GAO

Testimony Before the Subcommittee on National Security, Emerging Threats, and International Relations Committee on Government Reform, House of Representatives

HOMELAND SECURITY

Federal Leadership and Intergovernmental Cooperation Required to Achieve First Responder Interoperable Communications

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GAO

Accountability * Integrity * Reliability

GAO-04-963T

HOMELAND SECURITY

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Why GAO Did This Study

Lives of first responders and those whom they are trying to assist can be lost when first responders cannot communicate effectively as needed. This report addresses issues of determining the status of interoperable wireless communications across the nation, and the potential roles that federal state, local governments can play in improving these communications.

What GAO Recommends

GAO recommends that the Secretary of DHS (1) continue to develop a nationwide database of and common terminology for public safety interoperability communications channels; (2) assess interoperability in specific locations against defined requirements; (3) through federal grant awards encourage state action to establish and support a statewide body to develop and implement detailed improvement plans; and (4) encourage that grant applications be in compliance with statewide interoperability plans, once they are developed. GAO also recommends that the Director of OMB work with DHS to review SAFECOM's functions and establish a long-term program with appropriate authority and funding to coordinate interoperability efforts across the federal government.

DHS generally agreed with our first two recommendations but did not specifically address the other recommendations to DHS. OMB had no comments.

What GAO Found

In a November 6, 2003, testimony, GAO said that no one group or level of government could "fix" the nation's interoperable communications problems. Success would require effective, collaborative, interdisciplinary and intergovernmental planning.

The present extent and scope nationwide of public safety wireless communication systems' ability to talk among themselves as necessary and authorized has not been determined. Data on current conditions compared to needs are necessary to develop plans for improvement and measure progress over time. However, the nationwide data needed to do this are not currently available. The Department of Homeland Security (DHS) intends to obtain this information by the year 2005 by means of a nationwide survey. However, at the time of our review, DHS had not yet developed its detailed plans for conducting this survey and reporting its results.

The federal government can take a leadership role in support of efforts to improve interoperability by developing national requirements and a national architecture, developing nationwide databases, and providing technical and financial support for state and local efforts to improve interoperability. In 2001, the Office of Management and Budget (OMB) established the federal government's Wireless Public Safety Interoperable Communications Program, SAFECOM, to unify efforts to achieve national wireless communications interoperability. However, SAFECOM's authority and ability to oversee and coordinate federal and state efforts has been limited by its dependence upon other agencies for funding and their willingness to cooperate. OMB is currently examining alternative methods to implement SAFECOM's mission. In addition, DHS, where SAFECOM now resides, has recently announced it is establishing an Office for Interoperability and Compatibility to coordinate the federal response to the problems of interoperability in several functions, including wireless communications. The exact structure and funding for this office, which will include SAFECOM, are still being developed.

State and local governments can play a large role in developing and implementing plans to improve public safety agencies' interoperable communications. State and local governments own most of the physical infrastructure of public safety communications systems, and states play a central role in managing emergency communications. The Federal Communications Commission recognized the central role of states in concluding that states should manage the public safety interoperability channels in the 700 MHz communications spectrum. States, with broad input from local governments, are a logical choice to serve as a foundation for interoperability planning because incidents of any level of severity originate at the local level with states as the primary source of support. However, states are not required to develop interoperability plans, and there is no clear guidance on what should be included in such plans.

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to be here today to discuss the critical issue of wireless interoperable communications for first responders.[1] In testimony last November before this subcommittee, we pointed out that the inability of first responders—police officers, fire fighters, emergency medical service personnel, public health officials, and others—to communicate effectively over wireless systems with one another as needed during an emergency is a long-standing and widely recognized problem in many areas across the country.[2] Reports have shown that when first responders cannot communicate effectively as needed, it can literally cost lives of both emergency responders and those they are trying to assist. Thus, effective communications between and among wireless communications systems used by federal, state, and local public safety agencies is generally accepted as not only desirable but essential for the protection of life and property. Public safety officials generally recognize that effective "interoperable" communications is the ability to talk with whom they want, when they want, when authorized, but not the ability to talk with everyone all of the time. The effective interoperability of wireless systems permits a rapid and coordinated response to an emergency incident, whether that incident is a "routine" spill from an overturned tanker truck or railcar, a natural disaster, or a terrorist attack.

In this statement and in the report we are releasing today,[3] we examine (1) issues in determining the current interoperable communications capabilities of first responders nationwide, including the scope and severity of interoperable wireless communications problems across the nation; (2) the potential roles that federal, state, and local governments can play in improving these communications, and (3) how the variety of federal grants for state and local first responders may encourage or inhibit

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[1] Our work addressed issues of public safety wireless communications interoperability—communications that use radio frequency waves, such as cellular telephones and other types of wireless radios—instead of telephone wires for transmitting voice and data. We did not address interoperability problems that may be found in other homeland security functions, such as fire equipment, chem-bio equipment, and information technology.

[2] U.S. General Accounting Office, *Homeland Security: Challenges in Achieving Interoperable Communications for First Responders*, GAO 04-231T (Washington, D.C.: November 6, 2003).

[3] U.S. General Accounting Office, *Homeland Security: Federal Leadership and Intergovernmental Cooperation Required to Achieve First Responder Interoperable Communications*, GAO-04-740 (Washington, D.C.: July 2004).

the assessment of interoperable problems and the development of comprehensive plans to address those problems.

In doing our work, we met with federal, state, and local officials, obtained and reviewed appropriate documentation, attended several meetings of public safety communications officials, and met with staff of the National Governors Association. We conducted our work from July 2003 through June 2004 in accordance with generally accepted government auditing standards.

Summary

- The fundamental barrier to effectively addressing wireless interoperability problems for public safety has been the lack of effective, collaborative, interdisciplinary, and intergovernmental cooperation and planning.

Defining the Problem: Assessing Current Capabilities

- Interoperable communications needs are a function of effective incident command planning and operations structure that defines, for different circumstances and types of events, who is in charge and what types of information—voice, data, or both—would need to be communicated to whom under what circumstances.

- The current wireless interoperable communications capabilities of first responders nationwide has not been determined. To assess these capabilities a set of requirements is needed that can be used to assess "what is" compared to "what should be." The Office of Management and Budget has designated SAFECOM, within the Department of Homeland Security, as the focal point for coordinating federal efforts to improve interoperable communications. In April 2004, SAFECOM issued a document designed to serve as a set of baseline requirements and is working to develop a baseline of current capabilities by July 2005. This is a difficult task, and the details of SAFECOM's baseline study are still being worked out.

