



National Summary of Statewide Communication Interoperability Plans (SCIPs)

February 2009



**Homeland
Security**

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This document is a summary of the 56 SCIPs submitted to DHS in December 2007. This report is not intended to endorse any particular SCIP, but rather to facilitate collaboration among States to share best practices and innovative initiatives for the mutual benefit of all.

1 Executive Summary

One of the most important issues facing the emergency response community today is communications interoperability, commonly defined as the ability of public safety emergency responders to communicate with whom they need to, when they need to, as authorized. During emergency response scenarios such as natural disasters, terrorist acts, and day-to-day operations, responding agencies are often disadvantaged by the inability to communicate or share critical voice and data information with other jurisdictions or disciplines. The Department of Homeland Security (DHS) Office of Emergency Communications (OEC) recognizes that technology plays a critical role in the achievement of communications interoperability; however, it remains equally important that the procedures and training emergency responders use are interoperable and compatible as well. Seamless communications interoperability will be achieved when emergency response officials can be deployed anywhere in the country, use his or her own radio to communicate with other responders, and use the compatible standard operating procedures (SOPs) he or she has been trained on in their respective jurisdictions.¹

Statewide Communication Interoperability Plans (SCIPs) are a critical step in achieving communications interoperability not only within each State, but also across the country. The SCIP is a mechanism to align emergency responders at all levels in the State on a future vision for communications interoperability. Further, it serves as a roadmap for all agencies and jurisdictions in terms of the direction for moving forward and addressing communications interoperability issues at the State, regional,² local, and tribal level. In early 2007, DHS issued a set of criteria for SCIPs in the *Recommended Federal Grant Guidance for Emergency Response Communications and Interoperability Grants for Fiscal Year (FY) 2007*,³ requiring that by the end of 2007, each State must develop and adopt a SCIP as a stipulation for receiving future homeland security grant funds for communications interoperability initiatives. In support of the grant guidance and to further explain the criteria, in March 2007 DHS provided the *Statewide Interoperability Planning Guidebook* designed to be used as a step-by-step guide to develop a SCIP. By December 2007, all 56 States and territories submitted SCIPs to DHS, all of which were approved by DHS in April 2008.

An analysis of all 56 SCIPs highlighted the common themes, trends, and best practices found throughout the Nation. These commonalities have been outlined in this document along the lanes of the Interoperability Continuum⁴—governance, SOPs, technology, training and exercise, and usage. Examples of common strategies found throughout this document include:

Governance

- Expand, enhance, and formalize the communications governance model.
- Hire a full-time Statewide Interoperability Coordinator.
- Implement the SCIP and conduct a review to update the plan.
- Develop a statewide non-grant funding strategy to leverage and secure additional short- and long-term sustainment funding and resources.

¹ Department of Homeland Security's Statewide Interoperability Planning Guidebook. March 2007. <http://www.safecomprogram.gov/NR/rdonlyres/18F02413-CC4D-41B2-9097-F5FF04E080C7/0/StatewidePlanningGuidebookFINAL.pdf>

² Regional refers to regions within a State.

³ Recommended Federal Grant Guidance for Emergency Response Communications and Interoperability Grants for FY 2007. <http://www.safecomprogram.gov/SAFECOM/statewideplanning/>

⁴ Interoperability Continuum. <http://www.safecomprogram.gov/SAFECOM/tools/continuum/default.htm>

- Develop, implement, and communicate multi-jurisdictional, multi-disciplinary agreements necessary for the governance of interoperable communications.

SOPs

- Develop and implement National Incident Management System (NIMS)-procedures, specific Incident Command System (ICS)-related steps, and any associated qualifications into all SOPs.
- Develop and update SOPs in Tactical Interoperable Communications Plans (TICPs).
- Develop and promote common nomenclature guidance.
- Adopt and immediately utilize plain language speech communications in compliance with NIMS requirements.
- Develop a formal statewide SOP review process to ensure that all emergency response agencies have up-to-date SOPs.

Technology

- Conduct a statewide capabilities assessment which includes critical communications equipment and related interoperability issues.
- Develop or enhance strategic technology reserves (STRs).
- Develop shared statewide or regional radio systems supporting multiple Federal, State, and local agencies.
- Install statewide or regional fixed interoperability channel infrastructure.

Training & Exercise

- Incorporate interoperable communications into all existing and future training and exercise programs.
- Conduct an in-depth gap analysis to identify current training needs.
- Continue regularly scheduled NIMS/ICS training.
- Seek innovative solutions to deploy training standards, procedures, and systems for all facets of interoperable communications awareness.

Usage

- Conduct regular testing to identify operational or technical impediments to interoperable communications.
- Utilize plain language speech communications in compliance with NIMS requirements.
- Achieve daily usage of a statewide network among all responders, and implement weekly testing with documentation of users on the system.
- Develop programs to provide users with “How To” guides for specific radio equipment.

This document also summarizes how the SCIPs currently have strategies that will align to the National Emergency Communications Plan (NECP).⁵ The NECP provides recommended initiatives to guide emergency response providers and relevant government officials in making measurable improvements in emergency communications capabilities.

With the development and approval of all 56 SCIPs, the Nation has arrived at a crucial launching point for coordinating and improving statewide communications interoperability and planning efforts. This document presents the collective assessment of the current state of the Nation’s emergency response interoperable communications and identifies initiatives to guide the Nation, States, localities, and tribes towards improved interoperable communications.

⁵ National Emergency Communications Plan.
<http://www.safecomprogram.gov/SAFECOM/natlemergencycommplan/>

2 Introduction

SCIPs are locally-driven, multi-jurisdictional, and multi-disciplinary strategic plans to address statewide interoperability. The SCIPs define a strategy to improve statewide interoperable communications and will serve several purposes well beyond just meeting the SCIP requirement outlined by DHS. All 56 States and territories submitted SCIPs for communications interoperability, which were approved, marking a critical milestone in breaking down the barriers of the past and establishing a roadmap for the future of interoperability. Each SCIP reflects the complexity of the State's⁶ interoperable communications environment as measured against all lanes of the Interoperability Continuum: governance, SOPs, technology, training and exercises, and usage as shown in Figure 1 below. Successful advancement of communications interoperability depends upon the improvement of all five of the Interoperability Continuum critical success factors (i.e., governance, SOPs, technology, training and exercises, and usage) also known as "lanes." Each SCIP defines a vision and mission for statewide emergency response communications interoperability in the State; reflects the current status of State, regional, and local agency systems and challenges; and identifies key initiatives moving the State toward integrated statewide communications interoperability.

In March 2007, DHS issued a set of criteria for SCIPs in the *Recommended Federal Grant Guidance for Emergency Response Communications and Interoperability Grants for Fiscal Year (FY) 2007*. These criteria were developed in support of Section I.C.5 of the 2006 Homeland Security Grant Program (HSGP), which states "by the end of 2007, each State must develop and adopt a statewide communications plan" as a stipulation for receiving future homeland security grant funds for communications interoperability initiatives. In support of the grant guidance and to further explain the criteria, DHS provided the *Statewide Interoperability Planning Guidebook* designed to be used as a step-by-step guide to develop a communications interoperability strategic plan. The guidebook helped States respond to the statewide criteria with an actionable path forward for key stakeholders and leadership. The SCIPs were due from the States to DHS on December 3, 2007.

OEC facilitated a peer review process to evaluate and provide feedback on the SCIPs in February 2008. Each SCIP was evaluated by three to six peers from the public sector (Federal, State, local, and tribal) having expertise or experience with emergency operations, interoperable communications, emergency response, or grants management. The peers received training on how to review the SCIPs according to SCIP Weighted Evaluation Criteria.⁷ The peer review feedback was designed to assist States in continuing to enhance the SCIPs. All 56 SCIPs were approved by DHS in April 2008.

The development and approval of the SCIPs has been a key milestone for the Nation moving forward in 2008. The States set a path forward to improve communications interoperability and help OEC in determining the current status of the Nation's interoperability capabilities and strategies to improve those capabilities.

⁶ State refers to State and territory.

⁷ The SCIP Criteria and Weighted Evaluation Criteria were developed in collaboration with Federal, State, and local stakeholder working groups. <http://www.safecomprogram.gov/NR/rdonlyres/CD99AACD-E6F2-4396-8112-9124962CDC0B/0/SCIPWeightedEvaluationCriteriaFINAL090507.pdf>

2.1 The Interoperability Continuum

DHS's SAFECOM program, with input from State and local practitioners, developed the Interoperability Continuum to help the emergency response community and policy makers plan and implement interoperability solutions. The tool identifies five critical success factors that must be addressed to achieve interoperability: governance, SOPs, technology, training and exercises, and usage of interoperable systems. The degree of interoperability depends upon the improvement of all five of these lanes—no one factor (e.g., technology) is the solution to achieving interoperability.

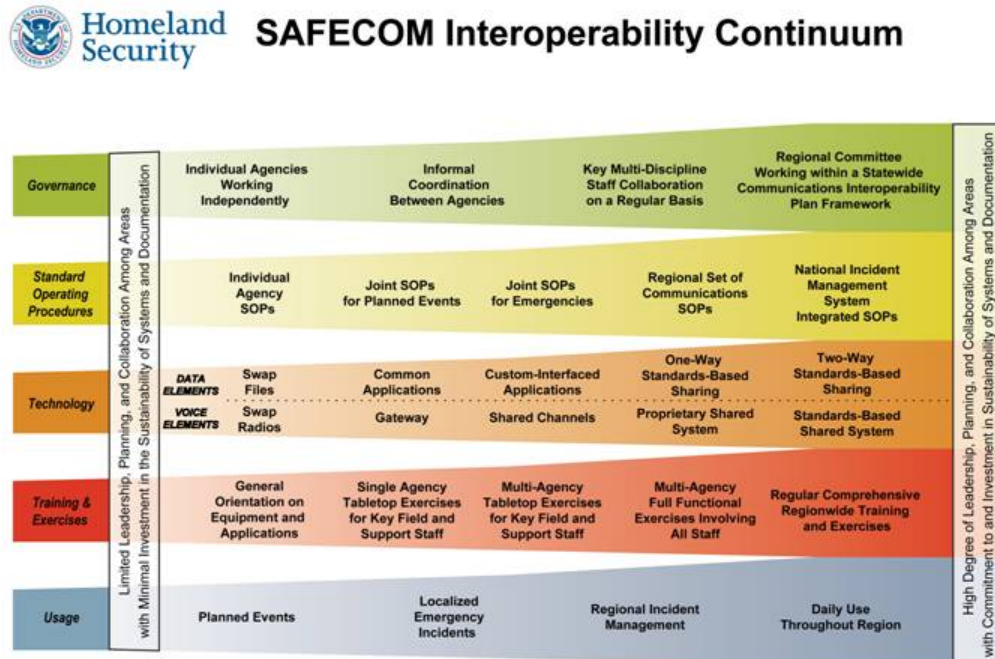


Figure 1: Interoperability Continuum

As an evolving tool, the Interoperability Continuum supports the National Preparedness Strategy and aligns with national frameworks including, but not limited to, the National Response Framework (NRF), NIMS, the NECP, The National Communications Capabilities Report (NCCR), and the 2006 National Interoperability Baseline Survey. To maximize the Interoperability Continuum's value to the emergency response community, SAFECOM recently updated the tool through a consensus process involving practitioners; technical experts; and representatives from Federal, State, local, and tribal agencies (shown above in Figure 1). It was revised to address both data and voice aspects of the technology lane.

The *Statewide Interoperability Planning Guidebook* recommended the States use the Interoperability Continuum to assist in documenting a comprehensive and complete view of the current communications and interoperability environment. Most States presented their current capabilities using the five lanes of the Interoperability Continuum. Jurisdictions across the Nation continue to use the Interoperability Continuum to track progress in strengthening interoperable communications.

2.2 Purpose of This Document

The purpose of this National Summary of SCIPs is to provide a consolidated analysis of the 56 SCIPs by highlighting common themes, trends, and best practices found throughout the Nation. The document does not endorse any particular SCIP, but rather demonstrates the complexity of the interoperable communications environment while creating an awareness of the commonalities found within it. Lastly, this document serves as a tool for every Statewide Interoperability Coordinator to understand the national emergency response communications environment as well as to inform future OEC projects, tools, and technical assistance efforts.

The document is organized according to the Interoperability Continuum; highlighting the importance of each component, the themes and gaps captured throughout the 56 SCIPs, and common next steps moving the Nation toward improved emergency response communications interoperability.

3 The Importance of Governance and Funding

Establishing a strong governance structure is one of the most critical aspects to successful multi-jurisdictional and multi-disciplinary interoperable communications. Determining a shared vision and collaborative decision-making process will support interoperability efforts to improve communication, coordination, and cooperation across disciplines and jurisdictions.⁸ Governing bodies for communications interoperability efforts are essential to ensure that focus and direction is maintained, as well as to provide guidance and assistance as necessary.

OEC recognizes that all States are unique and have diverse governance requirements; therefore, no “one-size-fits-all” governance structure exists. There are, however, critical components to a successful governance structure that were identified through best practices and lessons learned. For more information on the information highlighted in this section, please refer to the OEC document *Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan (SCIP) Implementation*.⁹

As part of the Governance Section, the SCIP Criteria recommended States “identify committed sources of funding, or the process for identifying and securing short- and long-term funding” and to “identify a plan for the development of a comprehensive funding strategy.” Congress has made interoperability a priority through increased levels of funding available to State and local governments. While these grants are indeed beneficial to States, funding is never guaranteed nor is it long-term. Dedicated and consistent funding is able to complement existing grant funds and serve as a mechanism for sustaining existing interoperability investments; it can also be set aside to invest in future interoperability efforts. States are in a constant search for sources of adequate funding, an issue that has become an ever-increasing priority across the Nation.

⁸ Department of Homeland Security Office for Interoperability and Compatibility Statewide Interoperability Planning Guidebook. March 2007.

