United States Government Accountability Office

GAO

Report to Congressional Requesters

July 2004

# HOMELAND SECURITY

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


GAO-04-740

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GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-04-740, a report to congressional requesters

## 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, and 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 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.
www.gao.gov/cgi-bin/getrpt?GAO-04-740.

To view the full product, including the scope and methodology, click on the link above. For more information, contact William Jenkins at (202) 512-8777 or jenkinsw@gao.gov.

## 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.

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## Abbreviations

| | |
|---|---|
| AGILE | Advanced Generation of Interoperability for Law Enforcement |
| CAPRAD | Computer Assisted Pre-Coordination Resource and Database System |
| COPS | Office of Community Oriented Policing Service |
| DHS | Department of Homeland Security |
| DOC | Department of Commerce |
| DOJ | Department of Justice |
| EMS | Emergency Management Services |
| FCC | Federal Communications Commission |
| FEMA | Federal Emergency Management Agency |
| IWN | Integrated Wireless Network |
| NTIA | National Telecommunications and Information Agency |
| NIST | National Institute of Standards and Technology |
| NIJ | National Institute of Justice |
| NPSTC | National Public Safety Telecommunications Council |
| PSWAC | Public Safety Wireless Advisory Committee |
| NCC | Public Safety National Coordination Committee |
| NLECTC | National Law Enforcement and Corrections Technology Center |
| NTIA | National Telecommunications and Information Administration |
| ODP | Office for Domestic Preparedness |
| OMB | Office of Management and Budget |
| PSWN | Public Safety Wireless Network |
| SAFECOM | Wireless Public Safety Interoperable Communications Program |

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**United States Government Accountability Office**
**Washington, DC 20548**

July 20, 2004

The Honorable Tom Davis, Chairman
Committee on Government Reform
House of Representatives

The Honorable Christopher Shays, Chairman
Subcommittee on National Security, Emerging Threats,
and International Relations
Committee on Government Reform
House of Representatives

The Honorable Adam H. Putnam, Chairman
Subcommittee on Technology, Information Policy,
Intergovernmental Relations and the Census
Committee on Government Reform
House of Representatives

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.[1] 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

[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.

incident, whether that incident is a "routine" spill from an overturned tanker truck or railcar, a natural disaster, or a terrorist attack.

Various reports have documented a number of barriers to achieving interoperable public safety wireless communications, including incompatible and aging equipment, limited and fragmented funding, fragmented planning and collaboration, and limited equipment standards. The federal government has been addressing these issues for over 15 years through the attempts of a variety of federal agencies to define the extent of the problem and to identify potential solutions. The September 11 attacks have resulted in greater public and governmental focus on the role of first responders and their capabilities to respond to emergencies, including terrorist incidents. In our November 6, 2003, testimony[2] before subcommittees of the House Committee on Government Reform we identified three principal challenges to improving interoperable communications for first responders: (1) clearly identifying and defining the problem; (2) establishing national interoperability performance goals and standards that balance nationwide standards with the flexibility to address differences in state, regional, and local needs and conditions; and (3) defining the roles of federal, state, and local governments and other entities in addressing interoperability needs. We noted that perhaps the fundamental barrier to addressing all of the long-standing problems in interoperable communications is the lack of effective, collaborative, interdisciplinary, and intergovernmental planning and that no one first responder group or governmental agency can successfully "fix" the interoperability problems that face our nation.

In this report, 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 the assessment of interoperable problems and the development of comprehensive plans to address those problems.

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

To address these issues, we met with officials of the Office of Management and Budget (OMB), the Department of Homeland Security (DHS), the Department of Justice (DOJ), the Department of Commerce (DOC), the Federal Communications Commission (FCC), and the Department of Defense (DOD), and obtained and reviewed appropriate documentation. We also met with officials from the states of California, Florida, Georgia, and Washington and local governments within those states. We chose these four states because we had information that they were active in addressing interoperability issues and because California and Washington provided an opportunity to examine specific interoperability issues that might be presented by national borders with Mexico and Canada. We obtained and reviewed documentation from federal, state, and local officials regarding interoperability issues, plans and activities. In addition, we attended several meetings of public safety communications officials and met with staff of the National Governors Association. See appendix I for more details on our objectives, scope, and methodology. In addition, information on cross-border communications issues we obtained during field visits to the states of California and Washington is included in appendix II. We conducted our work from July 2003 through June 2004 in accordance with generally accepted government auditing standards.

## Results in Brief

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 these data may be difficult, however, because several problems inhibit efforts to identify and define current interoperable communications capabilities and future requirements. 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. A federal program, the Wireless Public Safety Interoperable Communications Program, also known as 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.

The federal government, states, and local governments have important roles to play in assessing interoperability needs, 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 assist state and local governments to meet these goals. For example, currently national requirements for interoperable communications are incomplete and no national architecture exists, there is no single nationwide database of the frequency channels used by public safety agencies to coordinate frequencies, and no common nomenclature 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. 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. In 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 funding and has operated without signed memorandums of understanding negotiated with various agencies. DHS, where SAFECOM now resides, announced in May 2004 that it is establishing an Office for Interoperability and Compatibility to coordinate the federal response to the problems of wireless and other functional interoperability and compatibility. The office will include SAFECOM, but, as of June 2004, its exact structure and funding were still being developed.

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, Washington, Missouri 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.

The federal grant structure does not fully support statewide planning for communications interoperability because, among other things, grant guidance is inconsistent and does not include interoperability planning requirements. 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. In an effort to address the issue of inconsistent guidance, in 2003 SAFECOM coordinated with other agencies to develop standard grant guidance and requirements for planning, building, and training for interoperable communication. DOJ's Office of Community Oriented Policing Services (COPS) Program and DHS's Federal Emergency

Management Agency (FEMA), used portions of the guidance in their grant application requirements.[3]

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 (1) develop a nationwide database of interoperable public safety frequency channels and a standard nationwide nomenclature for these channels, (2) establish requirements for interoperable communications and assist states in assessing interoperability in their states against those requirements; (3) through DHS grant guidance, encourage states to establish a single statewide body to assess interoperability and develop a single comprehensive statewide interoperability plan for federal, state, and local communications systems in all frequency bands, and (4) at the appropriate time, require through DHS grant guidance that any purchase of interoperable communications equipment with federal funds must be certified as being in conformance with statewide interoperability plans. We also recommend that the Director of OMB in conjunction with DHS review SAFECOM's functions 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. The Department's comments are discussed later in this report. The Department letter is reprinted in appendix VII.

## 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

[3]Congress authorized the Office of Community Oriented Policing Services (COPS) within the Department of Justice to administer the Interoperable Communications Technology Program. The program awarded 14 grants totaling more than $66 million to first responders for interoperable communications in 2003 and provides technical assistance to grantees.

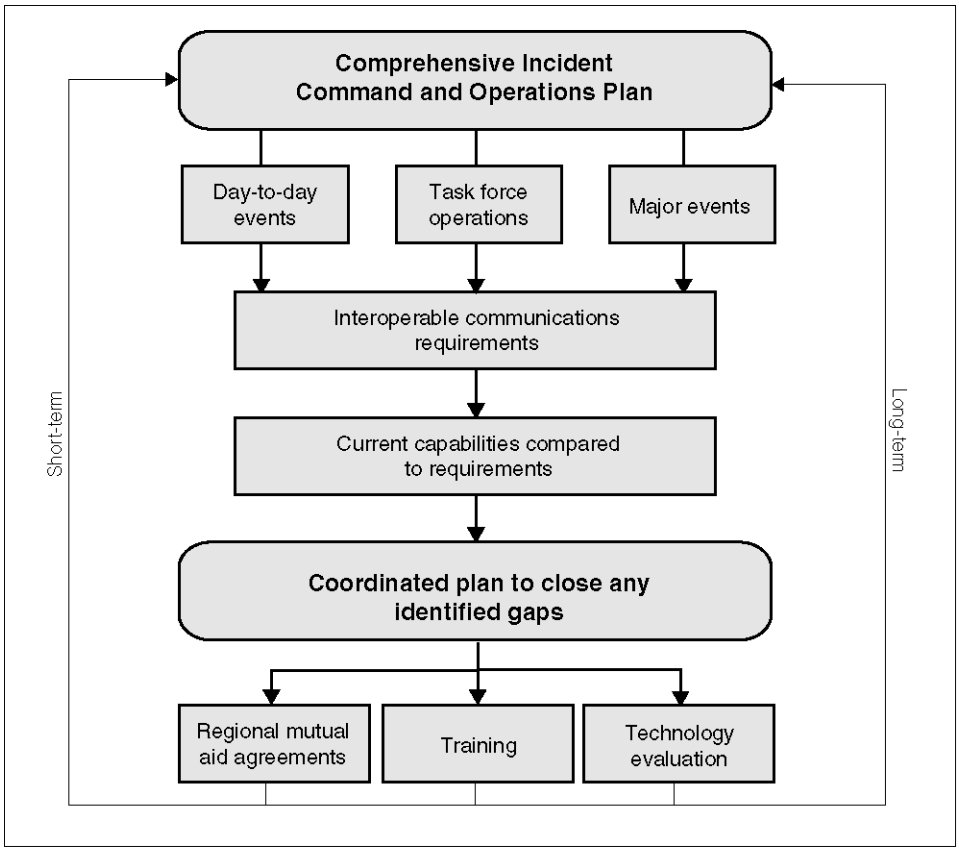
terrorist attacks. Public safety officials have pointed out that needed interoperable communications capabilities are based on whether communications are needed for (1) "mutual-aid responses" or routine day-to-day coordination between two local agencies; (2) extended task force operations involving members 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 spectrum as it becomes available. 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**




Source: GAO.

## Many Agencies and Groups Have Examined and Reported on Interoperability Issues

The first responder community is extensive and extremely diverse in size and the types of equipment in their communications systems. According to SAFECOM officials, 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.[4] In 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 example, a Public Safety Wireless Network (PSWN) analysis of Fire and Emergency Management Services (EMS) communications interoperability found a significant need for coordinated approaches, relationship building, and information sharing.[5] However, the PSWN program office found that public safety agencies have traditionally developed or updated their radio systems independently to meet specific mission needs.

According to a study conducted by the National Task Force on Interoperability,[6] public safety officials have unique and demanding communications requirements. According to the study, however, when the issue of interoperability is raised, officials respond that they are unable to even talk to their own personnel, much less expand their communications to include reliable and interoperable local and regional communications, and, ultimately reliable and interoperable local, state, and federal

[4]The spectrum bands are the useable radio frequencies in the electromagnetic distribution. Specific frequencies have been allotted for the public safety community.

[5]Fire and EMS Communications Interoperability, April, 1999. 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.

[6]*Why Can't We Talk? Working Together to Bridge the Communications Gap to Save Lives*: Feb. 2003). The Task Force was formed and funded by the National Institute of Justice, Department of Justice, and included representatives from associations across the public safety community, such as fire and police chiefs, emergency managers, mayors, cities, and states.

communications. The events of September 11, 2001, which called for an integrated response of federal, state, and local first responders, highlighted the need for interoperable first responder communication across disciplines and throughout levels of government.

The attacks on New York City and the Pentagon have resulted in greater public and governmental focus on the role of first responders and their capabilities to respond to emergencies, including those resulting from terrorist incidents. One result has been significantly increased federal funding for state and local first responders, including funding to improve interoperable communications among federal, state, and local first responders. In fiscal year 2003, Congress appropriated at least $154 million targeted specifically for interoperability through a variety of grants administered by the Department of Homeland Security, the Department of Justice, and other agencies. Other available grants, such as the Homeland Security Grant, could be used for a variety of purposes, including interoperable communications.

For over 15 years, the federal government has been concerned with public safety spectrum issues, including communications interoperability issues.[7] 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

[7]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.

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 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. According to NIST, the summit familiarized key interoperability players with work being done by others and provided insight into where additional federal resources may be needed.

In addition to the many federal agencies and programs involved with shaping first responder interoperable communication policies, a range of public safety associations play a significant role in defining the problems and solutions to emergency communications interoperability. For example the National Public Safety Telecommunications Council (NPSTC) is a federation representing public safety telecommunications. The purpose of NPSTC is to follow up on the recommendations made by the Public Safety Wireless Advisory Committee (PSWAC) to FCC and the National Telecommunications and Information Agency on public safety communication needs.[8] In addition, NPSTC acts as a resource and advocate for public safety telecommunications issues and is working with SAFECOM to develop requirements for first responder communications.

FCC established the Public Safety National Coordination Committee (NCC) to advise them on spectrum policy decisions for public safety interoperable communications. In July 2003, NCC made several recommendations to FCC for improving communications interoperability. The NCC's charter expired on July 25, 2003 and it has since been dissolved.

In 2002, the National Governors Association released a report that recommended that governors and their state homeland security directors

[8]*Final Report of the Public Safety Wireless Advisory Committee*: Sept. 1996. The FCC and the Department of Commerce's National Telecommunications and Information Administration formed the Advisory Committee in June 1995 to provide advice on the specific wireless communications requirements of public safety agencies through the year 2010 and to make recommendations for meeting those needs. Members were drawn from private industry, federal agencies, and state and local public safety agencies. The FCC regulates state and local government use of radio frequency spectrum and the NTIA regulates federal government use of radio frequency spectrum.

(1) develop a statewide vision for interoperable communications, (2) ensure adequate wireless spectrum to accommodate all users, (3) invest in new communications infrastructure, (4) develop standards for technology and equipment, and (5) partner with government and private industry.[9]

These associations and task forces are just a small representation of the many organizations identified by DHS and NIST as contributors to public safety interoperable communications efforts.

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 manufacture may design equipment with proprietary technology that will not work with equipment produced by another manufacturer.

## Nature and Scope of Interoperable Communications Problems Nationwide Are Unknown and Not Easily Identified and Catalogued

The current status of wireless interoperable communications across the nation—including current interoperable communications capability and the scope and severity of any problems—has not been determined. Although various reports have documented the lack of interoperability of first responders' wireless communications in specific locations, complete and current data do not exist documenting current interoperable communications capabilities and the scope and severity of any problems at the local, state, interstate, or federal level across the nation.

SAFECOM plans to conduct a nationwide survey to assess current capabilities of public safety agency wireless communications.

[9] *A Governor's Guide to Emergency Management. Volume Two: Homeland Security* (Washington, D.C.: 2002).

Accumulating these data may be difficult, however, because several problems inhibit efforts to identify and define current interoperable communications capabilities and future requirements. Improving the interoperability of first responder wireless communications requires a clear assessment of the current state of public safety wireless communications interoperability, using a set of defined requirements; an operational definition of any problems; and a planning framework to guide the resolution of those problems. However, defining interoperability problems is difficult because interoperability requirements and problems are situation specific and evolve over time.

## Federal Plans to Obtain Data on the Scope and Nature of Interoperable Communications Problems

By 2008, SAFECOM expects all public safety agencies in the United States to have a minimum level of interoperability, as defined by a national interoperability baseline. However, SAFECOM officials said they lack current nationwide information on the interoperable communications problems of first responders. Two key studies in the late 1990s sponsored by DOJ and PSWN program provide a nationwide picture of wireless interoperability issues among federal, state, and local police, fire, and emergency medical service agencies at that time.[10] Both studies describe most local public safety agencies as interacting with other local agencies on a daily or weekly basis. As a result, most local agencies had more confidence in establishing radio links with one another than with state agencies, with whom they less frequently interact. Local public safety agencies interact with federal agencies least of all, with a smaller percentage of local agencies expressing confidence in their ability to establish radio links with federal agencies.

However, the events of September 11, 2001, have resulted in a reexamination of the circumstances in which interoperable communications should extend across political jurisdictions and levels of government. To obtain a current national picture, SAFECOM established as a key objective to assess by July 2005 the current state of interoperability across the nation and create a nationwide baseline describing public safety communications and interoperability. The

[10]*Wireless Communications and Interoperability Among State and Local Law Enforcement Agencies*, January, 1998 by DOJ, and "Fire and EMS Communications Interoperability, April, 1999" by PSWN. DOJ's study concentrated on wireless interoperability issues within the state and local law enforcement community, while PSWN's study assessed communications interoperability issues within the fire and emergency medical services communities.

baseline will be the basis for measuring future improvements made through local, state, and federal public safety communications initiatives. SAFECOM officials said their study will be designed to measure actual interoperability capabilities in a sample of locations selected to represent the national condition. According to these officials, SAFECOM will conduct a gap analysis, which will compare the actual levels of interoperability within a state to the various scenarios used in a nationwide statement of requirements and determine the minimum level of interoperability that needs to be obtained.