Federal Leadership and Intergovernmental Cooperation Is Needed

- The federal, state, and local governments all have important roles in assessing interoperability needs, identifying gaps in meeting those needs, and developing comprehensive plans for closing those gaps.

- The federal government can provide the leadership, long-term commitment, and focus to help state and local governments meet these goals. For example, the federal government can provide the leadership and support for developing (1) a national architecture that identifies communications requirements and technical standards, (2) a national database of interoperable communications frequencies, (3) a common nomenclature for those frequencies, and (4) statewide interoperable communications plans.

- SAFECOM's ability to provide federal leadership and coordination is hampered by its dependence upon other federal agencies for funding and cooperation. SAFECOM is to negotiate an annual memorandum of understanding on funding or program participation with each federal agency that OMB has designated as a partner with SAFECOM.

- DHS has recently created the Office of Interoperability and Compatibility, which it expects to be fully established by November 2004. As of June 2004, the exact structure and funding for the office, including SAFECOM's role within the office, were still being developed.

- With broad input from local governments and first responders, states can serve as focal points for statewide planning to improve interoperable communications. The Federal Communications Commission has recognized the important role of states by providing them authority to administer the interoperability channels within the 700 MHz band of communications spectrum.

- Some states are working to develop statewide plans. However, states are not required to establish a statewide capability to (1) integrate statewide and regional interoperability planning or (2) prepare statewide interoperability plans that maximize use of spectrum to meet the range of interoperability needs within the state. Nor is there is any guidance for states on what such plans should include.

Federal Grant Structure Does Not Support Statewide Planning

- The fragmented federal grant structure for first responders does not support statewide interoperability planning. SAFECOM has developed grant guidance for interoperability, but cannot require that consistent guidance be incorporated in all federal first responder grants.

- The structure of some federal grants does not support long-term planning efforts because, for example, they did not require a communications plan prior to receiving grant funds and required a 1- or 2-year performance period.

- The federal and state governments lack a coordinated grant review process to ensure that funds allocated to local governments are used for communication projects that complement each other and add to overall statewide and national interoperability capacity.

Recommendations

We recommend that the Secretary of DHS:

- in coordination with the FCC and the National Telecommunications and Information Administration, set target dates for completing the development of a nationwide interoperable frequency database and common nomenclature for those frequencies;
- establish national interoperable communications requirements and assist states in assessing current capacities against those requirements;

- use DHS grant guidance to encourage states to establish a single statewide body to assess and develop statewide plans for improving interoperable communications; and

- at the appropriate time, require through DHS grant guidance that all state or local grant applications for equipment purchases conform with statewide interoperable communications plans.

We also recommend that the Director of OMB, in conjunction with DHS, review the interoperability mission and functions now assigned to SAFECOM and establish those functions as a long-term program with adequate coordination authority and funding.

DHS generally agreed with the first two recommendations, but did not directly address the third and fourth recommendations. OMB had no comments on our draft report or recommendations.

Background

Interoperable communications is not an end in itself. Rather, it is a necessary means for achieving an important goal—the ability to respond effectively to and mitigate incidents that require the coordinated actions of first responders, such as multi-vehicle accidents, natural disasters, or terrorist attacks. Public safety officials have pointed out that needed interoperable communications capabilities are based on whether communications are needed for (1) "mutual-aid responses" or routine day-to-day coordination between two local agencies; (2) extended task force operations involving members of different agencies coming together to work on a common problem, such as the 2002 sniper attacks in the
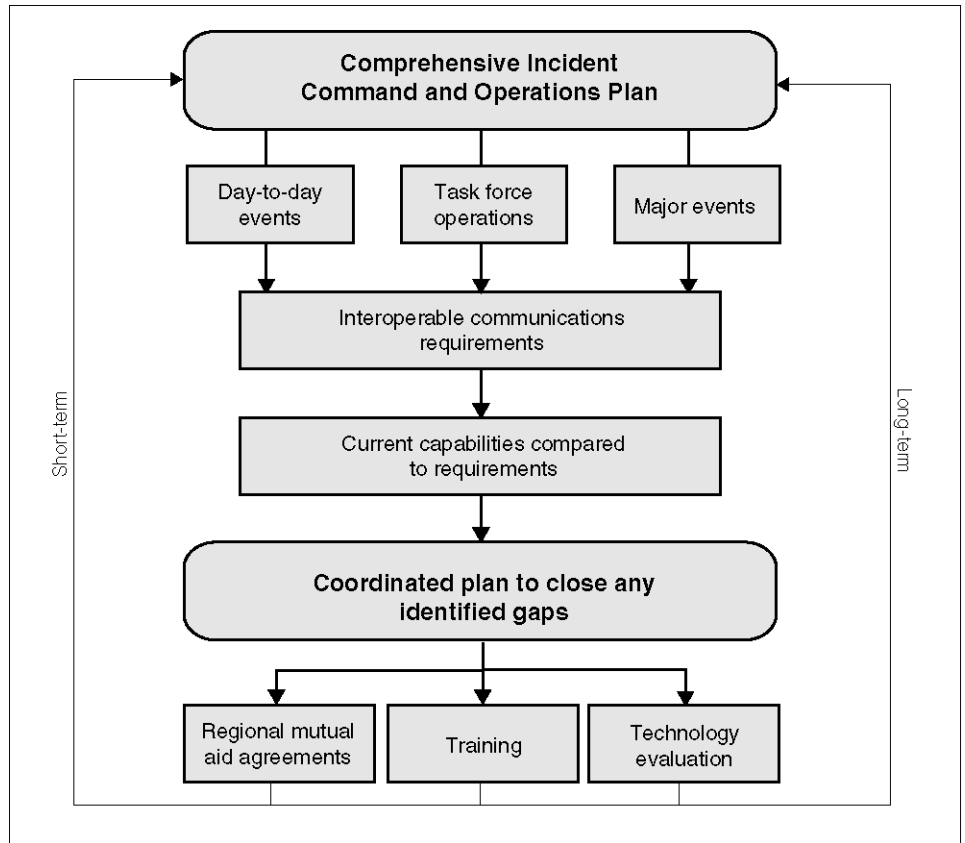
Washington, D.C. metropolitan area; or (3) a major event that requires response from a variety of local, state, and federal agencies, such as major wildfires, hurricanes, or the terrorist attacks of September 11, 2001. A California State official with long experience in public safety communications breaks the major event category into three separate types of events: (1) planned events, such as the Olympics, for which plans can be made in advance; (2) recurring events, such as major wildfires and other weather events, that can be expected every year and for which contingency plans can be prepared based on past experience; and (3) unplanned events, such as the September 11th attacks, that can rapidly overwhelm the ability of local forces to handle the problem.

