National Emergency Communications Plan

2014

Homeland Security

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MESSAGE FROM THE SECRETARY

Since the Department of Homeland Security (DHS) was established in 2003, one of its top priorities has been—and will continue to be—enhancing the communications capabilities of the Nation's emergency responders. Ensuring operable and interoperable communications and real-time information sharing among responders during all threats and hazards is paramount to the safety and security of all Americans.

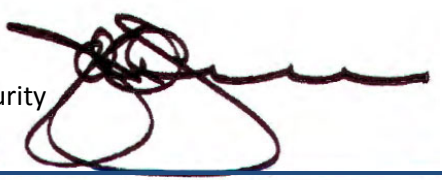
Emergency communications is a shared mission across all levels of government, the private sector, nongovernmental organizations, and even the public. The National Emergency Communications Plan is the cornerstone for coordinating this complex mission. The first Plan, published in 2008, was a tremendous success thanks to cross-stakeholder engagement and partnerships. DHS worked closely with emergency responders at all levels of government to meet critical benchmarks that were established in the Plan, including the most comprehensive nationwide assessment of communications used by response agencies and individuals. Emergency communications have improved since the first National Emergency Communications Plan due to the hard work and spirit of cooperation that are prevalent across the public safety community.

Many changes in the communications operating environment have occurred in recent years, presenting both opportunities and challenges for those involved in emergency communications. These changes include the emergence of new technologies to communicate and share information during emergencies, such as broadband services, applications, and social media, as well as the modernization of networks, devices, and information systems that support emergency communications. Concurrently in recent years, the Nation has adopted policies that focus on engaging the "whole community" in national preparedness activities.

As a result of this changing environment, DHS has worked closely with Federal, State, local, tribal, and territorial jurisdictions and the private sector to update the National Emergency Communications Plan with the goal of bringing public safety communications into the 21st Century. This Plan aims to maximize the use of all communications capabilities available to emergency responders—voice, video, and data—as well as ensure the security of data and information. To do so, the National Emergency Communications Plan emphasizes the need for enhancing and updating the policies, governance structures, planning, and protocols that enable responders to communicate and share information under all circumstances.

As with the first National Emergency Communications Plan, success will require the support and dedication of the emergency communications community that was instrumental in developing the recommendations set forth. To that end, I ask for your continued cooperation and assistance as we begin the implementation process for the 2014 National Emergency Communications Plan. Only by working together will we make progress toward increasing the speed, effectiveness, and efficiency of incident-related information sharing and ultimately help save lives and protect America's communities.

Jeh Charles Johnson
Secretary of Homeland Security



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2014 GOALS AND RECOMMENDATIONS

➢ **GOAL 1 – GOVERNANCE AND LEADERSHIP**: ***Enhance decision-making, coordination, and planning for emergency communications through strong governance structures and leadership.***

Recommendations:

- Update governance structures and processes to address the evolving operating environment.
- Increase intra-State collaboration of communications, broadband, and information technology activities.
- Increase regional structures or processes to foster multi-State coordination and information sharing.
- Enable the Emergency Communications Preparedness Center to serve as the Federal focal point for coordination with the First Responder Network Authority.
- Increase coordination of public safety and national security and emergency preparedness communications requirements and policies.
- Promote opportunities to share Federal emergency communications infrastructure and resources.
- Promote consistent policies across Federal grant programs and investments.
- Improve the ability to assess the impact of emergency communications grant funding.

➢ **GOAL 2 – PLANNING AND PROCEDURES:** ***Update plans and procedures to improve emergency responder communications and readiness in a dynamic operating environment.***

Recommendations:

- Update Statewide Communications Interoperability Plans to maintain Land Mobile Radio systems and address wireless broadband deployments.
- Coordinate Federal strategic planning for broadband capabilities through the Emergency Communications Preparedness Center.
- Enable One DHS to lead the implementation of a DHS strategic plan for emergency communications.
- Ensure nationwide public safety broadband planning is coordinated throughout each State and territory and focuses on responders' current and future needs.
- Establish points of contact to coordinate Federal broadband planning and deployment activities.
- Expand lifecycle planning activities to address broadband deployments and security, as needed.
- Evaluate, update, and distribute standard operating procedures to address new technologies and align them to tactical plans.
- Ensure standard operating procedures reflect current use of priority telecommunications services.
- Coordinate with entities from across the broader emergency response community to develop communications standard operating procedures.

➢ **GOAL 3 – TRAINING AND EXERCISES:** ***Improve responders' ability to coordinate and communicate through training and exercise programs that use all available technologies and target gaps in emergency communications.***

Recommendations:

- Develop training and exercise programs that target gaps in emergency communications capabilities and use new technologies.
- Identify opportunities to integrate more private and public sector communications stakeholders into training and exercises.
- Increase responder proficiency with Federal and national interoperability channels through training and exercises.

- Use regional governance structures to develop and promote training and exercise opportunities.
- Leverage technologies, conferences, and workshops to increase training and exercise opportunities.
- Promote awareness of and cross-training among Federal, State, local, tribal, and territorial Incident Command System Communications Unit personnel through training and exercises.
- Develop and share best practices on processes to recognize trained Communications Unit personnel.
- Improve States' and territories' ability to track and share trained Communications Unit personnel during response operations.

➢ **GOAL 4 – OPERATIONAL COORDINATION:** ***Ensure operational effectiveness through the coordination of emergency communications capabilities, resources, and personnel from across the whole community.***

Recommendations:

- Ensure inventories of emergency communication resources are updated and comprehensive.
- Enhance jurisdictions' ability to readily request communications resources or assets during operations.
- Implement Incident Command System communications-related roles, responsibilities, and planning.
- Ensure operational planning incorporates new technologies and communications partners.
- Ensure Public Safety Answering Point and Public Safety Communications Center continuity of operations planning addresses systems and staffing to support dispatch communications.
- Update procedures for implementing backup communications solutions.
- Increase Federal departments' and agencies' preparation and support for local emergency communications needs.

➢ **GOAL 5 – RESEARCH AND DEVELOPMENT:** ***Coordinate research, development, testing, and evaluation activities to develop innovative emergency communications capabilities that support the needs of emergency responders.***

Recommendations:

- Coordinate Federal research and development priorities and user requirements through the Emergency Communications Preparedness Center.
- Increase collaboration between Federal research and development and technology transfer programs across the homeland security, defense, and national security communities.
- Foster collaborative mission critical voice, data, and cybersecurity research, development, testing and evaluation.
- Government research facilities should facilitate the integration of Next Generation 9-1-1 into a nationwide solution.
- Cultivate an innovative marketplace for applications and technologies through the use of public and private partnerships.
- Support the evolution of alert and warning systems that deliver timely, relevant, and accessible emergency information to the public.
- Update priority service programs to successfully migrate to internet protocol-enabled fixed and mobile broadband networks.
- Increase use and awareness of the Project 25 Compliance Assessment Program.
- Continue to support Project 25 standards development for interoperability.

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EXECUTIVE SUMMARY

In 2008, the Department of Homeland Security (DHS) published the *National Emergency Communications Plan* (or the Plan) to accelerate improvements for public safety communications nationwide. Title XVIII of the *Homeland Security Act of 2002*, as amended, directs the DHS Office of Emergency Communications to develop and periodically update the National Emergency Communications Plan in coordination with Federal, State, local, tribal, territorial, and private sector stakeholders.[1] The law also directs the Plan to set benchmarks for enhancing emergency communications capabilities and for the Office of Emergency Communications to measure progress toward achieving those milestones.

> The National Emergency Communications Plan is a strategic national emergency communications plan that promotes communication and sharing of information across all levels of government, jurisdictions, disciplines, and organizations for all threats and hazards, as needed and when authorized.

The emergency communications landscape has evolved into a new, complex operating environment since the release of the 2008 National Emergency Communications Plan. Among the key developments are major changes in policy, legislation, budget conditions, and communications technologies. This includes the establishment of the First Responder Network Authority, which is charged with ensuring the building, deployment, and operation of a Nationwide Public Safety Broadband Network.

To prepare stakeholders for this dynamic environment, the Office of Emergency Communications led a national effort to update the National Emergency Communications Plan to account for new technologies for emergency responders. This Plan also addresses the necessity of Land Mobile Radio systems for ensuring the availability of mission critical voice capabilities.

The Office of Emergency Communications conducted outreach to more than 350 stakeholders involved in emergency communications to develop this version of the National Emergency Communications Plan. This included representatives from all major public safety organizations; emergency management agencies; Federal, State, local, tribal, and territorial governments; the private sector; and other emergency response agencies or entities such as utilities, nongovernmental organizations, and auxiliary resources.

Leveraging the foundation established by the 2008 National Emergency Communications Plan, this Plan aims to improve the key communications capabilities of emergency responders at all levels of government—notably the policies, governance structures, planning, and protocols that enable them to communicate and share information under all circumstances. The National Emergency Communications Plan's top priorities for the next three to five years are:

[1] Title 6 United States Code, § 572.

- Identifying and prioritizing areas for improvement in emergency responders' Land Mobile Radio systems;
- Ensuring emergency responders and government officials plan and prepare for the adoption, integration, and use of broadband technologies, including the planning and deployment of the Nationwide Public Safety Broadband Network; and
- Enhancing coordination among stakeholders, processes, and planning activities across the emergency response community.

To achieve these priorities, the Office of Emergency Communications has centered the National Emergency Communications Plan around five goals that provide continuity with the first national plan and align to the *SAFECOM Interoperability Continuum*.[2] The National Emergency Communications Plan goals are strategic in nature and aim to enhance emergency communications capabilities at all levels of government in coordination with the private sector, nongovernmental organizations, and communities across the Nation. The five National Emergency Communications Plan goals are:

- **Goal 1 - Governance and Leadership:** Enhance decision-making, coordination, and planning for emergency communications through strong governance structures and leadership
- **Goal 2 - Planning and Procedures:** Update plans and procedures to improve emergency responder communications and readiness in a dynamic operating environment
- **Goal 3 - Training and Exercises:** Improve responders' ability to coordinate and communicate through training and exercise programs that use all available technologies and target gaps in emergency communications
- **Goal 4 - Operational Coordination:** Ensure operational effectiveness through the coordination of communications capabilities, resources, and personnel from across the whole community
- **Goal 5 - Research and Development:** Coordinate research, development, testing, and evaluation activities to develop innovative emergency communications capabilities that support the needs of emergency responders

To implement the 2014 National Emergency Communications Plan, the Office of Emergency Communications will coordinate with public safety agencies and emergency responders from across the Nation through partnerships such as the SAFECOM Executive Committee/Emergency Response Council, the Emergency Communications Preparedness Center, and the National Council of Statewide Interoperability Coordinators, among others. Together, DHS and its partners will identify strategies and timelines to accomplish the Plan's goals, objectives, and recommendations and measure progress nationwide. The National Emergency Communications Plan's results will help DHS and Federal, State, local, tribal, and territorial stakeholders target their resources for emergency communications, including training, technical assistance, planning, outreach, and response and recovery operations.

[2] See Appendix 5 for more information on the *SAFECOM Interoperability Continuum*.

The future of emergency communications is at a critical juncture. Through the National Emergency Communications Plan and the work of the Office of Emergency Communications and its partners, DHS is committed to ensuring that our Nation's emergency responders can meet their mission needs and achieve the long-term vision of the Plan:

To enable the Nation's emergency response community to communicate and share information across levels of government, jurisdictions, disciplines, and organizations for all threats and hazards, as needed and when authorized

National Emergency Communications Plan Vision

To enable the Nation's emergency response community to communicate and share information across levels of government, jurisdictions, disciplines, and organizations for all threats and hazards, as needed and when authorized

1.0 INTRODUCTION

The Nation's preparedness and resilience continue to be tested by emergencies and disasters of varying scope and magnitude. This includes natural disasters that stretch across jurisdictional borders, such as hurricanes, earthquakes, and tornados; active shooter incidents in both large and small communities; and individual and terrorists' attempts to disrupt the safety and security of the American people, including the 2013 Boston Marathon bombings. These and other emergencies are stark reminders that our Nation must be ready to respond to all types of threats and hazards—whether natural, technological, or man-made.

Since the Department of Homeland Security's (DHS) establishment in 2003, one of its top priorities has been to improve the communications capabilities of those who are often the first to arrive at the scene of an incident: the Nation's emergency responders. DHS has partnered with the emergency response community to ensure that law enforcement, fire, and emergency medical services personnel have access to reliable and interoperable communications at all times in order to save lives, protect property and the environment, stabilize communities, and meet basic human needs following an incident.[3] This relationship reflects the fact that a government-centric approach is not sufficient to meet the challenges posed by today's threats and hazards.[4]

Emergency Communications

The means and methods for exchanging communications and information necessary for successful incident management.

Title XVIII of the *Homeland Security Act of 2002* provided renewed focus and vitality to this critical homeland security mission.[5] The legislation established the DHS Office of Emergency Communications to lead the development and implementation of a comprehensive national approach to advance national interoperable communications capabilities. To achieve this objective, the Act also required DHS to develop the *National Emergency Communications Plan* (or the Plan).[6]

[3] The term "response" is defined in the *National Preparedness Goal* and *National Response Framework*. The Goal establishes the capabilities and outcomes the Nation must accomplish in order to be secure and resilient. The *National Response Framework* is a guide to how the Nation responds to all types of disasters and emergencies. http://www.fema.gov/national-response-framework.

[4] Federal Emergency Management Agency. *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action*, December 2011, pg. 2.

[5] Title XVIII of the *Homeland Security Act of 2002* (Public Law 109-295).

[6] Appendix 1 provides a legislative compliance matrix that maps the National Emergency Communications Plan to its requirements in Title 6 United States Code § 572.

As the Nation's first strategic plan for emergency communications, the National Emergency Communications Plan established a vision for emergency responders at all levels of government to strive to achieve: ensuring the availability of communications as needed, on demand, and as authorized across all disciplines and jurisdictions. To achieve this vision, the Plan approached interoperability as a critical capability that must be developed and enhanced through partnerships, ongoing training, and joint planning and investments at all levels of government.

Statutory Requirements

The Homeland Security Act of 2002 (6 United States Code § 572) requires Department of Homeland Security (DHS) to establish and periodically update the National Emergency Communications Plan in cooperation with State, local, and tribal governments, Federal departments and agencies, emergency response providers, and the private sector and "provide recommendations regarding how the United States should support and promote the ability of emergency response providers and relevant government officials to continue to communicate in the event of disasters and to ensure, accelerate, and attain interoperable emergency communications nationwide." For more information on how the National Emergency Communications Plan meets the statutory requirements in 6 United States Code § 572, refer to Appendix 1.

Since the release of the first National Emergency Communications Plan in 2008, several technological, policy, and other developments have directly impacted emergency communications. One key development is the Nationwide Public Safety Broadband Network, which will be deployed using wireless Internet Protocol-based technologies. The Nationwide Public Safety Broadband Network will transform how emergency responders communicate and share information by increasing the availability of wireless broadband access and innovative mobile applications to public safety personnel nationwide.

In addition to technological developments, new policies provide direction for Federal departments and agencies on critical issues such as National Security and Emergency Preparedness communications.[7] Simultaneously, the Nation is evolving its approach to preparing for and responding to incidents through the *National Preparedness Goal*, which promotes a shared responsibility across all levels of government, private and nonprofit sectors, and the general public. DHS is also partnering with public and private sector stakeholders to improve the cybersecurity and resiliency of the Nation's critical infrastructure, including telecommunications networks and emergency services.[8] The *National Infrastructure Protection Plan 2013: Partnering for Critical Infrastructure Security and Resilience* guides the national effort to manage risk to the Nation's critical infrastructure.

Further, although natural phenomena such as hurricanes and other extreme weather events are not new hazards, trends in the frequency and severity of such events have increased their impact on the Nation. The DHS 2014 *Quadrennial Homeland Security Review* identifies evolving threats from natural disasters as having major implications for national preparedness and resilience, including emergency communications.[9]

[7] Executive Order 13618, *Assignment of National Security and Emergency Preparedness Communications Functions,* assigns national security and emergency preparedness communications functions to Federal Government entities to ensure Executive Branch communications at all times and under all circumstances to carry out its most critical and time sensitive missions.

[8] The *National Response Framework* defines private sector entities as large, medium, and small businesses; commerce, private cultural and educational institutions; and industry, as well as public-private partnerships that have been established specifically for emergency management purposes.

[9] Current and future versions of the *Quadrennial Homeland Security Review* can be found at http://www.dhs.gov/quadrennial-homeland-security-review-qhsr.

1.1 PURPOSE

In light of this changing environment, the Office of Emergency Communications led a national effort to develop a new National Emergency Communications Plan. The focus of this Plan is to ensure that strategies, resource decisions, and investments for emergency communications keep pace with the evolving environment, and that the emergency response community is collectively driving toward a common end-state for communications.

This version builds on the framework established by the 2008 National Emergency Communications Plan to enhance the key communications capabilities of emergency responders at all levels of government—notably the policies, governance structures, and planning and protocols that support their ability to communicate and share information under all circumstances.[10]

To develop the 2014 Plan, the Office of Emergency Communications used an extensive outreach process, involving more than 350 stakeholders, to identify the key challenges facing emergency communications and propose solutions to address them. The Office of Emergency Communications considered input from representatives from all major public safety organizations; Federal, State, local, tribal, and territorial governments; and key private sector partners, such as the communications and information technology sectors. They recommended updating the Plan's vision, goals, and objectives to reflect emergency responders' increasing use of data and video services during operations, as well as the continued need to maintain or upgrade their Land Mobile Radio mission critical voice communications capabilities.

To that end, the National Emergency Communications Plan identifies three top priorities for emergency communications over the next three to five years:

- Identifying and prioritizing areas for improvement in emergency responders' Land Mobile Radio systems;
- Ensuring emergency responders and government officials plan and prepare for the adoption, integration, and use of broadband technologies, including the planning and deployment of the Nationwide Public Safety Broadband Network; and
- Enhancing coordination among stakeholders, processes, and planning activities across the emergency response community.

1.2 SCOPE

The National Emergency Communications Plan is a plan for the Nation. It provides information and guidance to those that plan for, coordinate, invest in, and use communications to support response and recovery operations. This includes traditional emergency responder disciplines (e.g., fire, law

[10] For purposes of the National Emergency Communications Plan, the terms "share information" or "information sharing" refer to the exchange of data, information, or knowledge between various organizations, people, and technologies.

enforcement, emergency medical services), other entities that need to communicate and share information during emergencies, such as public health and medical, public works, and transportation agencies, as well as appointed and elected officials. The Plan is also designed for Federal, State, local, tribal, and territorial governmental personnel who are responsible for setting mission priorities, developing budgets, and planning for and acquiring communications technology assets.