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[11] program planning meeting in December 2003, participants agreed that a national baseline is necessary to know what the nations' 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. 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.

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

## Interoperability Issues Change as the Definition of First Responders Expands and Technology Evolves

Public safety officials generally recognize that 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. However, there is no standard definition of communications interoperability. Nor is there a "one size fits all" requirement for who needs to talk to whom. Traditionally, first responders have been considered to be fire, police, and emergency medical service personnel. However, in a description of public safety challenges, a federal official noted that the attacks of September 11, 2001, have blurred the lines between public safety and national security. According to the Gilmore Commission, effective preparedness for combating terrorism at the local level requires a network that includes public health departments, hospitals and other medical providers, and offices of emergency management, in addition to the traditional police, fire, and emergency medical services first responders.[12] Furthermore, Congress provided an expanded definition of first responders in the Homeland Security Act of 2002, which defined "emergency response providers" as including "Federal, State, and local emergency public safety, law enforcement, emergency response, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities."[13]

Technological changes also present new problems and opportunities for achieving and maintaining effective interoperable communications. According to one official, in the 1980s a method of voice transmission called "trunking" became available that allowed more efficient use of spectrum. However, three different and incompatible trunking technologies developed, and these systems were not interoperable. This official noted that as mobile data communications becomes more prevalent and new digital technologies are introduced, standards become more important.

In addition, 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 PSWN program office, Project 25

[12]*Third Annual Report to the President and the Congress of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction*, December 15, 2001. The panel is generally referred to as the Gilmore Commission, after its Chairman James S. Gilmore, III.

[13]Homeland Security Act of 2002, Pub. L. No. 107-296, § 2 (6), 116 Stat. 2135, 2140.

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.

Finally, 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.

## Federal Role in Interoperability Problems Continues to Evolve

The federal government has a long history in addressing federal, state, and local government public safety issues—in particular interoperability issues. Congress has also recently contributed to the development of policies. In October 2002 the House Committee on Government Reform issued a report entitled *How Can the Federal Government Better Assist State and local Governments in Preparing for a Biological, Chemical, or Nuclear Attack?* The Committee's first finding was that incompatible communication systems impede intergovernmental coordination efforts. The Committee recommended that the federal government take a leadership role in resolving the communications interoperability problem.

In December 2003, the SAFECOM and the AGILE program within DOJ issued a joint report in which they established a series of initiatives and goals extending over the next 20 years. The report concludes that a continuous and participatory effort is required to improve public safety communications and interoperability. OMB created the SAFECOM program as a short-term (18-24 months) E-Gov initiative. It had no designated long-term mission. However, OMB has identified SAFECOM as

the primary program responsible for coordinating federal efforts to improve interoperability. How to institutionalize that role is still an evolving process. In addition, the roles and responsibilities of the various federal agencies—the FCC, DOJ, and others—involved in communications interoperability have not been fully defined and SAFECOM's authority to oversee and coordinate federal and state efforts is limited. 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 and compatibility. The exact structure and funding for the office, which will include SAFECOM, are still being developed.

There are areas in which the federal government can provide leadership, such as developing national requirements and a national architecture for public safety interoperable communications, national databases, and common, nationwide terminology for communications. Moreover, the federal government alone can allocate communications spectrum for public safety use.

## Establishing 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. One example of potential future development is expanded coverage to include public safety support functions. The current statement is incomplete because it only addresses the functional requirements for traditional public safety first responders—Emergency Medical Services

personnel, firefighters, and law enforcement officers. The statement recognizes the existence of but does not include in this version those elements of the public safety community—such as transportation or public utility workers—whose primary mission provides vital support to public safety officials.

A national architecture has not yet been prepared to guide the creation of interoperable communications. An explicit, commonly understood, and agreed-to blueprint, or architecture, is required to effectively and efficiently guide modernization efforts. For a decade, GAO has promoted the use of architectures, recognizing them as a crucial means to a challenging goal: agency operational structures that are optimally defined in both business and technological environments.[14] Office of Management and Budget officials told us that OMB charged SAFECOM with developing a national architecture, which will include local, state, and federal government architectures. According to these officials, SAFECOM is to work closely with state and local governments to establish a basic understanding of what infrastructure currently exists, and to identify public safety communication requirements. 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 to Support Interoperable Communications Not Established

State and local officials consider a standard database to be essential to frequency planning and coordination for interoperability frequencies and for general public safety purposes. The Public Safety National Communications Council (NCC), appointed by the FCC to make recommendations for public safety use of the 700 MHz communications spectrum, recommended that the FCC mandate Regional Planning Committee use of a standard database to coordinate frequencies during

[14]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 *Information Technology: The Federal Enterprise Architecture and Agencies Enterprise Architectures Are Still Maturing* GAO-04-798T (Washington, D.C.: May 19, 2004).

license applications. In January 2001, the FCC rejected this recommendation noting that while the NCC believed that use of this database would ensure avoidance of channel interference between spectrum users, mandating use of the database was premature because it had not been fully developed and tested. The FCC directed the NCC to revisit the issue of mandating the database once the database is developed and has begun operation.

In its final report of July 25, 2003, the NCC noted that on July 18, 2003 the National Public Safety Telecommunications Council demonstrated to FCC staff what it represented was an operational version of the database, now named the Computer Assisted Pre-Coordination Resource and Database System (CAPRAD). The NCC urged the FCC to reevaluate its position in light of the demonstration of CAPRAD, and, if appropriate, to adopt a rule requiring its use by Regional Planning Committees in their planning process.

Officials at the National Law Enforcement and Corrections Technology Center (NLECTC)—Rocky Mountain Center[15] said they are developing and administering the CAPRAD database. Center officials told us CAPRAD is a frequency pre-coordination database that is evolving as the user community defines its requirements. For example, they said CAPRAD was used to develop a draft nationwide 700 MHz frequency allocation plan that included interoperability frequencies, frequencies allocated to states for general state purposes, and frequencies allocated to the general public safety community. FCC designated Regional Planning Committees[16] and

[15]The National Public Safety Telecommunications Council (NPSTC) Support Office operates as part of the National Law Enforcement and Corrections Technology Center–Rocky Mountain Center (NLECTC-RM). NLECTC is a program of the National Institute of Justice, the research and development arm of the U.S. Department of Justice. The NLECTC is hosted by the University of Denver. The NPSTC Support Office and its work on CAPRAD is funded by the Department of Justice AGILE program. AGILE funding also supports the FCC designated Regional Planning Committees.

[16]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 similar process 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.

frequency coordinators[17] can then use this plan as a starting point to develop detailed plans for their regions. Center officials said that several RPCs have also loaded their 700 and 800 MHz regional plans into CAPRAD for review by adjacent RPCs or officials needing information on a regional plan. Center officials also told us that they are working on a comparable SIEC model to include interoperability channels across all bands.

State and local officials we visited were familiar with the database and generally favored its use. For example, a California state official wrote us that some California state and local officials participated in the drafting of this NCC recommendation and believe its use will assist in preventing interstate interference. State and local officials in the State of Washington said that the use of the CAPRAD database should be mandatory. The officials said CAPRAD would facilitate new spectrum allocation and pre-coordination of spectrum. In addition, they said CAPRAD holds the potential of eliminating interference between users, and is the first universally accepted frequency coordination database. It holds the promise of a one-stop frequency coordination database, according to a Washington State Department of Information Services official.

## Common Terminology for Interoperable Channels Not Established

Technology solutions by themselves are not sufficient to fully address communication interoperability problems in a given local government, state, or multi-state region. For example, the regional communications chairs of the Florida Regional Domestic Security Task Forces have noted that non-technical barriers are the most important and difficult to solve. 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. In January 2001 the FCC rejected an NCC recommendation that

[17]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.

the FCC mandate through its rules that specific names be designated for each interoperability channel on all public safety bands. The Commission said it would have to change its rules each time the public safety community wished to revise a channel label and that this procedure would be too cumbersome.

In its final report on July 25, 2003, the NCC renewed its earlier recommendation and added a recommendation that all radios that include a channel-selection display be required to use the standard names. The NCC said standard names are essential to achieve interoperability because all responders to an incident must know what channel to which they must tune their radios. The NCC said adoption of such standard names will avoid confusion resulting from use of different names for the same frequency by different jurisdictions. In an earlier May 29, 2003 report, the NCC noted multiple examples where lack of common channel names had disrupted coordination of effective response to incidents. The NCC noted that the problem could endanger life and property in a very large-scale incident. In addition, the NCC noted that its recommendation could be implemented in a short time at virtually no cost and that the recommendation was consistent with previous FCC actions. For example, the NCC noted that the FCC had designated channels specified for medical communications use for the specific purpose of uniform usage.

## Converting SAFECOM's Functions to a Long-Term Program

The Office of Management and Budget (OMB) created SAFECOM in 2001 to unify the federal governments' efforts to coordinate work at the federal, state, local and tribal levels on improving interoperable communications. According to OMB, SAFECOM is the umbrella program for all Federal interoperability efforts and will work with state and local interoperability initiatives. DHS is the managing partner of the SAFECOM project with six additional agencies as partner agencies. The partner agencies include the Departments of Defense, Energy, Interior, Justice, Health and Human Services, and Agriculture. According to OMB, all of these agencies have significant roles to play in public safety communications, emergency/incident response and management, and law enforcement.

Our April 2004 report on Project SAFECOM[18] compared SAFECOM's progress against its overall objective of achieving national wireless

[18] *Project SAFECOM: Key Cross-Agency Emergency Communications Effort Requires Stronger Collaboration*, GAO-04-494 (Washington, D.C.: April 2004).

communications interoperability among first responders and public safety systems at all levels of government. This broad objective could not be fully realized within the target of 18 to 24 months. However, we also noted that two major factors have contributed to the project's limited progress toward this objective: (1) a lack of consistent executive commitment and support and (2) an inadequate level of interagency collaboration. We concluded that until these shortcomings are addressed, the ability of SAFECOM to deliver on its promise of improved interoperability and better response to emergencies will remain in doubt. We recommended that the Secretary of Homeland Security direct the Under Secretary for Science and Technology to complete written agreements with other federal agencies and organizations representing state, local, and tribal governments that define the responsibilities and resource commitments that each of those organizations will assume. These agreements should include specific provisions for funding the project and measuring its performance.

In addition, key program structure and funding issues seriously limit the ability of SAFECOM to affect the future long-term development of the interoperability function and mission. SAFECOM's program and funding structure were established to address the public safety wireless communications problems as a short-term, 18-24 month project. However, DHS recognizes that a long-term, intergovernmental effort will be needed to achieve the program's overall goal of improving emergency response through broadly interoperable first responder communications systems. As a result, DHS set a SAFECOM goal to establish a "system of systems" by 2023 that will provide the necessary interoperability for public safety users. The program funding structure as established does not support a long-term program. Because SAFECOM is an E-Gov project, each year OMB instructs federal agencies designated as a partner with SAFECOM to provide specified amounts of funding to SAFECOM. SAFECOM negotiates an annual Memorandum of Agreement on funding or program participation with each of these agencies; however, in our Project SAFECOM report, we said that by the end of our field work in 2004 SAFECOM had signed an agreement with only one agency in fiscal year 2004.

Representatives of federal, state, and local public safety users identified as a high priority the development of a business case with long term sustainable funding for a national office for public safety communications and interoperability and recommended that this office should become a part of the annual President's budget request process. SAFECOM officials said establishment of a budget funding line for SAFECOM was discussed

for fiscal year 2005 budget, but the budget does not contain a funding line for SAFECOM in fiscal year 2005 or beyond.

## 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 in DOJ; DOD; the FCC; the NTIA within DOC, and other agencies. For example, the Homeland Security Act assigns 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. As indicated earlier, ODP also plans to develop tools to link these assessments to detailed interoperable communications plans. According to this official, SAFECOM, as part of the Science and Technology Directorate, is responsible for (1) developing standards; (2) research, development, testing, and evaluation of public safety communications; and (3) advising ODP about available technologies and standards.

In addition, although OMB states that SAFECOM is the umbrella program to coordinate actions of the federal government, it does not include all major federal efforts aimed at promoting wireless interoperability for first responders. Specifically, the Justice Department continues to play a strong role in interoperability after establishment of DHS. Key Justice programs—the Advanced Generation of Interoperability for Law Enforcement (AGILE) and the Interoperable Communication Technology Program administered by the Office of Community Oriented Policing Services (COPS)—did not transition to the SAFECOM program in the new Department of Homeland Security.

AGILE is the Department of Justice program to assist state and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. It is dedicated to

studying interoperability options and advising state and local law enforcement agencies. The SAFECOM program director also said most of the federal research and development on prototypes is being conducted within the AGILE program.

SAFECOM and AGILE officials told us they have a close working relationship. The SAFECOM and AGILE programs also held a joint planning meeting in early December 2003 and developed an action plan that SAFECOM and AGILE said they were committed to implement, given available resources.

DHS must also coordinate with the Department of Defense (DOD) to address chemical, biological, radiological, nuclear, and high explosive events. A November 2003 Defense Science Board (DSB) report said DOD's role includes, when directed, military support to civil authorities, and that DOD assistance could be required to assist in incident response. But the Board concluded that DOD must improve communication interoperability between first responders and federal, state, and local agencies involved in emergency preparedness and incident response.

SAFECOM officials also will face a complex issue when they address public safety spectrum management and coordination. 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. However, the current legal framework for domestic spectrum management is divided between the NTIA within the Department of Commerce, responsible for federal government spectrum use and the FCC, responsible for state, local, and other nonfederal spectrum use. In a September 2002 report on spectrum management and coordination, we found that FCC and NTIA's efforts to manage their respective areas of responsibility are not guided by a national spectrum strategy.[19] The FCC and the NTIA have conducted independent spectrum planning efforts and have recently taken steps to improve coordination, but have not yet implemented long-standing congressional directives to conduct joint, national spectrum planning. We recommended that the FCC and the NTIA develop a strategy for establishing a clearly defined national spectrum plan and submit a report to the appropriate congressional

[19] *Telecommunications: Better Coordination and Enhanced Accountability Needed to Improve Spectrum Management*, GAO-02-906 (Washington, D.C.: September, 2002).

committees. The FCC and the NTIA generally agreed with this recommendation. In a separate report, we also discussed several barriers to reforming spectrum management in the United States.[20]

In written comments on a draft of this report, the Department of Commerce said it had issued two spectrum policy reports on June 24, 2004, in response to the President's initiative, entitled *Spectrum Policy for the 21st Century*. The Department said the second report recommends an interagency effort to study the spectrum use and needs of the public safety community, a public safety demonstration program, and a comprehensive plan to address the spectrum shortage, interference, technology, and security issues of the public safety community. The Department also said that the DHS would be an integral partner in fulfilling its recommendations.[21]

## SAFECOM's Authority to Coordinate Federal and State Efforts Is Limited

SAFECOM is involved in several federal coordination initiatives, including efforts to coordinate federal funding, but according to its officials, it does not have the oversight authority or pertinent information to fully accomplish this objective.

The SAFECOM program is attempting to coordinate federal grant funding to maximize the prospects for communication interoperability grants across federal agencies by means of interagency guidance. We selected several grant programs to determine how this guidance was used. We found that COPS (with DOJ) and FEMA (within DHS) used this guidance, at least in part, in their coordinated 2003 Interoperable Communications Equipment grants, and ODP used the guidance in its 2004 Homeland Security and Urban Areas Security Initiative grant programs. However, COPS and FEMA officials said that it was difficult to incorporate SAFECOM's recommended criteria for planning public safety communications systems into their joint guidance because statutory language for their grant programs focuses on the purchase of equipment without specifically addressing planning.