Interoperable communications are but one component, although a key one, of an effective incident command planning and operations structure. As shown in figure 1, determining the most appropriate means of achieving interoperable communications must flow from an comprehensive incident command and operations plan that includes developing an operational definition of who is in charge for different types of events and what types of information would need to be communicated (voice, data, or both) to whom under what circumstances. Other steps include:

- defining the range of interoperable communications capabilities needed for specific types of events;

- assessing the current capabilities to meet these communications needs;

- identifying the gap between current capabilities and defined requirements;

- assessing alternative means of achieving defined interoperable communications requirements; and

- developing a comprehensive plan—including, for example, mutual aid agreements, technology and equipment specifications, and training—for closing the gap between current capabilities and identified requirements.

Interoperable communications requirements are not static, but change over time with changing circumstances (e.g., new threats) and technology (e.g., new equipment), and additional available broadcast spectrum. Consequently, both a short- and long-term "feedback loop" that incorporates regular assessments of current capabilities and needed changes is important.

FIGURE 1: A Planning Process for Interoperable Communications

Comprehensive Incident
Command and Operations Plan

Day-to-day
events

Task force
operations

Major events

Interoperable communications
requirements

Current capabilities compared
to requirements

Coordinated plan to close any
identified gaps

Regional mutual
aid agreements

Training

Technology
evaluation

Short-term

Long-term

Source: GAO.

In addition, the first responder community is extensive and extremely diverse in size and the types of equipment in their communications systems. According to SAFECOM officials,[4] there are over 2.5 million public safety first responders within more than 50,000 public safety organizations in the United States. Local and state agencies own over 90 percent of the existing public safety communications infrastructure. This intricate public safety communications infrastructure incorporates a wide variety of technologies, equipment types, and spectrum bands.[5] In

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[4]The Wireless Public Safety Interoperable Communications Program (SAFECOM) was established in 2001 by the Office of Management and Budget (OMB) to focus on communications interoperability issues.

[5]Spectrum bands are the useable radio frequencies in the electromagnetic distribution. Specific frequencies have been allocated to the public safety community.

addition to the difficulty that this complex environment poses for federal, state, and local coordination, 85 percent of fire personnel, and nearly as many emergency management technicians, are volunteers with elected leadership. Many of these agencies are small and do not have technical expertise; only the largest of the agencies have engineers and technicians.

In the past, a stovepiped, single jurisdiction, or agency-specific communication systems development approach prevailed—resulting in none or less than desired interoperable communications systems. Public safety agencies have historically planned and acquired communications systems for their own jurisdictions without concern for interoperability. This meant that each state and local agency developed communications systems to meet their own requirements, without regard to interoperability requirements to talk to adjacent jurisdictions.

For over 15 years, the federal government has been concerned with public safety spectrum issues, including communications interoperability issues.[6] A variety of federal departments and agencies have been involved in efforts to define the problem and to identify potential solutions, such as the Department of Homeland Security (DHS), the Department of Justice (DOJ), the Federal Communications Commission (FCC), and the National Telecommunications and Information Agency (NTIA) within the Department of Commerce (DOC), among others. Today, a combination of federal agencies, programs, and associations are involved in coordinating emergency communications.

DHS has several agencies and programs involved with addressing first responder interoperable communication barriers, including the SAFECOM program, the Federal Emergency Management Agency (FEMA), and the Office for Domestic Preparedness (ODP). As one of its 24 E-Gov initiatives, the Office of Management and Budget (OMB) in 2001 created SAFECOM to unify the federal government's efforts to help coordinate the work at the federal, state, local, and tribal levels to establish reliable public safety communications and achieve national wireless

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[6]The radiofrequency spectrum is the medium that enables wireless communications of all kinds. Although the radio spectrum spans the range from 3 kilohertz to 300 gigahertz, 90 percent of its use is concentrated in the 1 percent of frequencies that lie below 3.1 gigahertz, because these frequencies have properties that make this portion of the spectrum well suited for many important wireless technologies. Radio waves are a form of electromagnetic radiation that propagate in space as the result of particle oscillations. The number of oscillations per second is called "frequency," which is measured in units of hertz. The term "kilohertz" refers to thousands of hertz and "gigahertz" to billions of hertz.

communications interoperability. The SAFECOM program was brought into DHS in early 2003. In June 2003, SAFECOM partnered with the National Institute of Standards and Technology (NIST) and the National Institute of Justice (NIJ) to hold a summit that brought together over 60 entities involved with communications interoperability policy setting or programs.

Several technical factors specifically limit interoperability of public safety wireless communications systems. First, public safety agencies have been assigned frequencies in new bands over time as available frequencies become congested and as new technology made other frequencies available for use. As a result, public safety agencies now operate over multiple frequency bands—operating on these different bands required different radios because technology was not available to include all bands in one radio. Thus, the new bands provided additional capabilities but fragmented the public safety radio frequency spectrum, making communications among different jurisdictions difficult. Another technical factor inhibiting interoperability is the different technologies or different applications of the same technology by manufacturers of public safety radio equipment. One manufacturer may design equipment with proprietary technology that will not work with equipment produced by another manufacturer.

Nature and Scope of Interoperable Communication Problems Nationwide Are Unknown

The current status of wireless interoperable communications across the nation—including the current interoperable communications capabilities of first responders and the scope and severity of the problems that may exist—has not been determined. Although various reports have documented the lack of interoperability of public safety first responders wireless communications in specific locations, complete and current data do not exist documenting the scope and severity of the problem at the local, state, interstate, or federal levels across the nation. Accumulating this data may be difficult, however, because several problems inhibit efforts to identify and define current interoperable communications capabilities and future requirements.

First, current capabilities must be measured against a set of requirements for interoperable communications, and these requirements vary according to the characteristics of specific incidents at specific locations. Who needs to talk to whom, when they need to talk, and what set of communications capabilities should be built or acquired to satisfy these requirements depends upon whether interoperable communications are needed for day-to-day mutual aid, task force operations that occur when members of

different agencies come together to work on a common problem such as the National Capitol Region sniper investigation, or major events such as a terrorist attack. Requirements for interoperable communications also may change with the expanding definition of first responders—from the traditional police, fire, and emergency medical providers to include such professions as health care providers and other professions—and the evolution of new technology.