In addition, the National Emergency Communications Plan seeks to increase coordination and planning with the growing number of entities that communicate and share information with public safety personnel and organizations during emergencies, including the public and other emergency response agencies or entities such as utilities, nongovernmental organizations, international partners, auxiliary resources, and commercial service providers.[11] In addition to interoperability, the Plan also provides recommendations to ensure that emergency response providers and relevant government officials (e.g., Federal Executive Branch, State, local, tribal, and territorial officials) can continue to communicate in the event of disasters and acts of terrorism.[12]

1.3 PROGRESS

The 2014 National Emergency Communications Plan builds upon the progress and lessons learned from implementing the 2008 Plan. As part of its legislative requirements, the Plan established a baseline level of interoperability and set timeframes for jurisdictions to achieve the baseline. Through the 2008 National Emergency Communications Plan goals, the Office of Emergency Communications measured communications capabilities throughout all 56 States and territories. More than 90 percent of the 2008 Plan's milestones to enhance emergency communications capabilities were achieved, and the Nation's jurisdictions collectively demonstrated the Plan's performance-based goals.[13]

Further, in addition to successfully meeting the Plan's requirements, the National Emergency Communications Plan improved key foundational elements for effective emergency communications. For example, as a result of the 2008 National Emergency Communications Plan, dozens of new governance structures and leadership positions were established at the State and territorial levels to coordinate planning and decision-making for interoperability and broadband deployment. In addition, hundreds of local public safety agencies have developed tactical plans and protocols to coordinate communications during emergencies, and several thousand responders and technicians have been trained to lead communications during incidents across the Nation.

1.4 ORGANIZATION OF THE NATIONAL EMERGENCY COMMUNICATIONS PLAN

The 2014 Plan supersedes the 2008 National Emergency Communications Plan and is effective immediately. The framework of the National Emergency Communications Plan is organized as follows:

[11] Per the *National Response Framework*, nongovernmental organizations include voluntary, racial and ethnic, faith-based, veteran-based, and nonprofit organizations that provide sheltering, emergency food supplies, and other essential support services. Nongovernmental organizations are inherently independent and committed to specific interests and values.
[12] 6 United States Code § 572.
[13] See Appendix 6 for a summary of progress implementing the 2008 National Emergency Communications Plan.

- **Section 2.0 – Emergency Communications Landscape.** This section provides an overview of the evolving operating environment, including key technological developments, and provides background for the Plan's priorities, goals, and recommendations.
- **Section 3.0 – National Emergency Communications Plan Strategic Components.** This section, as depicted in Exhibit 1, establishes the strategy to meet the Plan's priorities and better position the emergency response community for the current and evolving communications operating environment.
- **Section 4.0 – Implementation and Measurement.** This section describes the approach for measuring and assessing progress toward implementing the National Emergency Communications Plan and improving emergency communications capabilities at all levels of government, and across disciplines, nationwide.

Exhibit 1. The National Emergency Communications Plan Strategy

2.0 EMERGENCY COMMUNICATIONS LANDSCAPE

The emergency communications landscape has changed significantly since publication of the 2008 National Emergency Communications Plan. At that time, Land Mobile Radio systems were—and still are—the primary means for emergency responders to achieve mission critical voice communications. Public safety was in the early stages of adopting broadband and mobile data services, and the deployment of a nationwide public safety network was a notional concept. As a result, the 2008 National Emergency Communications Plan goals and priorities were largely focused around building the plans, processes, and structures to enhance Land Mobile Radio operability, interoperability, and continuity.

In recent years, a more complex and interdependent landscape has emerged due to new technologies, policies, and stakeholders involved in emergency communications. Land Mobile Radio systems delivering mission critical voice communications remain an integral component of the landscape; however, emergency responders are using more mobile data services and applications to share information and augment their mission critical voice capabilities.

Involving the Whole Community

The whole community concept, which is the underlying principle of Presidential Policy Directive 8 and the National Preparedness Goal, is a means by which individuals, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests.

In addition, response agencies are becoming more connected to other entities that need to communicate and share information during emergencies, such as public health, medical, and transportation agencies, critical infrastructure sectors (e.g., Energy, Information Technology, and others), and the public. While individuals in these entities are not always trained response personnel, they can help share valuable information and provide situational awareness during response and recovery efforts. This can be attributed to technology advancements, such as the widespread use of social media during emergencies, as well as new national preparedness doctrine that underscores the importance of engaging the whole community during emergencies.[14]

Moreover, information security and privacy considerations also shape the operating environment. The increasing availability of data and information essential to emergency communications operations and related technologies has both fundamentally changed and enabled more efficient and effective practices. This information is vulnerable to unauthorized access that could affect its confidentiality,

[14] Per the *National Preparedness Goal*, whole community is formally defined as, "A focus on enabling the participation in national preparedness activities of a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of Federal, State, and local governmental partners in order to foster better coordination and working relationships." Refer to Appendix 4, *Roles and Responsibilities*, for more information on the whole community.

integrity, or availability. It is critical to coordinate on security and privacy issues, as well as the management of sensitive data, while maintaining the availability and distribution of information for those who need it; this entails being transparent about information-sharing practices; protecting sources and methods; and ensuring privacy[15] and protecting civil liberties, while also enabling law enforcement investigations. This section addresses how the convergence of people, processes, and technologies is transforming the emergency communications landscape now and into the future.

2.1 Land Mobile Radio and Wireless Broadband Infrastructure

For nearly a century, the public safety community has used Land Mobile Radio networks for reliable, instantaneous, two-way voice communications. Land Mobile Radio systems are designed to meet emergency responders' unique mission critical requirements and support time-sensitive, lifesaving tasks, including rapid voice call-setup, group calling capabilities, high-quality audio, and guaranteed priority access to the end-user. Because these radio systems support lifesaving operations, they are designed to achieve high levels of reliability, redundancy, coverage, and capacity, and can operate in harsh natural and man-made environments. Land Mobile Radio technology has progressed over time from conventional analog voice service to complex systems incorporating digital and trunking features. These enhancements have improved the security, reliability, and functionality of voice communications.

For the foreseeable future, the public safety community is expected to follow a multi-path approach to network infrastructure use and development. Land Mobile Radio systems will remain the primary tool for mission critical voice communications for many years to come; in fact, for many public safety agencies, maintaining their Land Mobile Radio systems and improving operability and interoperability continue to be their top communications priorities.

To augment their Land Mobile Radio capabilities, emergency response agencies are increasingly using commercial wireless broadband services and, in some cases, procuring private broadband networks with faster data capabilities. Although commercial broadband networks do not meet public safety's unique requirements for mission critical voice communications, they can provide a range of data capabilities that enhance operational efficiency.

[15] Applying Fair Information Practice Principles to government and private sector stakeholder programs is a best practice for ensuring that privacy protections are included. The Fair Information Practice Principles are the widely-accepted framework of principles used to assess and mitigate privacy impacts of information systems, processes, or programs. It contains eight interdependent principles: Transparency, Individual Participation, Purpose Specification, Data Minimization, Use Limitation, Data Quality and Integrity, Security, and Accountability and Auditing. These principles form a framework that can be applied to any type of information collection, use, or sharing activity; the exact implementation of each principle, however, will vary based upon context.

Broadband networks, particularly the Nationwide Public Safety Broadband Network, stand to transform how emergency responders will communicate by providing unparalleled connectivity and bandwidth that enhance situational awareness and information sharing. Moreover, the Nationwide Public Safety Broadband Network will offer emergency responders benefits that are not available using only commercial systems, including the ability to provide coverage of underserved geographic areas and the ability to prioritize bandwidth allocations for public safety use, especially during catastrophic incidents.

The emergency response community's adoption of broadband capabilities is likely to occur in phases over several years. The pace will vary among agencies and jurisdictions depending on the requirements of the local operating environment, the lifecycle of current communications systems, and funding levels. As the public safety community integrates broadband into its emergency communications operations, a number of challenges will need to be addressed at all levels of government. These challenges will involve not only technology but, much like Land Mobile Radio, will also involve governance, standard operating procedures, training, and sustainable investments.

2.2 Broadband Applications and Services

The move toward a wireless broadband infrastructure will provide the means to transfer large amounts of data almost anywhere, at any time, at much faster rates than those available today. Similar to the commercial Internet, this high-bandwidth connectivity will allow mobile public safety personnel to use software applications to easily exchange media-rich information for emergency response and recovery.

Mobile applications and services are one of the largest, fastest-growing commercial markets in the world. Table 1 provides several examples of public safety broadband applications in use today. Such solutions—developed as part of the broader, commercially-based, broadband communications ecosystem—will constantly evolve and improve along with innovations in commercial technology.

Table 1. Examples of Public Safety Broadband Applications

Video Streaming	A firefighter's helmet camera is streaming real-time video back to an emergency operations center. Video surveillance feed from an ensuing crime scene is sent to dispatch and then to multiple responders within seconds.
Mapping/ Location-Based Services	Geocoded police points of interest appear on a map on an officer's mobile device as they move about a jurisdiction; map push-pins represent addresses flagged for known hazards and include drill-down information such as street level photos and recent crime data.
Large Data File Transfers	Detailed images from a disaster scene are integrated with incident management databases for decision by incident commanders. Building blueprints are sent to a firefighter's hardened mobile device.
Telemetry	Emergency medical personnel place sensors on a patient during an event and transmit vital signs to the nearest hospital. Temperature sensors from firefighter devices generate a heat map of a building interior, allowing civil engineers to determine the structural integrity of the building.

With the adoption of broadband technologies and applications, understanding and preparing for the security risks associated with the open architecture and vast complexity of Internet-based technologies and services will be critical for the public safety community. Cybersecurity, for example, is becoming a key consideration for public safety officials as new Internet Protocol-enabled technology is integrated into their operations. This will require the public safety community to implement effective strategies to enhance the resiliency of cyber and Internet Protocol-based infrastructures and safeguard private or sensitive information transmitted and stored by connected systems and devices.[16,17]

In order to meet these challenges, a multifaceted approach will be needed to ensure the confidentiality, integrity, reliability, and availability of data. For example, comprehensive cyber training and education on the proper use and security of devices and applications, phishing, malware, other potential threats, and how to stay on guard against attacks will be required. In addition, planning must match user needs against bandwidth requirements and the options for network resiliency. Finally, assessments of cyber risks and strategies to mitigate vulnerabilities must be conducted before the deployment of Internet Protocol-based networks occurs to ensure that mission requirements can be met securely and reliably from the outset. For public safety communications, strong security features will need to be built into the design and deployment of the Nationwide Public Safety Broadband Network, with the appropriate layers of control and security at both the core and access networks.

2.3 Modernizing Emergency Communications: Communications and Information Exchange Across the Whole Community

In addition to the Nationwide Public Safety Broadband Network, communication network modernization is occurring in other parts of emergency management and response communities, with significant ramifications for communications and coordination in the field. Among these developments are efforts to update the Nation's 9-1-1 infrastructure to Next Generation 9-1-1, an Internet Protocol-based model that will enable the transmission of digital information (e.g., texts, images, and video). In addition, the deployment of a nationwide public alerting system is using traditional media, such as broadcast and cable, as well as Internet Protocol-based technologies to transmit alerts to mobile phones and other devices.

While communications among responders play the most direct and immediate role in saving lives and protecting property, responders can be supported by communications from other stakeholders working collectively in the greater environment. As a result, a broader emergency communications ecosystem

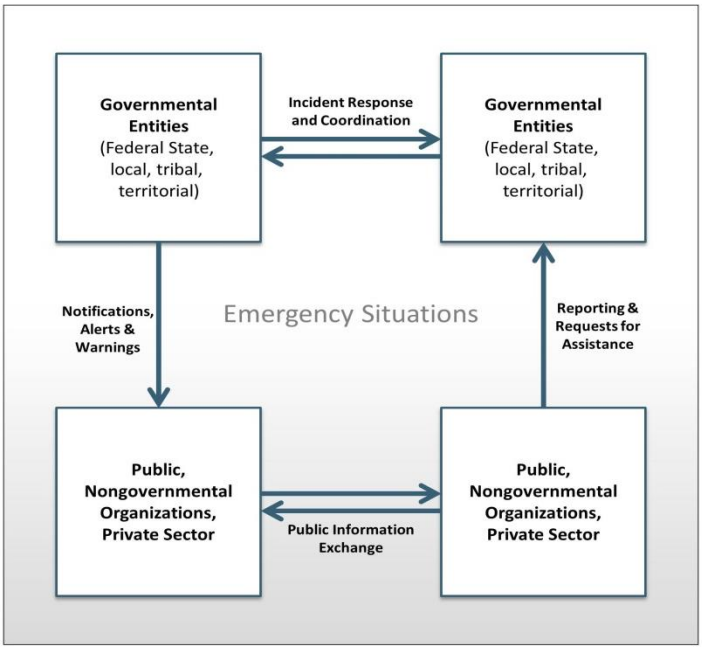
[16] The 2013 *National Infrastructure Protection Plan* defines cybersecurity as "the prevention of damage to, unauthorized use of, or exploitation of, and, if needed, the restoration of electronic information and communications systems and the information contained therein to ensure confidentiality, integrity, and availability. Includes protection and restoration, when needed, of information networks and wireline, wireless, satellite, public safety answering points, and 9-1-1 communications systems and control systems." http://www.dhs.gov/national-infrastructure-protection-plan.

[17] In February 2014, the National Institute of Standards and Technology released Version 1.0 of the *Framework for Improving Critical Infrastructure Cybersecurity*. The document, created through collaboration between the government and the private sector, is a voluntary risk-based approach to cybersecurity that uses industry guidelines to help organizations manage cyber risks to critical infrastructure. http://www.nist.gov/cyberframework/upload/cybersecurity-framework-021214-final.pdf.

has emerged that consists of many inter-related components and functions, including communications for incident response operations, notifications and alerts and warnings, requests for assistance and reporting, and public information exchange.[18] The primary functions are depicted in Exhibit 2 and described below.

- **Communications for Incident Response and Coordination.** These are primarily government-to-government functions that encompass communications between responders in the field, communications between a dispatch center and responders, and communications between government agencies at various levels providing incident support. These types of communications are critical for establishing command and control, conducting operations, and maintaining situational awareness during incidents. The primary communications networks that serve this function include Land Mobile Radio, commercial and private wired and wireless broadband networks, and, once it becomes fully operational, the Nationwide Public Safety Broadband Network.

Exhibit 2. Emergency Communications Ecosystem



- **Notifications and Alerts and Warnings.** This key communications function involves issuing alerts, warnings, and incident-related information, primarily from government agencies over privately owned communications networks and services to individuals, private sector entities, and nongovernmental organizations. The primary objective of alerts and warnings is to communicate potential threat and safety-related information to advise and protect the public in emergency situations. Prior to anticipated incidents (e.g., hurricanes, severe storms, or floods), the government may issue alerts and warnings such as evacuation notices or other information to help the public prepare. Following an incident, messaging from government agencies and public information officers is vital to relaying time-sensitive information on immediate response and recovery-related services to the general public. Several key communications systems enable this function, including the Integrated Public Alert and Warning System—which consists of the Emergency Alert System and Wireless Emergency Alert system—the National Warning System, and the National Oceanic and Atmospheric

[18] This graphic depicts the key uses and functions of emergency communications during emergencies. It should not be viewed as linear, as emergency communications are increasingly dynamic and multi-directional. For example, although communications in many emergency situations start with an individual's request for assistance, emergencies may start with a Federal, State, local, tribal, or territorial government agency's communications warning of an impending threat or weather situation.

Administration Weather Radio All Hazards. DHS' National Cybersecurity and Communications Integration Center and the National Infrastructure Coordinating Center also provide incident-related information to critical infrastructure owners and operators so they can take necessary action. In addition to these systems, more government agencies are using social media to relay time-sensitive warnings and information to the public.

- **Public Information Exchange.** Individuals often provide situational awareness to their family members and communities during incidents. This function is primarily supported by commercial networks, including the increasing use of social media by individuals and entities during emergencies. This function also applies to communications and information sharing from and between private sector entities that support government response, including utility companies and critical infrastructure operators that share information on the availability of their services, resources, and status of service restoration.

- **Requests for Assistance and Reporting.** Emergencies are often first reported to authorities by members of the public seeking assistance. Emergency 9-1-1 systems are the key communications systems that support this function. In the future, Next Generation 9-1-1 will enhance the capabilities of current 9-1-1 networks, allowing the public to transmit pictures, videos, and text messages that will provide additional situational awareness to dispatchers and emergency responders. In addition to calls to Public Safety Answering Points and Public Safety Communications Centers, programs such as the DHS "See Something, Say Something" campaign have increased the number of reports and tips from concerned individuals to government agencies, as has the use of social media. In addition, amateur radio operators also serve as key contributors in this function as they can be important conduits for relaying information to response agencies and personnel when other forms of communications have failed or have been disrupted. Some nongovernmental and private sector entities support this function by providing situational awareness of an incident to assist the government with response and recovery (e.g., utilities reporting on the status of service outages, commercial communications companies reporting infrastructure and service outages to the Federal Communications Commission (FCC) through the Disaster Information Reporting System and the Network Outage Reporting System.[19,20]

Modernization of these emergency communications components is facilitating the flow of information and communications among government agencies, the private sector, and the public, and in some cases, with entities from neighboring countries. The sample scenario in Exhibit 3 demonstrates the potential benefits of these interconnected emergency communications functions, including enhanced situational awareness, operational coordination, and decision-making.[21] Wireless broadband networks and applications will greatly influence incident operations as they become more prevalent and are

[19] FCC Disaster Information Reporting System: http://transition.fcc.gov/pshs/services/cip/dirs/dirs.html.
[20] FCC Network Outage Reporting System: http://transition.fcc.gov/pshs/services/cip/nors/nors.html.
[21] This is a notional scenario. While each of the applications is feasible today, it is not anticipated that all jurisdictions or communities will be required or able to implement these capabilities.

more widely adopted by emergency responders. As a result, the scenario provided in Exhibit 3 will likely begin to occur more frequently.

In addition to the benefits of this increased flow of communications and information, there are potential communications challenges for the emergency response community. While improvements in the quantity, quality, occurrence, timeliness, and type of information available to responders can enhance information sharing and communications during operations, they can also overload or degrade the information if the flow is not interoperable, properly secured, and managed so that the right information gets to the right people, at the right time. This reinforces the need for joint decision-making, planning, and investments to coordinate mutually-supportive strategies as Next Generation 9-1-1, the Nationwide Public Safety Broadband Network, nationwide public alerting systems, and other major capabilities are deployed across the Nation.

"Future 911 systems will use Internet protocols to facilitate interoperability and system resilience, and to provide better connections between 911 call centers, emergency responders, and alert and warning systems … Operational convergence of emergency communications seems to many to be inevitable, a question of "when," not "if." There is a growing realization among public safety officials, policy makers and others that 911 services could be part of a larger solution for emergency communications that links citizens with first responders and with emergency services such as hospitals through an interconnected system of communications networks and call centers."