SAFECOM also does not have authority to require federal agencies to coordinate their grant award information. SAFECOM is currently engaged

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

[21]We did not evaluate these studies for purposes of this report.

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 only contains award information from the 2003 COPS and FEMA Interoperability Communications Equipment Grants. The database does not contain grant award information from the Office for Domestic Preparedness on its Urban Areas Security Initiative (UASI) grants or its Homeland Security grants (HSG), nor from FEMA's Emergency Management Preparedness Grant or any other federal agency grant funds.

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 (FICC)[22] 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. OMB officials 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 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.

[22]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.

SAFECOM officials noted that this newly refocused SAFECOM role does not include providing technical assistance or conducting operational testing of equipment.[23] 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.

## A New DHS Office of Interoperability and Compatibility

The Directorate of Science and Technology (S&T) within DHS has been tasked to lead the planning and implementation of the Office of Interoperability and Compatibility (OIC). 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 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 the creation of the office through November 2004 but does not include costs to implement each portfolio's strategy.

In addition, 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. The Science and Technology Directorate is the manager of the new office, which is expected to establish partnerships with all relevant offices and agencies to effectively coordinate similar activities. These partners include representatives from national associations of emergency response providers, DHS and other government agencies, standards development organizations, and industry. The DHS plan for the new office includes a tool for relevant offices to identify areas in which they have current interoperability-related projects and thus identify program overlap inside and outside DHS and gaps in coverage. As of June 2004, the exact structure and funding for the office, including SAFECOM's role within the office, were still being developed.

[23]See appendix III for a discussion of SAFECOM's objectives to establish by 2005 (1) a research, development testing, and evaluation program that identifies and develops a long-term, sustainable technical foundation for interoperability improvements; and (2) a program to provide technical assistance to the public safety community.

## State and Local Governments' Roles in Statewide Interoperability Planning and Communications

In our November 6, 2003,testimony, we identified three barriers to improving public safety wireless interoperable communications: problem definition, establishing interoperability goals and standards, and defining the roles of federal, state, and local governments and other entities.[24] Of all these barriers, perhaps the most fundamental has been limited and fragmented planning and cooperation. No one first responder group, jurisdiction, or level of government can successfully address the challenges posed by the current state of interoperable communications. Effectively addressing these challenges requires the partnership and collaboration of first responder disciplines, jurisdictions, and levels of government—local, state, federal, and tribal. In the absence of that partnership and collaboration, we risk spending funds ineffectively—especially for immediate, quick response solutions—and creating new problems in our attempt to resolve existing ones. An integrated planning process that is recognized by federal, state, and local officials as representing their interests is necessary to achieve that partnership and collaboration.

Although no one level of government can successfully address interoperability communications challenges, the federal government can play a leadership role developing requirements and providing support for state efforts to assess their interoperable communications capability and develop statewide plans for transitioning from today's capability to identified required capability.

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.[25] 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

[24]*Homeland Security: Challenges in Achieving Interoperable Communications for First Responders*, GAO-04-231T (Washington, D.C.: Nov. 6, 2003).

[25]Appendix IV discusses the evolving role of states and the challenges they face in addressing communications interoperability problems.

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.

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.

## State and Local Governments Well Positioned to Play Key Roles

Planning requires a structure to develop and implement plans over time. States, with broad input from local governments, are a logical choice to serve as a foundation for interoperability planning. As recognized by the Federal Communications Commission, states play a central role in managing emergency communications, and state level organizations are usually in control at large-scale events and disasters or multiagency incidents. In addition, the FCC noted that states are usually in the best position to coordinate with federal government emergency agencies. Furthermore, according to DHS officials, state and local governments own over 90 percent of the physical infrastructure for public safety communications. Recent DHS policies have also recognized states as being in a key position to coordinate state and local emergency response planning. The Office for Domestic Preparedness has designated states as the appropriate source to develop state homeland security strategies that are inclusive of local needs, including communication needs.

According to PSWN, state leaders can also, through memorandum of understandings (MOU), help to define interagency relationships, reach procedural agreements, promote regular meetings of statewide or regional interoperability committees, and encourage joint efforts to deploy communications technology. State and local officials we talked with generally agreed that states can coordinate communications planning and funding support for state communications systems and coordinate interoperability efforts of local governments. For example, several officials

said the state can facilitate the planning process by including key stakeholder input in the decision making process and ensuring that communications interoperability issues are addressed. These officials also see state roles in providing common infrastructure and developing routine training exercises.

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 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.

State and local officials recognize that the interoperability responsibilities that FCC identified for SIECs in the 700 MHz band are also applicable to interoperability channels in other frequency bands. However, FCC did not retroactively apply the SIEC concept to interoperability channels in the 800 MHz band or in the below 512 MHz band nor did it apply the SIEC concept to the new 4.9 GHz band. The Commission also did not require

states to establish a SIEC because it found that some states already have a mechanism in place that could administer the interoperability channel, and requiring a SIEC would be duplicative. The Commission did provide that the administration of the 700 MHz interoperability channels defaults to Regional Planning Committees (RPC) should a state decide not to establish or maintain a SIEC for this purpose. Available data conflict on how many states have established SIECs or similar bodies, but do indicate that from 12 to 15 states did not implement a SIEC.[26]

The Public Safety National Coordination Committee, an FCC advisory body for the 700 MHz band, noted that SIECs are optional—there is no requirement that the states implement such committees. NCC recommended that FCC require all states to establish a SIEC or equivalent to provide each state with an identified central point of contact for information on that state's interoperability capability. NCC, however, also expressed concerns about the extent of state control and the lack of a broad representation of local membership in the SIECs.[27] NCC recommended to FCC that the name SIEC be changed to the Statewide Interoperability Executive Committee to be more inclusive of all agencies in the state.

We found general support in the states that we visited for NCC's recommendation to establish a Statewide Interoperability Executive Committee as the central point of contact for information on a state's interoperability capability. A state official from California told us that California's long history of collaboration in mutual aid communications activities was in part the basis for this NCC recommendation. According to officials of the Florida State Technology Office and local public safety officials, they support a central point of contact for statewide interoperability efforts. State of Washington officials said the

[26]FCC data show 38 states and the District of Columbia with SIECs or similar bodies, and 12 states with RPCs 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.

[27]NCC, which had recommended SIECs at the state level to administer interoperability channels, concluded that some state governments may be using their SIECs to control all aspects of interoperability channels use rather than the administrative purposes as intended by FCC. In addition, NCC found that some states have expanded the role of their SIECs to include other state-level functions, such as procurement, and that, in the absence of FCC guidance, some states had designated SIECs without an appropriately broad range of public safety agency members.

recommendation appeared consistent with what they are doing in Washington. Local officials in the state of Washington told us that the term "statewide" is inclusive—it represents both the state and local governments interests.

The states we visited or contacted were in the early stages of formulating their SIECs, and their roles and responsibilities are still under development.

- Recently the state of California established the California Statewide Interoperability Executive Committee. The Office of Emergency Services sponsors the Committee, which is responsible for setting technical and operational standards for all existing and planned public safety interoperability frequencies in California. Committee membership is designed to recognize the broad diversity of local communications needs because California has long recognized that responsibility for and command of an incident lies with the jurisdiction where the emergency or disaster occurs, which in the vast majority of incidents is the local government. Thus, a majority of the Committee's 35 members are representatives of local government, followed by the state agencies that support local government, and the federal agencies that support state and local government. Additionally, two California RPCs and the Association of Public-Safety Communications Officials have representation on the Committee. The Committee is supported by 9 to 10 working groups addressing various aspects of interoperability governance. California has several state communications systems and the coordination of these systems will be addressed by a Committee working group.

- In March 2003, the state of Florida established the Florida Executive Interoperable Technologies Committee. The Committee's membership includes state and local government officials from each of the seven Domestic Security regions in Florida and is chaired by the State Technology Office. The Committee's role is still evolving. The Committee and State Technology Office are responsible for the oversight and management of all interoperable communications issues (voice and data). The State Technology Office manages the interoperable radio frequency resources for the state. Furthermore, the state has identified the need for a single, comprehensive mutual aid plan and assigned the task of developing the plan to the Committee. However, the Committee's role in reviewing all state and local communications plans is still not determined.

- The Washington State Interoperability Executive Committee, formed by state legislation enacted on July 1, 2003, is a permanent subcommittee of the Information Services Board. The legislation specified membership for

state agencies and associations representing city government, county government, local government fire departments, Sheriffs and Police Chiefs, and emergency managers. Federal agencies were not included as voting members of the Committee, which issued an interim public safety communications plan on March 30, 2004. The interim plan, developed using a recent inventory of state communications systems, outlines various potential solutions and the implementation timeline. These are interim solutions and did not reflect local governments' concerns. However, the plan will be updated to incorporate local government survey responses. A final plan is due by December 31, 2004. The Committee intends to incorporate the existing mutual aid plans into the new statewide interoperability plan.

- In Georgia, the state did not opt to form a State Interoperability Executive Committee. Instead, the 700 MHz RPC Interoperability Committee is responsible for managing all radio frequency bands on behalf of the state of Georgia.

## 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.

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.[28] 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

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

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.

FCC-designated frequency coordinators expressed support for a comprehensive interoperability plan in July 2002. The Commission had suggested that the frequency coordinators for the VHF and UHF bands develop an interoperability plan for these bands. FCC said it envisioned that the coordinators would jointly develop an interoperability plan for the management and nationwide use of these interoperability channels. The frequency coordinators in a joint response rejected FCC's overture, stating that the actual management and operational guidelines for the VHF and UHF frequencies should be integrated with other interoperability frequencies in the 700 and 800 MHz bands, and with other interoperability channels in spectrum identified by NTIA for interoperability with the federal government. The frequency coordinators said operational and management planning should include all of these channels to better coordinate future assignment and use and that NCC and SIECs were better vehicles for developing the guidelines requested by FCC.

## Coordination of Federal and State Interoperable Frequencies in Statewide Plans

In some cases, for example, responding to such major events as tornadoes or wildfires, state and local government first responders also require interoperable communications with federal agencies. According to OMB, seven federal agencies have significant roles to play in public safety communications, emergency/incident response and management, and law enforcement. These agencies are the Departments of Homeland Security, Defense, Energy, the Interior, Justice, Health and Human Services, and Agriculture.

As mentioned previously, FCC designated frequency coordinators 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 the Federal Bureau of Investigations (FBI) are not integrated into hospital or health communications systems, and other federal agencies 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; and 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.

Local officials in Washington State also told us that communications and coordination between civil and military emergency communication organizations need improvement. These officials expressed concern that the Department of Defense has not fully coordinated with local officials to ensure that local jurisdictions can communicate with Defense. According to the Washington National Guard Civil Support Team and emergency management officials, the Guard Civil Support Team first responders can exchange radios with other first responders in order to communicate. In addition, the Civil Support Team can communicate on all frequency bands using a Navy Unified Command Communications Suite. Georgia National Guard officials said that they do not participate in the All Hazards Council planning process to coordinate interoperable communications.

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.[29] 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.

In addition, complicated FCC licensing and coordination requirements may further limit effective use of federal frequencies by state and local agencies. FCC officials told us in response to our draft report that FCC rules are consistent with what NTIA and FCC agreed to regarding use of federal spectrum by non-federal agencies generally. However, as a condition for their use of the federal VHF and UHF frequencies, FCC requires individual state and local public safety applicants to develop a written agreement between each nonfederal agency and a federal sponsor and to use this agreement to obtain an FCC license. FCC regulations permit federal agencies to use 700 MHz band public safety frequencies under its control if the Commission finds such use necessary, and the state/local government licensee approves the sharing arrangement.

PSWN suggested using SIECs to perform the necessary planning and coordination between FCC and NTIA for joint use of their separately controlled frequencies. PSWN noted that the federal government maintains a significant presence in many states, and that interoperable communications must cut across all levels of government. Thus, PSWN said it is essential that NTIA and federal entities and federal spectrum be involved in the SIEC planning process from the beginning. NCC recommended that FCC require the use of standard MOUs and sharing agreements where licensee authorizes federal agencies and other authorized users to use its frequencies. FCC noted that respondents to its notice seeking comments on NCC proposals were divided and that requiring a formal rule could only serve to increase administrative burden on the states, many of whom may be poised to implement the MOUs and sharing agreements or similar documents voluntarily. Thus, FCC decided not to require the use of MOUs but strongly recommended that states have the relevant SIEC or other entity responsible for the administration of the interoperability channels use MOUs.

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

## Federal Grant Structure Does Not Fully 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.[30] 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 resources state and local agencies must use in order to address these costs. Given these 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. Additional barriers to supporting regional planning, such as fragmented funding structures, limitations on time frames to develop and implement plans, and limited support for long-term planning are discussed in appendix V.

## Federal Grants Encouraged a "Regional" Approach to Planning, but Lacked Requirements for Interoperability Communications Plans

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 HSG or UASI grants require states or selected jurisdictions to conduct a needs assessment and submit a Homeland Security Strategy to

[30]Land Mobile Radio Replacement Cost Study, *Public Safety Wireless Network Program*, Fairfax, VA., June 1998.

ODP.[31] 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 the Office of Community Oriented Policing Services Program (COPS) and FEMA for Interoperable Communications Equipment 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 multijurisdictional and multidisciplinary project narrative was required. In addition to variations in requirements to create communications interoperability plans, federal 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, guidance in several federal grant programs—the Homeland Security Grant, UASI grant, COPs and FEMA communication equipment grants, and 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 and FEMA's Interoperable Communications Equipment Grants, and National Urban Search and Rescue grants all have 1-year performance periods.[32]

[31]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.

[32]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 1 year time period but that no-cost extensions of time were available to grantees on a case-by-case basis to accommodate unavoidable delays.

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 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.[33] 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. SAFECOM has also recently sponsored the formation of the Federal Interagency Coordination Committee (FICC),

[33]In response to a draft report, DHS 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.

which consists of a federal grant coordination working-group. Federal officials said that the council will assist in shaping the common grant guidance for Federal initiatives involving public safety communications.

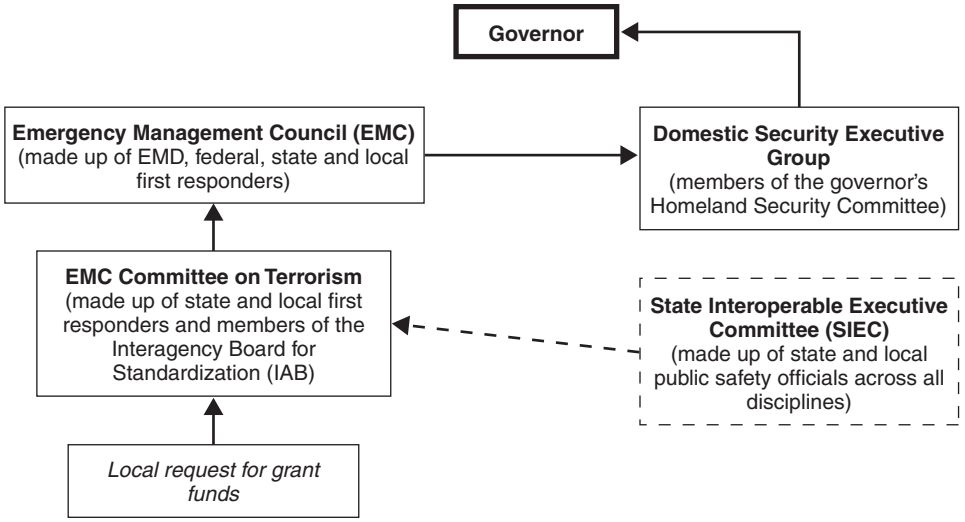
Despite federal efforts within DHS to synthesize federal grants, various agencies have statutory language which make it difficult to coordinate their use. For example, both SAFECOM and COPS officials said that certain statutory provisions underlying the grant programs presented barriers to the coordination efforts of COPS, FEMA, and SAFECOM to consolidate the grant application process for the 2003 Interoperable Communications Equipment grants. COPS and FEMA coordinated their application process for the grants and used sections of the SAFECOM grant guidance to guide their application requirements. COPS and FEMA officials said that the combined COPS and FEMA application process was intended to maximize the use of funds and reduce duplication and competition between the two agencies' Interoperability grants. Both COPS and SAFECOM officials explained that COPS and FEMA encountered difficulty in creating a combined grant application process because the COPS grant required a twenty-five percent match while the FEMA grant did not have such a requirement. However, COPS officials said FEMA added a twenty-five percent match of "in-kind" resources to its grant requirements in order to reduce competition between the COPS and FEMA grant programs.