Establishing a national baseline for public safety wireless communications interoperability will be difficult because the definition of who to include as a first responder is evolving, and interoperability problems and solutions are situation specific and change over time to reflect new technologies and operational requirements. In a joint SAFECOM/AGILE[7] program planning meeting in December 2003, participants agreed that a national baseline is necessary to know what the nation's interoperability status really is, to set goals, and to measure progress. However, at the meeting, participants said they did not know how they were going to define interoperability, how they could measure interoperability, or how to select their sample of representative jurisdictions; this was all to be determined at a later date. SAFECOM has embarked on an effort to establish a national baseline of interoperable communications capabilities by July 2005, but SAFECOM is still working out the details of the study that would be used to develop the baseline. At the time of our review, SAFECOM officials acknowledged that establishing a baseline will be difficult and said they are working out the details of their baseline study but still expect to complete it by July 2005.

DHS also has other work under way that may provide a tool for such self-assessments by public safety officials. An ODP official in the Border and Transportation Security Directorate of DHS said ODP is supporting the development of a communications and interoperability needs assessment for 118 jurisdictions that make up the Kansas City region. The official said the assessment will provide an inventory of communications equipment and identify how the equipment is used. He also said the results of this prototype effort will be placed on a CD-Rom and distributed to states and localities to provide a tool to conduct their own self assessments. SAFECOM officials said they will review ODP's assessment tool as part of a coordinated effort and use this tool if it meets the interoperability requirements of first responders.

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[7]The Advanced Generation of Interoperability for Law Enforcement (AGILE) is a key DOJ program promoting wireless interoperability for first responders.

Second, technical standards for interoperable communications are still under development. Beginning in 1989, a partnership between industry and the public safety user community developed what is known as Project 25 (P- 25) standards. According to the Public Safety Wireless Network (PSWN)[8] program office, Project 25 standards remain the only user-defined set of standards in the United States for public safety communications. DHS purchased radios that incorporate the P-25 standards for each of the nation's 28 urban search and rescue teams. PSWN believes P-25 is an important step toward achieving interoperability, but the standards do not mandate interoperability among all manufacturers' systems. Standards development continues today as new technologies emerge that meet changing user needs and new policy requirements.

Third, new public safety mission requirements for video, imaging, and high-speed data transfers, new and highly complex digital communications systems, and the use of commercial wireless systems are potential sources of new interoperability problems. Availability of new spectrum can also encourage the development of new technologies and require further development of technical standards. For example, the FCC recently designated a new band of spectrum, the 4.9 Gigahertz (GHz) band, for use and support of public safety. The FCC provided this additional spectrum to public safety users to support new broadband applications such as high-speed digital technologies and wireless local area networks for incident scene management. The FCC requested in particular comments on the implementation of technical standards for fixed and mobile operations on the band. NPSTC has established a task force that includes work on interoperability standards for the 4.9 GHz band.

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[8]The Department of Justice and the Department of the Treasury formed PSWN to promote effective public safety communications and to foster interoperability among local, state, federal, and tribal communications systems. PSWN was incorporated into DHS as part of the SAFECOM project in 2003.

Federal Leadership and Intergovernmental Cooperation Is Needed

The federal government, states, and local governments have important roles to play in assessing interoperability needs, identifying gaps in meeting those needs, and developing comprehensive plans for closing those gaps. The federal government can provide the leadership, long-term commitment, and focus to help state and local governments meet these goals. For example, currently national requirements for interoperable communications are incomplete and no national architecture exists, there is no standard database to coordinate frequencies, and no common nomenclature or terminology exists for interoperability channels. States alone cannot develop the requirements or a national architecture, compile the nationwide frequency database, or develop a common nationwide nomenclature. Moreover, the federal government alone can allocate communications spectrum for public safety use.

Need to Establish National Requirements and a National Architecture

One key barrier to the development of a national interoperability strategy has been the lack of a statement of national mission requirements for public safety—what set of communications capabilities should be built or acquired—and a strategy to get there. A key initiative in the SAFECOM program plan for the year 2005 is to complete a comprehensive Public Safety Statement of Requirements. The Statement is to provide functional requirements that define how, when, and where public safety practitioners communicate. On April 26, 2004, DHS announced the release of the first comprehensive Statement of Requirements defining future communication requirements and outlining future technology needed to meet these requirements. According to DHS, the Statement provides a shared vision and an architectural framework for future interoperable public safety communications. DHS describes the Statement of Requirements as a living document that will define future communications services as they change or become new requirements for public safety agencies in carrying out their missions. SAFECOM officials said additional versions of the Statement will incorporate whatever is needed to meet future needs but did not provide specific details.

A national architecture has not yet been prepared to guide the creation of interoperable communications. An explicit, commonly understood, and agreed-to blueprint, or enterprise architecture, is required to effectively and efficiently guide modernization efforts. For a decade, GAO has promoted the use of enterprise architectures, recognizing them as a crucial means to a challenging goal—agency operational structures that

are optimally defined in both business and technological environments.[9] SAFECOM officials said development of a national architecture will take time because SAFECOM must first assist state and local governments to establish their communications architectures. They said SAFECOM will then collect the state and local architectures and fit them into a national architecture that links federal communications into the state and local infrastructure.

Standard Databases and Common Nomenclature Not Yet Established

Technology solutions by themselves are not sufficient to fully address communication interoperability problems in a given local government, state, or multi-state region. State and local officials consider a standard database of interoperable communications frequencies to be essential to frequency planning and coordination for interoperability frequencies and for general public safety purposes. Police and fire departments often have different concepts and doctrines on how to operate an incident command post and use interoperable communications. Similarly, first responders, such as police and fire departments, may use different terminology to describe the same thing. Differences in terminology and operating procedures can lead to communications problems even where the participating public safety agencies share common communications equipment and spectrum. State and local officials have drawn specific attention to problems caused by the lack of common terminology in naming the same interoperability frequency.

The Public Safety National Communications Council (NCC), appointed by the Federal Communications Commission (FCC) was to make recommendations for public safety use of the 700 MHz communications spectrum. The NCC recommended that the FCC mandate (1) Regional

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[9]An enterprise architecture can be viewed as a link between an organization's strategic plan and the program and supporting systems implementation investments it intends to pursue to systematically achieve its strategic goals and outcomes. As such the architecture is basically a blueprint, defined largely by interrelated models, that describes (in both business and technology terms) an entity's "as is" or current environment, its "to be" future environment, and its investment plan for transitioning from the current to the future environment. See U.S. General Accounting Office, *Information Technology: The Federal Enterprise Architecture and Agencies Enterprise Architectures Are Still Maturing*, GAO-04-798T (Washington, D.C.: May 19, 2004).

