.gov/publications/ics_guide. Another guide will be released by U.S. DOT in 2007 that explains requirements for transportation officials to become compliant with the National Incident Management System.
- **Interagency Language Barriers**—The transportation, public safety, and emergency response communities each use specialized terms and acronyms that are not readily understood by others outside their profession. Agencies working together for the first time often struggle to understand one another. There are movements in some regions to develop a common glossary of terms. However, to be effective in overcoming language barriers, training, exercises and frequent communication among agency personnel are necessary.¹

Communications Systems Use and Coordination

- **Communications Equipment Compatibility, Redundancy, and Use**—The incompatibility of communications equipment among agencies is a common concern in many regions. Specific problems include:
 - Some first-responder agencies can communicate on a common platform, but transportation agencies are often not part of the common communications network.
 - Although many transportation agencies have internal communications networks, communications equipment is not necessarily available in all vehicles that may be used in emergency response.
 - Some communication mechanisms are not fully operational after normal business hours under normal conditions.
 - The Federal Bureau of Investigation (FBI) has its own communications system, which is not compatible with many local and state systems.
 - Many communications systems have insufficient redundancy if portions of their networks are destroyed and cell phone service, electricity, or land phone lines are not functional (as was the case after the September 11, 2001, terrorist attacks).
 - In regions that do have interoperable radio systems for multiple agencies, appropriate planning, coordination, and personnel training are necessary to establish usage parameters and allocate frequencies for various purposes.²

Emergency Operations

Emergency Operations Center Practices

- **Activation of Emergency Operations Centers (EOCs)**—There seem to be many different methods for determining when a state or local EOC should be activated due to a threat or an emergency. In some regions, there does not appear to be a clear connection between the Homeland Security Advisory System (HSAS) and the decision to activate an EOC. Furthermore, in some cases, personnel from state agencies who have a role in the operation of the EOC

once activated, do not always have a clear understanding of the decision process for activating the EOC.

- **Coordination among Emergency Operations Centers**—EOCs are generally established at the city, county, and state levels. Communication and coordination among EOCs, particularly across state boundaries during a major emergency remains a challenge, although many regions are taking steps to improve coordination processes.

Emergency Traffic Management and Evacuation

- **Designation of Regional Emergency Evacuation Routes**—Evacuation routes that may be used during an emergency have not been designated in many regions. Some localities have identified traffic detour routes for road closures due to vehicle crashes, planned special events, and construction. However, these route plans are often localized and do not address the potential need for a regional evacuation.
- **Regional Coordination in Emergency Transportation and Evacuation Route Planning**—Where emergency transportation and evacuation plans do exist they are often prepared at a county or city level and are not coordinated across county lines or state boundaries, creating incomplete or inconsistent evacuation routing systems. In some regions, the state highway operators and local agencies have not agreed upon plans to divert traffic from highways onto local streets. Nor have they established traffic operations controls (such as alternative traffic signal timing plans) on local streets to accommodate such diversions. Furthermore, areas that have developed regional emergency or evacuation plans, often feel that these plans have not been adequately tested and exercised.³
- **Accommodation of Oversize and Overweight Vehicles During Emergencies**—Interstate highways can accommodate most oversize and overweight vehicles. Detour routes and routes designated for emergency vehicle access to an incident site must also accommodate large and heavy vehicles. However, this is rarely planned for in an emergency. Much of the roadway infrastructure rebuilding that was necessary following the World Trade Center attack was due to

damage from heavy vehicles carrying debris from the site.

Personnel and Resource Management

- **Vehicle-Towing Contracts**—Vehicle-towing contracts between transportation operators (law enforcement and/or DOT or public works) and towing companies enable rapid clearance of individual incidents and may be critical during a major emergency, when many vehicles may be damaged or abandoned, blocking emergency traffic. Many regions do not have these contracts in place, and often state laws regarding vehicle towing prevent rapid vehicle clearance. For more information on quick clearance policies, see http://ops.fhwa.dot.gov/incidentmgmt/on_scene_ops/policies/quick_clearance.htm.
- **Damage Assessment Skills**—Many state DOTs are hampered in the damage assessment documentation process by a shortage of trained personnel to assess infrastructure damage and estimate associated repair costs.
- **Identification of Emergency Responders**—Unlike law enforcement and public safety personnel, DOT first responders are not necessarily easily identifiable through commonly recognized uniforms or identification badges. In large-scale events with participation from many responders from multiple jurisdictions and agencies and where scene security is tightly controlled, this lack of easily recognizable identification can be a problem. In these cases, DOT-issued responder identification may not be recognized as adequate. DOT first responders need to participate in regional public safety or national first responder identification programs.
- **Personnel Reporting During Emergencies**—Reporting of critical employees during a terrorist incident is a concern to some public works and transportation agencies, particularly those whose labor forces are largely contract employees. Some agencies are taking proactive steps to address these concerns by engaging their labor unions and contractors in active dialogues and adjusting contracts where appropriate. Some agencies are also taking steps to communicate with their internal personnel through surveys, training, and other means to address employee concerns in