– **Congressional Research Service** "An Emergency Communications Safety Net: Integrating 911 and Other Services"

Exhibit 3. Emergency Communications Ecosystem at Work – A Potential Scenario

Following a collision with a telephone pole, the driver of an overturned oil tanker truck texts a 9-1-1 operator that he is trapped in his vehicle's cabin. The 9-1-1 operator provides the information to several responders identified as being closest to the incident by their geo-location, including a police officer, a firefighter, two Emergency Medical Services units, and a hazardous materials team. A woman at the scene simultaneously uses social media capabilities on her smartphone to send photos to authorities and raise awareness among neighbors.

Having already been alerted to the unusual traffic congestion caused by the accident through a traffic-monitoring application, the police officer is already on the way using the quickest path, thanks to a dynamic routing application provided via smartphone and synched with the vehicle's audio system and video display.

Meanwhile, the electric utility company has been alerted to damage its infrastructure sustained during the incident through its continuous monitoring system. A repair team is dispatched to ensure power at the site and in the vicinity.

Based on photos and video provided by the public that identify the truck and its crash disposition, the Public Safety Answering Point is able to share information from the ground quickly so that responders can make quick and accurate decisions regarding the likely risk associated with the oil tanker crash and the mitigation steps responders should take.

The Public Safety Answering Point remotely selects the responding personnel through a public safety application loaded on their Internet Protocol-enabled mobile devices. Each responder is displayed on a local map with his/her skillset profile and an estimated time of arrival on scene. It also displays any resources that may be of use, such as fire hydrants and medical facilities. With this knowledge in hand, responders use their interoperable Project 25 radios to initiate voice communications and coordinate with each other in advance of arrival.

Video of the incident is now streaming to each first responder's smartphone from a traffic camera adjusted to give the best view of the incident. The traffic signs at local highways have all automatically adjusted to route traffic around the incident using machine-to-machine communications.

Public alerting authorities and local news stations have placed indications of the accident on Twitter and Facebook. Government alerts have been texted to smartphones in the incident area. Alerting mapping applications allows the public to avoid the accident route.

The 9-1-1 operator has been able to text the truck driver with an estimated response time. In addition, the operator has provided health information provided by the truck driver directly to Emergency Medical Services responders. When the emergency medical personnel make contact, they outfit the driver with sensors and upload his vital signs to the nearest hospital.

Enabled by broadband, responders arrive on scene with: (1) the full medical profile of the trapped driver; (2) foreknowledge of the priority actions to take to mitigate risks associated with the damaged oil tanker; (3) awareness of the arrival times and skill sets of other responders; (4) integrated support from the power utility and a hospital; and (5) the ability to focus on the incident, rather than a need for significant traffic management. In addition, communications applications and responder-enabled video gear has archived the incident response for precise after action reporting.

3.0 NATIONAL EMERGENCY COMMUNICATIONS PLAN STRATEGIC COMPONENTS

The National Emergency Communications Plan provides strategic direction and recommended key next steps for the emergency response community in an evolving communications landscape. For example, governance structures and processes need to address both current mission critical and emerging technologies; strategic plans must account for the sustainment of Land Mobile Radio and the continued integration of broadband; and training and exercises will need to emphasize lessons learned and prepare for entirely new operational processes. These priorities need to evolve to address the modernization of emergency communications, as well as the role of the whole community supporting incident communications.[22]

As depicted in Exhibit 1, the National Emergency Communications Plan strategy reflects a focus on the people, processes, and technology that are critical components to ensuring successful emergency communications under all threats and hazards. The National Emergency Communications Plan is structured around five strategic **goals** that drive the emergency response community toward the Plan's vision. Each goal is supported by a series of **objectives**; within each objective there are several actionable **recommendations** for various partners. They also promote the goals of the *Homeland Security Act of 2002*, such as the need to identify interoperability and continuity capabilities; identify obstacles to deploying interoperable capabilities; and recommend short- and long-term measures to enhance coordination and communication among Federal, State, local, tribal, and territorial governments.[23] As with the 2008 National Emergency Communications Plan, the Office of Emergency Communications will work with its partners to develop appropriate strategies and benchmarks to accomplish the recommendations.

The National Emergency Communications Plan's objectives and recommendations promote the concepts outlined in Presidential Policy Directive – 8: *National Preparedness*; the *National Preparedness Goal*; the *National Incident Management System*; and the *National Planning Frameworks*. While the majority of the proposed recommendations in the National Emergency Communications Plan support the Response mission area and the Operational Communications core capability identified in the *National Preparedness Goal*, many of the actions also foster integration and inter-relationships among all five mission areas—Prevention, Protection, Mitigation, Response, and Recovery.

Emergency Communications during the Boston Marathon Bombings – April 2013

"Interoperability was a success story. Over the years, millions of dollars have been invested under local, regional and state interoperability plans, and our investments in mutual aid channels, tactical channel plans, radio towers, new radios, and specialized training allowed first responders, as well as command level personnel, to effectively communicate by radio between agencies, between disciplines, and between jurisdictions."

– **Kurt N. Schwartz**, Undersecretary for Homeland Security & Homeland Security Advisor Director, Massachusetts Emergency Management Agency
Testimony before the House Homeland Security Committee

[22] The National Emergency Communications Plan goals and objectives align to the elements of the *SAFECOM Interoperability Continuum*. DHS developed the *SAFECOM Interoperability Continuum* in partnership with the public safety community to help agencies and jurisdictions identify their communications needs and track progress in implementing them. See Appendix 5 for more information.

[23] 6 United States Code § 572. Refer to Appendix 1 for a crosswalk of the legislative requirements to sections of the Plan.

3.1 GOAL 1: GOVERNANCE AND LEADERSHIP

- ***Enhance decision-making, coordination, and planning for emergency communications through strong governance structures and leadership***

Role of Governance and Leadership in Emergency Communications

When the 2008 National Emergency Communications Plan was released, the Nation was confronting a number of long-standing mission critical voice communications issues—notably, operability, interoperability, and continuity challenges among emergency responders. These challenges were compounded by the lack of coordination among emergency communications disciplines and jurisdictions, often leading to disjointed approaches to planning and the acquisition of disparate radio systems that were not interoperable with neighboring localities.

2012 National Emergency Communications Plan Progress Report Key Governance Findings

The percentage of jurisdictions with governance capabilities at the most advanced level – formal decision-making groups that are involved in strategic planning for emergency communications – was double that of the SAFECOM Baseline Survey in 2006.

The National Emergency Communications Plan was a key step toward increasing coordination across the emergency response community by promoting governance as a top national priority. DHS components helped implement this Plan by targeting grant policies, technical assistance offerings, and other activities to support coordination, planning, and decision-making across all levels of government, jurisdictions, and disciplines. Moving forward, DHS will continue to work with its stakeholders to build and update robust governance structures. These structures are important to maintaining current voice systems and ensuring that the planning, investment, and deployment of broadband systems incorporate emergency responders' needs and requirements.

Advancements in Governance and Leadership

To drive progress in this area, DHS has worked closely with its stakeholders to establish formal governance structures and processes at all levels of government—both domestically and internationally—and to improve coordination between the emergency response community and the private sector. Recognizing the need for statewide coordination, the Office of Emergency Communications partnered with State and territorial officials to support the creation and ongoing operation of Statewide Interoperability Governing Bodies or Statewide Interoperability Executive Committees in every State and territory. Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees serve as the primary steering groups for statewide interoperability activities.

The Office of Emergency Communications also provided guidance and support to increase the number of Statewide Interoperability Coordinators and created the National Council of Statewide Interoperability Coordinators to foster information sharing and coordination among emergency communications leaders. Statewide Interoperability Coordinators serve as the central coordination point for the daily operations of a State's interoperability efforts. They are critical for implementing the

Statewide Communication Interoperability Plan and coordinating governance activities, grants, training and exercises, and policy development to enhance interoperability throughout their State or territory.[24]

At the Federal-level, coordination on interoperability issues was limited prior to the release of the 2008 National Emergency Communications Plan. The Emergency Communications Preparedness Center, comprised of 14 Federal departments and agencies, was in the early stages of organizing itself as the focal point for coordinating Federal emergency communications activities, including coordinating Federal input to the National Emergency Communications Plan.[25] In 2010, the Emergency Communications Preparedness Center issued its first strategic agenda and has since instituted a collaborative framework that drives coordination on Federal priorities and investments in several key areas, including Federal broadband programs and emergency communications grants. In addition, DHS established the One DHS Emergency Communications Committee to coordinate intra-DHS emergency communications activities.

Enhancements in governance also extend to State and territorial collaboration within and between regions and with international partners. For example, in 2009, the Federal Emergency Management Agency (FEMA) appointed Disaster Emergency Communications Regional Emergency Communications Coordinators to support the administration of the Regional Emergency Communications Coordination Working Groups in each of the 10 FEMA Regions. These and other regional activities, including the Office of Emergency Communications' Regional Coordination Program, have helped form relationships between States and territories on key emergency communications planning and response actions.

In addition, coordination with international partners has expanded through the establishment of partnerships such as the Southwest Border Communications Working Group and the Canada – United States Communications Interoperability Working Group. Both working groups provide opportunities to align interoperability strategies and to resolve bilateral issues of common interest concerning cross-border communications and information exchange.

Key Gaps and Challenges Driving Action

While the growth in governance bodies at the Federal, State, local, tribal, territorial, and regional levels is a significant accomplishment, many of these entities were originally established to address Land Mobile Radio interoperability issues. The emergency response community must now evolve its

[24] Prior to the establishment of the Office of Emergency Communication, only eight States had developed strategic plans for emergency communications. Currently, all 56 States and territories have Statewide Communication Interoperability Plans and work with the Office of Emergency Communications to update them on an annual basis to improve interoperability statewide.
[25] The *Fiscal Year 2007 Department of Homeland Security Appropriations Act* (Public Law 109-295) established the Emergency Communications Preparedness Center to improve coordination of Federal emergency communications efforts, including information sharing, planning, operations, grants, and technical assistance. The Act also directs the Emergency Communications Preparedness Center to coordinate Federal aspects of the National Emergency Communications Plan.

governing structures to address changes in the environment. Fortunately, there is already a strong foundation for future progress. Federal, State, local, tribal, and territorial governments should focus on expanding or updating current structures, processes, and investments in governance.

A key challenge moving forward will be ensuring coordination between traditional Land Mobile Radio governance programs and other decision-making offices, bodies, and individuals that oversee broadband and technology deployments in States, localities, tribes, and territories. This includes coordination between Statewide Interoperability Coordinators and the State Single Point of Contact for the First Responder Network Authority, if different, as well as with those offices and individuals that oversee technology procurement, information security, budgeting for broadband systems, and emergency management.[26] Collaboration among these individuals, as well as their participation in State governing processes, will ensure coordination between legacy communications planning and maintenance, such as Land Mobile Radio systems and legacy 9-1-1 systems, and the deployment of new technologies and networks, including Next Generation 9-1-1, alerting, and the Nationwide Public Safety Broadband Network.

Further, the dynamic nature of the emergency communications landscape requires frequent assessment of memberships, policies, and priorities of Federal and regional governing bodies to ensure they are positioned to address new challenges. The planning and deployment of the Nationwide Public Safety Broadband Network will also require continued collaboration between the communications and information technology sectors and all levels of government. Increasing these partnerships has many benefits in an evolving operating environment, including the ability to share information and resources, realize potential cost savings, and help responders overcome challenges associated with access and coordination to needed infrastructure and data.

Objectives and Recommendations

The National Emergency Communications Plan strives to ensure that existing governance structures and processes are updated accordingly to foster collaboration on Land Mobile Radio and emerging technologies. The following recommendations are focused on improving cooperation at all levels of government, as well as more effectively coordinating Federal activities and financial assistance programs.

- **OBJECTIVE 1.1: Strengthen governance structures and processes to enhance State, local, tribal, and territorial collaboration and decision-making.** The emergency response community has come together to form a number of successful governance and leadership structures throughout States, localities, tribes, and territories across the Nation, including the establishment of Statewide Interoperability Coordinators, Statewide Interoperability Governing Bodies, and Statewide Interoperability Executive Committees. They were initially focused on Land Mobile Radio issues;

[26] The *Middle Class Tax Relief and Job Creation Act of 2012* (Public Law 112-96) created the First Responder Network Authority, as an independent authority within the National Telecommunications and Information Administration, to provide emergency responders with the first high-speed, nationwide network dedicated to public safety.

however, with the emergence of new technologies and users, these governing bodies must expand their focus to address new technologies and other developments.

Recommendations:

- **Update governance structures and processes to address the evolving operating environment.** With assistance from DHS, State, local, tribal, and territorial jurisdictions should assess their existing governance structures to ensure they are positioned to address current and emerging policy, technology, and planning developments. This could include adding representatives to Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees from associations, organizations, or agencies that support or rely on communications during response and recovery operations (e.g., emergency management agencies, 9-1-1 boards, hospital associations, utilities, and amateur radio organizations). Border States should also assess the need for international representation. As part of this effort, States, territories, tribes, and jurisdictions should also review and update, as necessary, key operating documents for their Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees (e.g., charters, agreements, policies, and procedures) to ensure they are positioned to address new technology deployments and facilitate coordination with the Statewide Interoperability Coordinators. The National Council of Statewide Interoperability Coordinators is positioned to provide additional guidance and coordination for this recommendation.

- **Increase intra-State collaboration of communications, broadband, and information technology activities.** States and territories should develop strategies, processes, and best practices to increase intra-State coordination among leadership offices that oversee emergency communications, information technology, cybersecurity, and broadband programs. For each State or territory, this includes ensuring collaboration among the Statewide Interoperability Coordinators; State Single Point of Contact; chief information officer or chief technology officer; chief information security officer; the director of the State Administrative Agency; and the State's Governor's office, as appropriate. This also applies to coordination between governance structures with communications oversight, such as Statewide Interoperability Governing Bodies, Statewide Interoperability Executive Committees, and 9-1-1 Boards.

Multi-State Collaboration Promotes Understanding of Requirements and Resources

The eight States in FEMA Region IV, along with Arkansas and Louisiana, coordinated to develop a Strategic Interstate Communications Resource Allocation Plan that identifies available communications resources in each of the 10 States that could potentially be deployed to assist another State during a large-scale incident.

- **Increase regional structures or processes to foster multi-State coordination and information sharing.** There has been an increased emphasis on regional coordination to enhance preparedness for incidents that exceed traditional jurisdictional boundaries, such as cyber attacks and large-scale natural disasters, like Hurricane Sandy in 2012. This focus has led to the establishment of more regional organizations across the Nation, such as Regional Emergency Communications Coordination Working Groups

and Regional Interoperability Councils that foster multi-State communications coordination, as well as groups like the All Hazards Consortium that focus on general emergency management activities.[27] State, local, tribal, and territorial jurisdictions are encouraged to increase their involvement in these multi-State partnerships through formal agreements, activities, or sharing best practices with neighboring States. They should also look to address activities that cross more than one FEMA Region or involve neighboring countries.

- **OBJECTIVE 1.2: Leverage the Emergency Communications Preparedness Center to increase coordination of Federal programs and requirements.** At the time of the 2008 National Emergency Communications Plan, the Emergency Communications Preparedness Center was a nascent organization focused on building its membership and identifying joint priorities. The Emergency Communications Preparedness Center has since evolved to focus on aligning Federal emergency communications planning and investments, and facilitating resource sharing. As emergency communications technologies and practices evolve, the Emergency Communications Preparedness Center should continue to serve as the focal point on key Federal issues, including outreach and broadband user requirements.

  Recommendations:

  - **Enable the Emergency Communications Preparedness Center to serve as the Federal focal point for coordination with the First Responder Network Authority.** As an interagency program comprised of 14 Federal departments and agencies with emergency communications responsibilities, the Emergency Communications Preparedness Center is well-positioned to provide the First Responder Network Authority with valuable information on the needs of Federal stakeholders. The Emergency Communications Preparedness Center member agencies represent much of the Federal Government's role in emergency communications, including operational usage, policy, grants, research and development, and technical assistance. To provide efficiency and organizational clarity, the Emergency Communications Preparedness Center will serve as the primary body for Federal coordination with the First Responder Network Authority, including Federal broadband user requirements.[28] Moving forward, the Emergency Communications Preparedness Center should work with the First Responder Network Authority to incorporate Federal requirements; provide an inventory of Federal assets for the Nationwide Public Safety Broadband Network; coordinate Federal research and development activities; and further define the Nationwide Public Safety Broadband Network's potential Federal user base.

[27] Established in 2005, the All Hazards Consortium is focused on homeland security and emergency management issues and involves representatives from the States of North Carolina, Maryland, Virginia, West Virginia, Delaware, Pennsylvania, New Jersey, and New York, as well as New York City-NY, Newark-NJ, Philadelphia-PA, and the National Capital Region (Washington D.C.).

[28] In a December 7, 2012, memo from the First Responder Network Authority Board Chairman to the Under Secretary for National Protection & Programs Directorate, the First Responder Network Authority expressed its plan to utilize the Emergency Communications Preparedness Center as an ongoing means of interacting and collaborating with key Federal stakeholder agencies on network deployment and operations matters.

- **Increase coordination of public safety and national security and emergency preparedness communications requirements and policies.** National security and emergency preparedness communications refers to the ability of Federal departments and their leadership to maintain communications at all times under all circumstances.[29] National security and emergency preparedness and public safety communications capabilities may be linked during responses to large-scale disasters that require Federal, State, local, tribal, and territorial support. The National Security and Emergency Preparedness Communications Executive Committee was established in 2012 to advise the President on national security and emergency preparedness requirements to enhance the survivability, resilience, and future architecture of national security and emergency preparedness communications. Given DHS' responsibilities for both national security and emergency preparedness and public safety communications, the Department should work with its Federal partners to increase coordination and information sharing between the Emergency Communications Preparedness Center and the Executive Committee. Collaboration between these groups can better align Federal communications priorities, requirements, and policies.

- **Promote opportunities to share Federal emergency communications infrastructure and resources.** Given fiscal constraints and the continued need to maintain and upgrade legacy communications systems, Federal agencies should promote infrastructure and resource collaboration across all levels of government. The Emergency Communications Preparedness Center should facilitate the exchange of information on existing Federal systems, planned modernization, or consolidation efforts to help identify opportunities to share infrastructure with Federal, State, local, tribal, and territorial governments. This includes identifying and streamlining processes for shared infrastructure for Land Mobile Radio and other communications systems that support response and recovery operations.

➢ **OBJECTIVE 1.3: Enhance the coordination and effectiveness of Federal emergency communications grants and investments.** Federal grant programs have played a vital role in building emergency communications capabilities nationwide, particularly related to governance. The Office of Emergency Communications coordinates with the SAFECOM Executive Committee/Emergency Response Council to annually develop the *SAFECOM Guidance on Emergency Communications Grants* to provide recommendations to grantees for improving interoperability.[30] This guidance document is also critical for ensuring consistency across the Federal Government's

[29] Executive Order 13618*, Assignment of National Security and Emergency Preparedness Communications Functions*, July 2012.
[30] The *SAFECOM Guidance on Emergency Communications Grants* provides grantees with information on emergency communications policies and technical standards for improving interoperability. The SAFECOM Guidance is updated annually and can be found at www.safecomprogram.gov.

grant programs for emergency communications. Further, in 2008, the Emergency Communications Preparedness Center established a Grants Focus Group to improve coordination of Federal emergency communications financial assistance programs, including grants, loans, and cooperative agreements. Through the Emergency Communications Preparedness Center Grants Focus Group, Federal agencies with emergency communications grant programs should focus on improving: (1) the coordination of grant policies, priorities, and processes to enhance consistency; and (2) the assessment of grant-funded activities.

