



METROPOLITAN POLICY PROGRAM

On the Ground: Protecting America's Roads and Transit Against Terrorism

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Though the federal government, states, and localities have spent considerable sums on transportation security since September 11, little funding has addressed needs outside of the air travel system and equipment for the "first responders" of public safety agencies. However, from 1991 to 2001, 42 percent of all terrorist attacks worldwide have targeted rail systems or buses. This brief examines the regulatory, financial, and logistical landscape of surface transportation security, making policy recommendations while counseling decision-makers to weigh carefully the trade-offs between accessibility and security.

I. Introduction

In early April 2004, the Federal Bureau of Investigation and U.S. Department of Homeland Security (DHS) issued a terse advisory, warning local officials of possible bombing attempts against buses or trains in American cities.² Given the train bombings in Madrid in March that had killed nearly 200 people and injured another 1,500, and a subway bombing in Moscow only one month earlier that had killed at least 40 people, there was widespread concern that the United States might be vulnerable as well.

These were not new fears. Soon after the suicide jetliner attacks on the World Trade Center and the Pentagon on September 11, 2001, widely disseminated news photographs of armed National Guardsmen standing watch over the Golden Gate Bridge symbolized one focus of America's wariness—the vast surface transportation network that moves people and goods near and far throughout the United States.

Indeed, others prior to September 11 had noted the significant vulnerability of the nation's transportation systems.³ Transportation infrastructure, terminals, or vehicles can become terrorist targets; vehicles can be used as delivery mechanisms or weapons themselves; and the transportation system can provide mobility for terrorists or dangerous substances. Al Qaeda's terrorists used jetliners as weapons on September 11, and Timothy McVeigh used a rented truck loaded with fertilizer to blow up the Murrah Federal Building in Oklahoma City in 1995. Also in 1995, using crude methods to disseminate the deadly chemical sarin, the Aum Shinrykyo cult killed 12 Tokyo subway passengers and employees (and injured or terrorized thousands more), and Palestinian terrorists regularly blow up buses in Israel with horrifying results.⁴ From 1991 to 2001, in fact, 42 percent of all terrorist attacks worldwide have targeted rail systems or buses.⁵

Paradoxically, the very same attributes that make transportation systems vulnerable allow them to achieve their mobility and economic functions. Therefore, public policymakers and managers must consider this security–service trade-off when devising improvements to the transportation system.

The benefits of transportation in the United States stem from the ease by which travelers can move from home to work to shopping to other social and recreational venues and by which goods and services can be delivered throughout the nation. Tightening security can threaten these benefits. To the extent that reducing vulnerability to terrorism compromises personal and economic mobility, the mere threat of terrorism, therefore, imposes significant social and economic costs on the United States.⁶ From a contrasting viewpoint, the surface transportation system can also play an important role in emergency response and recovery from a major terrorist attack.⁷

In this paper, we review steps the federal government and states and localities have taken since the September 11, 2001, attacks to enhance the security of highway and transit systems. Although these entities have taken several positive steps, we argue that protecting surface transportation has ranked lower in funding and program priority among the protective actions. We explore several ways in which surface transportation security should be enhanced.

In addition to the research cited, we draw on approximately four dozen personal interviews with officials in several federal agencies (Federal Highway Administration, Federal Transit Administration, Transportation Security Administration), three state governments (California, Illinois, Massachusetts), and three metropolitan areas (San Francisco, Chicago, Boston). See appendix for a list of those interviewed.

II. Surface Transportation Safety and Preparedness Objectives

Surface transportation is significant as both a terrorist target and a critical element of the national emergency response system. Terrorists regard attacking the surface transportation system as attractive primarily because of the opportunity to kill or injure large numbers of people, create widespread fear, and severely disrupt economic activity. Most obviously, transportation facilities (e.g., roads, rails, stations, ports) are themselves targets for assaults with conventional or radiological explosives, chemical weapons, or infectious bio-agents. In addition, large numbers of vulnerable passengers congregate in terminals, travel in transit vehicles, and pass over and through infrastructure choke points such as bridges and tunnels. A large portion of the nation's goods and services is delivered by truck and rail or stored in depots and warehouses served by the transportation system.⁸ Beyond these immediate impacts on people or goods, a terrorist organization could achieve longer-term disruption by creating fear among passengers or by disabling the system.

Terrorists could appropriate surface transport vehicles as weapons. They may commandeer explosive-laden trucks, passenger buses, and even fixed-rail cars, much as aircraft were on September 11. In addition, the transportation system is a potential vector of terrorist attack, carrying terrorists or dangerous chemicals or biological agents to the site of an attack on some other venue.⁹

Surface transportation is extremely vulnerable because of the system's vast size, openness, and highly networked character. The United States has more than 160,000 miles of interstate and national highways, plus 3.8 million miles of other roads.¹⁰ It has 600,000 bridges and tunnels, of which 500 have been classified as critical facilities based on size, traffic volume, and strategic importance.¹¹ Americans travel more than 2.8 trillion vehicle miles per year. They make about 9 billion transit trips per year, with the 30 largest bus or rail systems carrying more than 70 percent of the total.¹²

Consequently, there are hundreds of sites where terrorists could cause hundreds or even thousands of casualties or severely disrupt economic activity, and there are thousands of

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other locations where attacks could create great fear and economic disruption, albeit with fewer casualties.