⁹ Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan (SCIP) Implementation.
http://www.safecomprogram.gov/SAFECOM/library/technology/1416_establishinggovernance.htm

3.1 Common Governance Themes

OEC reviewed the governance sections of all 56 SCIPs and found that many States have long-established Statewide Interoperability Governing Bodies (SIGBs).¹⁰ The SCIP review found various approaches to establishing a statewide governance structure. There are 56 individual governance structures and many of them work sufficiently to provide strategy and direction for the communications interoperability effort; however, some structures need strengthening to be more effective. Detailed below are the most common governance models that OEC deduced from the SCIPs. While several States had formal governance structures in place and several other States had informal governance structures currently in place, four primary governance structures emerged.¹¹

While the SCIPs revealed many successful approaches, some States struggle to ensure that multi-jurisdictional and multi-disciplinary representation on the statewide governance structures is developed properly. This section provides a snapshot of the common statewide governance structures documented within the various SCIPs.

3.1.1 Subject-Specific Approach

The Subject-Specific Approach (also known as the Subject Matter Expert [SME] approach) to statewide governance is the most common approach reported in the SCIPs. This approach demonstrates a strong focus on statewide communications interoperability committees working on specific issues such as spectrum management, procurement, training, SOP development, and program management (shown in Figure 2 below).

Subject-Specific Approach Highlights:

- Interoperability committees are formed based upon SME areas. For example:
 - Technology (Equipment)
 - Operations (Tactical)
 - Program Management (Coordination/SCIP)
- Regional support/input is obtained via regional members' inclusion on the various SME committees and working groups.
 - A regional committee in-between the working group level and the SME level may exist.
- The structure is SME-focused as opposed to region-focused.

¹⁰ Different States have different names for their governing bodies, such as Statewide Interoperability Executive Committee (SIEC). SIBG is a generic name for governing bodies.

¹¹ Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan (SCIP) Implementation.

http://www.safecomprogram.gov/SAFECOM/library/technology/1416_establishinggovernance.htm

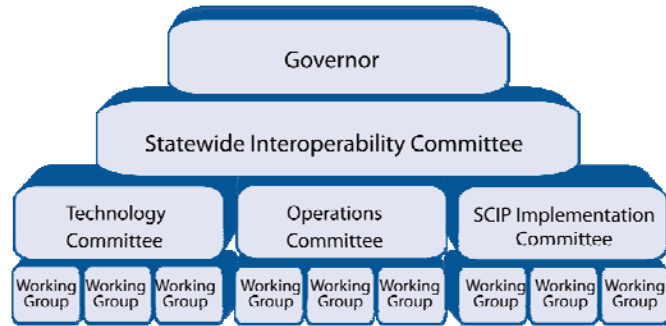


Figure 2: Subject-Specific Approach

3.1.2 Regional Approach

The Regional Approach to statewide governance is the second most common approach reported in the SCIPs. This approach establishes individual interoperability committees organized by State-defined regions. Each region may have its own committees and working groups (shown in Figure 3 below).

Regional Approach Highlights:

- Interoperability committees are organized by regions as defined by the State.
 - Many States utilized existing regional structures (i.e. Homeland Security regions, emergency response regions, Urban Area Security Initiative (UASI) regions, regions based on existing memorandums of understanding [MOUs], etc.)
- Each region focuses solely on individual interests at the regional level.
- Each region may form individual working groups or SME committees for their region.

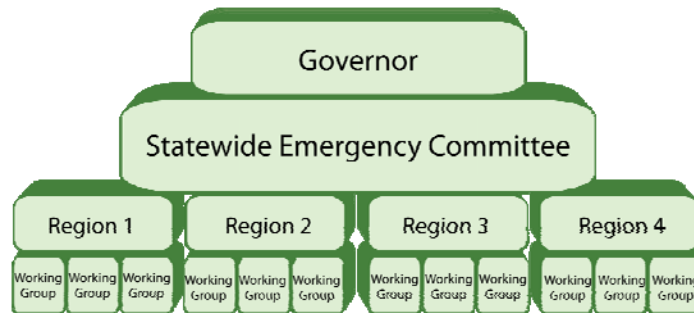


Figure 3: Regional Approach

3.1.3 Conventional Approach

The Conventional Approach to statewide governance utilizes a traditional hierarchy structure and is often found in smaller States and territories that may have fewer layers of government. The hierarchy tends to consist of the governor, a statewide interoperability governance body (e.g., SIGB), an interoperability advisory committee, and one or two working groups as deemed necessary (shown in Figure 4 below).

Conventional Approach Highlights:

- Often observed in States with:
 - Few levels of government
 - Many villages
 - Few State agencies

- Heavy Federal or military presence
- No existing regionalized structure in place
- o Little resources available for interoperability efforts
- The hierarchy supports just one committee at the State and local level that is responsible for all interoperable planning efforts.



Figure 4: Conventional Approach

3.1.4 Leveraged Approach

The Leveraged Approach to statewide governance is seen when there is an existing State agency management hierarchy that is utilized as the statewide interoperability committee (shown in Figure 5 below). Interoperability planning merges into or is a function of existing State agency responsibilities. Typically, directors or agency executives form the membership of the statewide interoperability committee(s).

Leveraged Approach Highlights:

- This governance approach was reported in only a few States where:
 - o An existing State agency structure is utilized
 - o Agencies have “dotted line responsibility” to the interoperability committee
 - o The agency directors or executives usually comprise the interoperability working group or committees
- The responsibility for statewide interoperability is absorbed by an existing management hierarchy.

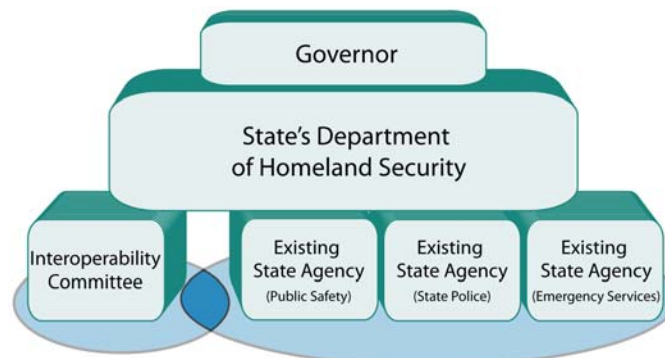


Figure 5: Leveraged Approach

Each of the observed approaches to statewide governance presents its own unique advantages, concerns, and recommendations. As stated previously, no “one-size-fits-all” model exists.

Leveraging the information reported in the SCIPs; however, provided OEC with an understanding of how to better assist the States along the road to establishing and maintaining efficient and effective interoperability governance. For more information on these types of models, please refer to OEC's [Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan \(SCIP\) Implementation](#).

Listed below are key components identified in the SCIPs and the number of States that met each component. If the State did not meet the component at the time of SCIP development, most States included it as an initiative in its SCIP.

Governance	Fully Implemented	Plan to Implement
Governance structure has:		
<i>Executive/Legislative Authority</i>	38	4
<i>Charter</i>	27	11
<i>Representation from each public safety discipline</i>	35	2
<i>Representation across each level of government</i>	21	1
<i>Representation from each region within the State/territory</i>	24	3
Full-time Statewide Communications Interoperability Coordinator	24	19

Note: For a few States it was unclear if they implemented/plan to implement the above key components.

3.2 Common Funding Themes

Across all States, a lack of funding is one of the most significant gaps in achieving statewide communications interoperability. All States have opportunities to fund their interoperability efforts through grants at the Federal or State level; however, funding from grants is not a committed source and cannot sustain interoperability efforts in the long-term. Since grants are currently the primary sources of funding for many States, this can be an obstacle to the implementation of the SCIPs.

States understand the challenge of acquiring ongoing funding, as 44 of the 56 States and territories have initiatives that deal directly with this issue. The majority of States are aware of the need to identify sources of funding other than grants to secure a financial base. Many States also realize the benefit of having a subcommittee that solely works to establish ongoing funding for statewide communications interoperability. For States that do not have a committed source of funding or a funding subcommittee, many recognize the need to develop a strategic plan for funding. Although funding is a challenge, the majority of States are beginning to develop approaches to secure ongoing funding to advance communications interoperability.

3.3 Key Governance and Funding Gaps and Obstacles

Listed below are the common governance and funding-related gaps and obstacles OEC identified in the SCIPs. These gaps and obstacles address many of the missing components required to establish a robust and highly productive governance structure complete with common goals and processes providing strategic direction and strategic interoperability initiatives.

- Governance bodies do not have formal structures; frequently act in an ad hoc capacity; and many times lack membership inclusive of locals, across jurisdictions and disciplines,

in a meaningful way. In addition, many States lack regional interoperability committees or processes for local jurisdictions to work with the SIGB.

- Emergency communications strategic planning efforts vary in scope and often do not address the operability and interoperability concerns of all relevant stakeholders.
- Communications is not seen as a priority by many agencies; thus, resources are not allocated for participating in planning activities.
- Greater Federal participation is needed in State, regional, and local governance and planning processes to strengthen the information flow and coordination.
- Many States do not have a full-time Statewide Interoperability Coordinator, or equivalent position, to focus on the activities needed to drive change.
- Few formal agreements such as MOUs or memorandums of agreement (MOAs) have been established between jurisdictions, tribes, regions, States, and bordering countries ensuring acceptance, agreement, and consistency of actions relative to interoperability.
- Short- and long-term legislative support in the form of funding and legislation is not consistent.

3.4 Supporting Initiatives to Address Key Governance and Funding Gaps

Each State developed strategic initiatives to address governance gaps in their States. The top common governance initiatives found in the SCIPs include:

- Expand, enhance, and formalize the communications governance model.
- Establish governance structures to support a system of systems.
- Hire a full-time Statewide Interoperability Coordinator.
- Assign a designated Statewide Interoperability Coordinator to each planning region.
- Implement the SCIP and conduct a review to update the plan.
- Develop a statewide non-grant funding strategy to leverage and secure additional short- and long-term sustainment funding and resources.
- Continue ongoing development of port, transit, and transportation interoperable communications efforts.
- Develop, implement, and communicate multi-jurisdictional, multi-disciplinary agreements necessary for the governance of interoperable communications.
- Develop interoperable communications strategies with neighboring States and countries.
- Obtain and sustain legislative support on interoperability matters.
- Develop, review, and update TICPs for the State and each region or county.

3.5 Governance and Funding Best Practices

3.5.1 Governance Best Practices

Because each State has different governance needs and priorities, listed below are some best practice areas pulled from the SCIPs. It should be noted that the selected best practice areas have varied approaches, and represent both small and large States and territories.

The States and territory selected are:

State	Best Practice Area	Notables
Indiana	Interstate Coordination	<ul style="list-style-type: none"> ▪ Indiana shows inter-State coordination - spearheaded the Midwest Public Safety Communications Consortium to include Michigan, Ohio, Illinois, and Kentucky.

State	Best Practice Area	Notables
Nebraska	Regional Structure	<ul style="list-style-type: none"> The State is organized into eight regions with the State agencies as the ninth region considered as peers.
New Jersey	Regional Structure Statewide Leadership	<ul style="list-style-type: none"> The State is divided into four Homeland Security Regions with each region having an active interoperability Regional Working Group that meet to determine the needs of each area in accordance with guidelines established at the State level and specific regional needs. New Jersey has a full-time interoperability coordinator in a Cabinet-level position, reporting directly to the Governor. The Interoperability Coordinator is the single point of contact for all interoperability issues throughout New Jersey.
Oklahoma	Regional Structure	<ul style="list-style-type: none"> The State uses a regional governance structure that serves as the primary source for local interoperability efforts. Membership includes one representative from each of the Oklahoma homeland security regions as well as members from multiple jurisdictions and disciplines from across the State.
Puerto Rico	Regional Structure	<ul style="list-style-type: none"> Puerto Rico gradually shifted from a territory-wide approach to a more regional approach to promote an atmosphere of cooperation and create partnerships within the emergency response agencies.
Texas	Working Groups	<ul style="list-style-type: none"> Texas uses temporary, narrowly chartered working groups for specific tasks, such as conducting research and collecting data, or to draft templates for required SCIP documents such as the Regional Interoperable Communications Plan. These various working groups are created when needed and suspended when their task is accomplished. Subject matter experts from multiple disciplines and regions are integrated into the working groups to provide true statewide representation.
Virginia	Working Groups Statewide Leadership	<ul style="list-style-type: none"> Virginia establishes Initiative Action Teams (IATs) as needed to assist in the implementation of SCIP initiatives. The IATs are informal groups of local and regional public safety practitioners and other stakeholders as needed, assembled for a limited timeframe to work towards the accomplishment of a specific initiative. The State served as the national governance model prior to SCIP requirements and their model is similar to the SAFECOM program governance model.

3.5.2 Funding Best Practices

An ongoing and dependable source must be identified for States to continue advancing interoperability. Grants serve as short-term solutions, but are not committed for the long-term effort. The following information some examples of States' alternatives for long-term funding:

Long-term Funding Best Practice	State Examples
9-1-1 surcharge fees	In Connecticut, funds from the Department of Public Safety 9-1-1 program support Connecticut's goal of providing a high-speed connection for all of the Public Safety Answering Points (PSAPs) within the State.
Tower leasing to private telecommunications companies	To support operational and maintenance costs, Delaware Code allows the State to collect revenue by leasing tower space to private telecommunications companies.