SAFECOM Guidance on Emergency Communications Grants — Priorities

- Leadership and Governance
- Statewide Planning
- Training and Exercises
- Activities that Enhance Operational Coordination
- Standards-Based Equipment

Recommendations:

- **Promote consistent policies across Federal grant programs and investments.** To ensure Federally-funded investments are coordinated, compatible, and interoperable, Federal departments and agencies should adopt and reference common grant guidance, such as the *SAFECOM Guidance on Emergency Communications Grants,* in emergency communications grant program materials. This document provides information to grantees seeking to implement emergency communications projects. It includes recommendations on how to coordinate with statewide leaders to ensure investments align with statewide plans and are not duplicative. Also included are recommendations on procurement of standards-based equipment to ensure Federally-funded investments are compatible and interoperable. To promote consistent policies from the Federal level, DHS will identify effective approaches to procuring emergency communications equipment across multiple technologies. In addition, DHS will provide sample language that State and local entities can use in contract vehicles to support inter- governmental purchasing, reduce duplication in purchases, achieve cost savings, and ensure compliance with technical standards that promote interoperability. At the same time, the Emergency Communications Preparedness Center Grants Focus Group should continue to drive the development and adoption of common policies, procedures, terminology, and grant guidance for Federal departments and agencies. This includes increasing the use of the *Emergency Communications Preparedness Center Recommendations to Federal Agencies: Financial Assistance for Emergency Communications* and the *Emergency Communications Preparedness Center Federal Financial Assistance Reference Guide,* which aim to improve Federal agencies' understanding of key policies and technological standards that promote interoperability.[31]

- **Improve the ability to assess the impact of emergency communications grant funding.** The Emergency Communications Preparedness Center Grants Focus Group should coordinate efforts to enhance the Federal Government's ability to understand, assess, and report on Federal funding for emergency communications activities. Central to this effort is implementing a

[31] The *2013 Emergency Communications Preparedness Center Recommendations to Federal Agencies: Financial Assistance for Emergency Communications* sets the national strategy for Federal financial assistance programs that fund emergency communications—including grants, loans, and cooperative agreements.

standard approach for collecting emergency communications data at the project level. The success of this initiative will require participation from all Federal departments and agencies responsible for administering emergency communications grants.

3.2 GOAL 2: PLANNING AND PROCEDURES

- ***Update plans and procedures to improve emergency responder communications and readiness in a dynamic operating environment***

Role of Planning and Procedures in Emergency Communications

Strong governance and partnerships can facilitate another key component of successful emergency communications—the development of strategies, plans, and operating procedures. Plans and operating procedures are especially critical in the current operating environment, as they can help Federal, State, local, tribal, and territorial governments manage their future mission critical voice needs and capabilities, as well as the deployment of new mobile data services and applications. To meet this challenge, response agencies at all levels of government will need to assess their strategic, business, operational, and tactical planning needs on a regular basis and update them as needed.

Advancements in Planning and Procedures

The 2008 National Emergency Communications Plan established a planning framework to guide diverse stakeholder efforts at all levels of government. As a result, all 56 States and territories have formal planning processes, led by their Statewide Interoperability Coordinators, to develop, implement, and update statewide strategic plans. The Statewide Communication Interoperability Plans have been useful in bringing together the emergency communications stakeholder community to identify near- and long-term initiatives to improve communications.

Standard Operating Procedure Progress — National Emergency Communications Plan Goals Findings

- Significant increase of jurisdictions having developed formal Standard Operating Procedures compared to 2006 SAFECOM Baseline Survey;
- More jurisdictions reported using Standard Operating Procedures during response operations;
- Increase in the adoption of National Incident Management System in Standard Operating Procedures, including greater use of plain language and Incident Command System forms for communications, such as Incident Radio Communications Plans (Incident Command System Form 205).

At the local level, DHS has coordinated the development of Tactical Interoperable Communications Plans in more than 150 jurisdictions. The Department has also worked with many States and all 10 FEMA Regions to develop Regional Emergency Communications Plans.

In addition, there has been an increase in both the development and use of emergency communications standard operating procedures nationwide. Public safety organizations' focus on these procedures has helped establish a more consistent and comprehensive approach for establishing intra- and interagency communications following an incident, enabling effective emergency responses to disasters and incidents such as Hurricane Sandy and the Boston Marathon bombings.

Key Gaps and Challenges Driving Action

To date, most emergency communications plans and procedures have focused on achieving operability and interoperability of mission critical voice communications capabilities. Given the rapidly evolving

operating environment, agencies and jurisdictions will need to update or develop new strategies to guide the investment, deployment, and security of both Land Mobile Radio and broadband communications systems. This includes planning and procedures for how spectrum will be used during emergencies, such as which entities are authorized to transmit on specific frequencies and what they are allowed to broadcast. Furthermore, given that responsibilities for emergency communications and information technology are many times led by different agencies, coordination is critical to ensure consistent priorities and strategies for deploying broadband services across States and territories. As an example, since some emergencies may require unplanned spectrum assignment changes, agency spectrum managers should be involved in emergency communications planning and operations.

In addition, as the emergency response community continues to integrate broadband services and technologies into their daily operations, DHS will work with public and private sector entities to refine their existing tactical plans, policies, and standard operating procedures. The DHS Critical Infrastructure Partnership Advisory Council is a mature partnership to leverage for coordinating planning across sectors that are involved in emergency communications, including the communications, information technology, intergovernmental, and emergency services sectors.[32]

Objectives and Recommendations

The following objectives and recommendations provide guidance to agencies at all levels of government to position their strategic, operational, and business planning initiatives in the evolving emergency communications environment.

- **OBJECTIVE 2.1: Increase strategic planning at all levels of government to address emergency communication gaps, new technologies, and stakeholders.** Federal, State, local, tribal, and territorial emergency response agencies should update existing or develop new strategic plans to address current emergency communications capabilities and gaps, as well as the deployment and use of new technologies (e.g., broadband, Next Generation 9-1-1, common alerting protocols, and social media).[33] In addition, to facilitate coordination and information exchange throughout the broader community, strategic planning for emergency communications should incorporate entities from across the Information Sharing Environment, as appropriate.[34] The Federal Government will continue to coordinate and support national strategic planning efforts for emergency communications through guidance and provision of support services, such as technical assistance and grant guidance.

[32] DHS, Critical Infrastructure Sector Partnerships Home Page. http://www.dhs.gov/critical-infrastructure-sector-partnerships.
[33] The Common Alerting Protocol is a digital format for exchanging emergency alerts that allows a consistent alert message to be disseminated simultaneously over many different communications systems. http://www.fema.gov/common-alerting-protocol.
[34] The Information Sharing Environment broadly refers to the people, projects, systems, and agencies that enable responsible information sharing for national security. https://www.ise.gov.

Recommendations:

- **Update Statewide Communication Interoperability Plans to maintain Land Mobile Radio systems and address wireless broadband deployments.** States and territories should update their Statewide Communication Interoperability Plans to plan for the deployment of wireless broadband services, while maintaining and enhancing legacy emergency communications systems and functions (e.g., Land Mobile Radio, Public Safety Answering Points, and Public Safety Communications Centers). In addition, Statewide Interoperability Coordinators are encouraged to collaborate with other communications and technology officials within their State/territory (e.g., State chief information officers, chief technology officers, and chief information security officers) to ensure a consistent approach on statewide planning activities for new technology deployments. As part of this effort, States should consider involving neighboring States in the development of the Statewide Communication Interoperability Plan. States and territories should continue to report progress in implementing their Statewide Communication Interoperability Plans to the Office of Emergency Communications on an annual basis.

Statewide Communication Interoperability Plan Workshops Promote Interoperability, Enhanced 9-1-1 Efforts

In 2013, the State of Iowa held its first joint planning workshop between the Statewide Interoperable Communications Systems Board and the Enhanced 9-1-1 Communications Council. As a result of this workshop, participants developed joint and separate goals and initiatives that were eventually incorporated into Iowa's Statewide Communications Interoperability Plan to support the strategic joint vision and mission of the Enhanced 9-1-1 Council and Iowa Statewide Interoperable Communications Systems Board. The two governing bodies have continued to collaborate on the implementation of the plan and other initiatives.

- **Coordinate Federal strategic planning for broadband capabilities through the Emergency Communications Preparedness Center.** Decision-makers within Federal departments and agencies should determine how their organizations could benefit from broadband technology to either improve or augment legacy capabilities. To inform Federal broadband planning efforts, Federal departments and agencies should coordinate their broadband requirements (e.g., coverage, roaming, priority access, and user base), as well as potential costs and applications, through the Emergency Communications Preparedness Center Broadband Focus Group. In turn, the Emergency Communications Preparedness Center will coordinate Federal input to the First Responder Network Authority for Nationwide Public Safety Broadband Network planning and development activities.

- **Enable One DHS to lead the implementation of a DHS strategic plan for emergency communications**. The One DHS Emergency Communications Committee will coordinate the implementation and track progress of a Department-wide integrated communications interoperability plan. The DHS plan will establish goals and priorities to improve interoperable and emergency communications, including Land Mobile Radio voice integration with broadband data technology. It will also provide a shared understanding of the roles, responsibilities, and

ongoing initiatives for integrating parallel emergency communications activities across the Department.

- **OBJECTIVE 2.2: Increase preparation for the adoption and deployment of the Nationwide Public Safety Broadband Network and wireless broadband technologies at all levels of government.** Federal, State, local, tribal, and territorial entities should conduct comprehensive outreach and planning to ensure that the deployment of broadband systems and technologies, including the Nationwide Public Safety Broadband Network, meets their responders' communications needs at initial operating capability and beyond. This includes having a complete understanding of their current broadband usage and coverage requirements. It also requires coordination with the First Responder Network Authority, as the final authority on Nationwide Public Safety Broadband Network-related decisions, to ensure input to and implementation of the business plan for building the foundational elements of the organization and the Nationwide Public Safety Broadband Network infrastructure. As an example, the National Public Safety Telecommunications Council has developed a series of user requirements to assist the First Responder Network Authority in the Nationwide Public Safety Broadband Network's design and architecture.[35]

> **State Broadband Planning**
>
> "The decision of a state to accept, or "opt-in," to the First Responder Network Authority's proposed plan for that state, or to not accept, and "opt-out" of that plan will be a major one. It is the goal of the First Responder Network Authority to develop an environment of "opt-in" throughout the country."
>
> – **Samuel Ginn**
> Former Chairman, First Responder Network Authority Board
> Testimony Before the House Subcommittee on Communications and Technology

Recommendations:

- **Ensure Nationwide Public Safety Broadband Network planning is coordinated throughout each State and territory and focuses on responders' current and future needs.** The Single Point of Contact within each State and territory should coordinate with local jurisdictions and tribal nations to document their current broadband usage, identify user needs, and establish baseline Nationwide Public Safety Broadband Network coverage requirements. States and territories should also identify potential infrastructure that can be shared to fill gaps in network deployment to ensure reduced network costs and economies of scale.[36,37] State and territorial Single Point of Contact should

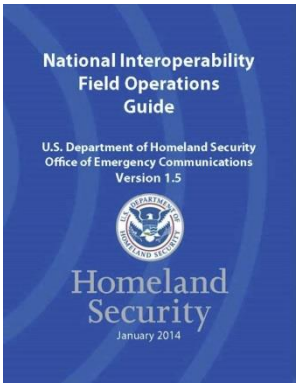
[35] The National Public Safety Telecommunications Council Broadband Working Group and its task groups research and define public safety broadband requirements in a number of key areas. http://www.npstc.org/broadband.jsp.
[36] As discussed in Goal 4, the DHS Communications Asset Survey and Mapping Tool provides a capability to document each State and territories' fixed and transportable assets.
[37] The Office of Emergency Communications Technical Assistance Program provides a variety of tools to assist States and territories with planning for Nationwide Public Safety Broadband Network deployment in coordination with the First Responder Network Authority. See http://www.publicsafetytools.info for more information.

also coordinate with local jurisdictions to develop a methodology to prioritize future broadband coverage needs.

- **Establish points of contact to coordinate Federal broadband planning and deployment activities.** Federal departments and agencies are encouraged to identify points of contact—whether an individual, office, or process—to coordinate key planning activities related to the Nationwide Public Safety Broadband Network's deployment.[38] These points of contact should collaborate with the Emergency Communications Preparedness Center, which will coordinate overall Federal broadband activities for the First Responder Network Authority, including Federal coverage requirements and infrastructure sharing.

- **Expand lifecycle planning activities to address broadband deployments and security, as needed.** Public safety agencies at all levels of government are encouraged to expand their system lifecycle planning efforts for current mission critical Land Mobile Radio systems to address the deployment of any planned broadband systems and other technologies, such as information technology services. Broadening lifecycle planning can improve coordination and planning of system refresh and replacement activities in support of the long-term transition to broadband systems. In addition, given the increased cybersecurity threats that could compromise broadband systems, agencies' lifecycle planning should analyze, address, and monitor system risks.

➢ **OBJECTIVE 2.3: Improve emergency responders' ability to communicate and share information through comprehensive standard operating procedures.** As more emergency responders adopt new technologies and applications, standard operating procedures will be critical for responders to coordinate and use communications equipment and facilities during response and recovery operations. In some cases, procedures may need to be updated to address entities, individuals, or organizations that provide or use communications during emergencies (e.g., utilities, the transportation sector, commercial carriers). In support of this recommendation, DHS will periodically update and publish the National Interoperability Field Operations Guide to ensure that it provides up-to-date radio frequency information to assist those establishing or repairing emergency communications in a disaster area.



Recommendations:

- **Evaluate, update, and distribute standard operating procedures to address new technologies and align them to tactical plans.** Jurisdictions and agencies should periodically assess and revise their standard operating procedures to ensure they appropriately incorporate new technologies used during response and recovery operations. This includes accounting for social media as a means of disseminating and receiving information to and from the public. Standard operating procedures should also align with a jurisdiction's existing tactical plans (e.g., Tactical

[38] DHS components should use the One DHS process to ensure a coordinated approach for departmental activities.

Interoperable Communications Plans) to achieve interoperable emergency communications and be widely distributed to users—including other emergency response entities such as utility companies, public health and medical organizations, or nongovernmental organizations, as appropriate.

- **Ensure standard operating procedures reflect current use of priority telecommunications services.** All levels of government should periodically review the priority service programs (e.g., Telecommunications Service Priority, Government Emergency Telecommunications Service, and Wireless Priority Service) to which they subscribe and ensure they have standard operating procedures governing the programs' use, execution, and testing. Key elements of the standard operating procedures should include the capabilities of each service; the method and points of contact to activate or subscribe to them; guidelines for usage and training; and potential cost recovery mechanisms available for use during State or Federally-declared disasters.[39]

- **Coordinate with entities from across the broader emergency response community to develop communications standard operating procedures.** As agencies review and update their emergency communications standard operating procedures, they are encouraged to involve entities that directly provide, use, or support communications during emergencies. This may include local, tribal, territorial, and regional entities, as well as international partners, auxiliary responders, and industry representatives, as appropriate. Further, standard operating procedures should include contact information for key industry representatives to provide access to timely communications resources and expedite restoration efforts (e.g., infrastructure owners and operators, public health, medical, public works, transportation entities, utility companies, and commercial telecommunications carriers).

[39] More information on Wireless Priority Service, Telecommunications Service Priority, and Government Emergency Telecommunications Service can be found at http://www.dhs.gov/about-office-emergency-communications under "Related Resources" on the right.

3.3 GOAL 3: TRAINING AND EXERCISES

- ***Improve responders' ability to coordinate and communicate through training and exercise programs that use all available technologies and target gaps in emergency communications***

Role of Training and Exercises in Emergency Communications

Effective training and exercise programs can bolster emergency responders' proficiency with communications equipment, as well as improve their ability to execute policies, plans, and procedures governing the use of communications. Continuing to train on Land Mobile Radio systems is necessary to ensure that emergency responders can achieve mission critical voice communications. However, as wireless broadband and other communications technologies become integrated into response and recovery operations, the need for training and exercises becomes even more critical to ensure that response personnel are routinely practicing with new communications capabilities to maximize their benefits.

Advancements in Training and Exercises

Improving emergency responders' skills and capabilities was one of the 2008 National Emergency Communications Plan's top priorities. Since then, notable strides have been made toward increasing the availability of emergency communications-specific training courses and field exercises. In recent years, DHS has designed and conducted multiple exercises under the Homeland Security Exercise and Evaluation Program to assess the Nation's response capabilities, including communications interoperability and continuity. Several of these were functional exercises, like the 2011 National Level Exercise, that tested communications among multi-jurisdictional and multi-disciplinary emergency responders, command posts, agencies, and government officials.[40,41]

DHS has worked closely with public safety agencies across the Nation to increase training opportunities for their communications personnel. For example, more than 4,000 emergency responders have taken DHS' All-Hazards Communications Unit Leader course, and more than 1,000 have taken the Department's Communications Technician course.[42] Both of these positions are critical for communications operability and interoperability—especially the functionality of communications equipment during incidents or planned events.

[40] Homeland Security Exercise and Evaluation Program policy and guidance is available at https://www.llis.dhs.gov/hseep.
[41] National Level Exercise 2011 was a Tier 1 exercise that occurred on May 16-19, 2011. Tier 1 exercises are mandated by Congress and coordinated by FEMA. The functional exercise component of National Level Exercise 2011 began with a simulated earthquake along the New Madrid fault line. It included more than 10,000 Federal, State, regional, local, private sector, and nongovernmental organization participants.
[42] More information on Communication Unit Leader and Communications Technician courses can be found at http://www.dhs.gov/video/communications-unit-leader-training#.

In addition to training, DHS has worked with States, localities, tribes, and territories to develop exercise programs that target their most pressing emergency communications issues. The Office of Emergency Communications Technical Assistance Program has helped State, territories, local jurisdictions, and tribal nations design, execute, and evaluate communications-focused tabletop, full-scale, and functional exercises to address gaps specific to their communications needs. In addition, the Office of Emergency Communications' implementation of the 2008 National Emergency Communications Plan showed that regular training and exercising have a direct correlation to operational effectiveness.[43]

Key Gaps and Challenges Driving Action

While States and territories have made progress to ensure training and exercises support the communications needs of their emergency responders, various challenges still remain. Reductions in budgets that support State, local, tribal, and territorial training and exercise programs have made it difficult for some States to establish formal oversight bodies to recognize and train Communications Unit personnel, which presents challenges with consistency in certification criteria. Further, turnover and reduction of staff have made it critical to efficiently educate new personnel on emergency communications equipment, protocols, and responsibilities. These issues can be compounded by logistical challenges associated with responder participation in formal training and exercise activities, as they may require shifting staff schedules, overtime pay, and increased time commitment, and travel.