Aside from its attractiveness as a target, weapon, or vector of terrorist attack, surface transportation is also a crucial part of the emergency response system and an essential element in recovering from an act of terrorism. The surface transportation system must be functioning well enough to allow ambulances, fire equipment, law enforcement, and possibly construction equipment to rescue and move the injured to hospitals, quell fires, secure or demolish damaged structures, and maintain public order. The system must be poised to handle the potential evacuation—orderly or panicked—of many people escaping real or perceived danger. Later, during the possibly extended process of economic and social recovery, a functioning or restored transportation system would be critical to freely moving people and goods could again.

This analysis suggests three preparedness objectives for the surface transportation system that are appropriate for terrorism as well as many natural and technological disasters:

- deterrence, prevention, and mitigation;
- emergency response and consequence management;
- recovery.¹³

A. Deterrence, Prevention, and Mitigation

The first objective is to deter or prevent attacks from occurring or to mitigate potential damage by anticipatory action. Meeting this objective entails improved gathering, analysis, and dissemination of law enforcement and intelligence information about methods of possible terrorist attack or specific threats against particular places. It also includes “target hardening” steps, for example, erecting physical barriers around vulnerable facilities, installing video surveillance, or instituting preventive patrol by security guards. These steps reduce the likelihood that terrorists will choose to attack these targets and increase the probability that an intended attack will be thwarted or prove ineffective.

B. Emergency Response and Consequence Management

Second are measures to prepare for emergency response to manage the consequences of an attack. These steps include planning for rescue, emergency transport, and medical care of the injured; evacuation and sheltering of people at risk; and fire suppression, containment of hazardous substances, or removal of blast debris.

C. Recovery

The third objective is recovery. An attack on transportation facilities could not only harm many people but also disrupt the movement of people and goods within (and possibly between) centers of population and economic activity. Recovery includes actions to restore public services and return physical structures, economic activities, and social life as closely as possible to pre-attack status.

III. Federal Action to Protect Surface Transportation

Galvanized by the attacks on the World Trade Center and the Pentagon and by the anthrax letters in fall 2001, the federal government has significantly bolstered security and preparedness for terrorism, including enacting laws, creating new institutions, reorganizing existing federal agencies, and increasing federal funding. Homeland security spending has increased from \$16.9 billion in 2001 to \$47.4 billion in 2005. Nondefense homeland security spending increased from about \$10 billion to \$30 billion in that period.¹⁴

Protecting transportation has been a high federal priority, but aviation, not surface transportation, has received the most attention from Congress, the White House, the Department of Transportation (DOT), and the new Transportation Security Administration

Table 1. Federal Homeland Security Funding By Agency, FY2003–FY2005 (budget authority, in millions of dollars)

Agency	2003 Enacted	Percent of 2003 total*	2004 Enacted	Percent of 2004 total*	2005 Request	Percent of 2005 total*
Department of Homeland Security	18,652.4		23,492.3		27,214.5	
Department of Agriculture	299.9	1.6	326.6	1.8	651.1	3.2
Department of Commerce	111.6	0.6	131.2	0.7	150.1	0.7
Department of Defense	8,442.0	45.7	7,024.0	39.4	8,023.1	39.8
Department of Energy	1,246.9	6.8	1,362.5	7.6	1,496.9	7.4
Department of Health and Human Services	4,002.4	21.7	4,109.0	23.1	4,276.1	21.2
Department of the Interior	47.4	0.3	67.2	0.4	49.3	0.2
Department of Justice	1,892.5	10.2	2,165.8	12.2	2,581.1	12.8
Department of Labor	69.4	0.4	52.4	0.3	68.6	0.3
Department of State	632.7	3.4	701.3	3.9	954.8	4.7
Department of Transportation	382.8	2.1	283.5	1.6	242.6	1.2
Department of the Treasury	80.0	0.4	90.4	0.5	87.1	0.4
Department of Veterans Affairs	154.3	0.8	271.3	1.5	297.0	1.5
Corps of Engineers	36.0	0.2	103.4	0.6	84.0	0.4
Environmental Protection Agency	132.9	0.7	123.3	0.7	97.4	0.5
Executive Office of the President	41.0	0.2	35.0	0.2	35.0	0.2
General Services Administration	67.1	0.4	78.9	0.4	79.5	0.4
National Aeronautics and Space Administration	205.0	1.1	191.0	1.1	207.0	1.0
National Science Foundation	284.6	1.5	327.9	1.8	343.6	1.7
Social Security Administration	132.0	0.7	143.4	0.8	155.0	0.8
District of Columbia	25.0	0.1	19.0	0.1	15.0	0.1
Nuclear Regulatory Commission	47.0	0.3	66.8	0.4	57.0	0.3
Smithsonian Institution	82.8	0.4	78.3	0.4	76.0	0.4
Other agencies	50.7	0.3	62.6	0.4	144.1	0.7
Total, Homeland Security	37,118.4		41,307.1		47,385.9	
Total, Homeland Security (w/o DHS)	18,466.0	49.7	17,814.8	43.1	20,171.4	42.6

* Excluding DHS funding.

Source: Executive Office of the President, *Budget of the United States Government, Fiscal Year 2005, Analytical Perspectives* (Government Printing Office, 2004), table 3-1.

(TSA), which was initially established in DOT and subsequently incorporated into the Department of Homeland Security (DHS).¹⁵ Although other components of DOT, notably the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and other units of DOT not discussed in this paper, took steps to help state, regional, and local transportation agencies better protect their infrastructure and operations, DOT programs account for only \$243 million in 2005 federal homeland security spending, or an estimated 1.2 percent of projected non-DHS funding (see Table 1).