advance of an emergency.⁴ However, these steps are not being taken universally.

- **Prioritizing Resources**—During emergencies, state and local resources are taxed in responding to the emergency itself while maintaining services related to routine incidents. Often, resources are required from a number of different jurisdictions. Currently no “clearinghouse” or system is in place to determine how these resources should be dispersed to the emergency while still maintaining baseline resources for routine response capability. Another related problem is that multiple agencies in a region frequently rely on the same contractors for emergency clean-up and repair. In a large-scale emergency, these resources may be overextended. These regions have identified the need to better coordinate emergency contractor agreements to reduce this risk.⁵
- **Handling Mass Casualty Incidents**—Some emergencies, particularly terrorist incidents, may cause mass casualties that will quickly overwhelm local resources. Many regions are not fully prepared to handle mass casualties and may not have established procedures or locations to handle victims of the emergency.
- **Terrorist Targets**—Some regions expressed concern that shelter sites may become secondary terrorist targets because of the large concentration of people.

Training and Drills

- **Emergency Preparedness Training/Exercises**—Although many state DOT personnel have experience in responding to emergencies, most indicate that they have had limited formal training and little or no experience in regional emergency response exercises. This lack of training impacts emergency preparedness and makes emergency planning difficult on such issues as pre-positioning resources.
- **Awareness Training**—While many state DOTs and transit agencies have provided training and brochures to their staff on looking for suspicious activity or potential emergencies, many agencies have not provided this training usually due to a lack of resources. Trained observers can be a valuable resource in preventing an emergency situation.⁶

Emergency Documentation

- **Documentation of Emergency Expenditures**—Most transportation agencies have established procedures for documenting emergency response expenditures to meet reimbursement requirements of the Federal Emergency Management Agency (FEMA) or FHWA Emergency Relief (ER) funds. However, some agencies expressed concern that FEMA and ER documentation requirements change frequently and necessitate ongoing training and communication to ensure compliance with current procedures.
- **Timeframe for Documentation of Emergency Expenditures**—DOT personnel are also concerned about FHWA’s policy to allow only 180 days following an event for a state to file for an ER reimbursement. They fear that 180 days is inadequate to assess, repair, and replace damaged infrastructure if the DOT is prevented from accessing the scene of a terrorist incident due to an extended crime scene investigation.

Equipment

- **Availability of Personal Protective Equipment (PPE)**—Although firefighters and hazardous materials (HAZMAT) technicians in most regions have some PPE and training on its proper use, other first responders—such as law enforcement, medical, and DOT personnel—do not in most cases.
- **Ability to Communicate with Bus Drivers**—A couple of the regions recognized the need for communication with bus drivers in emergency situations, such as bomb threats to transit vehicles. However, should an evacuation of a vehicle be necessary, communications to the driver and passengers would be severed in many regions because radios are permanently installed in buses.
- **Drainage System Mapping**—At least one region identified development of a digital regional drainage map as a high priority need. In this region, drainage maps are available at the local level, but have not been integrated regionally, making it difficult to track the possible flow of hazardous contaminants through the drainage system.⁷

Intelligent Transportation Systems (ITS)

■ Intelligent Transportation Systems (ITS)