The House Committee on Appropriations report for DHS's fiscal year 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 decision or to require agencies to provide grant program information to them for use in their database.

States are also initiating actions to address the lack of a centralized state-level grant review process. For example, the state of Washington is developing a centralized grant structure to review local requests for communications funds against a statewide interoperable communications

plan that is being developed by their SIEC. The funding process is shown in figure 2.

**Figure 2: Washington SIEC's Structure to Review Local Requests for Communications Funds**




Source: Washington State Emergency Management Division Officials.

## 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, unique public safety agency missions, and cultural differences among first responder organizations 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 the 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 multijurisdictional partnership and collaboration are essential for effectively addressing interoperability shortcomings.

The current status of wireless interoperable communications across the nation—including current capabilities and the scope and severity of problems that may exist—has not been determined. Long-term prospects for achieving functional interoperable communications are hindered by the lack of an institutionalized process—at the federal, state, regional, or local levels—to systematically identify and address current shortcomings.

The federal government can offer leadership and support for state efforts to develop and implement statewide interoperability plans for achieving specific interoperability goals. The federal government is best positioned to address nationwide issues, such as setting national requirements, developing a national architecture, establishing national performance standards, and the development of national databases and common nationwide nomenclature for interoperability channels. Moreover, acting through the FCC and the NTIA, the federal government alone has the authority to address public safety spectrum allocation, including expanding or altering current spectrum allocations. The federal government can also play a major role through such means as technical assistance and grant guidance in supporting state efforts to prepare comprehensive statewide interoperability plans for developing federal, state, and local communications systems that can communicate with one another as needed and as authorized. However, developing and implementing effective statewide plans that draw on the perspectives and expertise of the federal government and local public safety agencies and jurisdictions is not a task that can be completed in a matter of weeks.

The federal government's ability to provide consistent, focused, long-term attention to interoperable communications needs has been hampered by the lack of a designated agency with the authority and ability to coordinate the wide-variety of federal efforts that exist. OMB has described SAFECOM as the umbrella program to unify and coordinate the federal government's interoperable communications efforts. Although SAFECOM has made progress in developing grant guidance, issuing interoperable communications requirements, beginning the process of assessing current interoperable communications capability, and otherwise coordinating federal efforts, it is dependent upon other federal agencies for funding and their willingness to cooperate. The Department of Homeland Security has recently announced the establishment of the Office of Interoperability and Compatibility—of which SAFECOM would be a part—as the focal point for coordinating federal efforts for wireless and other functional interoperability. However, the exact nature of its roles and responsibilities are still being determined. Moreover, this office would still face many of the challenges that SAFECOM has faced in coordinating the

interoperability efforts of a variety of federal agencies outside of DHS, such as the FCC and the Departments of Justice and Commerce.

With federal leadership and support and local participation and support, states can serve as a key focus for efforts to assess and improve interoperable communications by developing and implementing statewide bodies to assess interoperability issues and guide efforts to remedy identified problems through statewide interoperability plans.

Federal assistance grants to state and local governments do not fully support statewide planning for wireless communications interoperability. Specifically, federal grants do not fully support regional planning and lack requirements to tie federal assistance to an approved statewide interoperability plan. Interoperability plans for public safety communications systems, once prepared, should guide federal funding assistance programs to state and local governments.

## Recommendations for Executive Action

To improve interoperable wireless communications for first responders, we recommend that the Secretary of the Department of Homeland Security ensure that the following actions are taken:

- In coordination with the FCC and the NTIA, continue development of a nationwide database of all interoperable public safety communications frequencies, establish a common nomenclature for those frequencies, and establish clear timeframes to complete both efforts;

- In consultation with state and local governments, determine the current status of wireless public safety interoperable telecommunications across the nation by assessing interoperability in specific locations against interoperability requirements that can be measured, and assist states in assessing interoperability in their states against those requirements;

- Through DHS grant guidance encourage states to establish a single statewide body responsible for interoperable communications and that this body shall prepare a single comprehensive statewide interoperability plan for federal, state, and local communication systems in all frequency bands. The statewide interoperability plan shall be based upon the nationwide standard frequency database and use the standard nationwide nomenclature for interoperability channels, once they are developed; 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 such grant applications are in conformance with statewide interoperability plans. DHS should give states adequate time to develop these focal points and plans and to provide guidance on development of such plans.

We further recommend that the Director, OMB, in conjunction with DHS, review the interoperability mission and functions now performed by SAFECOM and establish these functions as a long term program with adequate coordination authority and funding.

## Agency Comments and Our Evaluation

We sent a draft of this report to the Departments of Commerce, Defense, Homeland Security, and Justice, the Federal Communications Commission, and the Office of Management and Budget. We did not receive comments from OMB or the Department of Defense. The other agencies provided technical comments that we have incorporated into the final report as appropriate. In addition, we received written comments from the Department of Commerce and the Department of Homeland Security. The Department of Commerce said in a letter dated July 12, 2004 that it issued two reports on spectrum policy in June, 2004 (See appendix VI.) We added this information to the report text as appropriate.

The Department of Homeland Security provided written comments on a draft of this report in a July 8, 2004 letter, which is reprinted in Appendix VII. With respect to our first recommendation, DHS said it is developing a nationwide database of interoperable public safety communications frequencies in its fiscal year 2004 program as part of its support to the Computer Assisted Pre-coordination Resource and Database System (CAPRAD). DHS also said it plans to work with the National Public Safety Telecommunications Council (NPSTC) on a common nomenclature across public safety disciplines and jurisdictions. DHS did not mention coordination with the FCC and the NTIA on these matters; the FCC regulates state and local public safety wireless communications, and the NTIA regulates federal public safety spectrum. Either or both the FCC and the NTIA may also take action on the development of national databases and common nomenclature. DHS also only refers to the use of this database in the 700 MHz and 4.9 GHz bands: we believe it should be used for interoperable frequencies in all federal, state, and local public safety bands. We have amended our conclusions and recommendation to note the importance that DHS coordinate with the FCC and the NTIA on these matters across all interoperable public safety communications frequencies.

With respect to our second recommendation, DHS said it is developing a methodology to establish a national baseline of public safety communication and interoperability capabilities with input from the public safety community. We believe that DHS should also consult directly with state and local governments in developing requirements and assessing interoperability in the individual states against those requirements. We have amended our recommendation to include appropriate language.

With respect to our third recommendation, DHS noted that it had created coordinated grant guidance that encourages grant applicants to consider systems requirements to ensure interoperability with systems used by other disciplines and at other levels of government. DHS also discusses a methodology it developed in conjunction with the state of Virginia for development of a statewide communications system that ensures input from local levels, and states that this methodology will be available through the SAFECOM grant guidance for states interested in implementing a statewide system. However, the DHS letter did not directly address our recommendation about encouraging states to create statewide bodies for interoperable communications that would establish statewide interoperability plans for federal, state, and local communications systems in all frequency bands.

With respect to our fourth recommendation, DHS discusses a "bottoms-up" approach to development of a meaningful governance structure and a strategic plan for statewide communications and interoperability developed with its partner, the state of Virginia. However, DHS ' comments do not directly address our recommendations that DHS grant guidance require at the appropriate time that federal grant funds for communications equipment be approved on condition that such grants are in accordance with statewide interoperability plans.

We plan to send copies of this report to relevant congressional committees and subcommittees, to the Secretary of Homeland Security, the Director of the Office of Management and Budget, the Chairman of the Federal Communications Commission and other interested parties. In addition, the report will be available at no charge on GAO's Web site at http://www.gao.gov.

If you have any questions about this report or wish to discuss it further, please contact me at (202) 512-8777 or Thomas James, Assistant Director at (202) 512-2996. Key contributors to this report are listed in appendix VIII.

William O. Jenkins, Jr.
Director, Homeland Security
and Justice Issues

# Appendix I: Scope and Methodology

To examine the availability of data on interoperable wireless communications across the nation, we reviewed our November 6, 2003, testimony where we said that the first challenge to addressing first responder wireless communications interoperability issues was to clearly identify and define the problem and where we identified the absence of effective coordinated planning and collaboration as the fundamental barrier in addressing interoperability issues. We held further discussions on these problems with state and local officials about these issues during our field work in California , Florida, Georgia, and Washington. We also discussed these issues with state and local officials from Illinois, Indiana, Kentucky, Missouri, Ohio and during various public safety conferences and follow-up meetings. On the basis of these discussions, we developed a framework to analyze these issues. (See fig. 1.) We also held discussions with relevant federal officials about identifying and defining interoperable communications of first responders and about the applicability of this framework in a proposed federal nationwide survey of public safety wireless interoperability capabilities and requirements.

To examine potential roles that the federal government can play in improving interoperability of first responder wireless communications, we met with officials of key federal agencies about their roles in setting and implementing policy on interoperable communications for first responders. These agencies were the Office of Management and Budget (OMB), the Department of Homeland Security (DHS), Department of Defense (DOD), Department of Justice (DOJ), Department of Commerce, and the Federal Communications Commission (FCC). We obtained and reviewed relevant documentation about federal programs and projects addressing interoperable communications. We also interviewed state and local officials to obtain their views about the role the federal government should play in addressing interoperability issues.

To examine potential roles that local and state governments can play in improving interoperability of first responder wireless communications, we interviewed state and local officials in California, Florida, Georgia, and Washington and staff of the National Governors Association. We chose these four states because we had information that they were active in addressing interoperability issues and because California and Washington provided an opportunity to examine specific interoperability issues that might be presented by national borders with Mexico and Canada. We also met with public safety officials at meetings of (1) the National Public Safety Telecommunications Council; (2) the Public Safety Wireless Network program office; and (3) the Public Safety National Coordination Council, an FCC committee that advised the Commission on spectrum

policy decisions for public safety interoperable communications. We obtained and reviewed reports, testimonies, and other documents relating to public safety wireless communications and identified examples of state and local government roles in organizing and providing for first responder communications. We evaluated these examples of state and local government roles for potential application to other state and local governments. We also interviewed relevant federal officials about potential state and local government roles in improving first responder wireless communications interoperability issues.

To examine how the variety of federal grants for state and local first responders may encourage or inhibit the assessment of interoperable problems and the development of comprehensive plans to address these problems, we selected key federal grant programs that fund projects supporting state and local government first responder communications systems and reviewed program documentation and appropriations language for policies affecting interoperable communications. We also obtained relevant legislation and interviewed federal, state, and local officials to obtain their views on these issues.

To obtain information on cross-border communications issues, we visited San Diego, California, and Olympia, Washington, and talked to appropriate state and local officials. We also discussed these issues with federal officials at the Department of Commerce and FCC. We obtained and reviewed relevant documentation from the local, state, and federal officials.

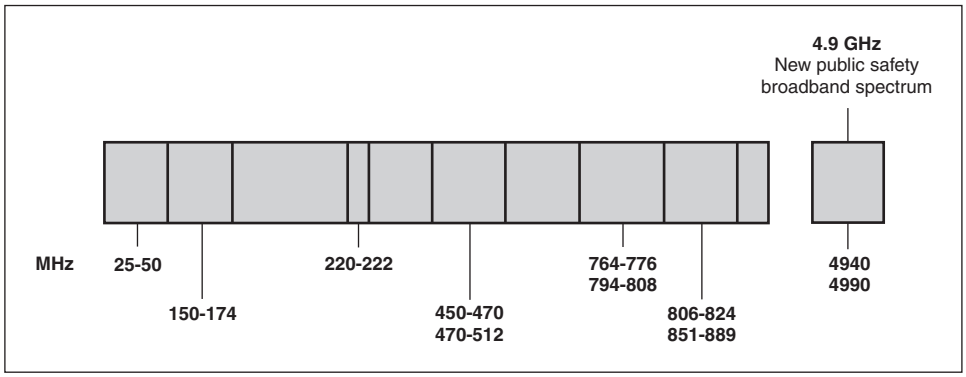
# Appendix II: Cross Border Spectrum Planning

Two issues related to radio spectrum allocation affect public safety communications across the United States borders with Canada and Mexico (1) the lack of coordinated cross border spectrum planning and (2) radio interference to users of the allocated spectrum. The United States, Canada, and Mexico are addressing these issues through various negotiations.

## Radio Frequency Spectrum Band Structure

Radio frequency spectrum allocation has not kept pace with technology and demand. The process used to allocate spectrum over the years has resulted in a problem that is still unresolved, according to the Association of Public-Safety Communications Officials (APCO). One official said past decisions in United States spectrum policy were based on the overall demands for spectrum and the limitations of technology at the time. According to this official, these decisions made sense individually, but collectively those decisions have a negative impact on the current ability of public safety agencies to interoperate. (See fig. 3.)

**Figure 3: Current Public Safety Spectrum Allocations**




Source: National Task Force on Interoperability, *When They Can't Talk Lives are Lost,* February 2003.

The radio frequency spectrum within the United States extends from 9 KHz to 300 GHz and is allocated to more than 450 frequency bands. The Federal Communications Commission (FCC) regulates the use of frequencies for state and local governments and has allocated certain portions of the spectrum for public safety agencies. Initially, almost all public safety communications were confined to the low end of the frequency range, but as technology advanced, higher frequencies became possible, offering a temporary solution for congestion and crowding. The result—public safety operates in 10 separate bands, which has added

capabilities, but which has also caused the fragmentation that characterizes the public safety spectrum today and make it difficult for different agencies and jurisdictions to communicate.

## Cross Border Planning

According to National Telecommunications and Information Administration (NTIA), Canada and Mexico have developed spectrum use and rules independent of that of the United States. In particular, Canada uses the fixed and mobile bands contained in the band 138-174 MHz for all users, including military, civilian, and government. Canada also uses a different channeling structure than the United States and is in the process of narrow banding portions on a different schedule than the United States. Moreover, the majority of the Canadian population resides in the United States/Canadian border area. Therefore, it is very difficult for the United States to identify and coordinate frequencies for new uses in the border area. The United States/Mexican border presents different problems in that neither country is aware of the operations authorized by the other country in the border area because there is no formal agreement to exchange data or coordinate use.

According to FCC, frequency band plans are also not consistent along the United States borders with Canada and Mexico. For example, the Canadian band plan for 800 MHz is different than the Mexican band plan primarily because of demographic differences in the border regions. According to FCC, some degree of harmonized spectrum has been achieved in the 800 MHz and 700 MHz public safety bands, but interoperability in the VHF and UHF bands is difficult to achieve because these bands are highly encumbered and have been operating for many years under different channel plans and different uses. State and local officials in Washington state also said they expect that the 700 MHz band will not be available for the foreseeable future along the Canadian border because Canada currently restricts use of the 700 MHz band for television broadcast purposes only. According to these officials, Canadian authorities have not initiated a process to relocate the television broadcasters out of the 700 MHz band. In addition, local Washington officials said that communication barriers result from border counties using different frequencies and equipment than one another.

## Cross Border Radio Interference

Interference among users of radio frequency spectrum has been a driving force in the management of spectrum at the national and international levels for many years. Interference among these users can occur when two or more radio signals interact in a manner that disrupts or degrades the

transmission and reception of messages. Our work in California and Washington state highlighted interference issues with United States/Mexico and United States/Canada. For example:

- Unlicensed radio users in Mexico cause interference to United States public safety agencies. For example, some Mexico radio users interfere with United States public safety communication frequencies because Mexico does not have complementary regulations governing its frequency use, according to local California public safety officials. Furthermore, in the 162-174 MHz band, there is also a problem with interference to federal government operations. Many of these interference cases involve unauthorized stations in Mexico.