Long-term Funding Best Practice	State Examples
Local tax revenues and Special Purpose Local Option Sales Tax (SPLOSTS)	One of Georgia's main sources of funding is from jurisdiction and agency taxes, which are obtained through local tax revenues and SPLOSTS.
Legislative appropriations	Many States are funded through legislative appropriations from State and local budgets.
Use of State and local resources	In Maryland, State agencies and local jurisdictions are encouraged through SIGB outreach efforts to fund interoperability projects from their own resources to ensure their sustainability.
User fees and rate recovery programs	Michigan, Ohio, South Carolina, and Utah use user fees and rate recovery programs to collect funding by charging a user fee to subscribers on the statewide or regional-wide systems.
Incentives for localities	Minnesota's Legislature provided a number of financial incentives for local governments to integrate onto their statewide emergency response communications system, including: 1) providing a sales tax exemption for local equipment acquired to integrate onto the backbone; 2) creating specific bonding authority outside levy limits and specifically designating "public safety communications" on property tax statements, and 3) providing for partial funding for local enhancements necessary to provide additional coverage or capacity where needed.
Local city and county property taxes	In addition to fees on cell and landline phones, funds generated from local or county property taxes in North Dakota go toward local and regional PSAPs for the support of voice and data communications requirements.
State Radio subscriber funding	North Dakota collects additional funding for State Radio from all subscribers for Mobile Data Terminals (MDT) and the Law Enforcement Teletype System (LETS) to operate and maintain the State Radio infrastructure that provides these services.
Tax levies	In Ohio, individual county municipal funds including tax levies are used as alternatives to fund the implementation and maintenance of shared regional and countywide systems.
Bonds and general funds	For long-term funding, Pennsylvania plans to utilize funds derived from the operating budget of the Office of Public-Safety Radio Services (OPRS). The State will continue to maintain an equitable distribution of future Homeland Security grants and other potential grant funds commensurate with the needs of the State and counties. Bonds and county general funds may be available for local entities to use for the costs of upgrades and future long-term interoperability funding such as capital replacement, repair, systems upgrades, and ongoing training.
Dedicated Bureau of Motor Vehicle (BMV) funds	In Indiana, an existing BMV transactions fee not only funded nearly 50% of the system build out, but also guarantees maintenance and operational revenue until 2019. No new taxes or fees were added, and agencies pay no user fees to operate on

Long-term Funding Best Practice	State Examples
	the statewide system.

3.6 Governance and Funding Tools

The following governance and funding tools are available on the [SAFECOM](#) website:¹²

[Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan \(SCIP\) Implementation](#)¹³

This document presents information about the role, system, and operations of statewide governing bodies that are charged with improving communications interoperability across a State. Without establishing a mandate, this national guide will assist States in developing and/or refining their governance methodologies and systems.

[Creating a Charter for a Multi-Agency Communications Interoperability Committee](#)¹⁴

This tool provides guidance to develop charter documents for multi-agency communications interoperability committees. The document is organized in a recommended charter structure with suggested headings for each section. Each section poses questions to consider when writing content for a charter. Sample paragraphs are included for reference.

[Interoperability Business Case: An Introduction to Ongoing Local Funding](#)¹⁵

This document helps emergency response officials develop a compelling business case by presenting steps and considerations to follow to tap into critical local funding sources for interoperability efforts.

[Writing Guide for a Memorandum of Understanding \(MOU\)](#)¹⁶

This document provides guidance to develop an MOU. The document is organized in a recommended MOU structure with suggested headings for each section. Each section poses questions to consider when writing content for an MOU. Sample paragraphs are included for reference.

[How to Guide for Funding State and Local Public Safety Wireless Networks](#)¹⁷

This guide provides emergency response professionals and government managers with an introduction to the key steps in developing and implementing a comprehensive strategy for funding wireless networks.

¹² SAFECOM Program. www.safecomprogram.gov

¹³ Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan (SCIP) Implementation.

http://www.safecomprogram.gov/SAFECOM/library/technology/1416_establishinggovernance.htm

¹⁴ Creating a Charter for a Multi-Agency Communications Interoperability Committee.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1290_creatinga.htm

¹⁵ Interoperability Business Case: An Introduction to Ongoing Local Funding.

http://www.safecomprogram.gov/SAFECOM/library/grant/1336_interoperabilitybusiness.htm

¹⁶ Writing Guide for a Memorandum of Understanding (MOU).

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1288_writingguide.htm

¹⁷ How to Guide for Funding State and Local Public Safety Wireless Networks.

http://www.safecomprogram.gov/SAFECOM/library/grant/1061_HowTo.htm

4 The Importance of Standard Operating Procedures

SOPs are formal written guidelines or instructions for emergency management that detail how equipment and resources should be consistently and effectively used. SOPs typically have both operational and technical components and enable emergency responders to act in a coordinated fashion across disciplines in the event of an emergency. Effective collaboration through coordinated plans, protocols, and procedures are just as important, if not more important, than the equipment itself. With the Federal government's focus on NIMS compliance throughout States, the need for "process" fixes to communications systems helps bring SOPs to the forefront of the interoperability challenge.

Formal and regularly updated SOPs should exist at the Federal, State, regional, local, and tribal levels. They should incorporate all necessary user agencies, address communications needs across a range of emergency events (e.g., small- to large-scale), and be communicated and available to the necessary users.

4.1 Common SOP Themes

Documentation, and even awareness of communications SOPs, varies widely among emergency response agencies. Some cities and towns have no communications SOPs in place – formal or informal, written or unwritten. Other cities and towns have informal, unwritten agreements, and still others implemented formal, fully documented SOPs.

Monitoring and oversight of the SOPs varies across the Nation. Some States have a process by which an individual or group of individuals serve as the clearinghouse to establish and execute the process by which statewide SOPs are developed, managed, maintained, and upgraded. In other instances, SOPs are reinforced and practiced at the agency user-level as a part of tabletop and field training exercises. The application and use of SOPs are monitored and managed by user agencies through their communications centers and dispatch operations, as well as through reports to dispatch and communications centers from radio users in the field. Follow up on SOP concerns or problems are addressed on an agency-to-agency basis.

The following information describes the common themes found throughout the SOP sections.

4.1.1 Mutual Aid SOPs

The most consistent SOPs mentioned in the SCIPs are mutual aid agreements that exist between agencies and counties, and include interoperable communications. These are SOPs that define practices for the use of statewide interoperability channels. Many mutual aid agreements exist between counties, municipalities, tribal nations, and non-governmental organizations throughout the States.

4.1.2 TICPs

Unlike the SCIPs, which focus on strategic planning, the TICPs focused on the tactical and operational requirements for rapidly establishing on-scene, incident-based mission critical voice communications. TICPs document the interoperable communications resources available within the designated area, who controls each resource, and what rules of use or operational procedures exist for the activation and deactivation of each resource. In support of DHS's effort to strengthen interoperable communications capabilities and processes, each Urban Area that received FY 2005 UASI funding (as well as designated metropolitan areas in States not having a

UASI) was required to develop a TICP. Since the TICP initial preparation, many States began developing statewide TICPs or TICPs for other regions within their States.

Many States noted that much of the detailed information on their interoperable communications SOPs is documented in their TICPs. In some instances, it was noted that the TICPs serve as the only collection site for the interoperable communications SOPs established and documented within their State. As an example, the TICPs address:

- Radio cache activation, inventory control, de-activation, and conflict resolution
- Shared channel activation and de-activation
- Gateway activation, coordination, and de-activation
- Shared system talk group prioritization

4.1.3 Locally Developed SOPs

Because most emergency response incidents are local, many States promote the development of SOPs that govern daily usage among responder disciplines at the regional level, which eventually form the basis for a standardized, statewide set of SOPs. These locally-based SOPs are coordinated with their respective operational areas or regions. Subsequently, some localities develop MOUs and SOPs with participating agencies for the use of the interoperable techniques, protocols, and technologies such as gateways or radio caches. The regions communicate the SOPs through their existing governance structure and document the process and protocols in their TICPs. Localities are also responsible for maintaining and updating SOPs. As new technology is deployed or as events highlight possible improvements, agencies should update or amend procedures.

Some States indicated that aside from the major metropolitan areas within the State, most localities have not developed or have minimally documented comprehensive multi-jurisdictional and multi-disciplinary SOPs that address interoperability. Depending on the locality, SOPs may address interoperability only as it applies to incident response, channel allocation, or interoperability between disciplines within the same locality. A few jurisdictions and agencies have formal discussions and move toward joint SOPs for planned events and emergencies. Lastly, a few States indicated that in some remote areas, coordination comes in the form of a handshake or gentleman's agreement.

A few State agencies and State government-elected officials exercise limited control over county and municipal governments. Therefore, although State agency compliance with various SOPs may be mandated, local compliance is limited to voluntary action or as a condition of accepting equipment grant funding. While some States indicated that they do not have a plan or process in place to identify or assess State, regional, or local SOPs, other States indicated that using the Communications Asset Survey and Mapping (CASM) tool with a locally designed database and onsite visits allow the State, regional, local, and tribal SOPs to be reviewed.

4.1.4 Statewide SOPs

Many States indicated they do not have or have not documented statewide communications SOPs. However, typically if the State has a statewide communications system, the State has developed SOPs that will govern the operation of the statewide communications system. In some cases, if the State is in the process of developing a statewide communications system, the SOPs developed will be reviewed by the system's governance bodies.

4.1.5 State-to-State and International Mutual Aid SOPs

States established standing plans to use mutual aid frequencies for law enforcement, fire service, emergency medical services (EMS), and emergency management between States. These efforts include consideration of interoperability planning, to the extent permitted by international agreement, along the Mexican and Canadian borders. These plans typically address major incidents and events.

Some States noted that in the event of a multi-state disaster, communications with adjacent States will be conducted under the Emergency Management Assistance Compact (EMAC). EMAC is a national governor's interstate mutual aid compact that facilitates the sharing of resources, personnel, and equipment across State lines during times of disaster and emergency.¹⁸ Additionally, there is the International Emergency Management Assistance Compact (IEMAC), which includes the New England States, the Maritime Provinces of Canada, and the Province of Quebec.¹⁹

4.1.6 Major Transit SOPs

In many cases, emergency response agencies in urban areas with major transit and bus service companies provided these organizations with interoperable equipment or established interfaces with the emergency response agencies' communications systems. In these situations, the transit organizations were included in the development and coordination of the regional SOPs.

4.1.7 NIMS Compliance

It is evident throughout the SCIPs that each State has its own way of coordinating SOPs. Some SOPs are statewide while many are locally developed and managed in various ways. For this reason, DHS issued the NIMS compliance requirement—the first-ever standardized approach to incident management and response. NIMS will enable responders at all levels to work together more effectively and efficiently to manage domestic incidents no matter what the cause, size or complexity, including catastrophic acts of terrorism and disasters.²⁰ Other critical components to successful SOPs that were identified through best practices and lessons learned include the implementation of plain language protocols and common channel naming, to name a few.

All States adopted NIMS through an Executive Order or Executive Proclamation that was necessary to meet Homeland Security Presidential Directive 5 (HSPD-5). Some States are closer to meeting the Federal mandate, while others are in the elementary stages; however, all SCIPs indicate that they are working to achieve NIMS and Incident Command System (ICS) compliance. Many States developed processes and procedures to monitor and demonstrate statewide compliance, while some States identified a specific individual whose role is to monitor NIMS compliance. Most States indicate that all future SOPs will be developed in compliance with NIMS and ICS requirements. Most, if not all States, declared that all State administered homeland security grants, jurisdictions, and agencies must comply with NIMS to receive grant funding.

Listed below are key components identified in the SCIPs and the number of States that met each component. If the State did not meet the component at the time of SCIP development, most States included it as an initiative in its SCIP.

¹⁸ Ohio SCIP.

¹⁹ New Hampshire SCIP.

²⁰ http://www.nimsonline.com/nims_faq.htm#0

SOPs	Fully Implemented	Plan to Implement
Implementation of plain language protocols	16	17
Implementation of common channel naming	5	8

Note: For a few States it was unclear if they implemented/plan to implement the above key components.

4.2 Key SOP Gaps and Obstacles

Listed below are the SOP-related gaps and obstacles identified to improve statewide communications and ensure interoperability during emergencies. These themes address many of the missing operational and technical components required to establish effective SOPs.

- Inconsistent channel nomenclature, common language, and radio codes.
- Require consistent SOP standards, policies, and procedures to ensure proper usage and maintenance.
- Require authority to track, enforce, or issue SOPs.
- Require dissemination of SOPs statewide.
- Require SOPs that address NIMS protocol training.
- Require recurring certification process for SOPs.
- Require updating to reflect changes in protocols or technology.
- Require formal, well-documented SOPs.
- Require integration and linkage to the various State and UASI plans, procedures, and exercises.
- Require the resources to conduct detailed audits of statewide SOPs.

4.3 Supporting Initiatives to Address SOP Gaps

Each State developed strategic initiatives to address SOP gaps in their States. The top common SOP initiatives found in the SCIPs include:

- Develop a formal statewide SOP training process to ensure that all emergency response agencies have up-to-date SOPs.
- Consolidate SOPs into a field resource guide.
- Develop SOPs for interoperable communications assets and newly acquired technologies.
- Ensure SOPs are properly tested, maintained, updated, and utilized.
- Develop and implement NIMS-procedures, specific ICS-related steps, and any associated qualifications into all SOPs.
- Develop, distribute, and promote interoperable communications SOPs to stakeholders.
- Establish and standardize statewide SOPs for all incidents.
- Develop a plan to address communications interoperability with safety and security elements of the major transit systems, ports, and rail operations as appropriate.
- Develop and update TICPs.
- Establish an online repository for SOPs.
- Establish a standing oversight committee responsible for developing and disseminating SOPs.
- Seek participation of Federal, local, county, regional, tribal, and private sector response agencies when creating SOPs.
- Use exercises to validate SOPs.
- Develop a baseline of existing SOPs.

- Develop and promote common nomenclature guidance.
- Adopt and immediately utilize plain language speech communications in compliance with NIMS requirements.

4.4 SOP Best Practices

The following best practices were identified in the evaluation of the SOP sections:

SOP Best practice	State Examples
SOPs with State, regional, local, and tribal levels	Colorado employs SOPs at the State, regional, local, and tribal levels. The SOPs continue to be developed, managed, maintained, upgraded, and communicated to the necessary users. Every county and local government in Colorado has formally adopted NIMS and all SOPs throughout the State are NIMS-compliant.
Statewide SOP Guidance	The Michigan Public Safety Communications System (MPSCS) Advisory Board established comprehensive SOP manuals for communications interoperability. The MPSCS SOPs provide guidance to agencies using the system across disciplines and geopolitical boundaries. SOPs are developed for radio caches, shared channels, NIMS compliance, agencies' rights and responsibilities, and problem identification and resolution. SOPs are reviewed annually or as needed based on shortcomings from items identified in after action reports from natural or planned incidents.