Except for its aviation security responsibilities, DOT was not in the first circle of federal agencies waging the war on terrorism, and it functioned with less White House and congressional support and attention. Neither the Bush administration nor Congress has made surface transportation a high homeland security priority, providing limited funding to state and local governments for protective enhancements to surface transportation security. From 2001 through 2005, federal homeland security appropriations for state and local governments doubled, from \$2.7 billion to \$5.5 billion, but much of this increase was for “first responder” programs (increasing from \$616 million in 2001 to \$3.6 billion in 2005).¹⁶

In terms of transit security, the U.S. House and Senate each passed its own version of

the Public Transportation Terrorism Prevention Act in late 2004. The bills would have authorized \$3.5 billion over three years in grants to transit agencies for detection equipment and other terrorism prevention measures.¹⁷ Funds in the Senate version were to come from the DHS, while the House version tapped the DOT. Neither was signed into law. The Senate also passed the Rail Security Act in 2004, which was to provide \$1 billion in grants to state and local governments, rail authorities, and Amtrak.¹⁸

According to a House committee report, in 2002 and 2003, the nation's aviation system with its 1.8 million daily passengers received \$11 billion from the federal government for security. By contrast, in 2003 and 2004, public transit's 14 million daily riders received only \$115 million specifically allocated for transit security grants as part of an overall \$1.4 billion from the Urban Area Security Initiative, a federal Homeland Security program designed to fund regional planning and coordination in critical incident response. In 2005, the government authorized another \$150 million (from \$1.2 billion in total discretionary funding). The government allocated an additional \$40 million for intercity bus security for 2002 through 2005 (\$10 million each year). Trucking security received \$5 million in 2005.¹⁹

Another House report pointed out that the federal government has invested \$9.16 per passenger in aviation security but less than one cent for each transit rider.²⁰ Even factoring in expenditures such as those for Amtrak rail improvements, the disparities are stark. As Representative Tom Petri, chair of a House subcommittee on highways, transit, and pipelines put it, "Not enough is being invested in improving transit security."²¹

A. The Department of Homeland Security

In transportation security, by far the most important post-September 11 initiative was congressional enactment of the Aviation and Transportation Security Act of 2001, which established TSA as a new unit in DOT.²² With the passage of the Homeland Security Act of 2002, TSA was subsequently transferred to the new Department of Homeland Security, effective March 1, 2003.²³

In addition to giving TSA sweeping new authority over aviation, the Transportation Security Act declared that the new DOT undersecretary "shall be responsible for security in all modes of transportation" in DOT, and under conditions of national emergency shall coordinate all transportation functions. The undersecretary's general transportation security functions were potentially quite broad, including maintaining liaison with intelligence and law enforcement agencies, receiving and disseminating intelligence, assessing the nature and level of threat to transportation, developing security policies and plans, managing research and development programs, and inspecting security facilities and systems.

Yet, again, the thrust of Transportation Security Act, and hence the immediate concern of the TSA undersecretary, was the airline industry. The act consisted largely of a detailed set of responsibilities to protect commercial aviation from future hijackings and other potential threats. The act also gave TSA an aggressive schedule for enhancing aviation security systems, directly hiring airport security personnel as federal employees, and transferring security responsibilities from the private firms that had previously held these functions. Fulfilling these aviation requirements within the time constraints set by Congress dominated the attention of TSA in its first years. Funding commitments to aviation security remain the agency's principal responsibility, accounting for more than 95 percent of its budget request for 2005.²⁴

Based primarily on the possibility of terrorists smuggling dangerous materials in international cargo or striking vessels themselves, Congress also focused on maritime security issues. In November 2002, Congress enacted the Maritime Transportation Security Act, which required, among other things, maritime personnel-identification and vessel-tracking systems, vulnerability assessments, incident response plans for vessels and facilities, and a risk assessment of foreign ports.²⁵ The U.S. Coast Guard has assumed many of these responsibilities.²⁶ The act also included a grant program that supplemented and was integrated into an existing program administered by TSA.

In transportation, TSA has taken a systems, rather than modal, approach to security, identifying and addressing elements of the overall transportation system that seem most vulnerable, with the greatest potential for loss of life, property damage, and economic disruption. Among other initiatives, TSA is developing two assessment tools to help the federal government and other jurisdictions assess threats and vulnerability. It has also worked on a national transportation workers' identification card.²⁷

To address surface transportation issues and port security, TSA in 2002 established an Office of Maritime and Land Security (OMLS). The office, however, has developed more slowly than the aviation elements of TSA and remains a small component of the agency; most of its development has occurred since late 2002. Amid a TSA workforce of approximately 35,000 in 2004, OMLS consists of fewer than 200 people to handle both its port and land transportation focal areas.

A major OMLS project has been to develop tighter regulations, issued in May 2003, on registration of and credentials for hazardous materials truck drivers.²⁸ The OMLS has also worked to prepare standards or guidelines for protecting physical infrastructure and to establish relationships with transportation stakeholders in state and local governments and the private sector. Following the Madrid railroad bombing in March 2004, TSA issued a rail/transit security directive to local agencies that required immediate implementation of 15 security measures.²⁹

These efforts are significant but do not compare to those in aviation.³⁰ The TSA's purview of surface transportation has only a general mandate from Congress and few personnel. It has little grant money to help state and local governments to defray the costs of new highway and transit security measures and, through matching, motivate commitments of their own funds. Moreover, owing to the small transportation staff, TSA has developed only nascent relationships with the thousands of public and private stakeholders, and the national associations, that play a role in surface transportation.³¹

B. The Department of Transportation

Much of the federal government's capacity to address transit and highway security resides in components of DOT. The DOT formed a security working group soon after September 11 that included representatives of all its departments (including TSA when it was part of DOT). The working group was to work on cross-cutting issues, such as providing more timely and extensive intelligence and security information from federal sources to transportation officials at the state and local levels..