Planning Committee[10] use of a standard database to coordinate frequencies during license applications and (2) specific names be designated for each interoperability channel on all pubic safety bands. The NCC said that both were essential to achieve interoperability because public safety officials needed to know what interoperability channels were available and what they were called. In January 2001, the FCC rejected both recommendations. It said that the first recommendation was premature because the database had not been fully developed and tested. The FCC directed the NCC to revisit the issue of mandating the database once the database was developed and had begun operation. The FCC rejected the common nomenclature recommendation because it said that it would have to change the rules each time the public safety community wished to revise a channel label. In its final report of July 25, 2003, the NCC renewed both recommendations. It noted that the FCC had received a demonstration of a newly developed and purportedly operational database, the Computer Assisted Pre-Coordination Resource and Database System (CAPRAD), and that its recommendations were consistent with previous FCC actions, such as the FCC's designating medical communications channels for the specifc purpose of uniform useage.

Converting SAFECOM's Functions To A Long-Term Program

In 2001, the Office of Management and Budget (OMB) established SAFECOM to unify the federal government's efforts to help coordinate work at the federal, state, local, and tribal levels in order to provide reliable public safety communications and achieve national wireless communications interoperability. However, SAFECOM was established as an OMB E-Gov initiative with a goal of improving interoperable communications within 18-24 months—a timeline too short for addressing the complex, long-term nature of the interoperability problem.[11] In

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[10]In 1987, the FCC developed a National Plan for Public Safety Radio Services that set national guidelines for use of the 800 MHz spectrum while allowing regional public safety planning committees to develop regional plans tailored to their areas own particular communications needs. A large portion of the 700 MHz public safety spectrum, approximately 53 percent (12.5 MHz), is designated for general use by local, regional, and state users. A regional planning process was adopted to govern management of this public safety spectrum. It is a process similar to that used in the 821-824 MHz and 866-869 MHz bands. Regional Planning Committees (RPCs) are allowed maximum flexibility to meet state and local needs, encourage innovative use of the spectrum, and accommodate new and as yet unanticipated developments in technology equipment. They are responsible for creating and managing regional plans.

[11]U.S. General Accounting Office, *Project SAFECOM: Key Cross-Agency Emergency Communications Effort Requires Stronger Collaboration*, GAO-04-494 (Washington, D.C.: April 16, 2004).

addition, the roles and responsibilities of various federal agencies within and outside DHS involved in communications interoperability have not been fully defined, and SAFECOM's authority to oversee and coordinate federal and state efforts has been limited in part because it has been dependent upon other federal agencies for cooperation and funding and has operated without signed memorandums of understanding negotiated with various agencies.

DHS, where SAFECOM now resides, announced in May 2004 that it had created an Office for Interoperability and Compatibility within the Science and Technology Directorate, to coordinate the federal response to the problems of wireless and other functional interoperability and compatibility. The new office is responsible for coordinating DHS efforts to address interoperability and compatibility of first responder equipment, to include both communications equipment and equipment such as personal protective equipment used by police and fire from multiple jurisdictions. The plan as approved by the Secretary of DHS states that by November 2004 the new office will be fully established and that action plans and a strategy will be prepared for each portfolio (type or class of equipment). The plan presents a budget estimate for creation of the office through November 2004 but does not include costs to implement each portfolio's strategy. The plans for the new office do not clarify the roles of various federal agencies or specify what oversight authority the new office will have over federal agency communications programs. As of June 2004, the exact structure and funding for the office, including SAFECOM's role within the office, were still being developed.

Multiple Federal Agencies Have Roles And Responsibilities For Interoperability

DHS has not defined how it will convert the current short-term program and funding structures to a permanent program office structure. When it does, DHS must carefully define the SAFECOM mission and roles in relation to other agencies within DHS and in other federal agencies that have missions that may be related to the OMB-assigned mission for SAFECOM. SAFECOM must coordinate with multiple federal agencies, including ODP within DHS, AGILE and the Office for Community Oriented Policing Services (COPS)[12] in DOJ, the Department of Defense, the FCC, the National Telecommunications and Information Administration within

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[12]Congress authorized COPS within DOJ to administer the Interoperable Communications Technology Program in 2003. The program awarded 14 grants totaling more than $66 million to first responders for interoperable communications and provides technical assistance to grantees.

the Department of Commerce, and other agencies. For example, AGILE is the DOJ program to assist state and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. The Homeland Security Act assigns the DHS Office for Domestic Preparedness (ODP) primary responsibility within the executive branch for preparing the United States for acts of terrorism, including coordinating or, as appropriate, consolidating communications and systems of communications relating to homeland security at all levels of government. An ODP official said the Homeland Security Act granted authority to ODP to serve as the primary agency for preparedness against acts of terrorism, to specifically include communications issues. He said ODP is working with states and local jurisdictions to institutionalize a strategic planning process that assesses and funds their requirements. ODP also plans to develop tools to link these assessments to detailed interoperable communications plans.

SAFECOM officials also will face a complex issue when they address public safety spectrum management and coordination. The National Telecommunications and Information Administration (NTIA) within the Department of Commerce is responsible for federal government spectrum use and the FCC is responsible for state, local, and other nonfederal spectrum use. The National Governors' Guide to Emergency Management noted that extensive coordination will be required between the FCC and the NTIA to provide adequate spectrum and to enhance shared local, state, and federal communications. In September 2002, GAO reported that FCC and NTIA's efforts to manage their respective areas of responsibility were not guided by a national spectrum strategy and had not implemented long-standing congressional directives to conduct joint, national spectrum planning.[13] The FCC and the NTIA generally agreed with our recommendation that they develop a strategy for establishing a clearly defined national spectrum plan and submit a report to the appropriate congressional committees. In a separate report, we also discussed several barriers to reforming spectrum management in the United States.[14] On June 24, 2004, the Department of Commerce released two reports entitled

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[13]U.S. General Accounting Office, *Telecommunications: Better Coordination and Enhanced Accountability Needed to Improve Spectrum Management*, GAO-02-906 (Washington, D.C.: Sept., 2002).

[14]U.S. General Accounting Office, *Telecommunications: Comprehensive Review Of U.S. Spectrum Management With Broad Stakeholder Involvement Is Needed*, GAO-03-277 (Washington,D.C.: Jan., 2003).

Spectrum Policy for the 21st Century, the second of which contained recommendations for assessing and managing public safety spectrum.