4.5 SOP Tools

The following SOP tools are available on the [SAFECOM](#) website:

[Writing Guide for Standard Operating Procedures](#)²¹

The purpose of the guide is to assist communities that want to establish formal written guidelines or instructions for incident response. Each section poses questions to consider when writing content for standard operating procedures. Sample paragraphs are included for reference.

[Plain Language Guide](#)²²

The purpose of this guide is to outline an approach for emergency response agencies, localities, and States to replace coded language radio transmissions with plain language. This guide includes reasons to adopt plain language, processes to make plain language a reality, and resources for transitioning to plain language.

²¹ Writing Guide for Standard Operating Procedures.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1289_writingguide.htm

²² Plain Language Guide.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1371_plainlanguage.htm

[Improving Interoperability through Shared Channels – Version 2](#)²³

This guide helps the emergency response community understand the level of effort, resources, and key actions needed to implement a shared channel solution. It also provides case studies of regions that have successfully implemented a shared channel solution.

[Interoperable Communications for Planned Events](#)²⁴

This guide is intended for emergency response officials responsible for designing and executing interoperable communications plans for planned events in their community (e.g., festivals, concerts, and sporting events). Interoperable communications plans include not only voice but also data considerations. The content presented in this guide is based on input from emergency responders, including lessons learned and best practices.

[National Public Safety Telecommunications Council \(NPSTC\) Channel Naming Report](#)²⁵

This document outlines the Public Safety National Coordination Committee (NCC)/NPSTC Standard Channel Nomenclature for Public Safety Interoperability Channels as revised in June of 2007. The requirement for a common naming protocol for public safety's interoperability frequencies was identified in early 2000 by the NCC, a Federal Advisory Committee chartered by the FCC that operated from 1999 to 2003, and provided recommendations to the Commission on operational and technical parameters for use of the 700 megahertz (MHz) public safety band.

[National Interoperability Field Operations Guide](#)²⁶

This document is a collection of technical reference material for radio technicians who are responsible for radios that will be used in disaster response applications.

5 The Importance of Technology

Technology is a critical element in advancing interoperability, but it is not the sole element. Interoperability is a complex, multi-dimensional issue that involves a technological, strategic, tactical, and cultural change. There is never a “silver bullet” solution in the form of any piece of innovative voice or data equipment. Successful implementation of voice and data communications technology is supported by a secure governance structure and is highly dependent on effective operational procedures and consistent training of practitioners. The technologies described within the Interoperability Continuum must be scalable to effectively support day-to-day incidents as well as unpredicted potentially catastrophic events.

The Interoperability Continuum specifically addresses technology by recognizing various technological approaches to achieve interoperability. The various approaches mentioned in the Interoperability Continuum can be observed in States across the country. It should be noted; however, that the most technically “advanced” communities often employ a combination of the technical approaches described in the Interoperability Continuum to achieve optimal

²³ Improving Interoperability through Shared Channels – Version 2.

http://www.safecomprogram.gov/SAFECON/library/technology/1370_improvinginteroperability.htm

²⁴ Interoperable Communications for Planned Events.

http://www.safecomprogram.gov/SAFECON/library/interoperabilitybasics/1335_interoperablecommunications.htm

²⁵ National Public Safety Telecommunications Council (NPSTC) Channel Naming Report.

http://www.safecomprogram.gov/SAFECON/library/technology/1319_npstcchannel.htm

²⁶ National Interoperability Field Operations Guide.

<http://www.npstc.org/documents/NIFOG%20v1.2%204-14-2008.pdf>

interoperability. That is, these communities do not abandon one approach for another, but rather combine multiple approaches to create a unified solution that can address multiple needs.

In addition to interoperability, the emergency response community is highly aware of the need to address operability and continuity of operations. Tragic events such as Hurricane Katrina have highlighted the need to plan for major disruptions in service. Several SCIPs directly addressed survivability and redundancy measures, along with STRs that are available to be deployed specifically for this purpose.

5.1 Common Technology Themes

States face unique challenges depending on geography, population, threats, and budgets; however, some similar technological approaches are used to address emergency response communications and interoperability. Although various technical approaches were described in the SCIPs to address these challenges, several common technological trends emerged. The following information describes the common themes found throughout the technology sections.

5.1.1 System of Systems

The concept of “system of systems” is considered a best practice by many in the emergency response community who are striving to achieve interoperable communications. A system of systems exists when a group of independently operating systems—comprised of people, technology, and organizations—are connected, enabling emergency responders to effectively support day-to-day operations, planned events, or major incidents.²⁷ A system of systems could include multiple connected local systems or a combination of State, regional, local, and tribal systems.

Some States, such as California, that have many urban areas with established land mobile radio (LMR) systems have identified a system of systems approach as the most appropriate strategy for their State. There are also regions of the country that have identified a system of systems strategy that allows independent systems to be integrated while also promoting collaboration through strong governance organizations.

5.1.2 Shared Radio Systems

As reflected in the Interoperability Continuum, shared radio systems provide an optimal level of interoperability. The term “shared radio systems” in this context refers to shared radio systems that are used as a primary system for daily operations. Shared radio systems are effective at the State level when multiple State agencies operate on a common shared radio infrastructure, thereby eliminating the need for multiple independent State systems. Shared radio systems can also operate at the regional level by supporting the operations of multiple local jurisdictions. Shared radio systems can also be designed to support multiple Federal, State, local, and tribal agencies. In addition, a shared radio system could be integrated into an even larger system of systems.

Many States have or are planning to implement a shared statewide radio system. These shared statewide radio systems are typically designed to consolidate the communications of multiple State agencies onto a single system, thereby providing strong interoperability. Many States also make these systems available to Federal, local, and tribal agencies on a voluntary basis. In this

²⁷ Definition from A System of Systems Approach for Interoperable Communications.
http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1362_thesystem.htm

case, local governments either chose to use the shared statewide radio system as their primary system, or they decided to interface their system to the shared statewide radio system creating a systems of systems.

Many States are striving to achieve the technical, operational, and financial advantages gained by combining multiple State and local agencies onto a common shared radio system. There are multiple initiatives to create shared statewide radio systems that not only support State agencies, but also Federal and local agencies. At least 30 States reported having shared statewide radio systems that either existed or were in progress that support multiple State agencies and Federal or local agencies. Fourteen (14) States reported that they are planning similar shared statewide radio systems. Local agencies typically cannot be required to use the shared statewide radio system, but were encouraged to do so. If local agencies chose not to use the system, there was often an option to interface to the shared statewide radio system either directly or through bridging technology.

Some States identified a strategy that included a long-term goal of migrating all local users to the shared statewide radio system. In these cases, the long-term strategy included creating one shared statewide radio system to support all Federal, State, local, and tribal agencies.

Some States reported the use of 700 and 800 MHz frequencies for existing or planned shared statewide radio systems. It was noted that at least 19 States are planning to use 700 MHz for a shared statewide radio system. There are also several shared statewide radio systems using very high frequency (VHF) as it propagates over distance better than 700/800 MHz frequencies; for example, Montana, Wyoming, and other large States. Some States are using hybrid systems that utilize multiple frequencies; for example Missouri and Virginia.

The shared radio system approach was also evident at the regional level. Regional shared radio systems often consist of 700 or 800 MHz trunked systems that support multiple jurisdictions, thereby providing extensive interoperability capabilities while providing cost savings and advantages of shared infrastructure.

5.1.3 Shared Channels

Mutual aid and national interoperability frequencies are used in many States to support interoperable communications by providing a common shared channel. Several regional and statewide systems exist that provide either common mutual aid frequencies or national interoperability frequencies.

The FCC and the Department of Commerce's National Telecommunications and Information Administration (NTIA) designated nationwide interoperability channels in the VHF, ultra high frequency (UHF), 700 MHz, and 800 MHz bands. Some States have implemented fixed infrastructure that supports national interoperability channels statewide. Others have installed regional infrastructure to provide national interoperability channel coverage. For example, Maryland created regional systems that provide national interoperability frequencies in each of the public safety bands along with a cross-band bridging capability.

In addition to the national interoperability frequencies, many States have identified additional channels for mutual aid use.

5.1.4 Public-Private Partnerships

Some States reported the establishment of public-private partnerships in order to provide cost effective emergency response LMR communications. These partnerships provide reliable mission-critical communications to emergency response agencies while providing cost savings and improved interoperability. Some of the most successful partnerships include State and local agencies and major LMR vendors who own and operate the infrastructure. These systems are designed to emergency response specifications and requirements.

Occasionally commercial radio services are used to provide push-to-talk communications to emergency response agencies. While these commercial systems are effective at providing push-to-talk service to emergency response agencies, users should evaluate the ability of these systems to support communications under heavy load conditions experienced during large events.

5.1.5 Strategic Technology Reserves/Survivability and Redundancy

Most States and localities are developing new systems or enhancing existing assets to provide backup communications in the event that critical communications are either disabled or destroyed. One common approach is the creation of a STR consisting of radio caches and transportable communications towers and equipment. This type of reserve can be used to provide backup and incident area communications when local infrastructure is damaged. The equipment can also be used to provide interoperable communications with Federal responders and mutual aid responders coming in from other States or regions. The majority of States reported the existence of or the development of STRs.

Several States have developed or are planning backup or alternate means of communications including satellite and redundant systems.

5.1.6 VoIP Systems (Statewide and Regional)

Voice over IP (VoIP) technology, sometimes referred to as Radio over IP (RoIP), is becoming a popular technology used to provide bridging between disparate radio systems on a statewide or regional basis. These networks are often supported by VoIP gateways and a common Internet Protocol (IP) backbone that allows the patching of multiple State or local radio channels. The systems are often controlled by workstations provided at dispatch centers or control points. Eleven (11) States reported the creation of statewide VoIP systems including Alabama, Florida, and Georgia. Several regional VoIP systems were reported as well, including regions in Kentucky, Maryland, Nebraska, and Virginia. Although VoIP systems do not provide the functionality or roaming capability of a shared radio system, they can be effective if complemented with strong governance, SOPs, training and exercises, requirements development, and plans for sustainability.

5.1.7 Data Interoperability (Wired and Wireless)

Although most SCIPs were focused on voice interoperability, many States also identified plans to address data interoperability and wireless data access.

Most States reported some limited wireless access capability. Some States included initiatives to identify and evaluate broadband wireless alternatives including public-private partnerships and 700 MHz broadband options.

Several States identified initiatives to increase situational awareness through the development of a common operating picture (COP) that integrates data from multiple disparate sources from both the State and local level. These COP systems often use Geographic Information System (GIS)

technology to depict relationships, connections, and patterns enabling situational awareness and better decision making. Projects of this type were reported in Alabama, Maryland, and Virginia.

5.1.8 Technology Assessments

The SCIP criteria encouraged development of a statewide capabilities assessment (or a plan for one), which includes critical communications equipment and related interoperability issues. Some States have already performed technology assessments. Of those that have not, most have identified initiatives to perform necessary technology assessments, with several intending to use the CASM tool to support data collection and analysis.

Listed below are key components identified in the SCIPs and the number of States that met each component. If the State did not meet the component at the time of SCIP development, most States included it as an initiative in its SCIP.

Technology	Fully Implemented	Plan to Implement
National interoperability channels programmed into radios	6	12
Conducting assessments of technology capabilities, specifically identifying and inventorying infrastructure and equipment	29	25

Note: For a few States it was unclear if they implemented/plan to implement the above key components.

5.2 Key Technology Gaps and Obstacles

Analysis of the SCIPs identified the following gaps that are driving initiatives for improved emergency response communications across the country:

- Require further technical assessment data or existing technical assessments incomplete or outdated.
- While the majority of States reported the existence of or the development of STRs, there are still significant gaps in this area:
 - Inadequate STR assets;
 - Current status of STRs unknown (also reflects need for assessments);
 - Regions without interoperable communication in disaster situations; and
 - Require backup and restoration capabilities.
- Require data interoperability.
- Require voice coverage (operability).
- Incompatible and aging communications equipment.
- State agencies on different systems.
- Require an infrastructure that supports mutual aid communications.
- Require broadband wireless communications.

5.3 Supporting Initiatives Addressing Technology Gaps

As the emergency response community continues to address communication needs, it is imperative for States to move forward in a way that promotes collaboration and addresses multiple dimensions that will lead to successful implementation of technical solutions.

Each State developed strategic initiatives to address gaps in technical capabilities. The top common technical initiatives found in the SCIPs include:

- Develop or enhance STRs.
- Develop or complete technology assessments.
- Develop shared statewide or regional radio systems supporting multiple Federal, State, and local agencies.
- Install statewide or regional fixed interoperability channel infrastructure.

5.4 Technology Examples

Listed below are examples of some of the current technology trends observed in the SCIPs:

Technology Example	State Examples
System of Systems	California's strategy includes the development of a statewide standards-based system of systems communications network for California's public safety and designated public service practitioners. The near term system of systems vision is the interconnection of existing legacy architectures with standards-based networks until some point in the future when all radio systems in California become standards-based observing the Project 25 (P25) suite of standards.
	Arizona is considering a system of systems approach to interoperability to include existing and new 700/800 MHz P25 trunked systems; the upgrade and build out of the State's digital microwave backbone; and high level network connections between key regional systems as well as Arizona's Interagency Radio System (AIRS), which utilizes a cross-band repeater configuration to enable VHF, UHF, and 700/800 MHz frequency interoperability, for jurisdictions that retain conventional radio systems.
	The State of Utah promotes a system of systems approach to the design and implementation of communications networks for public safety. Three primary communications systems exist in Utah with several smaller regional systems integrated into a common statewide interoperability platform.
STR (Radio Cache)	Virginia developed policies and procedures based on the NIMS typing model and secured funding for strategic radio cache resources statewide. The policies and procedures define radio cache resources in five types – Type I being the highest level of functionality and deployable resources. (Virginia has a best practices paper available upon request.)
STR (Survivability)	Alaska has two deployable, transportable, modular Alaska Land Mobile Radio (ALMR) systems that can be transported by truck, heavy sling lift by helo, or civilian and military aircraft to anywhere in State or Nation. The Department of Defense maintains two Transportable Communications units for mobile interoperable capability. Each of the four modules is mounted on a light-weight aluminum skid that can be quickly loaded on existing military cargo transport aircraft.
Shared Statewide Radio System	The Consolidated Communications Network of Colorado (CCNC) is a statewide Project 25 700/800 MHz Digital Trunked Radio System (DTRS) currently used by 32,200 users from 703 agencies. 80% of users are non-State agencies.