Federal Transit Administration. Prior to September 11, FTA, through its Office of Safety and Security, had provided a number of regional and local transit agencies with technical assistance in conducting security audits to identify weaknesses in infrastructure protection and security plans. The FTA expanded its efforts after September 11, concentrating on those believed to be most at risk of attack—about 30 of the largest transit properties and Utah, where the Winter Olympics were held in early 2002.

Because FTA is not primarily a regulatory agency, most of its efforts have involved technical assistance for interested transit agencies. The FTA has now extended security assistance to about 60 transit agencies, with an emphasis on training needs and a set of 20 relatively low-cost action items.³² These measures emphasize actions to improve management and accountability; identify security problems; screen employees in operational and maintenance positions; improve training and exercises; control access to sensitive documents, materials, and venues; and develop protocols for responding to different DHS threat-advisory levels.

During 2002–2003, FTA sponsored 17, two-day regional forums for transit agency staff and senior “first responders” from police, fire, and emergency medical service agencies. The forums focused on the role that transit could play in a regional emergency response capability; they were explicitly designed to integrate transit personnel into regional networks of emergency responders. The FTA has subsidized and worked with major state and regional transit agencies to develop large-scale emergency response drills based on terror-

ism scenarios as a way to test collaborative relationships and diagnose weakness.

The FTA has also widely publicized and disseminated information on the “best practices” adopted by local or regional transit agencies. The FTA also provided financing to the American Public Transit Association, the principal professional organization of the transit industry, to establish a Surface Transportation Infrastructure and Analysis Center.³³ This facility, which became operational in early 2003, coordinates and shares information among transit systems and national intelligence agencies about possible terrorism directed against transit.

Federal Highway Administration. The FHWA, working closely with a special task force of the American Association of State Highway and Transportation Officials (AASHTO), has undertaken several security and emergency response projects, in many respects paralleling the activity of FTA.³⁴ It also sponsored 10, two-day regional forums to help highway officials establish closer relationships with first responders and to focus the latter on response and recovery in highway emergencies. The participants conducted three major exercises in border state regions. The FHWA has developed various guidebooks and publications for transportation professionals around the country on topics such as updating emergency plans and assessing the vulnerability of highway infrastructure. The FHWA has also provided technical assistance to several areas judged by DHS to have high-risk transportation infrastructure.³⁵

As discussed, FTA and FHWA have conducted security activities with only limited new appropriations and personnel. Most resources for new transportation security functions have been focused on building TSA, with its noted limited focus on surface transportation. Nor have FTA and FHWA had significant funds to provide grants directly to state or local transportation agencies to improve security.

The Government Accountability Office has argued that, with the transfer of TSA to DHS, the responsibilities of TSA, on the one hand, and FTA and FHWA, on the other, have not been clearly defined by Congress or by administrative agreements, and that TSA has achieved only loose operational coordination. Although this state of affairs is not surprising, given the newness of TSA and the major reorganization in shifting from DOT to DHS, it is imperative that the relatively few federal personnel and resources available for surface transportation be used as effectively and as compatibly as possible.

Intergovernmental Funding. Two funding structures could potentially support transportation security. First is a dedicated funding stream, via homeland security funding, for surface transportation. Although Congress has authorized general-purpose grants to states and localities for homeland security, only a relatively small share has been dedicated to surface transportation functions.³⁷ The federal government has given state and local decision-makers broad discretion in using federal money to meet current security costs and bolster their protective capabilities but, with the exception of the dedicated funding, the government has not generally required states and localities to devote funds to surface transportation.

The other side of the financing picture is to use general transportation funds for homeland security purposes. A potential key source is the Transportation Equity Act for the 21st Century (TEA-21), which was due to expire in 2003 and has been extended at least through the spring of 2005. The Bush administration developed draft replacement legislation—the Safe, Accountable, Flexible, and Efficient Transportation Equity Act (SAFETEA)—for congressional consideration.³⁹ This bill, which authorizes federal funding for highway and transit grants to the states, provides both general-purpose funds for transportation capital plans developed by state and regional transportation agencies, and restricted-use funds for specific purposes; for example, congestion reduction and air quality improvement projects.

Although the Bush administration considered proposing “set aside” funding for surface transportation security, which could have been highlighted in SAFETEA, it decided not to establish a dedicated security fund. The DOT reportedly was reluctant to see states required to use federal allotments for security, particularly once TSA was transferred to

DHS. Instead, it drafted legislative language that treated many transportation security expenditures as capital projects, allowing grantees to use SAFETEA funds even for some operational purposes, while avoiding mandates. Under the highway title of the bill, SAFETEA proposes that security expenditures may be 100 percent federally funded, rather than requiring a nonfederal match as other uses do.

In summary, in response to the heightened security issues stemming from recent terrorist attacks, federal agencies have provided technical assistance and training to state and regional agencies that own and operate the nation's highways and transit systems, and the agencies have sought to enhance relationships between state and local transportation officials and first response agencies. Targeted financial support to defray costs incurred in response to the heightened security alerts, however, has been limited, as have dedicated subsidies for the capital costs of improving highway and transit system security.