SAFECOM's Authority To Coordinate Federal And State Efforts Is Limited

SAFECOM has limited authority to coordinate federal efforts to assess and improve interoperable communications. Although SAFECOM has developed guidance for use in federal first responder grants, SAFECOM does not have authority to require federal agencies to coordinate their grant award information. SAFECOM is currently engaged in an effort with DOJ to create a "collaborative clearinghouse" that could facilitate federal oversight of interoperable communications funding to jurisdictions and allow states access to this information for planning purposes. The database is intended to decrease duplication of funding and evaluation efforts, de-conflict the application process, maximize efficiency of limited federal funding, and serve as a data collection tool for lessons learned that would be accessible to state and locals. However, SAFECOM officials said that the challenge to implementing the coordinated project is getting federal agency collaboration and compliance. As of February 2004, the database contained award information from the 2003 COPS and FEMA interoperability communications equipment grants, but no others within or outside DHS.

SAFECOM's oversight authority and responsibilities are dependant upon its overall mission. OMB officials told us that they are currently in the process of refocusing the mission of the SAFECOM program into three specific parts: (1) coordination of federal activities through several initiatives, including participation in the Federal Interagency Coordination Council[15] and establishment of a process for federal agencies to report and coordinate with SAFECOM on federal activities and investments in interoperability; (2) developing standards; and (3) developing a national architecture for addressing communications interoperability problems. They said identification of all current and planned federal agency communications programs affecting federal, state, and local wireless interoperability is difficult. According to these officials, OMB is developing

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[15]FICC is an informal council consisting of federal agencies, whose mission is to help local, tribal, state, and federal public safety agencies improve public safety response through more effective and efficient interoperable wireless communications by reducing duplication in programs and activities, identifying and promoting best practices and coordinating federal grants, technical assistance, training, and standards. Proposed FICC members are federal agencies within DOJ, DHS, Defense, Agriculture, Health and Human Services, and Commerce.

a strategy to best utilize the SAFECOM program and examining options to enforce the new coordination and reporting process. SAFECOM officials said they are working to formalize the new reporting and coordination process by developing written agreements with other federal agencies and by obtaining concurrence of major state and local associations to the SAFECOM governance structure. SAFECOM officials noted that this newly refocused SAFECOM role does not include providing technical assistance or conducting operational testing of equipment. They said that their authority to conduct such activities will come from DHS enabling directives. SAFECOM officials also said that they have no enforcement authority to require other agencies to use the SAFECOM grant guidance in their funding decisions or to require agencies to provide grant program information to them for use in their database.

State and Local Governments Can Play a Central Role

States, with broad input from local governments, can serve as focal points for statewide planning to improve interoperable communications. The FCC has recognized the important role of states. In its rules and procedures, the FCC concluded that because states play a central role in managing emergency communications and are usually in control at large scale-events and disasters, states should administer the interoperability channels within the 700 MHz band of communications spectrum. States can play a key role in improving interoperable communications by establishing a management structure that includes local participation and input to analyze and identify interoperability gaps between "what is" and "what should be," developing comprehensive local, state, and regional plans to address such gaps, and funding these plans. The states we visited or contacted—California, Florida, Georgia, Missouri, Washington and a five state Midwest consortium—were in various stages of formulating these management structures. However, states are not required to establish a statewide management structure or to develop interoperability plans, and there is no clear guidance on what should be included in such plans. In addition, no requirement exists that interoperability of federal communications systems be coordinated with state and local government communications systems. The use of a standard database on communications frequencies by public safety agencies within the state and common terminology for these frequencies in preparation and implementation of these statewide interoperable plans are essential but are also not required. Without planning, coordination, and applicable standards—in other words, without a commonly understood and accepted blueprint or national architecture—the communications systems developed between and among locations and levels of government may not be interoperable.

States are key players in responding to normal all-hazards emergencies and to terrorist threats. Homeland Security Presidential Directive 8 notes that awards to states are the primary mechanism for delivery of federal preparedness assistance for these missions. State and local officials also believe that states, with broad local and regional participation, have a key role to play in coordinating interoperable communications supporting these missions. The Public Safety Wireless Network (PSWN), in its report on the role of the state in providing interoperable communications, agreed. According to the PSWN report, state leadership in public safety communications is key to outreach efforts that emphasize development of common approaches to regional and statewide interoperability. The report said that state officials have a vested interest in establishing and protecting statewide wireless infrastructures because public safety communications often must cross more than one local jurisdictional boundary.[16]

However, states are not required to establish a statewide capability to (1) integrate statewide and regional interoperability planning and (2) prepare statewide interoperability plans that maximize use of spectrum to meet interoperability requirements of day-to-day operations, joint task force operations, and operations in major events. Federal, state, and local officials are not required to coordinate federal, state, and local interoperability spectrum resources that, if successfully addressed, have significant potential to improve public safety wireless communications interoperability. As a result, states may not prepare comprehensive and integrated statewide plans that address the specific interoperability issues present in each state across first responder disciplines and levels of government.

Several state and local agencies that we talked with emphasized that they are taking steps to address the need for statewide communications planning. State officials also told us that statewide interoperability is not enough because incidents first responders face could cross state boundaries. Thus, some states are also taking actions to address interstate interoperability problems. For example, Illinois, Indiana, Kentucky, Michigan, and Ohio officials said that their states have combined efforts to form the Midwest Public Safety Communications Consortium to promote interstate interoperability. According to these officials, they also have taken actions to form an interstate committee to develop interoperability

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[16]See *The Role of The States in Public Safety Wireless Interoperability*, PSWN (2002).

plans and solicit support from key players, such as local public safety agencies.

Statewide Interoperable Communications Committees Offer Potential for Coordinated Statewide Planning

FCC recognized a strong state interest in planning and administering interoperability channels for public safety wireless communications when it adopted various technical and operational rules and polices for the 700 MHz band. In these rules and policies, FCC concluded that administration of the 2.6 MHz of interoperability channels in that band (approximately 10 percent) should occur at the state-level in a State Interoperability Executive Committee (SIEC). FCC said that states play a central role in managing emergency communications and that state-level organizations are usually in control at large-scale events and disasters or multi-agency incidents. FCC also found that states are usually in the best position to coordinate with federal government emergency agencies. FCC said that SIEC administrative activities could include holding licenses, resolving licensing issues, and developing a statewide interoperability plan for the 700 MHz band. Other SIEC responsibilities could include the creation and oversight of incident response protocols and the creation of chains of command for incident response and reporting. Available data indicate that 12 to 15 states did not create SIECs[17] but have relied on Regional Planning Committees or similar planning bodies.