Technology Example	State Examples
	<p>Indiana's Project Hoosier SAFE-T (Safety Acting for Everyone – Together), completed summer 2007, is an 800 MHz trunked voice and data communications system which provides both day-to-day and mission critical interoperability for Indiana Federal, State, and local first responders and public safety officials.</p> <p>ALMR is a single shared LMR system between Federal, State, and local government agencies; pooling spectrum between Federal and State users. The system is unique in that it was accomplished through the shared use of State of Alaska and Department of Defense assigned VHF frequencies.</p> <p>Wyoming is constructing a new P25, VHF digital trunked system – WyoLink – which will be the primary communications system for all State agencies and the public safety communications system for Federal, State, local, and tribal public safety agencies. The system will provide interoperability between all users.</p>
Shared Regional Radio System	<p>Several primary communications systems exist in Utah. The Utah Communications Agency Network (UCAN) operates an independent 800 MHz system that supports multiple jurisdictions in the heavily populated Wasatch Front region. In addition, this system is integrated with other State and regional systems to create a system of systems.</p> <p>Louisiana's 700/800 MHz P25 System is operational statewide providing 95% portable on street coverage in southern Louisiana and 95% mobile coverage in central and north Louisiana. The system has over 31,000 users, with additional agencies planning to connect to the system in early 2009 as the increased capability and coverage expansion of the P25 System continues.</p>
Shared Channels (Regional or Statewide FCC National Interoperability Channel Infrastructure)	<p>In addition to their primary radio system, Delaware installed FCC designated 800 MHz ICALL/ITAC frequencies throughout the State.</p> <p>Rhode Island maintains 17 sites using ITAC/ICALL repeaters as part of Region 19 interoperable initiative as well as inter-State interoperability with Connecticut and Massachusetts</p> <p>Through the TAC Stack initiative, Maryland is working to install regional infrastructure to provide coverage for interoperability channels designated by the FCC in three public-safety bands: VHF, UHF and 800 MHz. A cross band capability is provided through audio interconnect.</p>
VoIP / Radio over IP (RoIP)	<p>The Florida Interoperability Network (FIN), a statewide gateway solution, places over 230 public safety communications centers on a common IP network. FIN provides the ability to bridge radio resources together throughout the State.</p> <p>The Central Nebraska Regions for Interoperability (CNRI) effort includes a multi-county IP network and integration software to integrate independently owned and operated land mobile radio systems.</p>
Public-Private Partnerships	<p>The STARCOM 21 is a public-private partnership established to provide more cost effective access to reliable and interoperable communications to</p>

Technology Example	State Examples
	public safety agencies. In this example, the state-of-the-art LMR system has been made available to public safety agencies across all levels of government serving Illinois.
	Florida's Statewide Law Enforcement Radio System (SLERS) is a single, unified radio network that supports State law enforcement, Florida National Guard, and some local public safety agencies throughout the State of Florida. This statewide network is the result of a public-private partnership between the State of Florida and its vendor.
	Virginia created a partnership agreement between Virginia Information Technologies Agency (VITA) and its vendor for the modernization of IT infrastructure within the Commonwealth.
Data Interoperability (Common Operating Picture)	Virtual Alabama is a 3D visualization platform that provides the statewide common operating picture and situational awareness needed by Alabama's first responders to plan for, respond to, and recover from disasters.
	The Emergency Management Mapping Application (EMMA) enables the emergency management community to access and display relevant and real-time information on a map before, during, and after an incident occurs. The Maryland Emergency Geographic Information Network (MEGIN) is a secure technology backbone to provide first responders and emergency managers with access to specific data that they need, in real time, across the State.
Broadband Wireless	The National Capital Region (NCR) includes the District of Columbia and 18 other jurisdictions in Virginia and Maryland. The Regional Wireless Broadband Network (RWBN) is the first in the Nation to establish a public safety regional broadband wireless network at 700 MHz with the capacity to transmit video, data, and voice communications, though its future status depends strongly on the outcome of ongoing Federal spectrum decision making.

5.5 Technology Tools

The following Technology tools are available on the [SAFECOM](#) website:

[The Systems of Systems Approach for Interoperable Communications](#)²⁸

This brochure is designed to help the emergency response community, as well as Federal, State, local, and tribal policy makers, understand the system of systems concept, the benefits of applying this concept, and how it can aid agencies in achieving interoperability.

[Data Messaging Standards Guide for Requests for Proposals \(RFPs\)](#)²⁹

This guide is intended to assist procurement officials who develop RFPs for emergency response information technology systems. The language provided in the guide requires Emergency Data

²⁸ The Systems of Systems Approach for Interoperable Communications.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1362_thesystem.htm

²⁹ Data Messaging Standards Guide for Requests for Proposals (RFPs).

http://www.safecomprogram.gov/SAFECOM/library/grant/1355_datamessaging.htm

Exchange Language (EDXL) messaging standards that enable emergency responders to share critical data seamlessly across disparate software applications, devices, and systems.

[How to Guide for Managing the Radio System Life-Cycle](#)³⁰

This guide is designed to assist emergency response agencies in navigating the radio system life cycle. It covers issues essential to successful planning, design, procurement, implementation, operations, and maintenance of a regional or statewide radio communications system.

[Improving Interoperability through Shared Channels – Version 2](#)³¹

This guide helps the emergency response community understand the level of effort, resources, and key actions needed to implement a shared channel solution. It also provides case studies of regions that have successfully implemented a shared channel solution.

[Law Enforcement Tech Guide for Communications Interoperability](#)³²

This guide, published by the Department of Justice's Office of Community Oriented Policing Services, is intended to provide the emergency response community with practical information to support efforts to successfully establish interagency, interdisciplinary, and inter-jurisdictional voice and data communications systems. The guide assists with planning, procuring, and implementing new communications systems.

[National Public Safety Telecommunications Council \(NPSTC\) Channel Naming Report](#)³³

This document outlines the Public Safety NCC/NPSTC Standard Channel Nomenclature for Public Safety Interoperability Channels as revised in June of 2007. The requirement for a common naming protocol for public safety's interoperability frequencies was identified in early 2000 by the NCC, a Federal Advisory Committee chartered by the FCC that operated from 1999 to 2003, and provided recommendations to the Commission on operational and technical parameters for use of the 700 MHz public safety band.

6 The Importance of Training and Exercises

The training and exercises lane of the Interoperability Continuum refers to the instructional support designed to develop knowledge, skills, and performance of emergency response personnel. Proper training and regular exercises are critical to the implementation and maintenance of a successful interoperability solution. To progress along the training and exercises lane, a high degree of coordination and interdependence with the usage of interoperable equipment is essential due to consistently increasing levels of complexity and regularity in the training and exercise curriculum. As communities become adept in using localized jurisdictional interoperability solutions, the scope of the training and exercises should expand to involve cross-jurisdictional and cross-disciplinary aspects.

³⁰ How to Guide for Managing the Radio System Life-Cycle.

http://www.safecomprogram.gov/SAFECOM/library/systems/1048_HowTo.htm

³¹ Improving Interoperability through Shared Channels – Version 2.

http://www.safecomprogram.gov/SAFECOM/library/technology/1370_improvinginteroperability.htm

³² Law Enforcement Tech Guide for Communications. Interoperability

http://www.safecomprogram.gov/SAFECOM/library/technology/1316_technologyguide.htm

³³ National Public Safety Telecommunications Council (NPSTC) Channel Naming Report.

http://www.safecomprogram.gov/SAFECOM/library/technology/1319_npstcchannel.htm

Optimal interoperability involves equipment familiarization and an introduction to State and regional interoperability. Agency-specific education on local interoperability should be provided throughout the States to emergency response personnel during initial agency training programs, and refresher courses should be offered on a regular basis. Interoperability success is achieved by regular, comprehensive, and realistic exercises that address potential problems in the State and involve the participation of responders on every level.

6.1 Common Training and Exercises Themes

The goal of training and exercises is to guarantee the emergency response community can respond to incidents effectively, efficiently, and safely. Information received in the SCIPs identified limited frequency and limited scope of cross-jurisdictional and cross-disciplinary participants in training and exercise programs. In many of these cases, participants include stakeholders from across all levels of government, but not necessarily across all levels of the emergency response practitioner community. It should be noted that the exact frequency of exercises varies from State to State.

6.1.1 Operational Procedure Training

States build communications interoperability into operational procedures that can be trained and exercised regularly. Progress along the training and exercises lane intertwines with advancement along the technology lane to ensure operational field personnel are familiar with new technologies, such as gateways and patching systems, as they are acquired and incorporated into a community's system. As reported in the SCIPs, approximately six percent of States have implemented regular training and exercises focused solely on the use of existing technological interoperability solutions.

6.1.2 ICS Communication Unit Position Training

Critical and unprecedented incidents require an expert at the helm of the emergency response community who can immediately adapt to the situation. Within ICS, the communications specialists are referred to as the Communications Unit Leaders (COMLs). The role of any COML position is a critical function that requires adequate training above and beyond the basic knowledge of communications systems and prepares emergency responders to manage the communications component of larger interoperability incidents. In response to the immediate need for trained All-Hazards COMLs, OEC is utilizing a newly-developed curriculum to offer NIMS-compliant COML instruction throughout the Nation. Given the COML training was not available during the initial SCIP development, very few States have completed COML training in their respective communities at this time, but many have COML training planned and in place in the near future. OEC will also provide a train-the-trainer course to increase the number of COMLs throughout the Nation.

6.1.3 NIMS Training

The adoption and training of NIMS represents an initial step in establishing a national consistency for how agencies and jurisdictions define operations. As a result, some emergency response communities established a wide range of operational protocols, ranging from developed standards for interoperability channel naming to the use of plain language. The NECP and SAFECOM grant guidance encourages the migration from current radio practices to plain language standards, and all emergency response communities stand to benefit by effectively and efficiently meeting these standards. As reported in the SCIPs, very few States currently conduct communications-specific training and exercises focused on the use of established operational protocols. Most State and local agencies; however, have adopted NIMS, have trained in its use, and routinely

practice its implementation through planned exercises and multi-jurisdictional events. The NECP supports the widespread attention shown to NIMS training, and encourages those States that have not yet addressed this area to begin immediate plans for NIMS adoption and a NIMS/ICS training and exercise program.

6.1.4 Common Training and Exercise Programs

The majority of States have a firm process, whether formal or informal, for training and exercise certification. Communication-specific training is sometimes found to be a part of a larger training program within the States, and is conducted in the form of a classroom setting, workshop environment, Internet-based instruction, on the job training, train-the-trainer courses, and tabletop and full-scale exercises. Many States, however, recognize that more formal training needs to be developed around communications. States are taking extra precautions to ensure that all training and exercises that are offered are on a multi-agency, multi-jurisdictional, and multi-disciplinary level. The majority of States that are not already providing ongoing refresher training have plans to immediately begin such a course.

Nearly all exercises, whether or not communication-specific, are conducted in every State between a weekly, monthly, quarterly, and yearly basis. Almost all States conduct at least one exercise per calendar year, and several hold a minimum of two exercises per calendar year. As required by the Homeland Security Exercise and Evaluation Program (HSEEP), which highly encourages exercise documentation, several SCIPs reported that regular After Action Reports (AAR) and Improvement Plans (IP) are published following all full-scale and tactical exercises. The release of an AAR or IP allows for any shortcoming in a compulsory objective of an exercise to be immediately addressed by the development of an appropriate and timely training plan.

Listed below are key components identified in the SCIPs and the number of States that met each component. If the State did not meet the component at the time of SCIP development, most States included it as an initiative in its SCIP.

Training and Exercises	Completed	Plan to Complete
Conducting communications-specific training focused on:		
<i>Use of established operational protocols (e.g., plain language)</i>	6	20
<i>Use of NIMS ICS</i>	31	17
<i>Use of existing interoperable emergency communications solutions</i>	10	29
<i>Communication Unit Leader Training, Communication Unit Technician, or other ICS Communication Unit position training</i>	8	31
Conducting communications-specific exercises focused on:		
<i>Use of established protocols</i>	2	21
<i>Use of existing interoperable emergency communications solutions</i>	3	27
<i>Leverage TICP to exercise on SOPs</i>	2	15

Note: For a few States it was unclear if they completed/plan to complete the above key components.

6.2 Key Training and Exercises Gaps and Obstacles

Analysis of the SCIPs identified the following key gaps driving efforts for improved training and exercise programs for interoperability across the country. These gaps provide a snapshot of a current status with overall limited and inconsistent training, and few communications-specific exercise programs in place at this time:

- A national standard for Type III COML training and certification has been developed, but had not yet been rolled out nationwide at the time of SCIP development.
- A training curriculum for COMT, RADOs, and other Communications Unit positions has not yet been developed.
- Many emergency response agencies have limited availability of qualified technical staff to support daily operations and provide surge support for emergency communications; as a result it is difficult to allocate time for training.
- Non-government organizations (NGOs) have not been consistently involved in training and exercises.
- There are insufficient communications-specific training courses and field exercises available to emergency responders, and there is a lack of coordination with the private sector on training and exercises.
- There is a need of adequate time and funding to plan and conduct exercises that will comply with Federal guidelines.
- Not clear if training and exercises always include a communications component

As emergency response communities throughout the Nation work to close these key gaps and achieve the long-term vision for interoperability through implementation of the SCIPs, it must be emphasized that communications interoperability is an ongoing effort and not a one time investment. The implementation of effective communications-specific training and exercise programs on a continual basis is essential to ensure that emergency responders are able to efficiently communicate during incidents.