Thus, federal funding and technical assistance have primarily helped states and localities in their emergency response and recovery efforts—the second of the three transportation security objectives outlined in Section II—by providing some training to local responders, connecting transportation agencies more effectively to traditional emergency response agencies, and stimulating more detailed planning. The “deterrence, prevention, mitigation” objective has been served mainly through technical assistance in analyzing potential vulnerabilities and in somewhat improved methods of sharing intelligence and law enforcement information with transportation agencies.

IV. The State and Local Perspective on Transportation Security

State and local officials vary more widely than federal officials in their overall security concerns, given the perceived differing risks of attack among jurisdictions. Their capacity to act varies widely as well, given the substantial differences in personnel and fiscal resources.

In contrast to the federal government, state or local officials are directly responsible for attacks only in their own jurisdiction. No doubt they are genuinely concerned about other locales, but they are not responsible for multiple jurisdictions, as are federal leaders. No state or locality can afford to ignore the threat entirely, but officials in each jurisdiction are likely to make quite different assessments of the odds of attack depending on their sense of risk. New York City, Washington, D.C., and a few other key locales, for example, are likely to judge their risk as high, while other areas will judge their risk as much lower.

Because they own much of the national stock of transit and highway infrastructure, transportation agencies in most states initiated various short-term actions to tighten security, reassure the public, revise emergency response plans, and consider longer-term protective requirements. Nonetheless, as did their federal counterparts, state and local officials identified mass transit and highways as a lower priority among the many security issues demanding attention. State budget constraints further limited the scope and scale of their response.

In most states, two agencies took the initiative on transportation security: state departments of transportation, with responsibility for the physical infrastructure of major roadways and related facilities, and the state police, typically with responsibility for highway safety and law enforcement. In addition, the special districts or authorities that owned or operated turnpikes or bridges independent of state departments of transportation also assumed some responsibilities.³⁹ State transportation departments often systematically assessed infrastructure vulnerability, seeking to identify critical facilities and their vulnerability to terrorist attack, projecting the consequences of any attack on people and the economy, and thereby setting priorities for protection. State police departments sought to develop more extensive crisis management capabilities through planning, training, and exercises. They also built enhanced information links between transportation agencies and law enforcement. Many of these state efforts, however, were only loosely coordinated with large city and metropolitan area efforts. Major cities and transit agencies frequently per-

formed parallel vulnerability assessments and emergency planning, particularly if they viewed themselves as prime terrorist targets.⁴⁰

A. State Transportation Security Task Forces

Several states organized transportation security task forces—often subcommittees of multi-purpose, umbrella state committees—to bring together stakeholders concerned with surface transportation security issues.

Illinois organized a state terrorism task force in 1999, primarily motivated by the Oklahoma City bombing. However, the task force did not assemble a transportation subcommittee until 2002. In Illinois and elsewhere, even when consensus could be reached on the priorities in a list of critical and vulnerable transportation facilities, the required capital investments or major new operating costs limited action, especially when substantial federal financial assistance was not forthcoming.

In California, each of the eight divisions of the California Highway Patrol conducted a vulnerability assessment and developed protective plans for its area of operation. In the Bay Area, this effort led to a stakeholder task force that assessed the security needs of the Golden Gate Bridge and assigned responsibilities to each stakeholder. Responsibilities, for example, included who would respond to emergencies on various parts of the bridge, or how people and goods would be transported under different scenarios of damage and recovery.

Although state-level transportation security task forces or informal consultation within state departments of transportation usually included regional and major city transportation stakeholders, state efforts focused primarily on prevention and emergency response for state-owned infrastructure, not on the overall metropolitan transportation system. With some exceptions, such as California, coordination across jurisdictions and across levels of government remained secondary issues.

B. Emergency Response Capacity

Most states and cities had significant emergency response capacity in place prior to September 11. The emergency management system in the United States is a bottom-up system, with local governments given initial responsibility for planning and response, with state resources, and ultimately federal assets, called into play only when local resources can no longer cope with the demands of a particular emergency. Therefore, most jurisdictions had emergency and evacuation plans in place for natural or manmade disasters. They also had incident management systems, increasingly supported by intelligent transportation systems, for handling disruptions of normal operations; and they had plans and procedures for handling hazardous materials spills, developed through local emergency planning committees organized under U.S. Environmental Protection Agency regulations. After September 11, local governments revisited these plans and procedures and improved them, and training on terrorism response was made available to transportation staff.

C. Public Transportation Response

Regional public transportation agencies were key players. A survey of transit agencies by the American Public Transportation Association in 2004 found transit security investment needs approaching \$6 billion.⁴¹ Because they saw significant risk of being targeted for terrorist attack, transit authorities were highly motivated to protect their passengers, employees, vehicles, and infrastructure.

As did their state transportation counterparts, transit agencies had some advantages in addressing security issues. They generally already had written emergency response plans, regularly performed emergency drills and disaster exercises, and had at least basic working relationships with emergency response agencies and medical facilities. In many areas, under the federal Metropolitan Medical Response System program (which expanded after the September terrorist attacks), transit agencies were better integrated into enhanced emergency medical plans for various types of terrorist attack.

“Most states and localities have found it difficult to consider major new expenditures for transportation security, particularly capital investments.”