Content and Scope of Statewide Interoperability Plans Not Established

A comprehensive statewide interoperable plan can provide the guiding framework for achieving defined goals for interoperability within a state and for regions within and across states (such as Kansas City, Mo and Kansas City, Kans.). NCC recommended that all SIECs prepare an interoperability plan that is filed with FCC and updated when substantive changes are made or at least every three years. NCC also recommended to FCC that SIECs, for Homeland Security reasons, should administer all interoperability channels in a state, not merely those in the 700 MHz band. According to NCC, each state should have a central point identified for information on a state's interoperability capability.

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[17]FCC data show 38 states and the District of Columbia with SIECs or similar bodies and 12 states with Regional Planning Committees (RPC) assuming the SIEC role. However, PSWN data show 7 states with SIECs, 13 states with SIEC like committees, 15 states with statewide safety communication committees that have responsibilities broader than SIECs, and 15 states where RPCs have assumed SIEC responsibilities.

None of the four states we visited had finished preparation and funding of their state interoperability plans. Washington and Florida were preparing statewide interoperability plans at the time we visited. Georgia officials said they have a state interoperability plan but that it is not funded. However, one other state we contacted, Missouri, has extended SIEC responsibility for interoperability channels beyond the 700 MHz band.[18] The Missouri SIEC has also designated standard operational and technical guidelines as conditions for the use of these bands. SIEC requires applicants to sign a MOU agreeing to these conditions in order to use these channels in the state of Missouri. The Missouri SIEC Chairman said the state developed its operational and technical guidelines because FCC had not established its own guidelines for these interoperability channels in the VHF and UHF bands. The chairman said Missouri borders on eight other states and expressed concern that these states will develop different guidelines that are incompatible with the Missouri guidelines. He said FCC was notified of Missouri's actions but has not taken action to date. In another example, California intends to prepare a statewide interoperability plan. California's SIEC is re-examining California's previous stove piped programs of communications interoperability (separate systems for law enforcement, fire, etc.) in light of the need to maintain tactical channels within disciplines while promoting cross-discipline interoperability.

Coordination of Federal and State Interoperable Frequencies in Statewide Plans

FCC designated frequency coordinators[19] told FCC that planning for interoperability channels should include federal spectrum designated for interoperability with state and local governments. We found several examples in our field work that support inclusion of federal agencies in future state and local planning for interoperable communications. For example, a Washington State official told us that regional systems within the state do not have links to federal communications systems and assets. In another example, according to an emergency preparedness official in Seattle, a study of radio interoperable communications in a medical center also found that federal agencies such as FBI are not integrated into hospital or health communications systems, and other federal agencies

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[18]Missouri SIEC responsibility includes FCC's designated interoperability channels (except for certain legacy mutual aid channels) in the VHF and UHF bands.

[19]FCC has certified specific associations to perform the coordination process used to choose appropriate frequencies for public safety mobile radio systems. This coordination is essential to ensure that the numerous systems across the country have clear and interference free operation on these critical radio systems.

have no radio infrastructure to support and participate in a health emergency such as a bio-terrorism event. He told us that he has no idea what the federal communications plan is in the event of a disaster; he said he does not know how to talk to federal health officials responding to an incident or what the federal government needs when they arrive.

The federal government is developing a system that could improve interoperable communications on a limited basis between state and federal government agencies. The Integrated Wireless Network (IWN) is a radio system that is intended to replace the existing radio systems for the DOJ, Treasury, and DHS. IWN is an exclusive federal law enforcement communications system that is intended to interact and interface with state and local systems as needed but will not replace these systems. According to DOJ officials, IWN is intended to improve federal to state/ local interoperability but will not address interoperability of state and local systems.

However, federal interoperability with state and local wireless communications systems is hindered because NTIA and FCC control different frequencies in the VHF and UHF bands. To enhance interoperability, NTIA has identified 40 federal government frequencies that can be used by state and local public safety agencies for joint law enforcement and incident response purposes.[20] FCC, however, designated different frequencies for interoperability in the VHF band and in the UHF band from spectrum it controls for use by state and local public safety agencies.

Federal Grant Structure Does Not Support Statewide Planning

Total one-time replacement of the nation's communications systems is very unlikely, due to the costs involved. A 1998 study cited the replacement value of the existing public safety communication infrastructure nationwide at $18.3 billion.[21] DHS officials said this estimate is much higher when infrastructure and training costs are taken into account. Furthermore, DHS recently estimated that reaching an accelerated goal of communications interoperability will require a major investment of several billion dollars within the next 5 to 10 years. As a result of these extraordinary costs, federal funding is but one of several

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[20]NTIA states that these frequencies may not be used to meet day-to-day communications needs of non-federal public safety agencies.

[21]*Land Mobile Radio Replacement Cost Study*, PSWN (June 1998).

resources state and local agencies must use in order to address these costs. Furthermore, given the high costs, the development of an interoperable communications plan is vital to useful, non-duplicative spending. However, the federal funding assistance programs to state and local governments do not fully support regional planning for communications interoperability. Federal grants that support interoperability have inconsistent requirements to tie funding to interoperable communications plans. In addition, uncoordinated federal and state level grant reviews limit the government's ability to ensure that federal funds are used to effectively support improved regional and statewide communications systems.

Local, state and federal officials agree that regional communications plans should be developed to guide decisions on how to use federal funds for interoperable communications; however, the current funding requirements do not support this planning process. Although recent grant requirements have encouraged jurisdictions to take a regional approach to planning, current federal first responder grants are inconsistent in their requirements to tie funding to interoperable communications plans. States and locals are not required to provide an interoperable communications plan as a prerequisite to receiving some federal grant funds. As a result, there is no assurance that federal funds are being used to support a well-developed strategy for improving interoperability. For example, the fiscal year 2004 Homeland Security Grant (HSG) and Urban Areas Security Initiative (UASI) grants require states or selected jurisdictions to conduct a needs assessment and submit a Homeland Security Strategy to ODP.[22] However, the required strategies are high-level and broad in nature. They do not require that project narratives or a detailed communications plan be submitted by grantees prior to receiving grant funds.

In another example, fiscal year 2003 funding provided by COPS and FEMA for the Interoperable Communications Equipment Grants did not require that a communications plan be completed prior to receiving grant funds. However, grantees were required to provide documentation that they were actively engaged in a planning process and a multi-jurisdictional and multidisciplinary project narrative was required. In addition to variations in requirements to create communications interoperability plans, federal

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[22]In fiscal year 2004, this grant program's name changed from State Homeland Security Grant to Homeland Security Grant Program. The new program includes three different grant programs.

grants also lack consistency in defining what "regional" body should conduct planning.