The National Emergency Communications Plan recognizes the impact that these challenges can have on the availability and frequency of communications-focused training and exercise programs. At the same time, in order to be effective, these programs will need to evolve to reflect the changing operating environment. This means that agencies must assess their programs to ensure they align with national response doctrine, such as the *National Incident Management System* and the *National Response Framework*; account for new communications technologies being used by responders; and address gaps identified during assessments and after-action reports.

Public safety agencies will also need to broaden the scope of their training and exercise programs to address communications and information sharing with new entities, as well as the use of new technologies. As discussed in Section 2.0, communications from other sources, such as Public Safety Answering Points and Public Safety Communications Centers, the private sector, volunteer organizations, and the general public, are impacting operational coordination and decision-making for public safety officials. Training and exercises will be critical for emergency responders to foster coordination with these partners, as well as to manage and filter the large amounts of information (i.e., data, video, and voice communications) from these sources. Moving forward, public safety agencies will need to consider training and exercises that involve the broader emergency communications community and account for both Land Mobile Radio and broadband, as appropriate.

[43] DHS, *Progress Report on Implementing the National Emergency Communications Plan: Fiscal Year 2012 Report to Congress*, April 17, 2013, pg. 16.

Objectives and Recommendations

The 2008 National Emergency Communications Plan training and exercise milestones were focused on two key areas: (1) expanding communication-specific exercises around the Nation; and (2) developing standardized training for emergency responders who use or manage communications resources, mainly Land Mobile Radio systems. While this Plan seeks to build on the success of those initiatives, it also emphasizes the need for Federal, State, local, tribal, and territorial entities to regularly assess and update their training curricula and exercise criteria to reflect changes in the operating environment. In addition, this Plan provides suggestions to make the most efficient use of training and exercise opportunities given budget constraints, as well as recommendations to maximize the benefits of using trained Communications Unit personnel during response operations.[44]

- **OBJECTIVE 3.1: Update training and exercise programs to address gaps in emergency communications, as well as emerging technologies, policies, and partners.** As communications technologies continue to evolve, the need for training and exercises becomes even greater to ensure personnel are proficient in the increasing number of diverse capabilities used during incident response. Agencies will need to assess and update their training and exercise programs to ensure relevancy and completeness, and incorporate changes in policies, procedures, partners, and technologies. This includes revising training and exercises to ensure consistency with the Homeland Security Exercise and Evaluation Program and national response doctrine and guidance, such as the *National Incident Management System* and the *National Response Framework*.

  Recommendations:

  - **Develop training and exercise programs that target gaps in emergency communications capabilities and use of new technologies.** Federal, State, local, tribal, and territorial entities should review after-action reports from real-world incidents and exercises to determine how they can incorporate lessons learned into the objectives for their training and exercise programs. This may include addressing resource gaps, lack of adherence to procedures, areas for improvement with Land Mobile Radio, or other challenges. Programs should also reflect the use of new communications technologies, including mobile broadband, social media, and wireless emergency alerts, as appropriate.

[44] The Communications Unit is led by a Communication Unit Leader and includes Communication Technicians, incident communications center personnel, and technical specialists, all of whom can provide expertise and resources to maintain effective communications throughout an incident or event.

- **Identify opportunities to integrate more private and public sector communications stakeholders into training and exercises.** Federal, State, local, tribal, and territorial jurisdictions should identify domestic and international entities with potential roles in information sharing and the delivery of emergency communications during emergencies (e.g., utility companies, amateur radio operators, nongovernmental organizations, media companies, and telecommunications owners, operators, manufacturers, and suppliers). As appropriate, these entities should be incorporated into training and exercise activities on a more regular basis. This includes involving the appropriate stakeholders in curriculum or exercise design and execution, as necessary.

- **Increase responder proficiency with Federal and national interoperability channels through training and exercises.** Federal agencies should work with emergency response personnel to pre-program Federal and national interoperability channels into their radios and conduct regular training on them. These shared channels are common resources that are useful for initial on-the-scene coordination and communications. To that end, Federal departments and agencies should assess their current communications training curriculum and exercise programs to ensure they address the use of interoperability channels in designated public safety spectrum bands and the National Interoperability Field Operations Guide.[45,46]

➢ **OBJECTIVE 3.2: Increase awareness and availability of emergency communications training and exercise opportunities at all levels of government.** Implementation of the National Emergency Communications Plan and analysis of after-action reports from real-world incidents have shown that participating in training and exercises is a key indicator of an entity's or individual's success in the field. Given the importance of testing, agencies should identify cost-effective approaches for emergency responders to access these activities (e.g., distance learning or local training and exercises). Greater awareness of opportunities can be achieved through use of new technologies, as well as increased messaging of training and exercise opportunities through governance bodies. DHS will

Communications Interoperability Case Study

"The Department of Homeland Security (DHS) Office of Emergency Communications conducted an exercise during a previous Boston Marathon to test and train for communications interoperability. Based on lessons learned from this DHS assistance and funding for technology, our emergency radio communications system worked without incident[...] In the past, the police, fire and Emergency Medical Services personnel would not have been able to communicate because of our different radio systems."

– **Edward F. Davis III**
Commissioner, Boston Police Department, before the U.S. Senate Committee on Homeland Security and Government Affairs
July 10, 2013

[45] Interoperability channels are radio channels used for multi-disciplinary and multi-jurisdictional response. Planning radio channel usage and programming interoperability channels into radios in advance of emergencies or planned events can enhance preparedness and communications.

[46] *National Interoperability Field Operations Guide Sixth Printing,* April 2013. http://www.publicsafetytools.info/start_nifog_info.php.

continue to support State, local, tribal, and territorial training and exercises through the Office of Emergency Communications' Regional Coordination and Technical Assistance Programs and work with the public safety community to ensure these services continue to stay viable and current.

Recommendations:

- **Use regional governance structures to develop and promote training and exercise opportunities.** Regional governing bodies, such as the Regional Emergency Communications Coordination Working Groups and Regional Interagency Steering Committees, should collect and disseminate information on relevant and beneficial training and exercise opportunities to statewide governing bodies, such as the Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees. In turn, State and territorial entities should conduct outreach on training and exercises to increase awareness at the local level and with any tribal nations. This can increase preparation and coordination during cross-border or multi-State incidents.

- **Leverage technologies, conferences, and workshops to increase training and exercise opportunities.** Given budget constraints, Federal, State, local, tribal, and territorial governments should take advantage of scheduled stakeholder meetings and workshops as potential opportunities to develop or hold training, tabletop exercises, or operational-based exercises. These meetings could also serve as opportunities to review certain training standards or discuss communications-related exercise objectives or observations from recent exercises. In addition, agencies are encouraged to leverage new technologies to conduct virtual exercises and create opportunities to evaluate operational performance.

➢ **OBJECTIVE 3.3: Enhance the awareness, use, and tracking of trained Communications Unit personnel during response operations.** The 2008 National Emergency Communications Plan promoted the development and implementation of national training programs and recognition processes for emergency responders who use or manage communications resources. To help achieve these objectives, the Office of Emergency Communications, in conjunction with the FEMA Emergency Management Institute, implemented Communications Unit Leader and Communications Technician courses to ensure that every State and territory has trained personnel capable of deploying and operating advanced equipment during an incident or planned event. Over the past several years, Communications Unit Leaders and Communications Technicians have been successful in maintaining, reestablishing, and coordinating emergency communications functions during major disasters, including Hurricanes Sandy and Irene, wildfires in Arizona and New Mexico, and tornadoes and ice storms in the South and Midwest. The National Emergency Communications Plan seeks to build on this progress by aiming to have all Communications Unit positions (e.g., Communications Unit Leader, Communications Technician, and Radio Operator) more effectively integrated into operations and to improve States' and territories' capability to track and share trained communications personnel.

Recommendations:

- **Promote awareness of and cross-training among Federal, State, local, tribal, and territorial Incident Command System Communications Unit personnel through training and exercises.** State, local, tribal, and territorial governments are encouraged to develop educational materials and training opportunities for dispatchers, incident commanders, and executive-level leaders to improve their understanding of the roles and responsibilities of the Communications Unit. In addition, joint Federal and State Communications Unit Leader refresher training and communications-focused exercise objectives can help build awareness between the Communications Unit personnel and others in the incident command or command staff. DHS will continue to work with its Federal partners to encourage their participation in State exercises to improve their understanding of the Communications Unit's functions.

- **Develop and share best practices on processes to recognize trained Communications Unit personnel.** States and territories are encouraged to review the National Council of Statewide Interoperability Coordinators-endorsed recognition criteria for Communications Unit personnel and work with their neighboring States and territories most likely to offer assistance during an incident to develop and implement standardized criteria. The National Council of Statewide Interoperability Coordinators should continue to explore ways to promote recognition criteria, best practices, and lessons learned to improve consistency in Communications Unit training across States and territories.

- **Improve States' and territories' ability to track and share trained Communications Unit personnel during response operations.** The Office of Emergency Communications will coordinate with States and territories to develop and maintain a repository of their trained and recognized Communications Unit personnel. States and territories are encouraged to use tools, such as those hosted on the Office of Emergency Communications' Public Safety Technical Assistance Tools website, to store and share information with neighboring States for personnel deployment.[47] Further, incorporating the dispatch and tracking of Incident Command System Communications Unit personnel into dispatch decision-support programs or policies can help increase the use of trained personnel and improve documentation during response. States and territories should collaborate with Public Safety Answering Points and Public Safety Communications Centers to improve awareness and understanding of how this can be accomplished.

[47] DHS, Office of Emergency Communications Public Safety Technical Assistance Tools Home Page. http://www.publicsafetytools.info.

3.4 GOAL 4: OPERATIONAL COORDINATION

- ***Ensure operational effectiveness through the coordination of emergency communications capabilities, resources, and personnel from across the whole community***

Role of Operational Coordination in Emergency Communications

While the National Emergency Communications Plan's first three goals focus on building capabilities to achieve operable and interoperable communications, the fourth goal aims to translate those elements into operational success, ensuring that communications planning, processes, partnerships, and resources are effectively coordinated and utilized during response and recovery operations. Although responders require communications to achieve their mission under all circumstances, the need for interoperable and continuous communications capabilities is especially urgent during large-scale disasters and catastrophic situations. Continuity of communications can be achieved through emergency management assistance compacts or the deployment of Federally-owned communications equipment (e.g., Cellular on Wheels/Cellular on Light Trucks, generators) until State and local officials are able to identify additional resources. In addition to facilitating responder-to-responder coordination, these shared communications tools enable responders to request additional support, coordinate mutual aid, and integrate equipment and personnel into operations.

Advancements in Operational Coordination

Public safety agencies at all levels of government have taken steps to improve their ability to communicate as incidents grow and become more complex. This improvement was evident during responses to many large-scale disasters and emergencies in recent years, including the 2010 Deepwater Horizon Oil Spill; the 2011 Joplin, Missouri, and 2013 Moore, Oklahoma, tornadoes; the 2011 East Coast Earthquake; and the 2013 Boston Marathon bombings. During these and other responses, emergency communications services and needs were effectively coordinated and integrated across disciplines, jurisdictions, and levels of government. In addition, responding jurisdictions used the Emergency Management Assistance Compact and cross-border memoranda of understanding to streamline requests for assistance and expedite deployments of communications resources and personnel between States and bordering countries.

> DHS has seen "a tremendous improvement in capabilities at the state and local level…planning, the exercising and, importantly, the technology has allowed us to build more effective interoperable solutions that allow us to rapidly bring not only the responders to the immediate area, but responders from across the state and in some cases across the nation in a rapid manner."
>
> – **Craig Fugate,** FEMA Administrator

DHS has worked closely with State, local, tribal, territorial, and private sector partners (e.g., communications manufacturers, carriers, and public-private partnerships) to enhance operational communications for planned events (e.g., national political conventions, Super Bowl, State of the Union Address) and following disasters. The FEMA Disaster Emergency Communications Division has partnered with all 56 States and territories to identify emergency communications capabilities and requirements to expedite the delivery of Federal communications resources and support during large-scale incidents. Additionally, through assistance from the Office of Emergency Communications, States

continue to inventory their existing emergency communications capabilities using the Communications Asset Survey and Mapping Tool to better understand the availability and location of emergency communications capabilities.

Agencies and jurisdictions have also increased their proficiency with incident response principles under the *National Incident Management System*, which provide standard structures and procedures to improve coordination and communications. This has led to a more consistent execution of Communications Unit roles and responsibilities, as well as the use of Incident Command System forms, such as Incident Radio Communications Plans. Also, the increase in the use of simple, easily understood language has helped reduce the risk of miscommunication during incident responses.

Key Gaps and Challenges Driving Action

Despite these advancements, the changing operating environment is presenting new challenges to responder communications. Operational coordination is often complicated during large, complex incidents where there are various emergency communications personnel, coordinating structures, protocols, and concepts, in addition to commercial telecommunications networks that are congested or inoperable. In situations like these, proper application of the *National Incident Management System* is critical to ensure that all organizations are following appropriate procedures. While the National Emergency Communications Plan Goals Assessment showed that more jurisdictions are using the *National Incident Management System* concepts, it also identified several remaining inconsistencies in their application, which can be problematic as these inconsistencies can hamper communications personnel and assets from being effectively integrated and synchronized into operations at the incident-level. In addition, knowing how and when to request additional communications-specific resources can be difficult, especially at the outset of a disaster.

Further, communications challenges arising from the 2012 Derecho storm that impacted the Midwest and Mid-Atlantic regions of the United States reinforced the need for reliable and resilient emergency communications networks. As the FCC noted in its storm after-action report, a number of preventable system failures caused major disruptions to communications carriers' networks, preventing the public from connecting to 9-1-1 call centers during and shortly after the storm.[48] Given the deployment of Next Generation 9-1-1 and the important role that it will play in improving situational awareness during response operations, continuity of Public Safety Answering Point and Public Safety Communications Center operations are critical for communicating and coordinating with responders in the field.

Objectives and Recommendations

The following objectives and recommendations seek to improve operational effectiveness by promoting the identification and coordination of communications resources; implementing the *National Incident Management System* and *National Response Framework* components that address communications; and ensuring continuity of operations for emergency communications.

[48] FCC. *Impact of the June 2012 Derecho on Communications Networks and Services*, January 2013, http://www.fcc.gov/document/derecho-report-and-recommendations.

- **OBJECTIVE 4.1: Enhance the ability of jurisdictions to coordinate communications resources and services during emergency situations.** As incidents escalate, communications resources must be able to expand rapidly to meet responders' needs. The ability to identify communications resources and follow the procedures to obtain them is critical to quickly deploying them to the locations where they are most needed. This applies to government communications assets, resources, and capabilities provided by the private sector, nongovernmental organizations, and individuals or volunteer groups. Establishing and regularly updating communication asset inventories can help expedite the speed in which emergency communications resources are requested and integrated into operations. Operational mechanisms, such as emergency management assistance compacts, memoranda of agreements, local mutual aid or assistance agreements, and contracts with the private sector, help States and localities coordinate and share resources across domestic and international borders.

Recommendations:

- **Ensure inventories of emergency communications resources are updated and comprehensive.** In order for assets and personnel to be pre-positioned or rapidly deployed to support an incident, public safety agencies should have a complete understanding of the available communications resources (e.g., radio caches, personnel, supplies, and systems) within their States and neighboring jurisdictions. Public safety agencies, response entities, and communications service providers are encouraged to maintain and share comprehensive inventories of their communications capabilities and assets. Governance and advisory bodies (e.g., Statewide Interoperability Governing Bodies, Regional Emergency Communications Coordination Working Groups) should also coordinate with jurisdictions most likely to request or provide resources to develop and periodically update an inventory of government and private sector communications assets and personnel, including strategic technology reserves. Similarly, Federal departments and agencies should coordinate with DHS to ensure that their communications assets available to support incident response are integrated within Emergency Support Function #2—*Communications*.

Communications Sector Resources

The National Coordinating Center for Telecommunications and the Communications Information Sharing and Analysis Center are valuable resources for sharing information with Federal, State, local, tribal, and territorial jurisdictions on industry-specific communications services, teams, and capabilities that may be leveraged and integrated into response operations. Examples of assets that industry can provide include specialized teams, essential service providers, equipment, and advanced technologies.

- **Enhance jurisdictions' ability to readily request communications resources or assets during operations.** All levels of government should regularly assess and revise any mechanisms and procedures (e.g., memoranda of understanding, memoranda of agreement, and pre-scripted mission assignments) they have in place with other agencies, neighboring States, tribes, local jurisdictions, and private sector entities for coordinating and requesting emergency communications resources, including equipment and personnel. This may include establishing pre-negotiated contracts with private sector entities and nongovernmental organizations for

critical resources, such as temporary power. When executing these agreements, jurisdictions should clearly define their requirements so that resource providers can engineer the most efficient and effective solutions.

- **OBJECTIVE 4.2: Increase the implementation of the National Incident Management System concepts for command, control, and communications.** The assessment of the 2008 National Emergency Communications Plan goals showed an increase in the use of the *National Incident Management System* across the Nation, along with enhanced cooperation among law enforcement, fire, emergency medical services, and other disciplines. The results also showed the need to ensure that coordination across these disciplines is fully integrated into pre-planning, and consistently executed in accordance with the *National Response Framework*, the *National Incident Management System*, and Incident Command System command structures and practices. As previously discussed in Goal 3, agencies should continue to train and exercise on key Incident Command System positions, including positions within the Communications Unit, as well as appropriate templates and forms.

  Recommendations:

  - **Implement Incident Command System communications-related roles, responsibilities, and planning.** Response agencies at all levels of government emphasize the use of standardized *National Incident Management System* practices, plans, and common terminology during incidents involving multiple jurisdictions, disciplines, and agencies to promote unity of effort. As such, all agencies and jurisdictions supporting an incident should be involved in pre-planning, including development of a single incident action plan and a comprehensive Incident Command System Form 205 that identifies interoperability channels for each incident. Further, the Incident Command System also prescribes that the roles of operations section chief and logistics section chief should each be filled by a single individual to reduce possibly duplicative or conflicting orders, improve communications, and enhance information exchange.
  - **Ensure operational planning incorporates new technologies and communications partners.** The assessment of the 2008 National Emergency Communications Plan goals found that the majority of responders leverage commercial voice and/or mobile data solutions during incident response. The use of commercial solutions is expected to increase with the deployment of the Nationwide Public Safety Broadband Network, especially for mission critical purposes; however, the role of these technologies is not always fully integrated into communications planning. To prepare for widespread Nationwide Public Safety Broadband Network deployment, DHS should coordinate with appropriate stakeholders to update the Incident Command System Form 205 template to include specific fields for commercial voice and data services.