Application and Deployment—ITS applications such as Variable Message Signs (VMS), Highway Advisory Radio (HAR), 511 telephone systems (for traveler information), video surveillance cameras, Motorist Assistance Patrols, web sites with traveler information, High-Occupancy Vehicle (HOV) lanes (some with ramp meter bypass control), and Transportation Management Centers (TMCs) were all found to have application in emergency response and recovery. However, in some locations, the TMC and its ITS capabilities have not been incorporated into emergency planning, response, and recovery. Some first-responder agencies are unaware of the capabilities of the ITS systems in their communities and how these systems could be used in an emergency situation. Likewise, ITS operators have not fully considered the uses of ITS for wide-scale emergencies, and developed corresponding policies, such as guidelines for VMS messages. Furthermore, due to limited geographic deployment and lack of redundancy in the communications linkages for the ITS equipment, their application in emergency response and recovery may be limited. Most TMCs do not operate on a 24/7 basis, so they may not be staffed if emergencies happen “after hours.” In one region, concern was expressed about the geographic coverage of the 511 system since a major cell phone carrier had chosen not to participate in the system. In one major metropolitan area, the deployment of a 511 system is not being pursued and that was major concern since it can be such a valuable resource.⁸

- **Use of ITS Video Surveillance System Videotapes for Law Enforcement**—Not all regions with ITS systems in place have established procedures regarding the use of ITS video images for law enforcement purposes. In some cases, video surveillance is real-time only, and no videotapes are made. In other cases, if videotapes are made, they have to be retained for a certain period of time according to state law. Some agencies will release information to law enforcement agencies upon request, whereas others require a formal subpoena. These practices vary, in part, due to differences in state legal requirements, making it impractical to recommend a single method of

addressing them. However, each agency operating an ITS video system needs to address the issue of law enforcement use of data. Similar issues exist regarding videotapes from electronic toll-collection systems. One region noted that real-time camera images are typically provided on local agency web sites, but during one emergency, law enforcement asked the DOT to remove those images from the web site.⁹

- **Use of Highway Advisory Radio (HAR)**—Most regions have some ability to communicate with motorists through HAR systems. However, in some areas, HAR is unreliable due to terrain differences. Another issue is that many HAR systems are programmed through cell phone technology. If cell phone service is unavailable, personnel have to go to individual sites to program messages, which consumes time and resources.

Mutual Aid

- **Emergency Contracting Procedures and Mutual Aid Agreements**—Most agencies have the ability to procure goods and services through emergency contracts once certain declarations of emergency are made. However, in some cases, not all individuals involved in emergency response know the processes for enabling their emergency contracting provisions. Furthermore, most agencies have mutual aid agreements with surrounding local and state governments. But again, some transportation agencies were not aware of the extent of aid available, nor were they familiar with the processes necessary to request the aid from the other agencies.

Threat Notification, Awareness, and Information Sharing

Coordination and Notification Processes

- **Threat Notification Systems**—Many transportation agencies have no clear chain of command or notification procedures for information regarding terrorist threats or activities. As a rule, law enforcement agencies have the clearest channels for receiving terrorist information, since some of the information is considered to be law enforcement sensitive.

However, non-law enforcement agencies receive notification in a variety of ways, such as from their associated Federal agency (FHWA, Federal Transit Administration, Federal Aviation Administration, Federal Railroad Administration, Federal Motor Carrier Safety Administration, Coast Guard, or FEMA for emergency management agencies), from their state patrol, or from their state Office of Homeland Security. In one location, DOT participants noted that they were uncertain how threat information was passed through their agency or if it was shared with local governments. Some agencies indicate that at times, they receive the same information from different sources with varying degrees of detail, sometimes because the information was considered law enforcement sensitive and therefore could not be disseminated to those without proper security clearances. In addition, not all DOTs have a well-defined process or standard operating procedure for sharing threat information internally or with other local agencies. Finally, in many locations, dependable processes are not established for communicating threat level information outside of normal working hours, or those that are established are dependent on one or two individuals in an organization.

- **Inclusion of Transit and Local Public Works in Emergency Notifications, Planning, and Response**—Although state DOTs, large city public works, and major transit operators are commonly engaged in emergency planning, notification, and response procedures, frequently, smaller city public works and transit agencies are not. Notification is a particular concern for transit agencies which are liable for passenger protection and must plan routes and diversions in advance.¹⁰
- **The Homeland Security Advisory System (HSAS) and Local Application**—Most state DOTs and large transit and public works agencies have developed increased security and emergency readiness procedures corresponding to each of the HSAS threat levels and have implemented these procedures during periods of heightened threat level. However, these procedures are expensive to maintain because they require increased staff hours. Consequently, agencies worry that having to implement these procedures regularly will detract from other critical programs.
- **Official Verification of HSAS Threat Level Changes**—Many state and local agency policies

require official written verification of threat level changes from the U.S. Department of Homeland Security (DHS) prior to activating or deactivating state and local procedures. These agencies seek verification from the DHS website. However, they indicate that frequently the threat level posted on the DHS website is not changed until a day after news reports of threat level changes. This delays the agencies' ability to implement procedures quickly when the threat level is changed.¹¹