- According to local public safety officials in California, Mexico does not limit the frequency power that radios can emit. Mexican taxi radio users can emit enough power to force public safety radio repeaters in California to open up, and taxis can use them to make their radio calls. For example, San Diego County was forced to switch from their UHF and VHF radio systems to a more expensive 800 MHZ system, in order to operate without interference. In addition, Imperial County has 30 VHF frequencies potentially available for use but can only use two of them because of interference from Mexico.

- Interference is also an issue along the Canadian border because spectrum policies in the United States and Canada are not aligned. United States-devised solutions will not be able to be used in the shared Canadian area, according to local Washington State officials.

## Efforts to Address Cross Border Issues

Efforts are underway by the United States to address cross border problems with Canada and Mexico. According to an NTIA official, NTIA expects in the long term that agreements will be made with both Canada and Mexico that will provide equal segments in specified frequency bands that will be available for exclusive use by each administration. This type of arrangement will mitigate the problems associated with different uses, different channeling plans, and different plans for future use. The official said NTIA is now involved in negotiations with both countries to develop this type of arrangement and that both Canada and Mexico are in agreement with this approach. He said that the time to accomplish the migration of existing use from the segments designated to the other administration is the main factor that must be addressed for successful completion of these efforts.

In the short-term, NTIA plans to hold meetings with the Canadian government about four times a year to complete the negotiation of segmenting certain bands, to improve coordination procedures, to identify channels for shared use, and to identify common interference prediction techniques. With Mexico, NTIA plans in the near term to meet with a Mexican delegation to negotiate protocols involving the segmentation of certain land-mobile bands. NTIA also plans to participate in meetings of the Joint Commission,[1] which meets twice a year to address interference problems between stations of both countries.

FCC is also in the initial stages of forming an agreement with Canada on the use of public safety spectrum in the 700 MHz band, which will include a channel(s) to be used for mutual aid and interoperability. At this time, Mexico has not allocated the 700 MHz band for public safety. In other bands where public safety spectrum is not harmonized, agreements typically define shared use of spectrum, including power limitations to prevent interference across the border.

## Problems Establishing a Single Public Safety Nationwide Frequency Band

One question of interest to the Congress is whether a single nationwide frequency should be designated for public safety in the United States and as it relates to the United States borders with Canada and Mexico. Both FCC and NTIA told us that sufficient bands exist for state and local public safety. FCC said that currently five mutual aid frequencies in the 800 MHz band are included in agreements with Canada and Mexico, with the possibility of additional channel(s) in a future agreement with Canada in the 700 MHz band. Similarly, an NTIA official told us there are several interoperable frequencies in the 162 MHz to 174 MHz band and the 406-420 MHz band for state and local public safety.[2]

[1]The U.S.-Mexico Joint Commission on Resolution of Radio Interference is also known as the CMERAR in Spanish, the Joint Commission, or the Mixed Commission. The Joint Commission's principal mission is to resolve interference cases between U.S./Mexican users along our common borders. The CMERAR typically meets twice a year, and the Co-Chair of the U.S. Section is the Chief of FCCs Enforcement Bureau. Working groups meet on an as-needed basis and deal with interference cases on a local level.

[2]The Department of Homeland Security in its written response to a draft of this report noted that the actual UHF band is 406.1 MHz to 420 MHz, since 406 MHz is reserved for EPIRB signals to track downed airmen/aircraft etc.

# Appendix III: Potential Near-Term Steps to Improve Interoperability of Public Safety Wireless Communications

The SAFECOM program has established goals and objectives for the years 2005, 2008, and 2023 in its current work program. This program was developed in December 2003 at a joint SAFECOM and AGILE planning meeting with input from federal, state, and local representatives. The SAFECOM Program Manager said that the SAFECOM Executive Committee approved the program as developed in the December meeting. Key objectives for the year 2005 include: the completion of a statement of requirements for public safety interoperable communications; establishment of a research, development, test, and evaluation program for existing and emerging public safety communications and interoperability; establishment of a technical assistance program for public safety communications and interoperability; and development of a process to advance standards necessary to improve public safety communications and interoperability.

We provide descriptive material on these objectives, including why SAFECOM believes they are needed, major benefits anticipated if successfully completed, and key responsibilities of various parties to their accomplishment.

## Statement of Public Safety Interoperable Communications Requirements

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. One example of potential future development is expanded coverage to include public safety support functions. The current statement is incomplete because it only addresses the functional requirements for

traditional public safety first responders – Emergency Medical Services personnel, firefighters, and law enforcement officers. The statement recognizes the existence of but does not include in this version those elements of the public safety community—such as transportation or public utility workers—whose primary mission provides vital support to public safety officials.

In addition, the frequent changes in SAFECOM management teams and changing implementation strategies has resulted in major changes in how SAFECOM intends to achieve its ultimate goals. As originally conceived while SAFECOM was in the Treasury Department, the program would build upon Public Safety Wireless Network's (PSWN) efforts to achieve interoperability among state and local agencies by building an interoperable federal communications network. The SAFECOM program implementation strategy changed when the program was transferred to FEMA to focus on helping first responders make short-term improvements in interoperability using vehicles such as demonstration projects and research. At that time, the development of an interoperable federal system was seen as a long-term goal.

DHS describes SAFECOM's current goals as a vision that by the year 2023

"There is an integrated system-of-systems, in regular use, that allows public safety personnel to communicate (voice, data, and video) with whom they need on demand, in real time, as authorized:

Public safety can respond anywhere, bring their own equipment, and can work on any network immediately when authorized.

Public safety will have the networking and spectrum resources it needs to function properly."

SAFECOM officials said under this concept each major region of the country—for example, New York City, Chicago, and Saint Louis and their adjacent suburban jurisdictions—will have their own "system" which is made up of multiple subsystems, such as police agencies, that have established relationships. Part of the SAFECOM concept is that a centrally dispatched Urban Search and Rescue team can respond to any of these cities/regions and operate with the equipment that they bring with them.

However, a national architecture has not been prepared yet to guide the creation of interoperable communications. An explicit and commonly understood and agreed-to blueprint, or architecture, is required to

effectively and efficiently guide modernization efforts. For a decade, we have promoted the use of architectures, recognizing them as a crucial means to a challenging goal: agency operational structures that are optimally defined in both business and technological environments. Office of Management and Budget officials told us that OMB charged SAFECOM with developing a national architecture, which will include local, state, and federal government architectures. According to these officials, SAFECOM is to work closely with state and local governments to establish a basic understanding of what infrastructure currently exists and to identify public safety communication requirements. SAFECOM officials said the 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.

## Research, Development, Test, and Evaluation Program for Existing and Emerging Public Safety Communications and Interoperability

The SAFECOM Program Plan includes an objective for 2005 to establish a research, development and testing, and evaluation program that identifies and develops a long-term, sustainable technical foundation. The SAFECOM program plans provide funding and promote coordination across the federal government to test and evaluate existing communications and bridging technologies and to create a research and development program addressing emerging technologies, such as software defined radio.

Public safety agencies have been addressing communications interoperability for many years under the name “mutual aid.” Under mutual aid agreements public safety agencies have been monitoring each other’s activities and radio communications through the use of scanners or exchanging radios. The agencies have built cross-patches into dispatcher consoles to interconnect radio systems. They also have agreed on the shared use of specific frequencies for first responders, such as police forces and fire departments. For example, the state of California sponsored the California Law Enforcement Mutual Aid Radio System that provides a common set of channels statewide for mutual aid.

Other technology options are also becoming available to public safety agencies from government agencies and commercial vendors. For example, the Naval Research Laboratory (NRL) has developed and fielded

a high technology system that includes both civilian and military communications equipment that is capable of satellite communications and traditional public safety VHF, UHF, and 800 MHz spectrum bands.[1] According to NRL, all bands can be linked to every other band and to normal telephone lines, private cellular networks, and satellite links. According to NRL, its system comes in various sizes and configurations that have been used at the 2002 Olympic Games and Superbowl XXXVII and can meet other Homeland Security incidents.

New commercial technologies and systems are also becoming available. According to some state and local officials, they have to rely upon vendors for information on these new products because they do not have a single independent source of comprehensive information and the federal government can play a valuable role in testing and evaluating these technologies. For example, officials representing the Midwest Consortium told us that the federal government could create a clearinghouse of technical support for the state and local agencies. Therefore, rather than using the equipment vendors for technical advice on what to purchase and what type of systems to build, the state and local agencies could look to the federal government for technical assistance.

But federal officials said there is no single source of data on new vendor equipment and that their first task is to identify what equipment is available. For example, federal laboratory officials in Boulder, Colorado, said they recently conducted a literature search in which they identified 11 vendors that make 24 models of Project 25 portable/mobile radio equipment, 7 vendors that make 9 models of conventional Project 25 repeater/base stations equipment, and only 1 vendor that makes Project 25 base stations using trunking technology. However, they said another center had prepared a list of entirely different equipment.

Federal laboratory officials said that many of these technologies have not been tested and that there is no coordinated program today to test and evaluate vendor equipment and technologies. These officials said that various federal agencies conduct testing – for example, the Office of Law Enforcement Standards in the National Institute of Standards and Technology, the Department of the Interior, and the Forest Service. They said these agencies may also have different test objectives, for example, the NTIA/ITS laboratory conducts data analysis evaluation, while the

[1]We did not review the NRL's system performance.

National Law Enforcement and Corrections Technology Center in Rome, New York, concentrates primarily on operational testing.

SAFECOM officials said that their role is to coordinate research, development, test, and evaluation activities for the federal government as part of their contribution to communications interoperability. They acknowledged that the federal government has multiple initiatives under way and that no cohesive plan to coordinate these initiatives exists today. These officials said SAFECOM plans to create standardized procedures for uniform testing procedures by the federal government. However, they said that because the SAFECOM program has not been authorized, they cannot create a unified research, development, test, and evaluation program without statutory authority.

## Technical Assistance for Interoperable Public Safety Communications

First responders must have the necessary technical support and training needed to properly communicate with each other using wireless communications on a day-to-day basis as well as in emergency situations. First responders will be challenged to perform at their best ability, especially during a major incident such as a terrorist attack or natural disaster. Therefore, ongoing technical assistance and training is needed.

The SAFECOM Program Plan states that the public safety community expressed their need for technical assistance, including support for planning, development, implementation, and assessment of public safety communications systems. In response, SAFECOM is developing a plan to provide technical assistance and training to the public safety community. The plan or work package includes (1) creating a one-stop shop, which will consist of a Web portal and call in center and (2) providing training and technical assistance, which will consist of a practitioner resource group, training and assistance, national calling channels, and technical assistance publications for the public safety community. According to SAFECOM officials, the technical assistance work package has been approved for funding in fiscal year 2005.

State and local government officials told us what a national technical assistance and outreach program for the public safety community should include. A Georgia official said that training should also be provided by the federal government to improve wireless communications among public safety officials. According to SAFECOM training should consist of tools and templates to train multiple public safety agencies and personnel on how to use interoperable communications equipment and processes. For example, officials from the state of Georgia told us the federal government

should provide programs and assistance to coordinate the design and implementation of communications systems. Local officials in the state of Washington agreed that the federal government could offer staff assistance or technical support to the state and local public safety officials.

According to local officials in Florida, the federal government should require that public safety officials have communications training. These local officials told us that the police are required to train and pass qualifications for using their gun at least once a year; however, they use their guns less than their communications equipment. There are no requirements to train on using the communications equipment. Local officials in San Diego County told us that the federal government could use other federal entities, such as the National Accreditation for Law Enforcement, as a model to educate and train public safety agencies. The National Accreditation for Law Enforcement could use state agencies as consultants to provide technical and operation advice to small localities.

First responders must plan for and train on new technologies or the technology could have a negative impact on the effectiveness of emergency responders. The states we visited or contacted are using gateway technology as a short-term solution to achieving communications interoperability. However, this technology only patches different systems together and has to be used properly to be effective. For example, an official in California told us some public safety officials caused an entire system to crash at the most critical point of communications when they used it for the first time during an emergency because they had not been properly trained on the system. In addition, use of gateway systems may result in too many people trying to talk, in turn, taxing the communication systems.

## Standards to Improve Interoperable Public Safety Communications

State and local public safety officials we talked with told us they needed national guidance on standards. For example, members of the Midwest Consortium we spoke with said they needed more national guidance on standards and technical issues and the establishment of a national entity made up of federal, state, and local entities that set standards. However, consortium officials emphasized that federal communications standards and initiatives must be reasonable, balanced, and consistent with state and local jurisdictions' funding capabilities and their communication needs and objectives.

OMB has established the development of standards for first responder interoperability at all levels of government as a SAFECOM objective. SAFECOM is to develop these standards by working in partnership with federal, state, local, and tribal public safety organizations. SAFECOM is working on a plan to address the development of national standards to improve public safety communications and interoperability. A key initiative in the SAFECOM program plan for the year 2005 is development of a process to advance standards needed to improve public safety communications. This initiative will identify, test, and where necessary, develop standards in coordination with the public safety community and ongoing standards activities.

In our November 2003 testimony, we noted that a partnership between industry and the public safety user community developed what is known as Project 25 (P-25) standards. According to the PSWN program office, P-25 standards remain the only user-defined set of standards in the United States for public safety communications. PSWN believes P-25 is an important step toward achieving interoperability, but the standards do not mandate interoperability among all manufacturers' systems. Federal officials also told us significant work remains to complete the development of the Project 25 standards and to test vendor equipment against these standards. The SAFECOM work plan states that SAFECOM will devote resources to accelerate the completion of the Project 25 suite of standards and create a common radio nomenclature for first responders.

## Technological Near-Term Actions: Bridging Equipment

One problem that occurred in New York City on September 11, 2001, was that incompatible radio systems prevented police and fire department personnel from talking to one another. The DHS Secretary recently announced that DHS has identified technical specifications for a baseline interoperable communications system as the short-term solution to allow first responders to communicate by voice—no matter what frequency on which they are operating. SAFECOM officials said that the specifications the Secretary referred to are for generic bridging technologies that interconnect first responders' different land mobile radios. According to these officials, the Secretary has also determined that local emergency-based communications interoperability capabilities should be in locations of critical concern by December 2004. These officials said that this date is the deadline for putting an interim solution in place for interoperable radio communications for police, fire, and emergency first responders.

Some states are already using the bridging equipment or audio switches identified as a short-term solution by DHS and have identified several nontechnical barriers to successful use of the equipment. A state official in California told us that first responders need to plan their use of these technologies and become trained on using the technology, or it could have a negative impact on emergency response to an incident. This official said, for example, that some public safety officials had not been properly trained on using one vendor's system, causing the system to fail at a critical point the first time they used the system in an emergency. According to this official, this technology must be used properly to be effective. Local officials in the State of Washington also told us that multiple units of these systems could overload communications because too many officials are trying to talk at the same time. A federal laboratory official said the bridging or audio switches provide the benefits of interoperability of disparate radio systems but have several shortfalls. These shortfalls include a requirement that users be within coverage of their home radio systems and that the use of bridging equipment may require pre-incident coordination. He said there are 4 major vendors, and about 30 vendors in total that make bridging equipment. He said testing has been conducted on only 2 of the major vendors' equipment.

## Technological Near-Term Actions: Technical Assistance and Independent Assessments of Alternative Technologies

State and local officials said they want an independent source of information on new products and that the federal government can play a valuable role in providing that information. SAFECOM officials said they intend to include their bridging specifications in federal grant guidance as a condition for using federal funds to purchase bridging equipment. However, they said that the specifications for such equipment may be released and in use before their testing program for switches and bridging technologies is complete. They said public safety agencies must rely on vendor data to determine whether the untested systems meet DHS's requirements. SAFECOM officials also recognize that significant training on such equipment must accompany the delivery of the equipment to first responders. The officials said COPS and ODP have developed a template for providing technical assistance training for bridging equipment.

# Appendix IV: Role of States Continues to Evolve

State and local governments play a large, perhaps defining, role in resolving the communications interoperability problem. As recognized by the Federal Communications Commission, states play a central role in managing emergency communications, and state level organizations are usually in control at large-scale events and disasters or multiagency incidents. FCC also said that states are usually in the best position to coordinate with federal government emergency agencies. According to the National Strategy for Homeland Security,[1] local officials stress that they are the first to respond to any incident and the last to leave the scene of an incident. According to the SAFECOM program, state and local governments also own 90 percent of the public safety communications infrastructure.