- **OBJECTIVE 4.3: Strengthen resilience, security, and continuity of communications throughout response operations.** As emergency communications systems and functions become more interconnected, they also become more susceptible to vulnerabilities and disruptions in other parts of the communications ecosystem. Agencies and jurisdictions at all levels of government must plan for the interconnection of voice and data communications throughout the ecosystem. During large-scale events, planning and operations for backup communications need to include all available

assets and resources in the impacted incident area. For example, Land Mobile Radio systems may need to be augmented by air and marine mobile communications to create a comprehensive air, sea, and ground network with appropriate levels of security and authentication to ensure continuity of communications. Commercial cellular voice and data networks are often used as backup options as well, but these networks may be overwhelmed by congestion and capacity issues. Achieving secure and resilient voice and data communications across the ecosystem is essential for public safety and emergency management agencies to execute their missions under all circumstances.

Recommendations:

- **Ensure Public Safety Answering Point and Public Safety Communications Center continuity of operations planning addresses systems and staffing to support dispatch communications.** As part of continuity of operations planning, Public Safety Answering Points and Public Safety Communications Centers should address staffing requirements and technical resources to support their ability to maintain dispatch communications and functions during incidents.[49] This includes succession as well as backup procedures for major systems, such as computer-aided dispatch, radio, and power supply. In addition, Public Safety Answering Point and Public Safety Communications Center continuity of operations planning should incorporate relevant capabilities and assets, such as the Telecommunicator Emergency Response Task Forces initiative.[50] Telecommunicator Emergency Response Task Forces can help States develop programs to train teams that can be quickly mobilized and deployed to assist communications centers in the aftermath of disasters. These efforts can strengthen Public Safety Answering Points' and Public Safety Communications Centers' ability to maintain continuity as the public's main point of contact during crises, while also serving as key coordinators of emergency management activities by dispatching information to responders.

- **Update procedures for implementing backup communications solutions.** In the event that primary network and dispatch services are disrupted following an incident, agencies must be able to quickly implement backup communications solutions. As part of their continuity and backup planning efforts, public safety agencies at all levels of government should establish and update their procedures to determine when and how to request and implement backup systems to avoid single points of failure. Agencies should account for priority service

[49] The National Emergency Number Association provides Public Safety Answering Points with resources for Continuity of Operations and disaster planning. http://www.nena.org/?page=COP_PlanCourse.

[50] Established in 2006, the National Joint Telecommunicator Emergency Response Task Force Initiative is a partnership between the National Emergency Number Association and the Association of Public-Safety Communications Officials –International.

programs (e.g., Telecommunications Service Priority, Wireless Priority Service, and Government Emergency Telecommunications Service) and the use of new technologies in their backup planning and procedures, as well as capabilities that could support coverage and capacity during incidents (e.g., auxiliary communications; satellite communications; batteries and power supplies; air, sea, and ground networks; and specialized support teams). As part of their assessment, agencies should also consider the potential use of communications and information technology sectors' capabilities to support their communications needs.

- **Increase Federal departments' and agencies' preparation and support for local emergency communications needs.** During large-scale incidents, States and localities may require Federal support to provide and maintain operable and interoperable communications in an incident area, as well as support temporary re-establishment of the basic public safety communications infrastructure. To help integrate Federal resources, DHS, as the Federal Emergency Support Function #2 coordinator, should ensure the Emergency Support Function #2 Standard Operating Procedure is regularly updated and comprehensive to ensure primary and support agencies engage in appropriate planning and preparedness activities.

3.5 GOAL 5: RESEARCH AND DEVELOPMENT

- ***Coordinate Research, Development, Testing, and Evaluation activities to develop innovative emergency communications capabilities that support the needs of emergency responders***

Role of Research, Development, Testing, and Evaluation in Emergency Communications

The growing use of broadband technologies underscores the need for a comprehensive and coordinated research, development, testing, and evaluation strategy to ensure emergency responders have the right communications technologies, tools, and services to accomplish their mission. Research, development, testing, and evaluation programs are critical to identify and develop new commercial products and services that meet the unique needs of public safety officials. Research, development, testing, and evaluation can also help adapt existing commercial-off-the-shelf products for public safety use to realize cost efficiencies, while more quickly delivering innovative commercial solutions to the end-user. The importance of testing and evaluation should not be overlooked, as these processes demonstrate how systems, networks, and equipment can sustain functionality and satisfy user requirements, particularly security, availability, and scalability. As a result, coordinating research, development, testing, and evaluation efforts will help ensure that public safety requirements are fully integrated into new technologies, and that products and services comply with existing standards and can withstand rugged operating environments.

Advancements in Research, Development, Testing, and Evaluation

Recent advancements in public safety communications research and development have focused on developing the next generation of public safety applications and devices. Also, given that Land Mobile Radio will continue to be a critical component of emergency communications, research and development efforts will continue to focus on Project 25 Land Mobile Radio networks, as well as infrastructure that can support Project 25 and long-term evolution networks simultaneously. The DHS Office for Interoperability and Compatibility within the Science and Technology Directorate is the Department's lead for research, development, testing, and evaluation, as well as standards acceleration related to interoperable communications. Successful research and development efforts can be attributed to the impact of research and development efforts involving government, carriers, service providers, vendors, and academia. This includes the Department of Commerce's Public Safety Communications Research Program, which is leading the research, development, testing, and evaluation for public safety long-term evolution networks to support the planning and deployment of the Nationwide Public Safety Broadband Network.[51]

In addition to communications used for government response and recovery, research and development efforts have also improved and modernized communications between the government and the public during emergencies. For example, the Wireless Emergency Alerts system, a component of the Integrated Public Alert and Warning System, provides public safety officials at the Federal, State, local,

[51] Department of Commerce, Public Safety Communications Research Program Overview Home Page. http://www.pscr.gov.

tribal, and territorial levels with the ability to notify the public of emergency situations in real-time via mobile devices. Led by the DHS Science and Technology Directorate Office for Interoperability and Compatibility, these research, development, testing, and evaluation actions and investments have produced products and tools that have helped public safety officials protect lives and property.

Key Gaps and Challenges Driving Action

The adoption of new technologies for mission critical purposes and emergence of new applications should be integrated into and support existing processes. There are many benefits to using standards-based, open-source, vendor-neutral technologies; however, to meet public safety organizational needs, user requirements must be integrated during the development phase. For instance, the unique propagation characteristics of long-term evolution will bring advanced capabilities to both public safety and the consumer marketplace (e.g., virtual navigation, telemedicine, and crowd casting). To ensure these services can sustain mission critical communications, a number of challenges must be addressed, including key response features, such as mission critical voice capabilities; cybersecurity; and coverage and capacity issues in urban and rural areas. These and other challenges are currently being addressed by multiple entities across all levels of government, academia, and the private sector. As such, public and private sector entities conducting research, development, testing, and evaluation activities should increase collaboration to achieve maximum benefits for emergency responders and ensure that the systems and devices used by public safety are keeping pace with technological change.

Objectives and Recommendations

The National Emergency Communications Plan aims to increase collaboration of research, development, testing, and evaluation activities across all levels of government, as well as include participation from academia, the private sector, and the public safety community, including associations such as the Association of Public-Safety Communications Officials – International and the National Emergency Number Association. The recommendations in this section seek to facilitate the development and use of new mission critical technologies, fulfill emergency responders' broadband needs and requirements, and foster integration and avoid duplication of efforts.

- **OBJECTIVE 5.1: Ensure a coordinated Federal strategic approach to public safety communications research, development, testing, and evaluation.** Many Federal departments and agencies sponsor research, development, testing, and evaluation programs for public safety communications. Increasing coordination across these programs can help integrate common efforts, improve overall decision-making, establish common expectations and priorities for users and applications, and coordinate investments for products and applications being developed for both Land Mobile Radio and broadband technologies.

  Recommendations:

  - **Coordinate Federal research and development priorities and user requirements through the Emergency Communications Preparedness Center.** The Emergency Communications Preparedness Center Research and Development Focus Group and Broadband Focus Group should serve as forums for Federal departments and agencies to coordinate communications-

related research and development programs, share information with the public safety community, and facilitate short- and long-term research and development planning efforts to ensure programs and activities are aligned with emergency responder needs. In addition, these groups should collect Federal user and service requirements for the Nationwide Public Safety Broadband Network and provide them to the First Responder Network Authority.

- **Increase collaboration between Federal research and development and technology transfer programs across the homeland security, defense, and national security communities**. The homeland security, defense, and national security communities have significant experience developing innovative mobile solutions for agents in the field. For example, the Department of Defense has developed a *Mobile Device Strategy* and *Mobile Applications Security Requirements Guide* focused on improving wireless infrastructure, mobile devices, and mobile applications.[52] Increasing collaboration between defense and public safety research and development programs can help maximize resources on issues that cross disciplines. Potential areas of collaboration include leveraging lessons learned and best practices, identifying areas for partnerships (e.g., application development, or application and user device security), and sharing intellectual property, as appropriate.

➢ **OBJECTIVE 5.2: Accelerate the development and adoption of mission critical communication products, applications, and services.** The public safety community's adoption of Internet Protocol-enabled communications capabilities will depend on networks, services, security, and applications that meet its needs and requirements. To determine the benefits and expedite the availability and adoption of these products and services, public safety organizations must have detailed requirements, effective solutions, operational testing, and intuitive interfaces so that users can easily deploy solutions in the field with predictable performance. Government research and development programs should engage with private industry-driven research and development efforts—including those within the communications and information technology sectors—to capture the innovation and advancements available in the commercial marketplace.

Accelerating Broadband Infrastructure Deployment

As part of the effort to facilitate wired and wireless broadband infrastructure deployment, the Office of Science and Technology Policy has developed an interactive broadband mapping tool that allows carriers and communities to view and identify opportunities to leverage Federal properties for the deployment of high-speed Internet networks. This data can help the wireless industry make informed project implementation and scheduling decisions.

Recommendations:

- **Foster collaborative mission critical voice, data, and cybersecurity research, development, testing, and evaluation.** As communications technologies migrate to Internet Protocol-based networks, government and academic research facilities should identify and develop new technologies that address public safety mission critical voice and data requirements that are not

[52] Department of Defense. *Mobile Device Strategy*. http://www.defense.gov/news/dodmobilitystrategy.pdf.

currently offered by commercial solutions. Identifying and developing these technologies will require coordination with the public safety community through entities such as SAFECOM, the National Public Safety Telecommunications Council, the First Responder Network Authority, and the First Responder Network Authority's Public Safety Advisory Committee.[53] To improve and enhance the security of emergency communications networks and devices, DHS should coordinate with the public safety community to assess and mitigate cyber threats and risks.

- **Government research facilities should facilitate the integration of Next Generation 9-1-1 into a nationwide solution.** Government research facilities should leverage requirements, lessons learned, and best practices from Next Generation 9-1-1 early adopters to spur nationwide deployment and adoption. Researchers should give special consideration to understanding: (1) how Next Generation 9-1-1 networks will interface with the Nationwide Public Safety Broadband Network; (2) potential security risks presented by the use of data between Public Safety Answering Points, Public Safety Communications Centers, and emergency responders; and (3) other potential functions Public Safety Answering Points and Public Safety Communications Centers can leverage in an Internet Protocol-centric environment.

- **Cultivate an innovative marketplace for applications and technologies through the use of public and private partnerships.** In coordination with the First Responder Network Authority and members of the public safety community—including the Public Safety Advisory Committee, SAFECOM, the National Public Safety Telecommunications Council, and the Association of Public-Safety Communications Officials—the Federal Government should proactively engage with application developers to create and maintain mobile applications and products for public safety. The expanding mobile applications marketplace should be used as a model to bring commercial innovation to emergency communications. Many public safety agencies are already collaborating with the applications community to develop unique applications for their localities; however, long-term growth and adoption is predicated on coordination among developers, users, and service providers to ensure that applications are readily available and tailored to public safety needs (including inputs on user needs, bandwidth, and capacity constraints). This includes coordinating on security and privacy issues, as well as the management of sensitive data.

[53] The *Middle Class Tax Relief and Job Creation Act of 2012* (Public Law 112-96) required the First Responder Network Authority to establish a standing public safety advisory committee to assist them in carrying out its duties and responsibilities. http://www.ntia.doc.gov/files/ntia/publications/firstnet_psac_org_chart_and_membership-022013.pdf.

- **Support the evolution of alert and warning systems that deliver timely, relevant, and accessible emergency information to the public.** The emergence of location-based services, mobile video, social media, and other applications offers new opportunities for government agencies and officials to transmit alert and warning messages to the public. To improve the adoption and use of emergency alerting capabilities, such as the Wireless Emergency Alert Program, DHS should continue research, development, testing, and evaluation activities for potential solutions to enhance the geo-targeting precision of message content and delivery. As usage and adoption of Wireless Emergency Alert Program continues to increase, DHS should take advantage of opportunities for increased stakeholder feedback (including vendors, academic partners, and individuals with access and functional needs) to identify gaps, needs, and new technological capabilities that could be integrated into the Wireless Emergency Alert Program roadmap to improve performance and response.

➢ **OBJECTIVE 5.3: Modernize communications standards and programs to keep pace with technological change.** The Project 25 suite of standards and DHS' priority service programs support interoperability and communications continuity for the public safety community.[54] As new standards and infrastructures are developed, these programs must evolve to meet changing demands and technologies. The Office for Interoperability and Compatibility and the Public Safety Communications Research Program should collaborate with the private sector and participate in standards development organizations to ensure that public safety capabilities are incorporated into current and emerging standards.

Recommendations:

- **Update priority service programs to successfully migrate to Internet Protocol-enabled fixed and mobile broadband networks.** DHS should continue to partner with Federal departments and agencies and communications service providers to ensure that priority service offerings keep pace with commercial deployment of Internet Protocol networks, while at the same time consider priority requirements for the Nationwide Public Safety Broadband Network. This approach should generate: (1) a baseline understanding of current program capabilities and gaps; (2) an analysis of user needs and desired end-state, including any differences from authorized user requirements; (3) a gap analysis of customer needs/end-state and existing offerings; (4) a technology roadmap for priority services; and (5) a resource and timeline estimate to build and implement service offerings based on the gap analysis, as well as technologies from the technology roadmap, including lifecycle costs and timeframes.

- **Increase use and awareness of the Project 25 Compliance Assessment Program.** The Project 25 Compliance Assessment Program was created by the Office for Interoperability and Compatibility, in partnership with the Public Safety Communications Research Program, to help the emergency response community make informed purchasing decisions by providing

[54] Project 25 resulted in the Telecommunications Industry Association 102 suite of standards for public safety Land Mobile Radio and will need to be supported during the development of transitional solutions that permit and maintain interoperability between legacy Land Mobile Radio communications and long-term evolution networks.

manufacturers with a method to ensure their equipment complies with Project 25 standards.[55] The Office for Interoperability and Compatibility is transitioning compliance assessment to third-party laboratory accreditation organizations. DHS should continue to release summary test reports and Suppliers' Declaration of Compliance documentation to the public safety community. DHS should also encourage Federal agencies purchasing Project 25 communications equipment to use the resources made available by Project 25 Compliance Assessment Program.

- **Continue to support Project 25 standards development for interoperability.** With the recognition that mission critical voice communications are the primary means of communications for public safety agencies, the emergency response community should continue its commitment to further develop the Project 25 suite of standards for enhanced interoperability. DHS, as the senior Federal partner in the Project 25 standards development process and the chair of the Project 25 Steering Committee, continues to help drive interoperability testing, the addition of enhanced security features, and support for future communications capabilities such as Project 25 to long-term evolution interfaces.

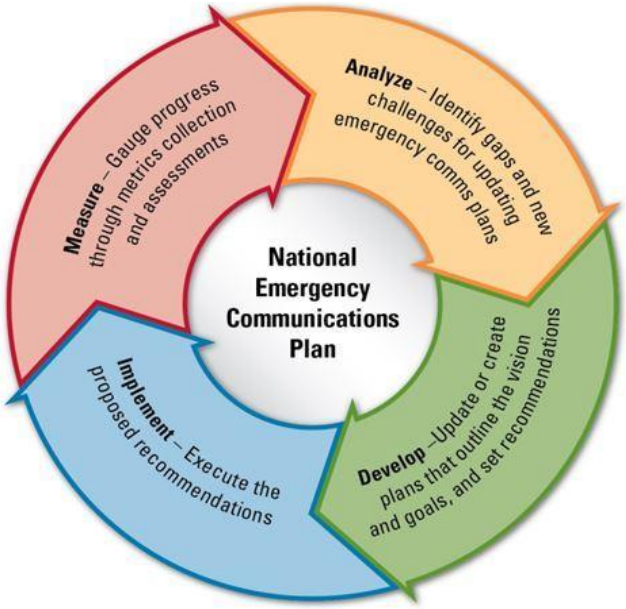
[55] For more information on the Project 25 Compliance Assessment Program, see: http://www.pscr.gov/outreach/safecom/p25_cap/p25_cap_docs.php.

4.0 IMPLEMENTING AND MEASURING THE NATIONAL EMERGENCY COMMUNICATIONS PLAN

The goals, objectives, and recommendations in Section 3.0 provide the blueprint to enhance emergency communications capabilities nationwide, consistent with the National Emergency Communications Plan's legislative requirements. This section reviews DHS' strategy for implementing and measuring the National Emergency Communications Plan in coordination with the Plan's stakeholders. As shown in Exhibit 4, this strategy is driven by a repeatable process that the first National Emergency Communications Plan established to guide emergency communications planning at all levels of government. This strategic management process aims to drive continuous improvement of the Nation's emergency communications capabilities through four primary phases.[56]

- **Analyze:** Assess implementation of existing planning priorities in conjunction with lessons learned from real-world incidents, events, and exercises to identify areas for continued improvement.
- **Develop:** Based on the analysis, generate new strategic priorities (e.g., vision, goals, objectives, and recommendations) to target current gaps and address future needs.
- **Implement:** Design supporting activities and timeframes for achieving the recommendations and building capability.
- **Measure:** Regularly assess progress in meeting milestones and achieving goals.

Exhibit 4. National Emergency Communications Plan Strategic Management Process



4.1 IMPLEMENTATION AND MEASUREMENT

Although DHS leads the development and management of the National Emergency Communications Plan, the implementation is a shared responsibility among the Department and the Plan's stakeholders. This reflects the nature of the emergency communications community, which spans disciplines, jurisdictions, and levels of government, and also involves the public and private sectors.[57]

[56] This methodology aligns with the *National Preparedness System's* six components that provide a consistent and reliable approach to support decision-making, resource allocation, and measuring progress toward building, maintaining, and sustaining capabilities.

[57] Appendix 4 addresses the key stakeholders responsible for executing the National Emergency Communications Plan's recommended strategies.

The ability of responders to communicate and share information to save lives and protect property is both the most important and most challenging criteria by which to measure the National Emergency Communications Plan's success. Given the multitude of public safety agencies across the Nation—and the large number of incidents to which they respond on a daily basis—consistently evaluating how well communications function during response operations is a major challenge that requires cooperation at all levels of government.