Intelligence Sharing and Infrastructure Protection Systems

- **Integration of Multiple Intelligence and Threat Information Sharing Systems**—Multiple systems are emerging for threat information and intelligence sharing systems. Most of these systems are not integrated or coordinated, creating the need for duplicate entry of information and reducing the effectiveness of any one system in providing comprehensive information.¹²

Policy

- **Understanding the Role of Transportation Planning in Emergency Preparedness and Response**—The important role that transportation planning agencies (namely metropolitan planning organizations [MPOs] and state DOTs) may be able to play in emergency planning and response is often overlooked. Transportation planning agencies may be able to channel funding to certain emergency response activities and provide funding for ITS systems, evacuation planning, road improvements, and other elements that can be important in emergency response. Furthermore, the transportation planning agencies can provide traffic information that can be vital in emergency route planning. They can also play a role in bringing together various regional agencies that need to coordinate their emergency planning, response, and recovery efforts.
- **Contract Maintenance for Interstates**—Several state DOTs use private contractors to provide maintenance on their interstate highway systems. These contracts are sometimes managed at the headquarters level and sometimes at the district level. In one region, because the interstate highway contract was managed at the headquarters level,

the local district office had little contact with the contractor. This situation could complicate emergency response on the interstate system. Furthermore, many of these contracts are focused on routine maintenance activities and do not adequately address large-scale incidents or emergency response responsibilities. In another region, interstate maintenance is contracted to the counties; again, this arrangement may complicate large-scale emergency response involving the interstate system due to coordination challenges.

- **Parking under Transportation Facilities**—Several DOTs allow vehicle parking under transportation bridges and overpasses, including those for the interstate system. This is necessary in many urban areas that lack alternative parking facilities. Most regions lack a comprehensive policy addressing parking under transportation facilities, despite the potential dangers it poses. In some cases, parking is regulated by permit and excludes vehicles carrying hazardous materials, but programs to ensure compliance are inadequate. In other regions, such parking is completely unregulated.
- **Authority to Close the Interstate System**—Some confusion was expressed about who has authority to close the interstate system in the event of an emergency. Although most DOT personnel knew who had the authority in their own states, they did not necessarily know who had the authority in adjoining states that could be impacted by an emergency.
- **Enforcement of Quarantine**—In almost all regions, the enforcement of a quarantine was identified as a problem issue. Although clear authority to enact quarantines is assigned in all regions, few, if any, regions have plans, procedures, or training for enforcing a quarantine.

or jurisdictions, resulting in multiple lists of critical and vulnerable infrastructure being developed for the same community. Shielding assessment information from public disclosure is another challenge that public agencies face. The open records laws in many states require that this type of assessment information be made available to the public, so some agencies are reluctant to do an assessment that will publicly reveal infrastructure vulnerabilities. Some regions have addressed this concern by filing their assessments with law enforcement or military agencies (National Guard) that are often exempt from disclosing some public records.

- **Procedure for checking/monitoring vulnerable infrastructure**—Although many agencies have identified vulnerable infrastructure, they have not all established methods for monitoring vulnerable infrastructure or securing it if a terrorist threat is received or the threat level is elevated. Furthermore, few coordinated efforts exist to communicate findings among agencies once security checks have been completed.

Threat and Vulnerability

- **Threat/Vulnerability Assessments**—Most transportation agencies have done at least a cursory assessment to determine what infrastructure is vulnerable to terrorist attack. However, in many cases, assessments were not done in conjunction with a law enforcement agency, nor were the results shared with law enforcement agencies. These assessments were not always coordinated with other local agencies

Endnotes

The following endnotes indicate the location of the workshop(s) at which this best practice was discussed.

(Endnotes)

- 1 Oakland, CA; Chicago, IL
- 2 Minneapolis, MN
- 3 Chicago, IL; Nashville, TN
- 4 Chicago, IL; Seattle, WA; St. Louis, MO
- 5 Chicago, IL
- 6 Los Angeles, CA
- 7 Minneapolis, MN
- 8 Los Angeles, CA
- 9 Baltimore, MD
- 10 Chicago, IL; Minneapolis, MN
- 11 Minneapolis, MN
- 12 St. Louis, MO

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