In our November 2003 testimony, we identified fragmented planning and cooperation as the key barrier to improving interoperability of public safety wireless communications systems. In the past, a stovepiped, single jurisdiction or agency-specific 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 example, a PSWN analysis of Fire and EMS communications interoperability found a significant need for coordinated approaches, relationship building, and information sharing. However, the PSWN program office found that public safety agencies have traditionally developed or updated their radio systems independently to meet specific mission needs.

The PSWN program also concluded that state leaders can, through memorandums of understanding (MOU), help to define interagency relationships, reach procedural agreements, promote regular meetings of statewide or regional interoperability committees, and encourage joint efforts to deploy communications technology. State and local officials that we talked with generally agree that states can coordinate communications planning and funding support for state communications systems and coordinate local governments' interoperability efforts. For example, several officials said the state can facilitate the planning process by

[1]National Strategy for Homeland Security, White House Office of Homeland Security.

including key stakeholder input in the decision making process and ensure that communications interoperability issues are addressed. However, officials also see state roles in providing common infrastructure and developing routine training exercises.

Several states have or are taking executive and legislative actions that coordinate and facilitate efforts to address problems of interoperable communications within their states. For example, as we indicated previously, states we visited have or are in the process of establishing SIECs to enhance communications interoperability planning, including the development of interoperability plans and administration of interoperability spectrum. California in 2003 also established the Public Safety Radio Strategic Planning Committee (PSRSPC) to develop and implement a statewide integrated public safety communications system for state government agencies that facilitates interoperability and other shared uses of public safety spectrum with local and federal agencies. In Florida, the governor issued an executive order in 2001 to establish seven Regional Domestic Security Task Forces that make up the entire state. Each of the regional task forces has a committee on interoperable communications under Florida's State Working Group. The Florida legislature supported that effort by establishing the task forces in law and formally designating the Florida Department of Law Enforcement and the Division of Emergency Management as the lead agencies. The Task Forces consist of agencies from Fire/Rescue, Emergency Management, and public health and hospitals, as well as law enforcement. In addition, it includes partnerships with education/schools, business, and private industry.

In addition, planning on a regional basis is key to interoperable communications systems development. The Public Safety Wireless Network report also notes that although in the past public safety agencies have addressed interoperability on an individual basis, more recently, local, state, and federal agencies have come to realize that they cannot do it alone. The report also notes that officials at all levels of government are now taking action to improve coordination and facilitate multijurisdictional interoperability. We talked with officials from several state and local agencies about their efforts to address interoperability issues on a regional basis. For example:

- In Georgia and Washington, state and local emergency consequence planning continues to be structured around the all-hazards planning model and are broken down into regions. The regions are made up of one or more counties that include cities, towns, and tribal nations within the regional geographical boundaries. This regional configuration was

implemented to develop regional interoperability plans, distribute federal grant funds, develop emergency responder equipment priority lists, plan and execute training exercises, create regionally based mutual aid plans, and develop volunteer infrastructure to support citizens' involvement in homeland security initiatives.

- The King County Regional Communications Board system in Washington State is a multijurisdictional coordination body. Communication decisions are made by the group and not made by individual jurisdictions. This regional cooperation is informal and not legislated or mandated.

- The San Diego County Regional Communications System was established in 1994 to provide an interoperable wireless network available to all public safety agencies.

State officials also told us that statewide interoperability is not enough because incident first responders face could cross boundaries. Thus, some states are also taking actions to address interstate interoperability problems. For example, state officials from Illinois, Indiana, Kentucky, Michigan, and Ohio said their states have combined efforts to form the Midwest Public Safety Communications Consortium to promote interstate interoperability. These officials told us that the governors of their five member states plan to sign an MOU with each other to signify that each state is willing to be interoperable with the other states and provide communication assistance and resources to the other states, to the extent that it does not harm their own state. According to these officials, they also have taken actions to form an interstate committee to develop interoperability plans and solicit support from key players such as local public safety agencies. The benefits of the consortium are increased interoperability on a larger regional basis, an exchange of technical information, greater power over vendor manipulation because of increased purchasing power, an exchange of pricing and technical information, and lessons learned from their collective experiences.

## Challenges in Addressing Communications Interoperability

Although efforts are underway to address communications interoperability issues, state and local public safety officials face challenges in addressing communications interoperability. According to state and local public safety officials, some of the key challenges they are confronted with today include (1) multiple statewide communication systems, (2) turf or control issues, and (3) lack of communications training for public safety officials.

Federal officials told us that states have multiple state communications systems that make communications interoperability planning more difficult. The states we visited have multiple statewide communications systems. For example, in the state of Washington, the departments of Transportation, Corrections, and Health use communication systems operating in the 800 MHz frequency band, while the National Guard and Emergency Management Division operate communications systems with the spectrum reserved for federal agencies. The remainder of the state agencies operates in the 150 MHz frequency band. Similarly, Florida has several statewide systems such as State Law Enforcement Radio System (SLERS) and Forestry systems that are not compatible. Because the forestry system operates on a different frequency band than SLERS, it does not allow users to communicate with law enforcement except through console patches. The SLERS was originally designed primarily for 8 state law enforcement entities. Membership now includes 17 law enforcement entities in 15 state agencies.

Some local jurisdictions also have multiple communications systems. For example, San Diego and Imperial Counties have developed and implemented a radio system referred to as the Regional Communications System (RCS). RCS's primary mission is to provide an interoperable wireless network available to all public safety and public service agencies within the counties, regardless of jurisdiction or level of government. However, according to local public safety officials in California, political, funding, and technology limitations such as incompatible communications equipment have prevented full participation in the system by the city of San Diego and other jurisdictions in the counties. According to a local government official in California, however, RCS and the city have collaborated on planning the transition from their current systems to a P-25 compatible system, which he said will provide seamless interoperability for all public safety agencies operating in the Southern California region.

According to PSWN, efforts to develop and implement regional or shared systems are hindered by perceptions that management control of radio system development and operations will be lost. As a result, coordination and partnership efforts do not evolve, and "stop gap" measures are implemented to address specific interoperability requirements. Interoperable communications is meaningless unless first responders overcome turf issues and learn to cooperate in any given incident, according to Midwest Public Safety Communications Consortium members. The Consortium members said that the technical part of building interoperability is easy, compared with the political and

operational issues. As a result, the planning process for addressing political and operational issues is vital.

In the state of Washington, a potential obstacle to effective coordination may lie in the historical relationship between state and local governments. The state has 39 counties and 268 towns and counties. According to a Century Foundation report, local and regional governments in Washington have a long tradition of home rule and independent action, which makes it difficult for state officials to coordinate the activities of the units of local government. Washington state and local officials said that the political power in the state is decentralized, and the local city and county governments may resist state-driven mandates. Things get done on a consensus basis at the local level.

According to local officials in Washington, that type of relationship does not exist between the state and local jurisdictions or the federal agencies and local jurisdictions. Regionally based planning is problematic due to resistance by locally elected officials, lack of trust between officials in different jurisdictions or disciplines, and competition over resources, according to a Century Foundation report. For example, one of the concerns of the Washington SIEC planning group was that the state could not force locals to participate or adhere to the development of a statewide communications plan, they could only invite locals to participate.

# Appendix V: Federal Grant Structure Does Not Fully Support Interoperability Planning

Federal grant funds can be used to facilitate and encourage coordinated regional planning. However, there are currently several challenges to the ability to use these funds to support the long-term coordinated regional planning that we have identified as being essential to improving interoperable communications. First, federal funds are structured to address short-term needs for the development of interoperability projects rather than long-term planning needs for communications interoperability. Second, federal grants have inconsistent requirements to plan regionally. Third, the first responders grant structure is fragmented, which can complicate coordination and integration of services and planning at the state and local levels, and has presented additional barriers to federal efforts to coordinate communications funds. Fourth, uncoordinated federal and state level grant reviews limit the government's ability to ensure that funds are used to improve regional and statewide communications interoperability.

## First Responder Federal Funding Is Structured to Support Short-Term Rather Than Long-Term Communication Needs

A study conducted in 1998 estimated the current replacement value of the existing public safety LMR infrastructure nationwide at $18.3 billion.[1] According to a PSWN report, DHS officials have said that this estimate is much higher when infrastructure and training costs are taken into account. In addition, reaching an *accelerated* goal for improving communications interoperability will require a major investment of several billion dollars within the next 5 to 10 years. The estimated cost of an LMR system for a state or local jurisdiction can range from tens of thousands to hundreds of millions of dollars, depending on the size and type of system being implemented. According to PSWN, these cost estimates account only for the procurement of the equipment and infrastructure and do not include ongoing operation and maintenance costs. According to another Public Safety Wireless network (PSWN) funding report, the extraordinary investment in LMR systems makes obtaining the necessary funding to finance the replacement or upgrade of LMR systems one of the greatest challenges facing public safety agencies. This is especially true because public safety communications systems typically reach the end of their useful life cycle in 8 to 10 years. In addition, the National Telecommunications and Information Administration (NTIA) and Federal Communications Commission (FCC) have established a new migration plan that will require that all federal and state and local public safety

[1]Land Mobile Radio Replacement Cost Study, *Public Safety Wireless Network Program, Fairfax, VA., June 1998.*

agencies replace current LMR equipment with narrowband (12.5 kHz) equipment by 2008 and 2018, respectively. Federal funding is but one of several resources state and local agencies must utilize in order to address these financial challenges.

State and local public safety officials say that they do not have reliable federal funding support for the planning costs associated with the long-term development of interoperable communications. State and locals officials from states that we visited identified the lack of a sustained funding source for communications as a major barrier. Local officials emphasized that public safety agencies need a re-occurring source of funds for communications because interoperability barriers cannot be fixed with a one-time grant.[2] For example, local public safety officials from Washington state asserted that, once the granted project is complete, locals still have intense fiscal pressures to face in the support and operation of the communication systems. As a result, state and local agencies need to provide assurances that they can sustain the projects that the grants have developed. However, they emphasized that further federal support is needed to help with these costs. Officials from Georgia and California also expressed the need for federal support in addressing on-going costs and suggested creating a dedicated source of funds similar to the interstate highway program or 911 tax to assist states with implementing the long-term solutions.

We have identified several federal grants that can be used to address first responder communications (See table 1.) Among these grants, in fiscal year 2003, Congress appropriated funds for two programs specifically dedicated to improving first responder interoperable communications. However, since 2003, the funding for these grant programs has changed significantly. In fiscal year 2003, the Office of Community Oriented Policing Services (COPS) and Federal Emergency Management Agency (FEMA) received approximately $154 million to provide grants for

[2]SAFECOM has identified several investment areas that must be taken into account in the life-cycle of a public safety communication system, in their recent grant guidance. These include: planning for public safety communication systems; building communication systems; upgrading/enhancing communication systems and equipment; replacing communication systems and equipment; maintaining communication systems and equipment; training public safety staff on issues related to emergency response communications; and managing public safety communications projects.

interoperable communications equipment[3]. In fiscal year 2004 FEMA's line-item budget for this program was cut and was not explicitly picked up anywhere else in DHS. The COPS program was awarded only $85 million as the sole source for the interoperable communications equipment grant for fiscal year 2004. In addition, the President's fiscal year 2005 budget proposal allocates no funds for the Interoperable Communications Equipment grant program to the DHS and suggests reductions in other funding sources that state and locals are eligible to use for communications interoperability. For more details on changes to these funding sources, see table 1.

[3]In technical comments to a draft of this report, COPS officials said of this $154 million, Congress directed that $5 million of COPS appropriations be earmarked for NIST and $3 million for NIJ/AGILE.

**Table 1: Changes to Funding Sources for Communications Interoperability Appropriated for Fiscal Years 2003 and 2004**

| Dollars in millions | | | |
|---|---|---|---|
| **Grant name/ description** | **Federal agency, department administering the grant** | **FY 2003** | **FY 2004** |
| FEMA Interoperable Communications Equipment Grant[a] | FEMA, DHS | $80 | |
| COPS Interoperable Communications Technology Grant | Office of Community Oriented Policing Services, DOJ | $75 | $85 |
| Homeland Security Grant Program[b] | Office for Domestic Preparedness, DHS | $2,066 | $1,700 |
| Urban Areas Security Initiative Grant | Office for Domestic Preparedness, DHS | $596 | $725 |
| Assistance to Fire- fighters Grant | Office for Domestic Preparedness,[c]DHS | $750 | $750 |
| Emergency Management Performance Grants | FEMA, DHS | $165 | $180 |
| National Urban Search and Rescue Response System | FEMA, DHS | $60 | $60 |
| Local Law Enforcement Block Grants | Bureau of Justice Assistance, DOJ | $400 | $225 |
| Edward Byrne Memorial State and Local Law Enforcement Assistance Discretionary Grants | Bureau of Justice Assistance, DOJ | $151 | $159 |

Source: GAO analysis of congressional appropriations, the president's fiscal year 2005 budget proposal, DHS, DOJ, and Catalogue of Federal Domestic Assistance data.

Notes: The fiscal year 2003 FEMA and COPS Interoperable Communications Equipment grants were grants specifically targeted toward improving first responder communication equipment to increase interoperability.

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

[b]Until fiscal year 2004, this program was administered by FEMA.

[c]The president's fiscal year 2005 Budget Proposal funds this program under the Office for Domestic Preparedness.

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 officials emphasize that federal grant conditions and requirements do not support this planning process. While there are several grants to assist first responders in

preparing for emergency response, state and local public safety officials from the states that we visited said that these grants do not provide adequate support for dedicated staff resources for communications planning or allow adequate time for state and locals to plan. Officials emphasized that most public safety organizations that are tasked with addressing the planning functions for the operational, technical, and coordination needs of communications systems, such as Regional Planning Committees, State Interoperability Executive Committees, and system managers rely on volunteer efforts of first responders, who also have full-time duties in their regular jobs.

With new spectrum policies for narrow banding, local first responders are skeptical that they will have the staff resources to meet potentially significant additional workloads in these new challenges. For example, managers of a regional communication system serving multiple counties in Washington state documented this concern in a 2003 filing to the FCC. The filing stated,

"The success of the regional planning approach can no longer be left to the volunteer efforts of the engaged public entities, particularly for something as complicated and intense as the re-banding proposed in the Supplemental Filing. All local governments are stretched to the maximum in our combined situation of economic challenges and security uncertainty. This has a limiting effect on the ability of the skilled personnel who normally engage in the regional planning efforts to continue engagement at the high levels that would be necessary to deal with a re-banding effort. This is even more the case in the complex border areas where numerous technical, procedural and perhaps political issues need to be resolved to make the effort a success. Region 43 strongly supports the need for a national pool of experts and funding to work with the RPCs as they undertake the re-banding in their Regions. These need to be people and resources that can do the hard work of inventorying systems, understanding spectrum relationships, evaluating the unique terrain and topography of the area and helping establish technically and operationally competent migration strategies that work for the unique situations of each Region… But Committees on their own can't do this work effectively, and left to their own resources, we will see staggered and inconsistent results across the country."

## Federal Grants Encouraged a "Regional" Approach to Planning, but Lacked Requirements for Interoperability Communications Plans

As we mentioned previously, creating communications interoperability requires a coordinated regional approach. Recent grant requirements have encouraged jurisdictions to take a regional approach to planning, which has resulted in more local efforts to plan using a multidisciplinary and multi-jurisdictional approach rather than the stove-piped planning that formerly existed. For example, grant criteria used in the fiscal year 2003 COPS and FEMA Interoperable Communications Equipment grants encouraged multi-jurisdictional and multidisciplinary approaches, which resulted in grants being given to applicants that developed regional and multidisciplinary partnerships. For example, officials from Florida that received the COPS grant award for $6 million told us that as a result of this encouraged regional approach, they applied for the grant using a consortium of nine counties that formed a plan for interoperability and will use the funds on a multiregional basis to increase interoperability within and among their jurisdictions. State and local officials that we spoke with said that the federal government needs to do more to encourage regional communications planning and that this requirement should be made a condition of receiving grants.