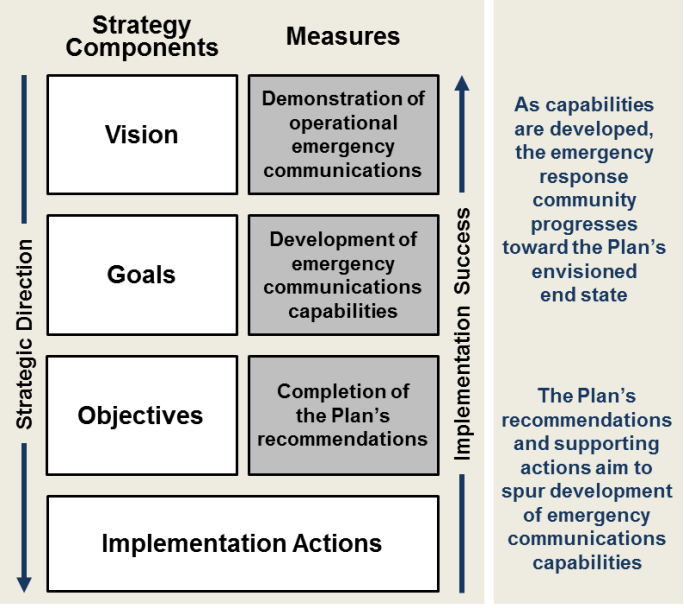
To address this difficult task, DHS partnered with public safety agencies and emergency responders following the release of the 2008 National Emergency Communications Plan to develop an assessment program. This collaboration produced a targeted measurement process based on operational performance benchmarks that enabled jurisdictions to test their capacity to communicate during responses. As a result, more than 2,800 counties or county-equivalents participated in the assessment—including thousands of Federal, State, local, tribal, and territorial agencies. The assessment increased their understanding of how responders coordinate, execute, and communicate during real-world incidents, exercises, or planned events.[58]

The measurement process also allowed jurisdictions to gain a baseline understanding of their emergency communications capabilities, such as the degree to which training and exercises are conducted within a county or county-equivalent. Capability measures were used in combination with operational performance measures to provide a more complete understanding of emergency communications. In general, jurisdictions with higher overall capability measurements can be expected to demonstrate greater operational effectiveness.

DHS will follow this proven approach to measure the progress of this National Emergency Communications Plan. Specifically, the Plan will focus its assessment actions around the following three measures, displayed in Exhibit 5.

- **Demonstration of operational emergency communications.** To measure progress toward the National Emergency Communications Plan's vision, DHS will employ the same methods for testing operational performance that were used to measure interoperability under the 2008 National Emergency

Exhibit 5. National Emergency Communications Plan Measures of Success



[58] The criteria used to measure operational performance and interoperability capabilities are presented in Appendix 8.

Communications Plan.[59] DHS will partner with jurisdictions across the country to test their ability to demonstrate response-level communications during an incident or event. This includes working with Federal, State, local, tribal, and territorial agencies on appropriate timeframes and benchmarks for these assessments. Also, as broadband technologies and a potentially broader set of stakeholders take a greater role in response and recovery operations, DHS will work with partners to update the performance criteria, as appropriate.

- **Development of emergency communications capabilities.** In addition to operational performance, DHS will assess progress in building emergency communications capabilities consistent with the *SAFECOM Interoperability Continuum*. Developing these capabilities (e.g., governance; policies, practices, and procedures; technology; training and exercises; and usage) is the foundation of a jurisdiction's ability to consistently achieve operational communications at an incident. The National Emergency Communications Plan capability assessment was a nationwide initiative that helped inform the strategic goals and objectives for the 2014 National Emergency Communications Plan. To measure progress since the last assessment, the Office of Emergency Communications will work with stakeholders across all levels of government to establish targets for their capability levels based on remaining challenges and new developments in the operating environment.

- **Completion of National Emergency Communications Plan recommendations and implementation actions.** The National Emergency Communications Plan goals, objectives, and recommendations aim to drive capability improvements at all levels of government. DHS will partner with National Emergency Communications Plan stakeholders to identify specific activities to support implementation of the Plan's recommendations. Completion of the recommendations will help gauge progress toward achieving the goals and objectives, which in turn help build emergency communications capabilities across the Nation.

4.2 PLANNING AND REPORTING

The National Emergency Communications Plan's three-pronged measurement process will generate detailed results on progress and provide a basis for formulating priorities and strategies for future planning. States, territories, urban areas, localities, and tribes are encouraged to leverage their operational and capabilities data for integration into Threat and Hazard Identification and Risk Assessments. DHS will work with its partners at the Federal, State, local, tribal, and territorial levels to

[59] The Office of Emergency Communications developed the *Communications Interoperability Performance Measurement Guide* to assist public safety officials with measuring the National Emergency Communications Plan goals and assessing performance of interoperable communications on a regular basis. http://www.safecomprogram.gov/oec/oec_performance_measurement_guide.pdf.

analyze results, understand correlations between performance and capability data points, and assess implications for future decision-making.

The National Emergency Communications Plan's results will also help DHS and the Federal Government better target ongoing support for emergency communications, including training, technical assistance, grant guidance, planning assistance, and stakeholder coordination. To ensure awareness, the Office of Emergency Communications will provide regular updates to the stakeholder community on the status of the National Emergency Communications Plan implementation. This outreach effort will allow stakeholders to track their partners' progress, share implementation best practices, and adopt remediation actions, as needed. In addition, the Office of Emergency Communications will provide Congress with progress on the National Emergency Communications Plan's implementation in its *Biennial Progress Report*.[60]

[60] Title XVIII of the *Homeland Security Act of 2002* requires the Office of Emergency Communications to report to Congress on DHS' progress toward achieving national emergency communications goals. In addition, the law requires the Emergency Communications Preparedness Center to report to Congress annually on Federal agencies' progress.

5.0 CONCLUSION

Since 2008, tremendous progress has been made to enhance emergency responder communications capabilities. However, as the emergency communications ecosystem continues to evolve, the Nation must build on previous successes and pursue opportunities for improvement. The 2014 National Emergency Communications Plan emphasizes the close collaboration by stakeholders to plan for and shape the future of emergency communications. The deployment of new technologies provides emergency responders access to high-speed and cutting-edge capabilities, while current emergency communications networks offer responders the security, reliability, and coverage they need to execute their mission in an all-hazards environment. Striking the right balance between addressing existing gaps and requirements while also integrating new technologies is a significant challenge facing public safety organizations across all levels of government.

To that end, the National Emergency Communications Plan sets forth five strategic goals to advance the capabilities needed for operational success in an increasingly dynamic and interconnected environment. The Plan establishes a series of targeted objectives that address each goal and collectively emphasize the maintenance and improvement of Land Mobile Radio systems, preparation for the integration of emerging technologies, and improved coordination among an expanding emergency response community. The Plan identifies actionable recommendations for stakeholders to enhance and update the policies, governance structures, planning, and protocols that enable responders to communicate and share information under all circumstances. Ultimately, the intent of the National Emergency Communications Plan is to ensure the emergency response community drives toward a commonly defined end-state for communications.

Moving forward, emergency response agencies will be making critical decisions regarding resources, personnel, and equipment to address the evolving operating environment. The guidance provided in this Plan will help to advance their efforts. However, success of the Plan will require the support and dedication of the entire emergency communications community, including Federal, State, local, tribal, and territorial partners, nongovernmental organizations, the private sector, and the public. In order to realize the Plan's vision, and help bring public safety communications into the 21st century, DHS and the Office of Emergency Communications will work diligently to ensure that our Nation's emergency responders can fulfill their mission needs in a seamless and fully interoperable next generation communications ecosystem.

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APPENDIX 1: STATUTORY REQUIREMENTS MATRIX

	6 USC § 572 Requirements	National Emergency Communications Plan Sections
1	Include recommendations developed in consultation with the Federal Communications Commission and the National Institute of Standards and Technology for a process for expediting national voluntary consensus standards for interoperable emergency communications equipment	• Section 3.0 – Objectives 1.3 and 5.3 • Appendix 6
2	Identify the appropriate capabilities necessary for emergency response providers and relevant government officials to continue to communicate in the event of natural disasters, acts of terrorism, and other man-made disasters	• Section 2.0 • Section 3.0 – Objectives 1.2, 2.3, 4.1, 4.3, and 5.3 • Section 4.0 • Appendices 6 and 8
3	Identify the appropriate interoperable emergency communications capabilities necessary for Federal, State, local, and tribal governments in the event of natural disasters, acts of terrorism, and other man-made disasters	• Section 2.0 • Section 3.0 – Objectives 1.2, 1.3, 4.1, and 4.3; • Appendices 6 and 8
4	Recommend both short-term and long-term solutions for ensuring that emergency response providers and relevant government officials can continue to communicate in the event of natural disasters, acts of terrorism, and other man-made disasters	• Section 3.0 – Objectives 1.2, 1.3, 2.3, 3.3, 4.3, 5.2, and 5.3
5	Recommend both short-term and long-term solutions for deploying interoperable emergency communications systems for Federal, State, local, and tribal governments throughout the Nation, including through the provision of existing and emerging technologies	• Section 3.0 –Objectives 1.3, 2.2, 3.1, 5.1, 5.2, and 5.3
6	Identify how Federal departments and agencies that respond to natural disasters, acts of terrorism, and other man-made disasters can work effectively with State, local, and tribal governments in all States, and with other entities	• Section 3.0 – Objectives 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, and 4.2
7	Identify obstacles to deploying interoperable emergency communications capabilities nationwide and recommend short-term and long-term measures to overcome those obstacles, including recommendations for multi-jurisdictional coordination among Federal, State, local, and tribal governments	• Section 2.0 • Section 3.0, Objectives 1.1, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.2, and 5.2
8	Recommend goals and time frames for the deployment of emergency, command-level communications systems and develop a timetable for the deployment of interoperable emergency communications systems nationwide	• Section 3.0
9	Recommend appropriate measures that emergency response providers should employ to ensure continued operation of relevant governmental communications infrastructure	• Section 3.0 – Objectives 1.1, 1.2, 1.3, 2.3, 3.3, 4.1, 4.3, and 5.3 • Appendices 6 and 8

6 USC § 572 Requirements		National Emergency Communications Plan Sections
10	(House Resolution 1) Set a date, including interim benchmarks, by which State, local, and tribal governments, and Federal agencies expect to achieve a baseline level of national interoperable communications	• Section 4.0 • Appendices 6 and 8

APPENDIX 2: KEY AUTHORITIES AND REFERENCES

This appendix provides an overview of the key authorities that guide the development, implementation, and management of the National Emergency Communications Plan. Title XVIII of the *Homeland Security Act of 2002*, as amended, requires the Department of Homeland Security (DHS) to establish and periodically update the National Emergency Communications Plan to guide improvements in emergency communications nationwide.[61] This law and other related statutory actions have helped define improvements to emergency communications. Table A2-1 describes the core set of statutory provisions that provides the foundation for the execution of emergency communications functions.

While this appendix includes the primary authorities that most directly impact emergency communications, there are other key homeland security doctrine and plans that influence the development and implementation of the National Emergency Communications Plan. These plans—including the *National Planning Frameworks*, the *National Infrastructure Protection Plan*, and the *National Incident Management System*—are discussed in Appendix 3, *Part of a Broader National Preparedness Strategy*. The National Emergency Communications Plan is also consistent with, and supports, the DHS 2014 Quadrennial Homeland Security Review, which provides a strategic framework to guide the activities of participants in homeland security towards the goal of a secure and resilient Nation. [62]

Table A2-1. Statutes (in chronological order)

Title	Date Enacted	Description
The Communications Act of 1934, as amended (Title 47 United States Code §151 *et. seq.*)	**1934**	Regulates interstate and foreign communications by wire and radio in the public interest. Establishes the Federal Communications Commission as the chief regulatory authority on communications matters. Assigns war powers to the President, thereby enabling the Executive Branch of the Federal Government to direct priority provisioning of telecommunications services deemed critical to national security interests during wartime emergencies.
The Robert T. Stafford Disaster Relief and Emergency Assistance Act, (Title 42 United States Code § 101 *et. seq.*)	**1988**	Describes the programs and processes by which the Federal Government provides disaster and emergency assistance to State and local governments, tribal nations, eligible private nonprofit organizations, and individuals affected by a declared major disaster or emergency. Establishes the use of temporary communications systems in anticipation of or during an emergency. Applies to response and recovery from all hazards.

[61] Title XVIII of the *Homeland Security Act of 2002*
[62] DHS, *Quadrennial Homeland Security Review*, June 2014. http://www.dhs.gov/quadrennial-homeland-security-review-qhsr.

Title	Date Enacted	Description
The Homeland Security Act of 2002 (Title 6 United States Code § 101 *et. seq.*)	**2002**	Establishes DHS as an executive department of the United States Government and specifies significant responsibilities associated with emergency preparedness, response, and recovery, including emergency communications. Includes provisions for improving the management, coordination, and interoperability of communications services in support of Federal, State, local, tribal, and territorial authorities.
The Intelligence Reform and Terrorism Prevention Act (Title 42 United States Code § 2000ee, 50 United States Code § 403-1 *et. seq.*, § 403-3 *et. seq.*, § 4040 *et. seq.*)	**2004**	Acting on recommendations made by the National Commission on Terrorist Attacks Upon the United States (9/11 Commission), strengthens the emergency communications provisions codified by the *Homeland Security Act*. Authorizes the Secretary of Homeland Security to establish a comprehensive national approach to achieving public safety interoperable communications at all levels of government. Establishes the Office for Interoperability and Compatibility to enhance public safety interoperable communications.
The Fiscal Year 2007 Department of Homeland Security Appropriations Act	**2006**	Includes Title VI, the *Post-Katrina Emergency Management Reform Act*, which reorganizes the Federal Emergency Management Agency, amends the *Stafford Act*, and addresses emergency communications through Subtitle D—The *21st Century Emergency Communications Act of 2006*. The latter amends the *Homeland Security Act of 2002* by adding Title XVIII—*Emergency Communications*, which establishes the Office of Emergency Communications, transfers existing programs and functions to the Office, and assigns new responsibilities for developing and implementing a comprehensive national approach to achieving public safety interoperable communications. This includes 6 United States Code § 572 requirements for developing and periodically updating the National Emergency Communications Plan.
Security and Accountability for Every Port Act	**2006**	Includes Title VI—Commercial Mobile Service Alerts of the *Warning, Alert, and Response Network Act*, which establishes standards, protocols, procedures, other technical requirements and associated Federal Communications Commission (FCC) rules that enable Commercial Mobile Service providers to voluntarily transmit emergency alerts to subscribers. Establishes the Commercial Mobile Service Alert Advisory Committee to develop and submit recommendations to the FCC regarding the technical standards and protocols required for transmitting emergency alerts to subscribers. Amends the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* to define "essential service provider" as a municipal, nonprofit, or private, for profit entity that provides telecommunications service, electrical power, natural gas, water and sewer services, or any other essential service (as determined by the President).

Title	Date Enacted	Description
Implementing the Recommendations of the 9/11 Commission Act	**2007**	Amends the *Homeland Security Act* and other statutes to improve communications for emergency responders through grant programs. Provisions include directing the Secretary of Homeland Security to establish the Interoperable Emergency Communications Grant Program to help States to implement initiatives to improve international, national, regional, statewide, local, and tribal interoperable emergency communications; and establish the Border Interoperability Demonstration Project to facilitate emergency communications across international borders.
The Middle Class Tax Relief and Jobs Creation Act (47 United States Code § 1424 *et. seq.*)	**2012**	Establishes the First Responder Network Authority, an independent entity within the Federal Government, to ensure the building, deployment and operation of a Nationwide Public Safety Broadband Network to enhance the ability of emergency responders to communicate. Reallocates the 700 megahertz D Block spectrum for public safety use and provides $7 billion in Federal funding toward the deployment of Nationwide Public Safety Broadband Network. The Board governing the First Responder Network Authority is comprised of three permanent members—the Secretary of Homeland Security, the Attorney General, and the Director of the Office of Management and Budget—and 12 term-limited individuals appointed by the Secretary of Commerce.

Table A2-2 describes related executive orders and presidential directives that affect the development and implementation of the National Emergency Communications Plan. These authorities set national policy and provide executive direction in areas closely related to emergency communications, including, but not limited to, national preparedness, domestic incident management, critical infrastructure resilience, cybersecurity, and continuity of government operations. Many of the National Emergency Communications Plan's concepts and strategies align to, intersect with, or are shaped by these authorities.

Table A2-2. Executive Orders and Presidential Directives

Title	Date Issued	Description
Homeland Security Presidential Directive –5, Management of Domestic Incidents	**2003**	Seeks to enhance management of domestic incidents by establishing a single, comprehensive *National Incident Management System* and developing a *National Response Plan*. (Effective March 22, 2008, the first edition of the *National Response Framework* superseded the *National Response Plan*; the second edition of the *National Response Framework* was issued May 2012). Provides that Federal departments and agencies require States and local entities to adopt the *National Incident Management System*, to the extent permitted by law, for providing Federal preparedness assistance. Identifies the Secretary of Homeland Security as the principal Federal official for domestic incident management.

Title	Date Issued	Description
Executive Order 13407, Public Alert and Warning System	**2006**	Directs the Department of Homeland Security to oversee the development of an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people and to ensure that the President can communicate with the public under all conditions.
National Security Presidential Directive–51/Homeland Security Policy Directive–20, National Continuity Policy	**2007**	Establishes a comprehensive national policy on the continuity of Federal Government structures and operations. Prescribes continuity requirements for all Executive Branch departments and agencies, and provides guidance for State, local, tribal, and territorial governments, and private sector organizations to enable a more rapid and effective response to and recovery from a national emergency. Directs the Secretary of Homeland Security to develop, implement, and maintain a comprehensive continuity communications architecture.
Presidential Policy Directive–8, National Preparedness	**2011**	Seeks to strengthen the security and resilience of the United States through systematic preparation for threats that pose the greatest risk to the Nation's security. Directs the Secretary of Homeland Security to oversee the development of the *National Preparedness Goal, National Preparedness System, National Preparedness Report*, and a Campaign for Building and Sustaining Preparedness. Emphasizes that national preparedness is the shared responsibility of the whole community. Replaces Homeland Security Policy Directive-8, *National Preparedness*.
Executive Order 13618, Assignment of National Security and Emergency Preparedness Communications Functions	**2012**	Assigns national security and emergency preparedness communications functions to Federal Government entities to ensure the Executive Branch can communicate at all times and under all circumstances to carry out its most critical and time sensitive missions. Establishes an interagency National Security and Emergency Preparedness Communications Executive Committee to serve as a forum to address national security and emergency preparedness communications matters. Revokes Executive Order 12472, *Assignment of National Security and Emergency Preparedness Telecommunications Functions*, thereby decommissioning the National Communications System.
Presidential Policy Directive–21, Critical Infrastructure Security and Resilience	**2013**	Addresses the roles and responsibilities across the Federal Government and establishes a more effective partnership with critical infrastructure owners and operators and State, local, tribal, and territorial entities to enhance the security and resilience of critical infrastructure. Replaces Homeland Security Policy Directive-7, *Critical Infrastructure Identification, Prioritization, and Protection*.