6.3 Supporting Initiatives Addressing Training and Exercise Gaps

Each State developed strategic initiatives to address training and exercise gaps in their States. The top common training and exercise initiatives found in the SCIPs include:

- Incorporate interoperable communications into all existing and future training and exercise programs.
- Conduct an in-depth gap analysis to identify current communications training needs.
- Develop ongoing training that is formalized and will involve broad stakeholder participation.
- Continue regularly scheduled NIMS/ICS training.
- Seek innovative solutions to deploy training standards, procedures, and systems for all facets of interoperable communications awareness.
- Develop a training curriculum that includes ICS Communication Unit Position training.
- Develop web-based and CD-ROM tutorials, handouts, and classroom materials to provide for initial and ongoing training of practitioners.
- Develop an exercise strategy and tracking system.
- Develop a train-the-trainer course, new workshops, and new classroom techniques.
- Develop a statewide exercise and evaluation program to be updated annually with plans for HSEEP tabletop and full-scale exercises.

6.4 Training and Exercises Best Practice

Training and Exercise Best Practice	State Examples
Yearly Planning Workshops	Each year, the Indiana Department of Homeland Security (IDHS) hosts a statewide Training and Exercise Planning Workshop (TEPW) for personnel involved in creating training and exercise programs for Federal, State, and local governments. The IDHS Consolidated Training Calendar is available online and searchable by discipline, topic, and date to ensure that training opportunities throughout the State are easily located.

6.5 Training and Exercises Tools

The following Training and Exercises tools are available on the [SAFECOM](#) website:

[Interoperable Communications for Planned Events](#)³⁴

This guide is intended for emergency response officials responsible for designing and executing interoperable communications plans for planned events (e.g., festivals, concerts, and sporting events) in their community. Interoperable communications plans include not only voice but also data considerations. The content presented in this guide is based on input from emergency responders, including lessons learned and best practices.

[Communications Unit Leader Training Course](#)³⁵

This COML training will qualify emergency responders as lead radio communications coordinators if they possess the necessary prerequisites, including knowledge of local communications; communications systems; and State, regional, and local communications plans. COML responsibilities include developing plans for the effective use of incident communications equipment and facilities, managing the distribution of communications equipment to incident personnel, and coordinating the installation and testing of communications equipment.

[Communications-Specific Tabletop Exercise \(TTX\) Methodology](#)³⁶

This document is intended to help local policymakers and Federal technical assistance programs plan, design, and conduct communications-specific exercises in collaboration with the emergency response community. Tabletop Exercises (TTXs) are an important component of interoperability training and exercises. Replicable nationwide, the methodology may be tailored to the specific needs, realities, and organizational cultures of diverse localities.

³⁴ Interoperable Communications for Planned Events.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1335_interoperablecommunications.htm

³⁵ Communications Unit Leader Training Course.

<http://www.safecomprogram.gov/SAFECOM/currentprojects/comtraining/>

³⁶ Communications-Specific Tabletop Exercise (TTX) Methodology.

http://www.safecomprogram.gov/SAFECOM/library/interoperabilitybasics/1396_communicationsspecificabletop.htm

7 The Importance of Usage

Success in the usage lane is contingent upon progress and collaboration among all lanes of the Interoperability Continuum. The usage lane of the Interoperability Continuum focuses on the actual usage of equipment, technology, SOPs, and training and exercises in day-to-day operations to ensure proper usage during large-scale incidents. Usage refers specifically to how often a community uses and engages in interoperable communications across disciplinary and jurisdictional lines. Unless emergency response agencies employ interoperable equipment, SOPs, and training on a regular basis, communities will not be adequately prepared to respond during potentially catastrophic large-scale events.

An optimal level of usage would show that practitioners are familiar and proficient with all operational procedures and equipment, and routinely work in collaboration with one another. Interoperable communications are employed daily for planned events, localized emergency incidents, and regional incident management. Optimally, there is no cause for hesitancy in a critical moment and no hindrance in a split second to save a life.

In submission of the SCIPs, States were asked to “describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability.”

Emergency responders who train regularly, and who employ solutions and operational procedures on a daily basis, are able to use emergency communications more effectively during major events and unforeseen incidents. The ability of emergency responders to effectively communicate is paramount to the safety and security of our Nation; a lack of proficient and coordinated solutions and protocols serve only to hinder these abilities during critical response and recovery efforts.

7.1 Common Usage Themes

An analysis of the SCIPs shows that to advance interoperable communications nationwide, States need to continue to increase user levels of familiarity and proficiency of communications capabilities by providing day-to-day tests, ongoing and refresher training, testing of communications plans, and regional large-scale exercises.

Some States employ some form of regular usage of interoperability solutions and testing of emergency capabilities, resulting in a high level of familiarity and proficiency in local communities. However, many States are lacking in their familiarity with Federal, tribal, and neighboring agencies and jurisdictions’ policies and processes. In addition, many State, local, and tribal agencies have or are in the process of modernizing and expanding their systems through Federal grant programs and a number of initiatives. States can benefit by working to better understand existing programs and infrastructures across all disciplines and jurisdictions in their areas. A clear and precise familiarity will serve to improve coordination and maximize safe and efficient field capabilities.

7.2 Key Usage Gaps and Obstacles

Analysis of the SCIPs identified the following key gaps driving efforts for improved usage in the current state of interoperability across the country:

- There is a deficient in regular communications training and exercises.

- Many mutual aid channels that are available are rarely used other than for back-up systems.
- There are limitations in the list of qualified individuals that can be called upon to respond during extended deployment of certain equipment.
- Regular usage of relevant interoperable communications equipment and SOPs are not mandated.
- There is no tracking mechanism currently in existence to measure the success and continuity of interoperable communications usage.
- There is a severe lack of consistency in the usage of plain language.
- SOPs do not currently address regular usage of equipment to maintain a level of familiarity with responders.
- A need of knowledge on the availability of interoperable equipment and therefore require training on the use of available equipment.
- Interoperability is limited between different mutual aid channels and services, between different Federal and State entities, and between local agencies across jurisdictions.
- Outreach and education to improve partnerships and collaborative relationships with all stakeholders do not exist.

7.3 Supporting Initiatives Addressing Training & Exercise Gaps

Nearly every State has declared an immediate plan to encourage the regular use of equipment and SOPs through increased training and exercises and AARs to establish an assessment and record of proficiency throughout every jurisdiction. Regular testing will commence in several areas, and users on every system will be documented.

In a select few areas, “How To” guides for specific equipment will be developed following communications assessment information available through the employment of CASM. Vendors will be encouraged to read these guides and to base their future developments and distributions on the provided information.

As referred to in the Interoperability Continuum, the term “usage” covers a broad range of requirements and opportunities for improvement. As a result, the advancement of every previously-mentioned element on the Interoperability Continuum – governance, SOPs, technology, and training and exercises – will naturally promote usage and will help to ensure the proficiency of the emergency response community and the safety of the Nation.

Each State developed strategic initiatives to address usage gaps in their States. The top common usage initiatives found in the SCIPs include:

- Encourage the daily use of interoperable communications equipment.
- Conduct regular testing to identify operational or technical impediments to interoperable communications.
- Conduct NIMS-compliant training and exercises to promote usage of all technologies and procedures on a regular basis.
- Develop a multi-faceted capability for testing and exercising statewide interoperable communications plans, systems, and personnel.
- Identify usage patterns through the employment of the CASM tool.
- Conduct a needs assessment to guide the dissemination of interoperable communications equipment in the future.
- Utilize plain language speech communications in compliance with NIMS requirements.

- Achieve daily usage of a statewide network among all responders, and implement weekly testing with documentation of users on the system.
- Develop additional resources to provide technical assistance, and a central repository for all AARs.
- Develop programs to provide users with “How To” guides for specific radio equipment.

7.4 Usage Best Practice

Usage Best Practice	State Example
Usage Exercises	California sponsors and facilitates a plethora of well-designed and executed exercises, which are the most effective means of testing and validating policies, plans, procedures, training, equipment, and interagency agreements; training personnel and clarifying roles and responsibilities; improving interagency coordination and communications; identifying gaps in resources; improving individual performance; and identifying opportunities for improvement. Quarterly exercises are conducted for earthquake, nuclear power plant, and independent systems operators. Monthly exercises are conducted on tsunami and dam crisis efforts. Biweekly exercises are conducted on fire radio checks, and weekly tests occur on the Operational Area Satellite Information System (OASIS). Roll calls are made on each of the two secure communications systems consisting of hard-wired direct telephone lines: the California Warning Alert System (CALWAS) and the National Warning Alert System (NAWAS).

8 Conclusion and Future Progress

The completion of all 56 SCIPs across the Nation marks a significant achievement for the emergency response community. Each SCIP demonstrates the States willingness and ability to aggressively pursue the problem of interoperability and addresses the issues in terms of the five critical success factors necessary to achieve interoperability: governance, SOPs, technology, training and exercises, and usage of interoperable systems. In documenting a unified current state assessment of communications interoperability, the Nation’s emergency response community can move forward together towards achieved, marked improvement. Collectively, the Nation stands ready to proceed down the path of implementation.

As mentioned throughout this document, OEC is dedicated to assisting the States towards achieving each vision and mission. Through the collection and analysis of all 56 SCIPs combined with other practitioner input and relevant data, OEC developed the NECP to address nationwide gaps and determine solutions so that emergency response personnel at all levels of government and across all disciplines can communicate as needed, on demand, and as authorized. The NECP is the Nation’s first strategic plan to improve emergency response communications, and complements overarching homeland security and emergency communications legislation, strategies, and initiatives. In addition to the detailed NECP initiatives (see Appendix D), the NECP includes the following milestones as recommended actions for the States to consider as they implement their SCIPs:

By July 2009:

- Establish a full-time statewide interoperability coordinator or equivalent positions.
- The Statewide Interoperability Governing Body (SIGB) should incorporate the recommended membership as outlined in the [Criteria for Statewide Interoperability Strategic Plans](#) and should be established via legislation or executive order by an individual State's governor.
- All Federal, State, local, and tribal emergency response providers within UASI jurisdictions have implemented the Communications and Information Management section of the NIMS.
- Tactical planning among Federal, State, local, and tribal governments occurs at the regional interstate level.

By January 2010:

- Emergency response agencies program an appropriate set of frequency-band-specific nationwide interoperability channels into all existing emergency responder radios and incorporate the use of the channels into SOPs, training, and exercises at the Federal, State, regional, local, and tribal levels.

By July 2010:

- SCIPs reflect plans to eliminate coded substitutions throughout the ICS.
- All Federal, State, local, and tribal agencies in UASIs will have defined alternate/backup capabilities in emergency communications plans.
- Complete disaster communications training and exercises for all 56 States and territories.

Lastly, the NECP provides overarching national goals and priorities to improve operability, interoperability, and continuity of communications within the Federal, State, local, and tribal emergency response communities.

The utility of developing SCIPs and the level of investment required will not end with this process. Beginning this fiscal year, States will begin aligning their SCIPs to the NECP goals and milestones. Alignment is expected to be complete by December 2010. It is the goal of OEC to work with the States to implement and update the SCIPs in a fashion that bridges interoperability gaps and moves the individual States and the Nation as a whole towards the shared vision of the NECP – emergency response personnel can communicate as needed, on demand, and as authorized; at all levels of government; and across all disciplines.

The analysis demonstrates the complexity of the interoperable communications environment while creating an awareness of the commonalities found within it. The identification of the common themes, trends, and best practices found throughout the Nation reveals that States have many of the same challenges and needs. These challenges are not insurmountable and will best be overcome through continued partnerships among Federal, State, local, and tribal emergency response organizations and industry. All emergency response stakeholders must work together to achieve successful interoperable communications.

Appendix

A. SAFECOM SCIP Criteria Compliance Matrix

Criteria #	Description
1.	Background and Preliminary Steps
1.1	Provide an overview and background information on the state and its regions. Include geographic and demographic information.
1.2	List all agencies and organizations that participated in developing the plan. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)
1.3	Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular discipline and should not have to balance the coordinator duties with other responsibilities.
1.4	Describe the communications and interoperability environment of the current emergency response effort.
1.5	Include a problem definition and possible solutions that address the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum.
1.6	Identify any Tactical Interoperability Communications Plans in the state.
1.7	Set the scope and timeframe of the plan.
2.	Strategy
2.1	Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state.
2.2	Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries.
2.3	Provide a strategic plan for addressing data interoperability in addition to voice interoperability.
2.4	Describe a strategy for addressing catastrophic loss of communication assets by developing redundancies in the communications interoperability plan.
2.5	Describe how the plan is, or will become, compliant with the National Incident Management System (NIMS) and the National Response Plan.
2.6	Describe a strategy for addressing communications interoperability with the safety and security elements of the major transit systems, intercity bus service providers, ports, and passenger rail operations within the state.
2.7	Describe the process for periodic review and revision of the state plan.
3.	Methodology
3.1	Describe the method by which multi-jurisdictional, multi-disciplinary input was provided from all regions of the state. For an example of a methodology that ensures input from all regions, see the Statewide Communication Interoperability Plan, or SCIP, methodology developed by SAFECOM.
3.2	Define the process for continuing to have local input and for building local support of the plan.
3.3	Define how the TICPs were incorporated into the statewide plan.
3.4	Describe the strategy for implementing all components of the statewide plan.
4.	Governance
4.1	Identify the executive or legislative authority for the governing body of the interoperability effort.
4.2	Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all of the relevant

Criteria #	Description
	emergency response disciplines and regions in the state.
4.3	Provide the charter for the governing body, and use the charter to state the principles, roles, responsibilities, and processes.
4.4	Identify the members of the governing body and any of its committees.
4.5	Provide a meeting schedule for the governing body
4.6	Describe multi-jurisdictional, multi disciplinary agreements needed for decision making and for sharing resources.
5.	Technology
5.1	Include a statewide capabilities assessment (or a plan for one) which includes critical communications equipment and related interoperability issues. At a minimum this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately more detailed information will be required to complete the documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment.
5.2	Describe plans for continuing support of legacy systems and developing interfaces among disparate systems while migrating to newer technologies.
5.2.1	Describe the migration plan for moving from existing technologies to newly procured technologies.
5.2.2	Describe the process that will be used to ensure that new purchases comply with the statewide plan, while generally allowing existing equipment to serve out its useful life.
6.	Standard operating Procedures (SOPs)
6.1	Include an assessment of current local, regional, and state operating procedures which support interoperability.
6.2	Define the process by which the localities, regions, and state will develop, manage, maintain, upgrade, and communicate standard operating procedures (SOPs), as appropriate.
6.3	Identify the agencies included in the development of the SOPs and the agencies expected to comply with the SOPs.
6.4	Demonstrate how the SOPs are NIMS-compliant in terms of the Incident Command System (ICS) and preparedness.
7.	Training and Exercises
7.1	Define the process by which the state will develop, manage, maintain and upgrade, or coordinate as appropriate, a statewide training and exercises program.
7.2	Describe the process for offering and requiring training and exercises, as well as any certification that will be needed.
7.3	Explain how the process ensures that training is cross-disciplinary.
8.	Usage
8.1	Describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability.
9.	Funding
9.1	Identify committed sources of funding or the process for identifying and securing short- and long-term funding.
9.2	Include a plan for the development of a comprehensive funding strategy. The plan should include a process for identifying ongoing funding sources, anticipated costs, and resources needed for project management and leveraging active projects.
10.	Implementation
10.1	Describe the prioritized action plan with short- and long-term goals for achieving the objectives.
10.2	Describe the performance measures that will allow policy makers to track the progress and success of initiatives.
10.3	Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives.
10.4	Describe the roles and opportunities for involvement of all local, tribal, and state agencies in the implementation of the statewide plan.