In our November 6 testimony, we also identified coordinated planning for communications interoperability as a pre-requisite to effectively addressing communication issues. However, 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 pre-requisite 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 Program (HSGP) requires states to conduct a needs assessment and submit a State Homeland Security Strategy to Office for Domestic Preparedness (ODP); however, the required strategy is high-level and broad in nature. It does not require that project narratives or a detailed communications plan be submitted by grantees prior to receiving grant funds.

- The Urban Areas Security Initiative (UASI) grant requires a Needs Assessment and Urban Area Strategy to be developed by grantees, but also does not require project narratives or detailed plans.

- The COPS and FEMA 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 multijurisdictional and multidisciplinary project narrative was required for submission. If applicants intended to use the funds to support a project that was previously developed, they were required to submit the plan for review.

An ODP program official acknowledged that requirements to develop a detailed communications needs assessment are missing and that ODP is currently developing an assessment tool. The official said that grantees could use this tool to assess their specific communication needs and conduct a gap analysis. The analysis would be used by the jurisdictions to develop an interoperable communications plan that would support the State and Urban Area Homeland Security strategies.

State and local public safety officials that we spoke with reported that because of the lack of federal requirements to submit plans for interoperable communications; some federal grant funds are being spent on individual projects without a plan to guide these expenditures. States that we visited received federal funds that could be used for communications, but did not have statewide communications plans to guide decisions on local requests for federal funds. To combat this concern, the state of Washington Emergency Management Division said that it is holding back on allocating its obligated funds until its State Executive Interoperability Committee has developed a statewide communications plan that can be used to guide decisions on local request for communication funds.

In addition to variations in requirements to create communications interoperability plans, federal grants lack consistency in defining what "regional" body should conduct planning. Regions are defined differently by different federal agencies. The COPS office, which provided grant funds for interoperable communications equipment, defined eligible regions as Metropolitan Statistical Areas (MSA's).[4] The Office for Domestic Preparedness' (ODP) Urban Areas Security Initiative's provided grants to "urban area" regions, which were defined—in some cases—as a subset of a MSA. On the other hand, FEMA awarded its grants for interoperable communications equipment based upon a jurisdictional nomination from the state governor. Furthermore, FCC has defined regions for

[4]In the application guidance, the Metropolitan Statistical Areas were defined as a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core.

communications planning based upon other characteristics. However, all four of the agencies encourage state and locals to conduct "regional" planning for communications.

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

In addition to resources for planning, first responders emphasized that the limited time provided to first responders to conduct planning for communications interoperability before submission of grants presents a barrier. State and local officials from the Office of Emergency Management Services expressed concern about their inability to develop effective plans within the current grant timeframes. State officials from California's Office of Emergency Management said that the short turn around timeframe on the ODP Homeland Security and UASI grants limited their ability to perform a high-level grant review or assist with local planning. ODP required that grantees submit a proposal within 30 days of the announcement. As a result, state officials said that they were allowed only enough time to review whether local grant proposals matched an itemized equipment list provided by ODP and could not perform an evaluation of local grant proposals or provide assistance to the locals in planning for and writing their grants. A representative from a county Office of Emergency Services in California expressed the same sentiment. He said that grants are coming with such short timeframes that localities are operating with a total lack of information before submitting the grants. He stressed that states and localities need time to study what they need in order to get something worthwhile. Officials from the other three states that we visited—Florida, Georgia, and Washington—also articulated similar concerns.

Similar to state and local officials, federal officials expressed concerns about first responders' ability to plan for long-term regional communication systems within the current 30 or 60 day submission time frames allotted for the grants. Officials from SAFECOM said that in order to alleviate the previous stove pipe communications planning of agencies, regional planning should be a pre-requisite to receiving federal funds. However, they emphasized that if planning were required as a condition for receiving grants, states would have to be given enough lead time to prepare a successful plan. The officials said that the current time frames placed on grants does not allow states or jurisdictions enough time to effectively create a communications plan that would make the most efficient use of federal funds. Adequate lead time may be a 1 or 2 year planning period. In addition, states should be given a planning model to demonstrate how to successfully plan for communications—including

creating a governance structure as the first step. SAFECOM officials said that they are trying to develop this type of model in the Commonwealth of Virginia. ODP is also developing a similar model in Kansas City, Missouri.

COPS officials administering the fiscal year 2003 Interoperable Communications Technology grant also said that requiring that a communications plan be developed prior to receiving grants would be a positive thing, if the grantees were given an appropriate amount of time to develop a plan before submission—perhaps several months. They noted that they did not require that grantees have a communications plan developed prior to receiving federal funds because the grantees only had 30 days from the grant announcement to submit their proposals. The Homeland Security Grant, UASI grant, Assistance to Firefighters grants also allow states only 30 or 60 days to submit a grant proposal. Demonstration grants also have been awarded to state and locals for communications interoperability that have 1 or 2 year performance periods and do not support long-term solutions. For example, Assistance to Firefighters Grant, COPS and FEMA's Interoperable Communications Equipment grants, and National Urban Search and Rescue Response System grants all have 1-year performance periods.[5] UASI, HSGP, and Local Law Enforcement Block Grants have 2-year performance periods.

[5] n 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.

## Fragmented First Responder Grant Structure Complicates and Limits Coordination at the Federal, State, and Local Levels

In our 2003 testimony,[6] we pointed out that the federal first responder grant programs' structure was fragmented, which can complicate coordination and integration of services and planning at the state and local levels. We also highlighted the variation in grant requirements for first responders grants. For example, DHS's Assistance to Firefighters grant had a maintenance of effort requirement while the Fire Training Systems grant had no similar requirement.

In this report, we find that fragmentation exists within Communications Interoperability grants that presents challenges to federal efforts to coordinate and streamline the funding process. Multiple agencies provide communication interoperability funding and have different guidelines and appropriations language that define how the funds can be used. A list of interoperable communications grant sources from 2003 through 2004 within DHS and DOJ and their eligible uses are listed in table 2.

[6]See U.S. General Accounting Office, *Reforming Federal Grants to Better Meet Outstanding Needs*, GAO-03-1146T (Washington, D.C.: Sept. 3, 2003).

**Table 2: Federal Interoperable Communications Grant Funding Sources and Their Eligible Uses**

| Grant name/ description | Federal agency, department administering the grant | Equipment acquisition | Planning | Training | Exercises |
|---|---|---|---|---|---|
| FEMA Interoperable Communications Equipment Grant[a] | FEMA, DHS | X | | | |
| COPS Interoperable Communications Technology Grant | Office of Community Oriented Policing Services, DOJ | X | | | |
| Homeland Security Grant Program[b] | Office for Domestic Preparedness, DHS | X | X | X | X |
| Urban Areas Security Initiative Grant | Office for Domestic Preparedness, DHS | X | X | X | X |
| Assistance to Fire- fighters Grant | Office for Domestic Preparedness,[c] DHS | X | | X | |
| Emergency Management Performance Grants | FEMA, DHS | X | X | X | X |
| National Urban Search and Rescue Response System | FEMA, DHS | X | | X | X |
| Local Law Enforcement Block Grants | Bureau of Justice Assistance, DOJ | X | X | X | |
| Edward Byrne Memorial State and Local Law Enforcement Assistance Discretionary Grants | Bureau of Justice Assistance, DOJ | X | | X | |

Source: GAO analysis of DHS and DOJ data.

[a]The Homeland Security Grant and all other grants listed, with the exception of the FEMA and COPS "Interoperable Communications Equipment grants," provide funding for various emergency preparedness activities, which may include improving interoperable communications.

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

[c]Until fiscal year 2004, this program was administered by the FEMA.

Despite federal efforts within DHS to synthesize federal grants, various agencies have statutory language that make it difficult to coordinate their use. For example, both SAFECOM and COPS officials said that certain statutory provisions underlying the grant programs presented barriers to the coordination efforts of COPS, FEMA, and SAFECOM to consolidate the grant application process for the 2003 Interoperable Communications Equipment grants. COPS and FEMA coordinated their application process for the grants and used sections of the SAFECOM grant guidance to guide their application requirements. According to COPS and FEMA officials, the combined COPS and FEMA application process was intended to maximize the use of funds and reduce duplication and competition between the two agencies' Interoperability grants. Both COPS and SAFECOM officials explained that COPS and FEMA encountered difficulty in creating a

combined grant application process because the COPS grant required a twenty-five percent match while the FEMA grant did not have such a requirement. However, COPS officials said FEMA added a twenty-five percent match of "in-kind" resources to its grant requirements in order to reduce competition between the COPS and FEMA grant programs.

In addition to matching requirements, the underlying statutory language for COPS and FEMA interoperable communications grants made it difficult to incorporate some of the SAFECOM grant guidance recommendations. For example, SAFECOM grant guidance recommended that applicants conduct planning for developing public safety communications and specified eligible planning activities. However, the underlying statutory language for the COPS and FEMA grants focuses on the purchase of equipment without specifically addressing planning. COPS and FEMA officials said that they were able to justify allowing certain planning activities directly related to the purchase of equipment, but could not require that funds be used to develop a communications system. SAFECOM grant guidance also recommended addressing maintenance and other life-cycle costs of communications equipment; however, the statutory language underlying COPS and FEMA interoperable communications equipment grants focuses on funding the purchase of equipment rather than maintenance and other related costs.

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

Federal officials that we spoke with agreed that, generally, there is no high-level review of communications interoperability across the federal government to ensure that the full range of granted projects compliment each other and add to overall statewide and national interoperability. Each agency reviews its own set of applications and projects. As a result, grants can be given to bordering jurisdictions that propose conflicting interoperability solutions. For fiscal year 2003, federal officials from COPS and FEMA attempted to eliminate awarding funds to conflicting communication systems within bordering jurisdictions by selecting different applicant pools and coordinating their review of grant proposals. The COPS office selected the largest MSAs from each state and territory as well as the 50 largest MSA's regardless of state, to apply for COPS funds.[7] FEMA requested that the governor of each state nominate one lead jurisdiction to submit a grant proposal, taking into account the state's demographics and the location of critical infrastructure. In addition to selecting applicants from different jurisdictions, COPS and FEMA engaged in a process to ensure that projects from neighboring jurisdictions did not conflict with or duplicate each other. The collaboration that occurred between COPS and FEMA to review the 2003 Interoperable Communications Equipment grant proposals was a step forward, however, these agencies constitute only two of several federal agencies that provide funds for communications interoperability.

A coordinated high-level review of key federal grant programs that award funds for communication purposes does not exist. In response to this challenge, SAFECOM has recently sponsored the formation of the Federal Interagency Coordination Committee (FICC), which includes a federal grant coordination working group. The 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,

[7]The COPS Application Guidance states that after eliminating duplicate MSAs from the two categories, their methodology resulted in the identification of 74 candidates that could apply for the grant. A lead jurisdiction was designated within the MSA to promote multi-jurisdictional, interoperable partnerships with neighboring localities. In the application guidance a Metropolitan Statistical Areas was defined as a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core.

training, and standards.[8] Federal officials said that FICC will assist in shaping the common grant guidance for federal initiatives involving public safety communications. As of April 23, 2004, officials said that FICC has held two meetings.

State governments that we visited also did not have a coordinated or centralized grant review process to ensure that communications grant funds in the programs that we reviewed were being used to support projects that were complimentary and not duplicative. Florida State Technology Office (STO) officials, who are members of Florida's Domestic Security Oversight Board (DSOB), said that the DSOB was concerned that there was no overall centralized review of grant applications for federal funding and no central review of federal funds passing through the state to local governments.[9] For example, STO has the statutory authority to review plans for new or expanded communication systems. However, STO officials said that some local communications plans are not reviewed by the state because there is no requirement that locals must submit their plan to STO for review before grant approval.[10] Florida is now developing a funding working group under the DSOB to review funding requests for communication interoperability.

Officials that we spoke with in California also acknowledged that there has been no centralized grant review process for funds that can be used for communications interoperability. Officials from the grants administration division within the Office of Emergency Services said that they do not have a centralized review of grant funds in California because several state and local agencies receive funds directly to their agencies or jurisdictions from the federal government.

Local officials were concerned that this lack of a coordinated review of grants used across the state for communications interoperability can

[8]Proposed FICC members are federal agencies within the DOJ, DHS, Defense, Agriculture, and Commerce.

[9]The Domestic Security Oversight Board prepares Domestic Security Funding Recommendations—including recommendations for funding interoperable communications—to the governor and state and legislature. Decisions on the used of federal and state homeland security funds are based upon the recommendations of the oversight board.

[10]STO officials said that the one exception to this rule is their review of Emergency Medical Services grants, which requires a state-level review before approval for federal or state funds.

result in grants being awarded to bordering jurisdictions or localities that propose conflicting interoperability solutions and, therefore, compound existing barriers to regional or statewide interoperability. As a result, the state of Washington has set up a structure to facilitate centralized grant review of federal and state funding to ensure that they promote regional interoperability. Officials intend to use a statewide communications plan being developed by their State Interoperability Executive Committee (SIEC) to review local funding proposals.

## No Comprehensive Grant Database Exists that Can Be Used to Facilitate Federal Oversight and Coordination of Funding to Jurisdictions

Currently, there is no database that can be used as a tool for coordinating federal or state oversight of funding for interoperable communications systems. SAFECOM is currently engaged in an effort with DOJ to create a "collaborative clearinghouse" that could facilitate federal oversight of interoperable communications funding to neighboring 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. According to federal officials, this database is operational; however, its use is limited in its ability to coordinate federal oversight of grant funds for several reasons. First, the database does not contain information from the majority of relevant federal agencies and SAFECOM has no enforcement authority to require that all federal agencies provide information to the database or use it guide decisions in their grant approval process.

In addition, SAFECOM officials said that it is unclear how to obtain the needed information from formula grants on the use of federal funds for communications. The State Homeland Security grant issued by ODP is a large grant provided to states that can be used for communications interoperability, among other things. However, federal officials said that once these funds enter the states, there is no reporting obligation on the use of the funds by jurisdiction—this information is lost. According to these officials, formula grants that go directly to the jurisdictions, like the ODP UASI grants, have the potential to be tracked and used within the database if ODP provides application and award information for the database. The officials said that, as a result of limitations that may exist in obtaining the relevant information from formula grants, the database would likely only include information from discretionary grants, earmarks, or grants provided directly to the local jurisdictions.

# Appendix VI: Comments from the Department of Commerce

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

July 12, 2004

Mr. William O. Jenkins, Jr.
Director, Homeland Security and Justice
United States General Accounting Office
Washington, DC 20548

Dear Mr. Jenkins:

Thank you for providing the Department of Commerce with an opportunity to comment on the General Accounting Office's (GAO) draft report entitled *Homeland Security: Achieving Interoperable Communications Among First Responders Requires Cooperation* (GAO-04-740). The Department is pleased to see that GAO recognizes the important leadership role that the Federal Government can play in achieving interoperability goals for first responders.

I appreciate the efforts of the GAO in investigating and reporting on the complex issues surrounding public safety communications interoperability. The Administration fully supports the highest level of attention to the ability of our Nation's first responders to communicate effectively. The Bush Administration has accomplished a good deal in addressing first responder interoperability, including coordination of federal grant programs, encouraging advanced technological development, and improving coordination among public safety officials at all levels of government. As your draft report indicates, more can be done.

The Department of Commerce strives to encourage the best technology and most effective telecommunications and spectrum policies to deal with the rapidly changing communications requirements of public safety agencies. To that end, the Department of Commerce released two spectrum policy reports on June 24th in response to the President's Initiative, entitled *Spectrum Policy for the 21st Century*. In these reports, the Department documents a year-long, interagency effort to study and recommend improvements to the spectrum management system in the United States. These reports make specific recommendations dealing with interoperability among federal, state, and local public safety agencies. Of particular note to your inquiry, Report 2 recommends an interagency effort to study the spectrum use and needs of the public safety community, a public safety demonstration program, and a comprehensive plan to address the spectrum shortage, interference, technology, and security issues of the public safety community. The Department of Homeland Security would be an integral partner in fulfilling these recommendations. Both reports are available on the Web site of the Department of Commerce's National Telecommunications and Information Administration at http://www.ntia.doc.gov.