Grant Submissions and Performance Period Time Frames Also Present Challenges to Short- and Long-Term Planning

State and local officials also said that the short grant application deadlines for recent first responder grants limited their ability to develop cohesive communications plans or perform a coordinated review of local requests. Federal officials acknowledged that the limited submission timeframes presents barriers to first responders for developing plans prior to receiving funds. For example, several federal grant programs—the Homeland Security Grant, UASI grant, COPs and FEMA communication equipment grants, Assistance to Firefighters Grant—allow states only 30 or 60 days from the date of grant announcement to submit a grant proposal. These time frames are sometimes driven by appropriations language or by the timing of the appropriations enactment. Furthermore, many grants have been awarded to state and locals for communications interoperability that have 1- or 2-year performance periods, and according to state and local officials, do not support long-term solutions. For example, Assistance to Fire Fighters Grants, COPS/ FEMA's Interoperable Communications Equipment Grants, and National Urban Search and Rescue grants all have 1-year performance periods.[23] UASI, HSG program, and Local Law Enforcement Block Grants have 2-year performance periods.

No Coordinated Federal or State Grant Review Exists to Ensure Funds are Used to Improve Regional or Statewide Communications Interoperability

The federal and state governments lack a coordinated grant review process to ensure that funds allocated to local governments are used for communication projects that complement each other and add to overall statewide and national interoperability. Federal and state officials said that each agency reviews its own set of applications and projects, without coordination with other agencies. As a result, grants could be given to bordering jurisdictions that propose conflicting interoperability solutions. In fiscal year 2003, federal officials from COPS and FEMA attempted to eliminate awarding funds to conflicting communication systems within bordering jurisdictions by coordinating their review of interoperable communications equipment grant proposals. However, COPS and FEMA

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[23]In their technical comments on a draft of this report, COPS officials said the performance period for the FY 2003 Interoperable Communications Technology Equipment and the COPS Interoperable Communications Technology Program have a one year time period but that no-cost extensions of time were available to grantees on a case-by-case basis to accommodate unavoidable delays.

are only two of several federal sources of funds for communications interoperability.

In an attempt to address this challenge, in 2003 SAFECOM coordinated with other agencies to create the document *Recommended Federal Grant Guidance*, *Public Safety Communications and Interoperability Grants*, which lays out standard grant requirements for planning, building, and training for interoperable communications systems. The guidance is designed to advise federal agencies on who is eligible for the first responder interoperable communications grants, the purposes for which grant funds can be used, and eligibility specifications for applicants.[24] The guidance recommends standard minimum requirements, such as requirements to "…define the objectives of what the applicant is ultimately trying to accomplish and how the proposed project would fit into an overall effort to increase interoperability, as well as identify potential partnerships for agreements." Additionally, the guidance recommends, but does not require, that applicants establish a governance group consisting of local, tribal, state, and federal entities from relevant public safety disciplines and purchase interoperable equipment that is compliant with phase one of Project-25 standards.

The House Committee on Appropriations report for the DHS FY 2004 appropriation states that the Committee is aware of numerous federal programs addressing communications interoperability through planning, building, upgrading, and maintaining public safety communication systems, among other purposes. The Committee directed that all DHS grant programs issuing grants for the above purposes incorporate the SAFECOM guidance and coordinate with the SAFECOM program when awarding funding. To better coordinate the government's efforts, the Committee also encouraged all other federal programs issuing grants for the above purposes to use the guidelines outlined by SAFECOM in their grant programs. However, SAFECOM officials said that they have no enforcement authority to require other agencies to use this guidance in their funding decisions or to require agencies to provide grant program information to them for use in their database.

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[24]DHS officials said that, in addition to outlining the eligibility for grant dollars and the purposes for which federal dollars can be used, the SAFECOM grant guidance provides consensus guidelines for implementing a wireless communications system. DHS said this guidance is useful in directing all agencies towards interoperability goals, even if they are not specifically applying for federal funding.

Conclusions

A fundamental barrier to successfully addressing interoperable communications problems for public safety has been the lack of effective, collaborative, interdisciplinary, and intergovernmental planning. Jurisdictional boundaries and unique public safety agency missions have often fostered barriers that hinder cooperation and collaboration. No one first responder agency, jurisdiction, or level of government can "fix" the nation's interoperability problems, which vary across the nation and often cross first responder agency and jurisdictional boundaries. Changes in spectrum available to federal, state and local public safety agencies—primarily a federal responsibility conducted through the FCC and NTIA—changes in technology, and the evolving missions and responsibilities of public safety agencies in an age of terrorism all highlight the ever-changing environment in which interoperable communications needs and solutions must be addressed. Interdisciplinary, intergovernmental, and multi-jurisdictional partnership and collaboration are essential for effectively addressing interoperability shortcomings.

Recommendations

We are making recommendations to DHS and OMB to improve the assessment and coordination of interoperable communications efforts. We recommend that the Secretary of DHS:

- in coordination with the FCC and National Telecommunications and Information Administration, continue to develop a nationwide database of public safety frequency channels and a standard nationwide nomenclature for these channels, with clear target dates for completing both efforts;

- establish requirements for interoperable communications and assist states in assessing interoperability in their states against those requirements;

- through DHS grant guidance encourage states to establish a single, statewide body to assess interoperability and develop a comprehensive statewide interoperability plan for federal, state, and local communications systems in all frequency bands; and

- at the appropriate time, require through DHS grant guidance that federal grant funding for communications equipment shall be approved only upon certification by the statewide body responsible for interoperable communications that grant applications for equipment purchases conform with statewide interoperability plans.

We also recommend that the Director of OMB, in conjunction with DHS, review the interoperability mission and functions now assigned to

SAFECOM and establish those functions as a long-term program with adequate authority and funding.

In commenting on a draft of this report, the Department of Homeland Security discusses actions the department is taking that are generally consistent with the intent of our recommendations but do not directly address specific steps detailed in our recommendations with respect to establishment of statewide bodies responsible for interoperable communications within the state, the development of comprehensive statewide interoperability plans and tying federal funds for communications equipment directly to those statewide interoperable plans. OMB did not provide written comments on the draft report.

This concludes my prepared statement, Mr. Chairman, and I would be pleased to answer any questions you or other members of the Subcommittee my have at this time.