In Boston, for example, the Massachusetts Bay Transportation Authority (MBTA), an independent state agency that operates the regional subway and bus systems and contracts for commuter rail service, had good working relationships with the City of Boston’s emergency response agencies and with state emergency management officials; they had regular safety drills and worked closely in planning major public events, such as the annual “First Night” New Year’s Eve celebration and the annual Fourth of July concert along the Charles River. Both the City and the MBTA improved their Emergency Operations Centers to be ready for a major incident. However, transit agencies faced distinct limits on increasing their security actions. Post–September 11, they experienced fiscally painful spikes in operating costs as they intensively used personnel for extra protective duty both for routine operations and special events, and made investments in modest physical security upgrades.

After September 11, intelligence sharing became even more critical. A key element of the preparedness objective deterrence, prevention, and mitigation is developing law enforcement intelligence in useable forms to keep transit or other transportation agencies abreast of potential and actual threats and to allow them to better target their security resources in response. The much-criticized color-coded alert system managed by the White House Office of Homeland Security, and later by DHS, was aimed at conveying such information. However, from the perspective of transportation agencies, the core problem in terms of law enforcement information was that they remained peripheral to the information sharing process, not central players.

Most transit agencies either depended on city police forces or had only small transit police staffs, and they lacked expertise on terrorism issues. Even a relatively large transit system such as San Francisco’s Bay Area Rapid Transit District (BART) had only a small, dedicated police force of about 150 officers. Relationships between transit agencies and city and state law enforcement agencies were a valuable asset, and contacts grew more extensive, frequent, and intense in the aftermath of September 11, although governmental coordination remained an issue.⁴²

As at the federal level, state and local transportation agencies focused mainly on planning and developing relationships for the emergency response and recovery objectives. Other than information analysis and vulnerability assessments, and some tightening of access to facilities, transportation agencies were limited in their deterrence, prevention, and mitigation efforts.

D. Funding Constraints

Surface transportation agencies perceived increased operating costs as unwelcome necessities in the climate of extraordinary state fiscal stress in 2002 and 2003. Most states and localities found it difficult to consider major new expenditures for transportation security, particularly capital investments. Federal funds dedicated to homeland security were also quite limited.

Although transportation agencies could have tapped funding available in TEA-21 for capital spending on security needs, the political dynamics of transportation fund allocation worked against this. Because TEA-21 funds could be used for a wide range of transportation purposes, security issues competed with traditional transportation projects. Moreover, states were reluctant to use general-purpose transportation funds for security purposes, even where the perceived need was high. Many believed that the federal government would (or should) eventually provide dedicated homeland security subsidies.

On the other hand, when the federal government provided general-purpose homeland security funds to state or local governments, there were numerous nontransportation claimants (e.g., first responders or health agencies) emerged to lobby for allocations of money for their own projects, often with well-established expectations about securing these funds.

Thus, in many instances, transportation stakeholders did not want to use the TEA-21 funds for security because they were seeking dedicated homeland security funds for this objective. Yet, transportation stakeholders were typically unable to make strong enough

claims for police, fire, and public health agencies to capture a large share of homeland security funds. The result was limited federal funding allocated for transportation security.

Overall, states have been modestly proactive on transportation security issues. They have been quite concerned about major facilities, such as the Golden Gate Bridge, which have high public visibility and are perceived to face substantial risk. They are concerned, too, about potential attacks on vehicles or people using their facilities but find it difficult to devise new protective measures. Given the scale of their systems in terms of miles of roadway and track and numbers of bridges and tunnels, providing guards or installing surveillance systems is likely to be ineffective and prohibitively expensive. They therefore have concentrated on their role as emergency responders, enhancing capacity that, to some degree, was already in place.

V. Policy Recommendations

Since September 11, most states, large cities, and transportation agencies have enhanced emergency management plans to include responses to terrorism. They have assessed facility vulnerabilities, tightened procedures, and improved protection of buildings, terminals, and key infrastructure. Progress is not equal in all cases, nor are preparations as extensive as would be ideal. However, real change has occurred, particularly in locales that perceive a high risk of attack. Notwithstanding this improvement, much remains to be done.

The next tasks in enhancing surface transportation security are both more difficult and must proceed in a less favorable political and organizational climate than the initial steps. This section suggests surface transportation security policy issues that need attention in coming years.

A. Rethinking Federal Funding for Surface Transportation Security

The nation must carefully assess its financing system for surface transportation security to determine whether its structure results in underinvestment in security. As discussed, transportation agency resource constraints are shaping policy decisions. Whatever form they take, prevention and protection measures are likely to require significant capital investments, particularly for infrastructure improvements, such as physical barriers or electronic surveillance equipment. Some protective measures may also require significant ongoing operating expenses, for example, for security personnel to monitor video surveillance equipment.

In the stringent fiscal climate that the majority of states and localities face today, it is likely that the federal government will need to rationalize and enhance its role in providing funds to ensure that states and localities have support and fiscal incentives to act. Federal funds can leverage commitments of state and local revenues. In line with recent trends, the federal government and the states should continue to target limited fiscal resources to higher threat areas, reducing the tendency for funds to be widely distributed irrespective of risk.

Given a likely shortage of funds for improvements in transportation security, transit and highway officials must identify the most needed protective measures, ensuring that the most pressing needs are met. Transportation agencies are often regarded as secondary players compared with emergency managers, public safety, and law enforcement agencies. Transportation officials have a role in the discussions but often sit in an outer circle of participants. Transportation agencies must develop stronger and more effective voices in state decision-making and resource allocation.