Criteria #	Description
10.5	Establish a plan for identifying, developing, and overseeing operational requirements, SOPs, training, technical solutions, and short- and long-term funding sources.
10.6	Identify a point of contact responsible for implementing the plan.
10.7	Describe critical success factors for implementation of the plan.
11.	PSIC Requirements
11.1	Describe how public safety agencies will plan and coordinate, acquire, deploy, and train on interoperable communications equipment, software, and systems that: <ul style="list-style-type: none"> 1) utilize reallocated public safety spectrum- the public safety spectrum in the 700 MHz frequency band; 2) enable interoperability with communication systems that can utilize reallocated public safety spectrum for radio communications; or otherwise improve or advance the interoperability of public safety communications systems that utilize other public safety spectrum bands.
11.2	Describe how a strategic technology reserve (STR) will be established and implemented to pre-position or secure interoperable communications in advance for immediate deployment in an emergency or major disaster.
11.3	Describe how local and tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed.
11.4	Describe how authorized non-governmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed (if applicable).

B. Background Information

Office of Emergency Communications

In the DHS Appropriations Act for FY 2007 (Public Law 109–295, Oct. 4, 2006), Congress established OEC to promote the ability of emergency responders and government officials to continue to communicate in the event of a natural disaster, act of terrorism, or other man-made disasters, and to ensure, accelerate, and attain interoperable and operable emergency communications nationwide. The OEC Office of the Director was established within the DHS’s National Protection and Programs Directorate to oversee the transition of three programs from other DHS entities into OEC—the Integrated Wireless Network (IWN), the Interoperable Communications Technical Assistance Program (ICTAP), and the SAFECOM program (excluding its research, development, testing and evaluation, and standards functions which remained with the Office for Interoperability and Compatibility (OIC) in the Science and Technology directorate).³⁷

OEC recognizes that the development of a successful solution to improve interoperable communications requires a practitioner-driven focus on user needs. The input of both practitioners and policy makers across disciplines, jurisdictions, and levels of government, who are able to represent their own needs and to strategically approach the greater needs of the emergency response community, is essential for interoperable communications.

Public Safety Interoperable Communications Grants

The Deficit Reduction Act of 2005 (Public Law 109-171, Feb. 8, 2006) provided \$1 billion in grants to improve interoperable communications. In December 2006, Congress passed the Call Home Act of 2006 (Public Law 109-459, Dec. 22, 2006), which in part required the Assistant Secretary of the National Telecommunications and Information Administration (NTIA) to award this \$1 billion for the Public Safety Interoperable Communications (PSIC) Grant Program. NTIA, in consultation with DHS, developed grant program policies, procedures, and regulations for these grants. Shortly thereafter, Section I.C.5 of the 2006 HSGP stipulated that all States were required to develop and adopt SCIPs by December 2007 as a stipulation to receive any future Federal funding for public safety communications. DHS jointly held peer reviews of the SCIPs and PSIC Investment Justifications and reported back to the States on the comments and necessary upgrades.

³⁷ DHS’s SAFECOM program, in conjunction with its Federal partners, provides research, guidance, tools, and templates on communications-related issues to Federal, State, local, and tribal emergency response agencies. Since its inception, the SAFECOM program has operated under the principle that any successful effort to improve emergency response communications interoperability must take into account the direct needs of emergency responders on the front lines in large, small, rural, and urban communities across the Nation. All non-research and development aspects of the SAFECOM program were incorporated into OEC through Title XVIII of the Homeland Security Act of 2002, as amended. SAFECOM’s authorities related to research, development, testing, evaluation, and standards remain in the Office for Interoperability and Compatibility (OIC) in DHS’s Science and Technology Directorate.

C. Supporting Plans and Reports

OEC is responsible for several new initiatives and coordinated efforts to enhance interoperability. Each of the following plans and reports has an individual purpose to improve communications interoperability and inform specific audiences, and each initiative is linked to each other. A summary of the initiatives is provided below.

National Emergency Communications Plan

As required by Congress in the DHS Appropriations Act for FY 2007, OEC developed the NECP to address nationwide gaps and determine solutions so that emergency response personnel at all levels of government and across all disciplines can communicate as needed, on demand, and as authorized. The NECP is the Nation’s first strategic plan to improve emergency response communications, and complements overarching homeland security and emergency communications legislation, strategies, and initiatives. The NECP leveraged information gathered from the SCIPs, TICPs, and the NCCR to identify gaps and priority initiatives for emergency communications nationwide. Furthermore, it provides overarching national goals and priorities to improve operability, interoperability, and continuity of communications within the Federal, State, local, and tribal emergency response communities. The NECP was released to Congress in July 2008.

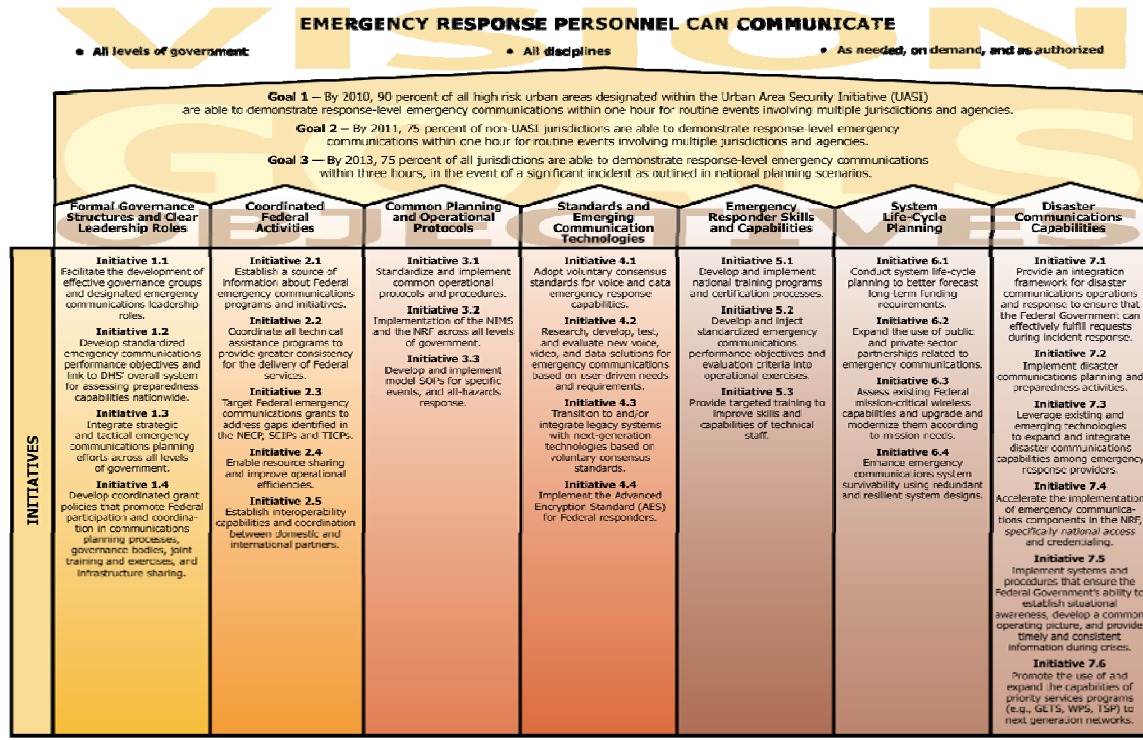


Figure C.1: National Emergency Communications Plan Overview

The NECP was developed in coordination with the emergency response community, other government officials, and industry representatives as part of OEC’s practitioner-driven approach to addressing emergency communications issues. OEC developed the NECP Working Group to provide practitioner input into the NECP. The Working Group vetted draft goals and initiatives, and came to consensus on the following key components:

- Expand the level of coordination and outreach between Federal, State, local, and tribal emergency response providers through enhanced, common, and formal governance structures and leadership positions.
- Promote common planning and operational protocols to ensure efficient and consistent use of resources.
- Promote common approaches to training, exercises, and technical assistance to better equip emergency response personnel.
- Enhance system functionality, security, redundancy, and performance.
- Promote research and development (R&D), standards, testing, and evaluation within the public and private sectors focusing on technologies and capabilities that will meet evolving emergency communications needs.
- Gain cultural buy-in, political support, and sustained funding to enhance the usage of emergency communications.

For more information or to read the NECP, please refer to the [SAFECOM](http://www.safecomprogram.gov/SAFECOM/natlemergencycommplan/) website at <http://www.safecomprogram.gov/SAFECOM/natlemergencycommplan/>.

National Communications Capability Report

As also required by Congress in the DHS Appropriations Act for FY 2007, OEC conducted an assessment of interoperable emergency communications capabilities, including operability and interoperability, across all levels of government (i.e., Federal, State, local, and tribal).³⁸ To compile the NCCR, OEC leveraged information from past assessments, enhanced by targeted interviews with Federal and local emergency response stakeholders, to show preliminary findings related to interoperability and operability assurance capabilities. OEC also collected a broader sample of Federal and local agency information to validate the initial findings and incorporated State and tribal data from ongoing collection activities (i.e., the SCIP program), and expanded the scope of emergency response providers beyond government agencies to include private sector entities. The NCCR compiles all of these findings to provide a comprehensive assessment on the state of interoperable emergency communications.

The NCCR provides a framework to evaluate current emergency communications capabilities across all levels of government. The report was delivered to Congress in the Spring of 2008 and will assist government officials at all levels to determine priorities and allocate resources more effectively.

The NCCR provides a snapshot of interoperable emergency communications capabilities nationwide. This includes:

- An understanding of emergency response capabilities needed and in use.
- Gaps between those capabilities and what is required.
- An inventory of Federal, State, and local systems and equipment currently being used.
- Relevant government initiatives and documentation.

Figure C.2 below provides an overview sample of capability needs across each element as mapped to the Capabilities Assessment Framework and the Interoperability Continuum.

³⁸ The National Communications Capability Report, Final Results. May 2008.

Capability Elements	Sub-Elements	Descriptions
Governance	Leadership	Level of government leaders' awareness, support, and advocacy for interoperable emergency communications
	Decision-making Groups	Presence and scope of inter-agency partnerships to address interoperable emergency communications issues
	Agreements	Range of formal and informal interoperable emergency communications agreements (e.g., MOU/MOA/MAA, Ordinances, Executive Orders) and scope of agencies involved
	Funding	Level of funding available and dedicated to interoperable emergency communications
	Strategic Planning	Presence/scope of strategic planning processes for interoperable emergency communications
Standard Operating Procedures	Policies, Practices, and Procedures	Range of formal and informal emergency communications policies, practices, and procedures (e.g., Command and Control (NIMS))
Technology	System Functionality	Range of fixed and mobile/deployable systems and equipment, and associated voice, video, and data capabilities
	System Performance	Levels of system performance, including availability (e.g., coverage, capacity), reliability (e.g., Quality of Service), and scalability
	Interoperability	Range of ad-hoc to permanent interoperable emergency communications solutions
	Continuity of Communications	Range of primary and backup infrastructure, systems, and facilities, associated levels of survivability, security, and redundancy
Training and Exercises	Training	Scope and frequency of interoperable emergency communications training and availability of sufficiently trained human resources
	Exercises	Scope and frequency of interoperable emergency communications exercises
Usage	Frequency of Use and Familiarity	Level of familiarity, proficiency, and frequency with which interoperable emergency communications solutions are activated and used

Figure C.2: Capabilities Needs Chart

Urban Areas and Tactical Interoperable Communications Plans

In support of DHS's effort to strengthen interoperable communications capabilities and processes, each Urban Area that received FY 2005 UASI funding (as well as designated metropolitan areas in States not having a UASI) was required to develop a TICP. Unlike the SCIPs, which focus on strategic planning, the TICPs focused on the tactical and operational requirements for rapidly establishing on-scene, incident-based mission critical voice communications. TICPs document the interoperable communications resources available within the designated area, who controls each resource, and what rules of use or operational procedures exist for the activation and deactivation of each resource. The typical contents of TICPs include:

- An overview of the jurisdictions covered by the plan.
- Description of the governance structure(s) in place.
- Information on available interoperability resources, policies, and procedures.
- Regional emergency resource staffing.
- Usage of the CASM tool.