I hope you find this information helpful. If you have any additional questions about the Department of Commerce's role in improving communications interoperability among our nation's first responders, please contact Assistant Secretary for Communications and Information Michael D. Gallagher at (202) 482-1840.

Sincerely,

Donald L. Evans

# Appendix VII: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

July 8, 2004

Mr. Norman J. Rabkin
Managing Director, Homeland Security
and Justice
U.S. General Accounting Office
Washington, DC 20548

Re: GAO Draft Report: Homeland Security: Achieving Interoperable Communications Among First Responders Requires Cooperation, GAO-04-740; GAO Engagement 440234

Dear Mr. Rabkin:

The Department of Homeland Security (DHS) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report to the Honorable Tom Davis, the Honorable Christopher Shays, and the Honorable Adam H. Putnam, House Committee on Government Reform, entitled "HOMELAND SECURITY: Achieving Interoperable Communications Among First Responders Requires Cooperation", GAO-04-740, June 2004.

The Department of Homeland Security (DHS) agrees with GAO's assessment that interoperable communications among public safety first responders is essential. Unfortunately, in many cases, agencies cannot perform their mission critical duties because they are unable to share vital voice or data information via radio with other jurisdictions in day-to-day operations and in emergency response to incidents including acts of terrorism and natural disasters.

To address this public safety need, SAFECOM works with existing federal communications initiatives and key public safety stakeholders to address the need to develop better technologies and processes for the cross-jurisdictional and cross-disciplinary coordination of existing systems and future networks. SAFECOM was established as an E-Government (E-Gov) initiative and placed in DHS to serve as the umbrella program within the federal government to help local, tribal, state, and federal public safety agencies improve public safety response through more effective and efficient interoperable wireless communications. By definition, communications interoperability is the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed and as authorized.[1] As a program driven by public safety practitioners, SAFECOM harnesses diverse federal resources in service of the public safety community.

[1] SAFECOM has adopted this definition of public safety communications interoperability from the National Task Force on Interoperability's report "Why Can't We Talk? Bridging the Communications Gap to Save Lives," released in February 2003.

The solution to the problems of public safety communications and communications interoperability is not a single or even a set of discrete tasks. There is no simple solution. Instead, the identification and orchestration of many programs over various time periods is required.

**SAFECOM's Mission**

The Office of Management and Budget (OMB) originally defined SAFECOM's mission in three parts: (1) coordination of federal activities; (2) developing standards; and (3) developing a national architecture. To accomplish these goals, SAFECOM has taken a systematic approach towards addressing the problem. This approach began in May 2003 when the program was transferred to the Directorate for Science and Technology (S&T) at DHS. Included in this approach are the following steps.

*Identify the problem, recognizing that it is a problem with many complex elements.* SAFECOM recognizes that before interoperability can occur, reliable, mission-critical, agency-specific communications are essential for public safety agencies. SAFECOM also recognizes that more than ninety percent of the public safety communications infrastructure is owned and operated at the local and state level. Addressing the problems of communications interoperability will therefore require involvement of the local and state public safety and government communities.

SAFECOM recognized early the need to earn the trust and participation of the national associations representing local and state public and government officials. A governance structure was developed and implemented by SAFECOM to incorporate these local and state stakeholders. This governance structure also includes federal emergency response providers, and SAFECOM continues to support the Federal Partnership for Interoperable Communications (FPIC)[2] as a means of addressing the unique issues related to federal interoperability. Evidence of the success of this strategy can be seen by the recent letter of support developed by ten of the major local and state public safety associations.

*Work with the leadership of the public safety community to gather comprehensive needs and requirements in order to develop appropriate approaches to solutions, referred to as work packages.* SAFECOM recently released the first ever comprehensive Public Safety Communications Statement of Requirements (SoR) outlining what public safety needs to effectively communicate in their response to emergencies. This SoR was developed in full partnership with the National Public Safety Telecommunications Council (NPSTC) and the Department of Justice's AGILE Program (now referred to as CommTech).[3]

*In partnership with the leadership of the public safety community, develop a process by which to systematically attach the problems and needs to programmatic solutions.* SAFECOM has drafted a plan for a technical architectural framework for public safety communications. The strategy for the plan is centered on the development of an architectural framework that satisfies the real-world requirements of public safety responders. The framework outlines *what* the overall structured approach is for facilitating interoperability. Functional standards then define the details of the structure, and indicate *how* the architecture (and its components) will operate.

[2] FPIC was formerly known as the Federal Law Enforcement Wireless Users Group (FLEWUG), and represents the federal communications user community.

[3] The SoR was released in April 2004. The SoR is considered to be a 'living document,' that will require additional review as new user groups are identified and as technology progresses. The current document is version 1.0.

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*Identify current initiatives addressing this problem and develop a coordination strategy to leverage existing work while decreasing unnecessary duplication of efforts.* Beginning at the National Summit on Public Safety Communications and Interoperability in June 2003, SAFECOM, in partnership with the National Institute of Standards and Technology and the former AGILE Program, developed an extensive database on federal programs and national organization efforts aimed at improving public safety communications at all levels of government. The resulting survey, assessment, and database allow SAFECOM to effectively identify and coordinate relevant programs.

*Implement the solutions strategy to develop short- and long-term projects to address public safety communications and communications interoperability needs.* In December 2003, SAFECOM hosted its first complete stakeholder strategy meeting in San Diego, California. The resulting strategy outlined short- and long-term projects that the stakeholders felt were absolutely necessary for SAFECOM to pursue in order to improve interoperability. SAFECOM has since obligated resources for each of these projects in its budget, but is still waiting to receive funding from its federal funding partners.

**SAFECOM's Philosophy**

*Emphasis on Coordination*
These accomplishments are just examples of the successful steps SAFECOM has taken over the course of the last year. In addition, to fulfill its mission as an umbrella program, SAFECOM has sponsored the creation of a Federal Interagency Coordination Council (FICC) to coordinate funding, technical assistance and standards development across the federal government for communications and interoperability. The FICC is comprised of the National Institute of Justice's CommTech (formally known as AGILE), the DHS Wireless Management Office, Department of Justice Wireless Management Office, Department of Agriculture, Office for Domestic Preparedness (ODP), Community Oriented Policing Services (COPS), Federal Emergency Management Agency (FEMA), National Telecommunications Industry Administration, Federal Communications Commission, Department of Defense, National Institute of Standards and Technology, and others. SAFECOM is creating partnerships among diverse federal programs to streamline methodologies employed in efforts to improve communications interoperability.

One of the ways that SAFECOM coordinates federal activities is through the development of coordinated grant guidance, which outlines eligibility for grants, the purposes for which grants may be used, and guidelines for implementing a wireless communication system. Although SAFECOM does not have grant making authority, it has created this grant guidance, with input from the public safety community, in order to help to maximize the efficiency with which public safety, communications-related grant dollars are allocated and spent. The SAFECOM grant guidance was included as part of the COPS and FEMA grants in FY03 and was incorporated in the COPS and ODP grant processes in FY04.

*Bottom-Up Approach*
SAFECOM recognizes that over 90% of the nation's public safety communications infrastructure is owned by localities and states. Therefore, as SAFECOM partners with other federal agencies, it remains a program designed by public safety for public safety creating interoperability solutions that are driven from the bottom-up.

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An example of SAFECOM's 'bottom-up approach' is evident in its work with local agencies within the Commonwealth of Virginia (VA). SAFECOM partnered with VA to develop a strategic plan for statewide communications and interoperability. In alignment with its practitioner-driven philosophy, SAFECOM developed a methodology to ensure local practitioner input into the VA statewide plan. This methodology will serve as a model for other states and regions developing statewide communications and interoperability plans.

SAFECOM is further partnering with local public safety communities on an initiative called RapidCom9/30 to ensure that a minimum level of public safety interoperability is in place in ten key urban areas by September 30, 2004. The RapidCom9/30 project will provide incident commanders in charge of managing/directing various responding agencies the ability to adequately communicate with each other and the respective command center within 1 hour of an incident. By working with public safety practitioners at the local level, SAFECOM seeks to develop effective solutions to improve public safety communications and interoperability.

**SAFECOM Response to Specific GAO Recommendations for Executive Action**

(1) **Develop a nationwide database of interoperable public safety communications frequencies and establish a common nomenclature for those frequencies.**

The SAFECOM Program is developing a nationwide database of interoperable public safety communications frequencies in its FY04 program as part of its support to the Computer Assisted Pre-coordination Resource and Database System, CAPRAD. CAPRAD is a secure, web-based application that assists State and Local public safety frequency coordinators across the nation efficiently allocate spectrum in the 700 MHz public safety frequency band. The CAPRAD Spectrum Management Toolset was originally developed at the request of the National Public Safety Telecommunications Council (NPSTC). NPSTC is a federation of State and local associations representing public safety telecommunications. Funding for CAPRAD has historically been provided by the National Institute of Justice (NIJ) AGILE program. In addition to 700 MHz spectrum management, CAPRAD is currently being expanded in a number of areas as requested by the user community including:

- Management of the newly allocated 4.9 MHz public safety frequency band
- Management of the Statewide Interoperability Executive Committee (SIEC) spectrum set aside frequencies
- Development of a user friendly, graphical nationwide database of interoperable public safety communications frequencies
- Initiation of a Public Safety Wireless Telecommunications Infrastructure Database application

Among the initial CAPRAD enhancements planned under SAFECOM are:

- Continued development of a Public Safety Wireless Telecommunications Infrastructure Database application to include information on additional interoperability resources and assets
- Enhancements in response to the President's Spectrum Policy Initiative Reports (June 04) calling for mandatory use of CAPRAD and standardized web-based frequency coordination, see http://www.ntia.doc.gov/

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To address the need for a common nomenclature across public safety disciplines and jurisdictions, SAFECOM plans to work with NPSTC to leverage existing efforts addressing incident command systems. The complete scope of the common nomenclature issue is currently being defined.

(2) **Determine the current status of wireless public safety interoperability telecommunications across the nation by assessing interoperability in specific locations against interoperability requirements that can be measured, and establish a national baseline for interoperable communications.**

DHS, through the SAFECOM program, is addressing the need for a national baseline of public safety communication and interoperability capabilities across the nation. During the SAFECOM/AGILE Joint Program Planning Meeting in December 2003, key public safety practitioners and stakeholders voiced the need for a measure of the nation's current level of interoperable communications. SAFECOM, with input from the public safety community, is developing a methodology to establish this baseline.

In order to develop this measurement tool, SAFECOM will define the optimal metrics, assess previous studies into the state of interoperability, conduct a gap analysis, and launch and support a project team to conduct the baseline assessment. SAFECOM has developed a Statement of Work for the baseline activities and a Request for Quotes will be released in July 2004.

Once complete, this baseline will be the basis for measuring future improvements made through local, state, and federal public safety communications initiatives and will be used to define a minimum level of interoperability.

(3) **Through federal grant guidance encourage state action to establish a single statewide body responsible for interoperable communications and that this body shall prepare a single comprehensive statewide interoperability plan for federal, state, and local communications systems in all frequency bands. The statewide interoperability plan shall be based upon the nationwide standard frequency database and use the standard nationwide nomenclature for interoperability channels, once they are developed.**

SAFECOM has created coordinated grant guidance that outlines eligibility for grants, the purposes for which grants could be used, and guidelines for implementing a wireless communication system. The SAFECOM grant guidance was included as part of the COPS and FEMA grants in FY03 and was incorporated in the COPS and ODP grant processes in FY04. Although SAFECOM does not directly manage any grant making programs, it has created grant guidance, with input from the public safety community, in order to help to maximize the efficiency with which public safety communications related grant dollars are allocated and spent. The SAFECOM grant guidance encourages applicants to consider systems requirements to ensure interoperability with systems used by other disciplines and at other levels of government. Because SAFECOM recognizes that many federal dollars are allocated at the local level, this grant guidance recommends that dollars spent at any level consider coordination between local, state, and federal agencies development of solutions to public safety interoperability and communications. As a model of such coordination, SAFECOM has developed, in conjunction with the Commonwealth of Virginia, a methodology for the development of a statewide communication system that ensures input

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from the local level. This methodology will be available through the SAFECOM grant guidance for states interested in implementing a statewide system.

**(4) 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 such grant applications are in conformance with statewide interoperability plans. DHS should give states adequate time to develop these focal points and plans and to provide guidance on development of such plans.**

SAFECOM developed coordinated grant guidance outlining eligibility for grants, the purposes for which grants could be used, and guidelines for implementing a wireless communication system. This guidance was distributed to the relevant federal grant making programs and adopted in FY03 and FY04 solicitations. Among these guidelines is the development of a meaningful governance structure that brings together the appropriate parties in the development of a communications solution. SAFECOM believes that such a governance structure, which includes representation of statewide bodies or initiatives, is critical to the success of any communications initiative. However, it is important to note that the notion of governance is based on a locally driven principle that focuses on the end user needs and requirements. To model this bottom up approach, SAFECOM has partnered with the Commonwealth of Virginia to develop a strategic plan for statewide communications and interoperability. In alignment with its practitioner driven philosophy, SAFECOM developed a methodology to ensure local practitioner input into the statewide plan which will serve as a model for other states and regions developing statewide communications and interoperability plans. To develop this strategic plan, SAFECOM conducted six focus group sessions with local practitioners in diverse regions across the commonwealth in preparation of a larger strategic planning session held in Richmond, VA. SAFECOM believes that by working with public safety practitioners at the local level, the Commonwealth of Virginia will develop an effective statewide strategy for the improvement of public safety communications and interoperability.

**SAFECOM's Role in the Newly Created Office for Interoperability and Compatibility**

DHS, in an effort to more effectively address the needs of public safety, has established a national interoperability program office to significantly improve interoperability and compatibility, allowing firefighters, police officers and other emergency personnel to communicate and share equipment with each other during a major disaster. The Directorate of Science and Technology (S&T) within DHS has been tasked to lead the planning and implementation of the national interoperability office in coordination with other DHS programs. Modeled after the SAFECOM program, the new office will focus on coordination of federal efforts to improve public safety interoperability. The interoperability office will create a series of portfolios to address critical interoperability and compatibility issues related to the emergency response provider and homeland security communities. The SAFECOM program will serve as the communications portfolio and will continue to manage and coordinate communications interoperability issues.

**Additional SAFECOM Comments to the GAO Report**

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On page 51, the GAO report states: "Similarly, an NTIA official told us there are several interoperable frequencies in the 162MHz to174MHz band and the 406-420 MHz band for state and local public safety."

SAFECOM Comment: The actual UHF band is 406.1 to 420MHz, since 406MHz is reserved for EPIRB signals to track downed airmen/aircraft etc.

On page 39, the GAO report states that the SAFECOM grant 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."

SAFECOM Comments: 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. This guidance is useful in directing all agencies towards interoperability goals, even if they are not specifically applying for federal funding.

**Conclusion**

SAFECOM continues to work aggressively to improve public safety communications and interoperability. By partnering with local, state and federal public safety agencies, SAFECOM has taken important steps to address the interoperability issue. These include the development of grant guidance, the first statewide practitioner driven plan (The VA Plan), and the first ever comprehensive Statement of Requirements (SoR) for public safety. Ongoing efforts to create a baseline understanding of the nation's level of interoperability, to develop consistent methodologies for and provide technical assistance through the FICC, and build a national architecture for public safety communications will continue as high priority SAFECOM projects. SAFECOM, with its partners, is assuring a safer America through effective public safety communications.

Additional information on the SAFECOM Program can be obtained at http://www.safecomprogram.gov/.

Thank you again for the opportunity to comment on this draft report. If you have questions or need clarification regarding our comments, please contact Mr. Thomas Krones, (202) 401-5861, or e-mail: Thomas.krones@dhs.gov.

Sincerely,

Anna F. Dixon
Director, Bankcard Programs
and GAO/OIG Liaison

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# Appendix VIII: GAO Contacts and Staff Acknowledgments

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## Staff Acknowledgments

In addition to the above, Leo Barbour, Karen Burke, Katherine Davis, Sally Gilley, Robert Hadley, Latesha Love, Gary Malavenda, and Shirley Perry made contributions to this report.

# GAO Related Products

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