B. Confronting the Accessibility–Security Trade-Off

Our transit and highway systems are open. It is impractical to check every passenger and vehicle no matter how many monitoring devices or personnel are deployed.⁴³ However, we

have by no means settled the degree to which openness and accessibility of transportation can and should be subject to security trade-offs. A future terrorist attack on a transportation venue might well result in legislation mandating sweeping changes in transportation access. Are the same access restrictions imposed on the air transport system feasible and effective for public transit or freight shipments? What consequences would they likely have both in economic and social terms? Are they acceptable given the current degree of threat and the other goals performed by the vast transportation system? Such questions should be addressed and analyses undertaken to ensure that policy is not made in a vacuum as a result of crisis.

C. Preventing Terrorism

Deterrence, prevention, and mitigation measures for transportation facilities have not evolved as far as emergency response capabilities. State and local governments profess a tremendous desire for timely, credible, and specific threat information, through the national threat alert system or from directly communicated law enforcement information. This information would allow protective measures to be deployed when needed without wasting resources on needless equipment or operating expenses at other times. The question is whether such information will ever be available from federal law enforcement sources, given the significant obstacles to obtaining information about potential terrorist attacks.

Also important, but far less developed, are methods to assure that local law enforcement personnel, who easily outnumber their federal counterparts, contribute effectively to surveillance and investigation of possible terrorist threats. Information developed by local law enforcement could well prove critical in stopping a future attack. Transit and highway security operations might also add important data, and they must be carefully integrated with other police operations. To achieve the necessary flow of law enforcement intelligence from local to federal levels requires much cooperation among levels of government. Increased federal efforts are needed to help these agencies understand the types of information to be collected and which data are significant. This effort may require further expansion of the number of transportation officials cleared to receive law enforcement information and classified intelligence data.

D. Federal Assistance for Technology Assessment

The feasibility and effectiveness of improvements in physical infrastructure are being debated. New technologies are being developed, tested, and refined,⁴⁴ and advances are frequently difficult for short-staffed state and local transportation agencies to monitor and review. It would be wasteful, moreover, for each state to perform this function on its own. Thus, a strong federal role in identifying and testing innovative technology and providing technical assistance to states and localities is highly desirable. The federal government can also play a key role in setting standards for technology and security practices, ensuring that investments are not delayed by state and local uncertainty about what will be required in the future.

E. Emergency Preparedness

Because prevention may not be successful, emergency response and consequence management and recovery capabilities also should be enhanced in transportation and other contexts. These preparedness tasks include building deeper capacity. Training must go beyond “awareness” instruction to include more specialized skill development. Jurisdictions need the services of more than a single individual with these skills. As the anthrax letter attacks of 2001 showed, emergencies that span wider geographic areas or longer time periods can severely tax both the emergency responders and the handful of specialists with expertise in particular situations. Transportation agencies, moreover, need enhanced capabilities for communicating with the public during such emergencies.

Greater integration across transportation agencies is also needed. The range of trans-

portation agencies and operators in a large metropolitan area or state is significant, creating significant coordination problems within the transportation community itself. Yet many security concerns would benefit from collective scrutiny, information exchange, and perhaps joint action. Metropolitan planning organizations (MPOs) could play a far larger role in this regard and could be an important factor in setting transportation security budget priorities. However, in the three areas examined in this report—Boston, Chicago, and the San Francisco Bay area—MPOs were not prominently involved in security activities, although the Metropolitan Transportation Commission in San Francisco played a limited convening and coordination role. Although MPOs vary enormously in their structure and capabilities, in many areas they could play a stronger role in pulling together diverse agencies, stimulating discussion, articulating common concerns, and providing planning assistance.⁴⁵

Transportation agencies should also be better linked to other agencies outside the transportation purview. During crises, emergency response agencies—police, fire service, emergency management services—must effectively coordinate efforts and include close links with the health care system, which itself lacks sufficient coordination. For example, hospital emergency room staffs and public health infectious disease specialists may be called on to work together in a bio-terror attack. Improved integration should go beyond the public sector to include major private corporations or nonprofit organizations (universities, health care centers) whose personnel or facilities may be attacked or whose assets (trained personnel, facilities, or transportation capabilities) could be useful in a crisis. Integration of capacity must also span jurisdictional boundaries, effectively connecting large cities with smaller communities in a metropolitan area or state emergency response with more isolated communities. We must develop more comprehensive forms of mutual aid if we are to avoid either prohibitively expensive duplication of equipment or training or substantial areas that lack important dimensions of protection.

Integration should also ensure interoperability and relationship-building and asset-sharing. Emergency radio systems, for example, do not typically allow fire fighters from one jurisdiction to communicate with those from another community, or even with police or paramedics from their own. However, interoperability implies more than the compatibility of equipment. It means the ability to work together effectively in emergencies, even when the units have not previously trained or exercised together. This requires common protocols, such as the Incident Management System, the adoption of which has been mandated by the Homeland Security Act as the template for emergency response by federal agencies and nationally.⁴⁶

Building deeper, more integrated, interoperable emergency response capabilities is a far more difficult undertaking than the improvements made to date. These future steps affect basic organizational operations by rank and file personnel, not merely planning or policy-making activities by senior officials. They not only require changes in single agencies but also coordination among networks of organizations that may not be hierarchically linked and managed. Effecting these changes is thus likely to be time-intensive and costly in organizational and dollar terms. It will require significant commitments of line and management personnel at the expense of other activities, and it will require many agencies to negotiate new forms of collaboration.