TICPs serve as a centralized single repository of valuable tactical interoperability information for the geographical areas covered by the plan. The objective is to establish interoperability among all emergency responder agencies and support Incident Command and Operations Section personnel within one hour of a relevant incident. Many States and jurisdictions used CASM to conduct, document, and update communications capabilities assessments. For this reason, CASM is closely tied to the TICP planning process, and can be used to generate data for the portion of the TICPs covering interoperability equipment and resources.

ICTAP conducted a comprehensive review process of the TICPs and prepared TICP Scorecards for each UASI. The TICP Scorecard evaluations focused on the governance, SOPs, and usage lane elements of the Interoperability Continuum. The TICP Scorecard results clearly demonstrated the progress being made by urban/metropolitan areas in their tactical interoperable

communications capabilities. Since their preparation, many States began developing statewide TICPs or TICPs for other regions within their States. Additionally, UASI coordinators were involved in the SCIP preparation process and TICIP initiatives are being integrated into the State SCIPs.

D. NECP Initiatives

Through the collection and analysis of these initiatives combined with other relevant data, OEC developed supporting initiatives to address the Nation's needs in the NECP. The NECP provides recommended initiatives to guide emergency response providers and relevant government officials in making measurable improvements in emergency communications capabilities. The recommendations help guide homeland security funds to improve emergency communications at the Federal, State, and local levels and to support the implementation of the NECP.³⁹

Governance

The NECP identified the following emergency communications capabilities as key to establishing successful governance structures:

- Strong multi-agency, multi-jurisdictional government leadership
- Formal, thorough, and inclusive interagency governance structures
- Clear lines of communication and decision-making
- Strategic planning processes
- Adequate funding and budgeting to cover not only initial system and equipment investment, but for the entire life cycle (operations, exercising, and maintenance).
- Increased budgetary support for emergency communications from State and local governments
- Broad regional (inter- and intra-State) coordination in technology investment and procurement planning

The NECP also identified seven objectives to improve emergency communications for responders across the Nation. The following two objectives involve immediate dependency on successful governance for statewide communications interoperability:

1. Formal decision-making structures and clearly defined leadership roles coordinate emergency communications capabilities
2. All levels of government drive long-term advancements in emergency communications through integrated strategic planning procedures, sustained funding approaches, and public-private partnerships

Listed below are the NECP initiatives developed to overcome the governance gaps identified in the SCIPs.

- **Initiative 1.1: Facilitate the development of effective governance groups and designated emergency communications leadership roles.** Uniform criteria and best practices for governance and emergency communications leadership across the Nation will better equip emergency response agencies to make informed decisions that meet the needs of their communities. Effective leadership positions and representative governance groups nationwide will standardize decision-making processes and increase the ability of emergency response agencies to share information and respond to incidents.
- **Initiative 1.3: Integrate strategic and tactical emergency communications planning efforts across all levels of government.** Tactical and strategic coordination will

³⁹ National Emergency Communications Plan.

eliminate unnecessary duplication of effort and maximize inter-agency synchronization, bringing tactical response together with strategic planning.

- **Initiative 2.5: Establish interoperability capabilities and coordination between domestic and international partners.** Emergencies occurring near international borders often require a bi-national response, necessitating interoperability with international partners. These countries often have different technical configurations and regulatory statutes than the United States. Coordination is essential to ensure that domestic and international legal and regulatory requirements are followed.

Standard Operating Procedures

The NECP identified the following capabilities necessary for successful, organized, and operational SOPs:

- Standardized and uniform emergency responder interaction during emergency response operations
- Standardized use and application of interoperable emergency communications terminology, solutions, and backup systems

The plan also identified the following objective involves immediate dependency on successful SOPs for Statewide communications interoperability:

- Emergency responders employ common planning and operational protocols to effectively utilize their resources and personnel

Listed below are the NECP initiatives developed to overcome the SOP gaps identified throughout the SCIPs:

- **Initiative 3.1: Standardize and implement common operational protocols and procedures.** A national adoption of plain language radio practices and uniform common channel naming, along with the programming and use of existing national interoperability channels, will allow agencies across all disciplines to effectively share information on demand and in real time. Common operational protocols and procedures avoid the confusion that disparate coded language systems and various tactical interoperability frequencies can create during mutual aid. Use of the existing nationwide interoperability channels with common naming will immediately address interoperability requirements for agencies operating in the same frequency band.⁴⁰
- **Initiative 3.2: Fully implement the NIMS and the NRF across all levels of government.** Emergency response agencies across all levels of government should adopt and implement national-level policies and guidance to ensure a common approach to incident management and communications support. Implementation of these policies

⁴⁰ National Telecommunication and Information Administration (NTIA) and the members of the Interdepartmental Radio Advisory Committee (IRAC), with support from the FCC, revised the NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management. NTIA amended the “Conditions for Use” and eliminated the requirement for an MOU between the non-Federal and Federal entities for use of the law enforcement (LE) and IR channels. The new conditions do, however, require the non-Federal entity to obtain a license and provide a point of contact for inclusion in the license application submitted to the FCC for use of the LE/IR channels.

will establish clearly defined communications roles and responsibilities and enable integration of all communications elements as the Incident Command Structure expands from the incident to the national level.

- **Initiative 3.3: Develop and implement model SOPs for specific events and all-hazards response.** The range of informal and formal practices and procedures that guide emergency responder interactions and the use of interoperable emergency communications solutions comprise SOPs. Agencies should develop, coordinate, and share best practices and procedures that encompass both operational and technical components. Command and control protocols should be NIMS-compliant, incorporating ICS as an operational guide. Procedures for the activation, deployment, and deactivation of technical resources should be included, as well as roles and responsibilities for operation, management, recovery, and continuity of equipment and infrastructure during an event. Agencies should identify procedures used to trigger and implement backup communications solutions in the event that primary systems and solutions become unavailable. As the scale of an event expands, procedures for the integration of communications solutions become increasingly critical. Agencies must institute processes by which policies, practices, and procedures are regularly developed and reviewed for consistency across agencies.

- **Initiative 7.1: Provide an integration framework for disaster communications operations and response to ensure that the Federal Government can effectively fulfill requests during incident response.** Although disaster communications capabilities are owned by many agencies and private sector entities, there is currently a limited understanding of how these capabilities would be integrated during operations. As evidenced by Hurricane Katrina, deployable assets were in use across the operations areas but there was limited coordination, and a common operating picture was not available to senior leaders across government.

Technology

The NECP also identifies the following technical capabilities needed to achieve the national vision:

- Voice and data standards that pertain to real-time situational information exchange and reports for emergency responders before, during, and after response
- Uniform model and standard for emergency data information exchange
- Testing and evaluation of emergency communications technology to help agencies make informed decisions about technology
- Public safety communications technology based on open standards
- Basic level of communications systems operability

The Plan identifies the following three technology objectives to improve emergency communications for responders across the Nation:

1. **Standards and Emerging Communication Technologies:** Emerging technologies are integrated with current emergency communications capabilities through standards implementation, research and development, testing and evaluation

2. **System Life-Cycle Planning:** All levels of government drive long-term advancements in emergency communications through integrated strategic planning procedures, appropriate resource allocations, and public-private partnerships
3. **Disaster Communications Capabilities:** The Nation has integrated preparedness, mitigation, response, and recovery capabilities to communicate during significant events

Listed below are NECP initiatives, developed to achieve the national objectives, which may impact SCIP plans:

- **Initiative 4.1: Adopt standards for voice and data emergency response capabilities.** Standards will enable agencies to make informed procurement decisions and benefit from emerging technologies. Compliance assessment programs provide a documented certification process for communications equipment and programs.
- **Initiative 4.3: Transition and/or integrate legacy systems with open architecture and next generation technologies.** Transitioning to open architecture and next generation technologies will allow emergency response agencies a greater ease of usage, functionality, and capabilities. The upcoming FCC narrowbanding deadline calls for non-Federal emergency response agencies operating in frequencies below 512 MHz to transition from 25 kilohertz (kHz) to 12.5 kHz channels in 2013 to ensure spectrum efficiency. Federal grants can facilitate the migration and transition from legacy to approved open architecture and next generation systems.
- **Initiative 4.4: Implement the Advanced Encryption Standard (AES) for Federal responders.** A standard nationwide encryption method will diminish the interoperability challenges faced by Federal responders (who previously used different methods) and will provide guidance to local and State agencies when working with Federal agencies.
- **Initiative 6.1: Conduct system life-cycle planning to better forecast long-term funding requirements.** Providing planning and business case best practices through technical assistance will enable leadership to project the true cost of sustaining its communications system and allow budgeting for maintenance and eventual replacement. Grant funding authorizations from states and the Federal Government should be prioritized to support cooperative, regional (intra-state or inter-state) system planning efforts.
- **Initiative 6.2: Expand the use of public and private sector partnerships related to emergency communications.** While the private sector owns more than 85 percent of critical infrastructure, government and public safety agencies own and operate communications systems that support their critical missions, including defense, law enforcement, and public safety. The private sector's capabilities include fixed, mobile, and rapidly deployable networks, assets, and facilities that can help ensure the success of emergency communications. A more formal understanding of the specific service offerings and capabilities of private sector organizations is required to better leverage existing and future communications capabilities.
- **Initiative 6.4: Enhance emergency communications system survivability by using redundant and resilient system design.** Disaster events can adversely affect the performance of the communications systems that agencies use for emergency response. Emergency response agencies must identify the events that can disrupt the

communications system components (e.g., radio repeaters, backhaul circuits, power systems) and develop plans to enhance survivability. Implementing redundant infrastructure, developing resilience strategies, identifying recovery time objectives, and exercising communications continuity plans will improve communications system survivability

- **Initiative 7.1: Provide an integration framework for disaster communications operations and response to ensure that the Federal Government can effectively fulfill requests during incident response.** Although disaster communications capabilities are owned by many agencies and private sector entities, there is currently a limited understanding of how these capabilities would be integrated during operations. Following Hurricane Katrina, deployable assets were in use across the operations areas, but there was limited coordination. In addition, a common operating picture was not available to senior leaders across government.
- **Initiative 7.2: Implement disaster communications planning and preparedness activities.** Identifying critical communications vulnerabilities and developing mitigation strategies is important for all agencies with operational responsibilities during major events. Agencies should evaluate the readiness posture of communications centers (e.g., Public Safety Answering Points [PSAP]) and emergency response and commercial networks that may be vulnerable to weather damage, flooding, and man-made disasters. The vulnerabilities identified should be a primary focus of disaster planning and preparedness activities. System planning activities should account for the availability of alternative and backup communications solutions and redundant pathways (i.e., provided by different vendors) to support communications if primary capabilities become unavailable.
- **Initiative 7.3: Leverage existing and emerging technologies to expand and integrate disaster communications capabilities among emergency response providers.** Deployable communications technologies can provide robust voice, video, and data capability for agencies requiring communications during disasters. Packaging these capabilities to be quickly deployable and easily integrated and interoperable is a significant hurdle. DHS will work across the government and private sector to enable more effective pre-positioning and integration of existing and cutting edge technologies.
- **Initiative 7.6: Promote the use of and expand the capabilities of priority services programs (e.g., GETS, WPS, and TSP) to next-generation networks.** Priority access services are critical to the ability of emergency responders to access telecommunications resources during an event. Major events result in high-level use of telecommunications resources by emergency responders and the public. It is critical that emergency response providers have access to telecommunications resources when needed to enable information exchange. Currently, the National Communications System sponsors several priority access services (i.e., GETS, TSP, and WPS) that are available for use by Federal, State, local, and tribal agencies. Based on mission requirements, agencies across levels of government should leverage these services to ensure access to telecommunications resources when needed. In addition, planning is needed to ensure the availability of these services as networks transition to next-generation technologies.

Training and Exercises

The NECP identified the following capabilities needed to achieve a nationwide future state of advanced communications interoperability:

- Uniform, standardized performance objectives to measure effectiveness of emergency responders communications capabilities
- Emergency response providers who are fully knowledgeable, trained, and exercised on the use and application of day-to-day and backup communications equipment, systems, and operations irrespective of the size of the emergency response

The NECP also identified the following two objectives involve immediate dependency on successful training and exercise programs:

1. Emergency responders have shared approaches to training and exercises, improved technical expertise and enhanced response capabilities
2. The Nation has integrated preparedness, mitigation, response, and recovery capabilities to communicate during significant events

In identifying these necessary capabilities and objectives, the NECP is seeking to build upon the interoperability progress we have already made as a Nation. OEC is responsible for ensuring that Interoperable Emergency Communications Grant Program (IECGP) funding is consistent with the SCIPs and with the NECP. OEC also encourages all States to align with the objectives, initiatives, and capabilities defined in the NECP.

HSEEP also provides information to consider when creating training and exercise programs to achieve a future state of complete interoperability throughout the Nation. States were encouraged to visit the HSEEP website (<https://hseep.dhs.gov>) while in the development process of the SCIPs, and are encouraged to continue visiting the website.

Listed below are the NECP initiatives developed to overcome the training and exercises gaps identified in the SCIPs:

- **Initiative 5.1: Develop and implement national training programs and certification processes.** Standardized training programs should be established to deliver regular training to all emergency responders to build knowledge and competency; across disciplines, jurisdictions, and levels of government; and with key private sector organizations as appropriate. These programs should also be evaluated regularly to determine their effectiveness and impact on performance and proficiency levels, and to ensure that existing content remains valid and new content is incorporated as appropriate.
- **Initiative 5.2: Develop and inject standardized emergency communications performance objectives and evaluation criteria into operational exercises.** Incorporating standardized objectives and evaluation criteria into exercise programs will ensure consistent evaluation of communications performance. By evaluating communications as part of operational exercises, leadership gains an increased awareness of communications gaps. This understanding will ensure communications needs are prioritized appropriately.
- **Initiative 5.3: Provide targeted training to improve skills and capabilities of technical staff.** Though most technicians receive formal communications training at the start of their careers and through informal on-the-job training, ongoing or refresher training is not commonly provided due to an insufficient number of qualified subject matter experts. Developing training programs for technical staff will increase not only the number but the expertise of technical and operational resources.