V. Conclusion

As the United States looks to the future, the stakes of deciding how to improve transportation security are high. We do not know whether the nation will face repeated, horrific terrorist attacks. If we face a continued severe threat, surface transportation systems may well become targets, perhaps regular targets. People's lives and welfare may depend on the steps taken to date and in the near future.

The novelty of a terrorist threat to American territory means that the nation has only begun to develop firm plans for better protecting the surface transportation system and how these enhancements will be financed. This paper has reviewed the responses of transportation agencies at different levels since September 11 rather than focusing on the substance of the policy choices about enhancing security. Much more policy analysis is needed in that realm.

As we develop transportation security strategy, we must also address more clearly the potential trade-off between security and service accessibility in the transportation sector. The many economic and social benefits that the surface transportation network provides rest, in important respects, on its openness. As in other areas of homeland security, we must be aware of the costs and the benefits of enhancing security.

Appendix

Interview Subjects and Institutional Affiliations (at the time of interview)

Boston and Massachusetts

Robert Calobrisi, Boston Emergency Management Agency, Boston Fire Department
 Paul Christian, Boston Fire Department
 Peter Cusalito, Weapons of Mass Destruction Civil Support Team,
 Massachusetts National Guard
 Paul Evans, Boston Police Department
 William Fleming, Police Department, Massachusetts Bay Transportation Authority
 Michael Galvin, Boston Basic City Services
 Brian Greeley, State Office of Commonwealth Security
 Eric Hahn, Boston Police Department
 John Hasson, Boston Emergency Management Agency, Boston Fire Department
 Jerry Leone, US Attorney's Office and Anti-Terrorism Task Force
 Michael Leone, Massachusetts Port Authority
 Stephen McGrail, Massachusetts Emergency Management Agency
 Stephen Morash, Boston Emergency Management Agency, Boston Fire Department
 Elaine Sudanowicz, Boston Transportation Department,
 and Boston Emergency Management Agency
 Richard Swensen, State Office of Commonwealth Security

Chicago and Illinois

Sara Alexander, Chicago Office of Emergency Management and Communications
 Mike Chamness, Illinois Emergency Management Agency
 Joe Gaspirich, Illinois Emergency Management Agency
 Captain James Getz, Illinois Department of Natural Resources Conversation Police
 Rick Guzman, Illinois Office of Homeland Security
 Harmon Herbert, United States Coast Guard
 Chief James Kehoe, Chicago Fire Department
 Tom Korty, Illinois Department of Transportation
 Ed LeFevour, Chicago Department of Aviation
 Fred Leonard, Metra Police
 David Lozeau, Chicago Transit Authority
 Bernero Martinez, Chicago Police Department
 Rob Newbold, Illinois Department of Transportation
 Kevin Phillips, Cook County Emergency Management Agency
 Lt. Col. Michael Snyders, Illinois State Police
 Leslee Stein Spencer, Illinois Department of Public Health
 Lt. Earl Zuelke, Chicago Police Department, Maritime Unit

San Francisco and California

Kathleen Bailey, California Office of Emergency Services, Coastal Region
 Lucien Canton, San Francisco Office of Emergency Services
 Phyllis Cauley, California Office of Emergency Services, Coastal Region
 Sargeant Richard Desmond, Jr., California Highway Patrol
 Jeff Georgevich, Metropolitan Transportation Commission
 Michael Griffin, California Office of Emergency Services, Coastal Region
 Michael Guerin, California Office of Emergency Services Law Enforcement Branch
 Len Hardy, Bay Area Rapid Transit
 Robert Hertan, San Francisco MUNI
 Captain Rick Linson, California Highway Patrol
 Lisa Mancini, San Francisco MUNI
 Nancy Okasaki, Metropolitan Transportation Commission



Federal and Other

Bob Adduci, U.S. Department of Transportation, Volpe Center

Frank Buckley, Transportation Security Administration,
Office of Maritime and Land Security

Theo Gamelas, Transportation Security Administration,
Office of Maritime and Land Security

John Gerner, Federal Highway Administration, Office of Transportation Security

Rob Healy, American Public Transportation Association

Greg Hull, American Public Transportation Association

Tony Kane, American Association of State Highway and Transportation Officials

Susan Knisely, Federal Transit Administration Office of Safety and Security

Charles Morton, Transportation Security Administration,
Office of Maritime and Land Security

Brian O'Malley, Transportation Security Administration,
Office of Maritime and Land Security

David Price, Federal Highway Administration, Office of Transportation Security

Harry Saporta, Federal Transit Administration Office of Safety and Security

Steve Sprague, Transportation Security Administration,
Office of Maritime and Land Security

Endnotes

1. Arnold Howitt is Executive Director of the A. Alfred Taubman Center for State and Local Government, John F. Kennedy School of Government, Harvard University. Jonathan Makler, formerly a project manager at the Kennedy School, is a transportation planner at the IBI Group, Boston, MA.
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26. The Coast Guard was transferred from the DOT to the DHS along with the TSA under the Homeland Security Act.
27. U.S. Government Accountability Office, "Transportation Security."
28. Code of Federal Regulations 49, sec. 1572 (2003).
29. Public Transportation Terrorism Prevention and Response Act of 2004
30. Recently, the DHS missed an April 2005 deadline to submit a transportation modal security plan to Congress. See: "DHS Misses Deadline on Transportation Security Plan," *Congressional Quarterly Midday Update*, April 7, 2005.
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