APPENDIX 3: PART OF A BROADER PREPAREDNESS STRATEGY

The Nation continues to develop and implement strategies to strengthen preparedness and resiliency in the midst of a dynamic threat environment. These efforts have yielded the *National Incident Management System*; *National Preparedness Goal*; *National Preparedness System*; National Planning Frameworks; and a coordinated National Exercise Program. Working together, these components help the Nation develop and deliver the core capabilities identified in the Goal, including operational communications.

As a strategic plan for emergency communications, the National Emergency Communications Plan is a key component in this portfolio. This appendix describes how the National Emergency Communications Plan aligns with, implements, and supports our Nation's broader national preparedness strategy.

PRESIDENTIAL POLICY DIRECTIVE - 8

Signed by the President in March 2011, Presidential Policy Directive-8, *National Preparedness*, is aimed at strengthening the security and resilience of the United States through systematic preparation for the threats that pose the greatest risk to the security of the Nation.[63] It consists of four main components: the *National Preparedness Goal*; *National Preparedness System*; *National Preparedness Report*; and the Campaign to Build and Sustain Preparedness. The directive emphasizes that national preparedness is the shared responsibility of the whole community.

As technologies have evolved and responsibilities have expanded to include more nongovernmental partners, the National Emergency Communications Plan recognizes that engaging a broad set of stakeholders is critical to effective information sharing and communications during emergencies. The following section offers additional detail on the National Emergency Communications Plan's relationship to the elements of Presidential Policy Directive-8:

Exhibit A3-1. Key Components of Presidential Policy Directive-8

[63] White House. Presidential Policy Directive – 8, *National Preparedness*, March 2011. http://www.fema.gov/ppd8.

- **National Preparedness Goal:** The *National Preparedness Goal* is the cornerstone for the implementation of Presidential Policy Directive-8. It establishes the capabilities and outcomes for the Nation to accomplish across all five mission areas (Prevention, Protection, Mitigation, Response, and Recovery) in order to be secure and resilient. Each of the five mission areas has distinct core capabilities and corresponding target elements necessary for success. While the majority of the National Emergency Communications Plan's proposed recommendations support the Response mission area and the operational communications core capability identified in the Goal, many of the Plan's goals and objectives also foster planning and coordination across the Prevention, Protection, Mitigation, and Recovery mission areas.

- **National Preparedness System:** The *National Preparedness System* is the methodology through which the Goal is implemented. The System consists of six components: (1) identifying and assessing risk; (2) estimating the level of capabilities needed to address those risks; (3) building or sustaining the required levels of capability; (4) developing and implementing plans to deliver those capabilities; (5) validating and monitoring progress; and (6) reviewing and updating efforts to promote continuous improvement. The National Emergency Communications Plan has incorporated all six of these components as they pertain to emergency communications. In particular, the National Emergency Communications Plan's strategic management process, identified in Section 4.0, provides a consistent and repeatable approach to support planning, decision-making, resource allocation, and measuring progress toward building, maintaining, and sustaining capabilities. Specific linkages between the National Emergency Communications Plan and other key components of the Preparedness System include:

  - ***Identifying and Assessing Risk and Estimating Capability Requirements:*** As discussed in Section 2.0 of the National Emergency Communications Plan, public safety officials will need to prepare for the increasing security risks to the emergency communications architecture. This includes, but is not limited to, threats to open architecture and Internet-based technologies and services; security risks presented by data sharing between Public Safety Answering Points, Public Safety Communications Centers, and first responders; and cyber risks. The Threat and Hazard Identification and Risk Assessment process provides a common, consistent approach for identifying and

Exhibit A3-2. The National Preparedness System

assessing risks and associated impacts. It builds on existing State, local, tribal, and territorial hazard identification and risk assessments. Jurisdictions can integrate the findings from the National Emergency Communications Plan assessment process into their Threat and Hazard Identification and Risk Assessments, which can ultimately provide them with a better understanding of overall communications gaps. This can support more informed decision-making on resource allocation, operations planning, and mitigation activities.

- ***Building and Sustaining Capabilities.*** Building and sustaining capabilities is a key output of the National Emergency Communications Plan. The Plan's recommendations aim to increase emergency communications capabilities through responders' proficiency with communications equipment, as well as training, planning, coordination, and education.

- ***Validating Capabilities.*** Exercises, remedial action management programs, and assessments are some of the methods to validate capabilities. Effective training and exercise programs can bolster emergency responders' proficiency with communications equipment, as well as improve their ability to execute policies, plans, and procedures governing the use of communications. The National Emergency Communications Plan emphasizes the need to enhance responders' ability to coordinate and communicate through training and exercises, as well as assessing capabilities on a regular basis.

- **National Planning System.** The *National Planning System*, part of the *National Preparedness System*, provides a unified system with a common terminology and approach, built around plans that support the all-threats and -hazards approach to preparedness. These plans—whether strategic, operational, or tactical—enable the whole community to build, sustain, and deliver the core capabilities identified in the *National Preparedness Goal*. The National Emergency Communications Plan helps implement several key pieces of the *National Planning System*, including:

  - ***National Response Framework.*** The *National Response Framework*, one of five national planning frameworks, is a guide for how the Nation responds to all types of disasters and emergencies. It identifies roles, responsibilities, and coordinating structures for incident response and provides the structure and mechanisms to execute national-level policy and support for incident management. As such, the National Emergency Communications Plan aligns to the principles and constructs of the *National Response Framework* by providing policy and planning guidance that supports the response core capabilities, namely operational communications.

    Operational Communications Core Capability

    Ensure the capacity for timely communications in support of security, situational awareness, and operations by any and all means available, among and between affected communities in the impact area and all response forces.

  - ***Federal Interagency Operational Plans.*** The *Federal Interagency Operational Plans* for each mission area further define the concepts, principles, structures, and actions introduced in

their respective frameworks, with a specific focus on these elements at the Federal level. The *Response Federal Interagency Operational Plan* is the plan to which the National Emergency Communications Plan is most directly associated, as it addresses specific tasks for the operational communications core capability. The National Emergency Communications Plan's goals and recommendations aim to support Federal partners in executing tasks pertaining to the operational communications core capability.

- ***Departmental Plans.*** Any Federal department or agency with responsibility for emergency communications should ensure that its operational plans align to the goals and objectives of the National Emergency Communications Plan. For example, the Department of Homeland Security (DHS) is developing a Department-wide, integrated communications interoperability plan to improve interoperable and emergency communications, including land mobile radio voice integration with broadband data technology.

- **National Preparedness Report.** DHS is required to report annually to Congress on the progress the Nation is making towards building and sustaining the core capabilities. The report is structured around the core capabilities identified in the Goal. As part of the assessment of the operational communications core capability, DHS has and will continue to report on key results from implementation of the National Emergency Communications Plan in the annual *Preparedness Report to Congress*. The *2013 National Preparedness Report to Congress*, for example, includes results from the National Emergency Communications Plan capability assessment. It also credits the National Emergency Communications Plan with helping jurisdictions progress beyond the early stage of interoperable communications development and close numerous communications capability gaps. In addition, the report shows that 92 percent of States and territories rated the operational communications capability as a high priority.[64]

NATIONAL INCIDENT MANAGEMENT SYSTEM

Mandated by Homeland Security Presidential Directive- 5, *Management of Domestic Incidents*, the *National Incident Management System* provides a systematic, proactive approach and template to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity. First issued in 2004, the *National Incident Management System* establishes a core set of concepts, principles, terminology, and technologies covering the incident command system; multi-agency coordination systems; unified command; training; identification and management of resources (including systems for classifying types of resources); qualifications and certification; and the collection, tracking, and reporting of incident information and incident resources.

To implement the 2008 National Emergency Communications Plan, DHS evaluated jurisdictions' use of the *National Incident Management System* components, concepts, and principles as they related to

[64] Federal Emergency Management Agency. *2013 National Preparedness Report to Congress*. May 2013.

command, control, and communications. This included assessing the effectiveness and regularity of Incident Command System implementation, namely the performance of responder roles and responsibilities utilizing the Incident Command System command structure; the use of easily-understood language; and the use of Incident Action Plans and Incident Command System forms. The assessment also reviewed the use of the Operations Section Chief position, which plays a key role in facilitating the exchange of information among agencies and across disciplines, and the Communications Unit Leader, who is responsible for establishing and maintaining communications interoperability for responding agencies. The Office of Emergency Communications will continue to evaluate the implementation of the *National Incident Management System* components, concepts, and principles as they relate to communications as part of the National Emergency Communications Plan performance and capability assessments.

NATIONAL INFRASTRUCTURE PROTECTION PLAN

The *National Infrastructure Protection Plan* and its 16 sector-specific plans create a system to protect public and privately-owned critical infrastructure. The National Emergency Communications Plan acknowledges the importance of critical infrastructure sectors to the emergency communications ecosystem; not only does it address leveraging and integrating communications services, teams, and capabilities into response operations, it also focuses on the growing interdependencies between the communications and other sectors (e.g., transportation, energy, and health). DHS also worked with the main private sector partnership—the Critical Infrastructure Partnership Advisory Council—to coordinate the communications and emergency services sectors' input for the National Emergency Communications Plan.

APPENDIX 4: ROLES AND RESPONSIBILITIES

This appendix provides an overview of the roles and responsibilities of the key public and private stakeholders who are involved in the emergency communications mission and the implementation of the National Emergency Communications Plan. In addition to emergency responders at all levels of government, this appendix also addresses key private sector and nongovernmental organizations, as well as partnerships and advisory committees, with whom the Federal Government coordinates emergency communications policies, plans, and programs.

All Levels of Government

The responsibility for responding to and managing planned events and incidents begins at the local level—with individuals, first responders, and public officials in the county, city, or town affected by the incident. When emergencies escalate, additional support may be requested from other jurisdictions, States, or even the Federal Government. Operational communications is a core capability for any incident, regardless of size, location, or cause; therefore, each level of government must take the necessary preparedness actions to ensure the capacity to communicate with both the emergency response community and the affected populations, as well as with other governmental entities.

Local Jurisdictions

Local leaders, emergency managers, and public safety officials prepare their communities to manage incidents locally. Among their numerous responsibilities, these officials provide strategic guidance; manage resources; develop and implement policies and budgets; and oversee local preparedness efforts to improve emergency management and response capabilities. A number of local entities involved in response operations require interoperable, continuous, and secure communications to carry out their missions. This includes public safety disciplines, such as local law enforcement, fire, and emergency medical service personnel who respond to the early stages of an incident and are primarily responsible for the protection and preservation of life, property, evidence, and the environment. In addition, emergency management agencies are also involved with coordination and communications during incidents by disseminating alerts and warnings and operating emergency operations centers, among other key functions. Local Public Safety Answering Points and Public Safety Communications Centers also play critical roles by serving as key communications and information conduits between the public and emergency responders. Since natural and man-made emergency response efforts generally begin at the local level, coordination among these entities is critical to ensuring effective communications and information sharing when responding to emergencies of all scopes and sizes.

State Agencies

State agencies and officials help coordinate and integrate statewide responders and resources into the local incident command before, during, and after incidents. States must be prepared to maintain or accelerate the provision of emergency communications resources and services when an incident grows and local capabilities are unable to keep up with demand. Likewise, if a State anticipates that its resources may be exceeded, they must have a process in place to request and integrate Federal

assistance. A listing of the key statewide officials and governing bodies with responsibility for emergency communications are described below. This list is not intended to be exhaustive as some States have additional agencies or individuals with whom they interact.[65]

- **Statewide Interoperability Coordinator.** The Statewide Interoperability Coordinators serves as the State's single point of contact for interoperable communications and implements the Statewide Communication Interoperability Plan, which establishes a vision for interoperability in the State.
- **State Single Point of Contact.** The single point of contact serves as the coordinator for the State and Local Implementation Grant Program and First Responder Network Authority's efforts with respect to the Nationwide Public Safety Broadband Network. This person may or may not be the Statewide Interoperability Coordinator.
- **Statewide Interoperability Governing Body or Statewide Interoperability Executive Committee.** The Statewide Interoperability Governing Body or Statewide Interoperability Executive Committee serves as the primary steering group for the statewide interoperability strategy. Its mission is to support the National Council of Statewide Interoperability Coordinators in efforts to improve emergency response communications across the State through enhanced data and voice communications interoperability. Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees often include representatives from various jurisdictions, disciplines, as well as subject matter experts.
- **State Emergency Management Agency Director.** The director of the State emergency management agency is responsible for ensuring that the State is prepared to deal with any type of emergency, as well as coordinating statewide incident response. This includes collaborating with appropriate statewide representatives for critical capabilities, such as emergency communications. The director may also have the responsibility for statewide 9-1-1 communications and public alerting.
- **State Information Technology and Security Officials.** A State or territory's chief information officer, chief technology officer, and chief information security officer manage key information technology and broadband deployment initiatives, including information technology procurement, security, and information technology planning and budgeting.
- **State 9-1-1 Administrator.** This individual manages a State's or territory's 9-1-1 functions as determined by State legislation. The official title and role of this position may vary by State or territory.

Territories

Similar to each State, territorial governments are also responsible for coordinating the emergency communications resources needed to respond to incidents of all types and any scale, determining their

[65] Each State has the ability to designate other officials and offices to oversee aspects of emergency communications and information technology.

resource capacity, and ensuring an efficient process for requesting assistance, when necessary. Given that their geographical locations often present unique challenges for receiving assistance during times of disaster, it is equally important for territorial governments to prioritize emergency communications. It is especially critical for territories to build relationships and partnerships among neighboring islands, other nearby countries, States, the private sector, nongovernmental organizations, and the Federal Government.

Tribal Nations

Indian country is geographically dispersed across the United States, and tribe size varies significantly, both by enrollment and land area. Federal agencies respect tribal self-government and sovereignty, honor tribal treaties and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and tribal governments. Communications and emergency services might be handled internally by a tribe; provided by Federal, State, or county entities; or handled by any combination thereof. These jurisdictional complexities can greatly complicate emergency response and communications. Many reservations are located in rural areas far from emergency services, which also pose challenges for first responder communications.

Federal Departments and Agencies

The Federal Government has an array of capabilities and resources that can be made available to support emergency response efforts at all levels of government. Federal departments or agencies may function as first responders for incidents involving primary Federal jurisdiction or authorities (e.g., on a military base, a Federal facility, or Federal lands). Under these circumstances, a Federal department or agency becomes the central coordinator of emergency communications activities with State, local, tribal, territorial, and regional partners. Examples include the United States Coast Guard or the Environmental Protection Agency for oil and hazardous materials spills and the United States Forest Service or the Department of the Interior for fires on Federal lands.

Emergency Communications Preparedness Center Members

- Department of Agriculture
- Department of Commerce
- Department of Defense
- Department of Energy
- Department of Health & Human Services
- Department of Homeland Security
- Department of the Interior
- Department of Justice
- Department of Labor
- Department of State
- Department of Transportation
- Department of the Treasury
- Federal Communications Commission
- General Services Administration

At the same time, the Federal Government is responsible for ensuring the efficient delivery of Federal capabilities for large-scale and catastrophic incidents in support of State, local, tribal, and territorial government efforts, as well as other Federal partners. This can include the following communication functions:

- Facilitating Federal, State, local, tribal, and territorial planning through funding, technical assistance, and guidance;

- Promoting the development of national, regional, and statewide communications plans to address how available Federal assets can be incorporated during times of crisis;
- Promoting the alignment of Federal, State, local, tribal, territorial, and private sector emergency communications plans and preparedness activities to facilitate the development of robust regional communications coordination capabilities; and
- Supporting Federal, State, local, tribal, and territorial operational efforts, providing surge capacity and coordinating distribution of Federal resources to support emergency communications.

Private Sector Entities and Nongovernmental Organizations

Private Sector

As the owners and operators of the majority of the Nation's critical infrastructure, private sector entities are responsible for protecting key commercial communications assets, as well as ensuring the resiliency and reliability of communications during day-to-day operations and emergency response and recovery efforts. In addition, commercial communications carriers have a primary role in network restoration during outages and service failures and support reconstitution for emergency response and recovery operations. The communications sector has a history of successfully cooperating both within the sector and with response entities at all levels of government. These relationships help government and the private sector coordinate joint incident response activities, share and analyze infrastructure information, and coordinate standards development and priority service technologies.

Private Sector Partnerships

"Update national strategies (such as the National Response Framework and the National Emergency Communications Plan) and initiatives to account for advanced [Next Generation Network] communications capabilities, such as the Nationwide Public Safety Broadband Network, and to reflect the evolving communications environment."

– National Security Telecommunications Advisory Committee Report to the President on the National Security and Emergency Preparedness Implications of a Nationwide Public Safety Broadband Network

The private sector's extensive experience protecting, restoring, and reconstituting the communications infrastructure will be particularly important as the Nation plans and prepares for the adoption, migration, and use of emerging technologies, including deployment of the Nationwide Public Safety Broadband Network. Its expertise provides insight on how to address network vulnerabilities so that emergency communications are reliable and resilient during times of crisis.

Depending on the type of incident and its scale, other private sector entities may also have a role supporting, facilitating, or using communications during emergencies, as well as provide services and networks for the government to alert the public. For example, key private sector partners—including privately-owned transportation and transit, telecommunications, utilities, financial institutions, hospitals, and other health regulated facilities—may need to establish and maintain a direct line of communication between their organization and emergency response officials.

Nongovernmental Organizations

Nongovernmental organizations can play vital roles during emergency response and recovery operations, as they have the capability to deliver specialized services that support core capabilities, including operational communications.[66] Nongovernmental organizations include voluntary and non-profit organizations that provide shelter, food, and other essential support services and disaster relief.[67] As technology evolves, various s are also implementing new ways to facilitate communications and information sharing during emergencies.

Individuals and Volunteer Organizations

As discussed in Section 2.0 of the National Emergency Communications Plan, the public and volunteer groups play an increasingly important role in emergency communications. Emergencies are often first reported to authorities by members of the public seeking assistance, and—more than ever before—the public is encouraged to alert the government to potentially dangerous or suspicious activities or update officials on the aftermath of an incident. For example, the Department of Homeland Security's (DHS) "If You See Something, Say Something" campaign emphasizes the importance of reporting suspicious activity to the proper local law enforcement authorities.

Nongovernmental Organization Communications During Response Operations

The American Red Cross has established a digital operations center in Washington, D.C., that enables the organization to more effectively understand and anticipate disaster needs in order to deploy assistance more efficiently. The center has the capability to monitor, respond to, and analyze social media platforms, share timely information, coordinate with other emergency response entities, and allocate resources accordingly. The American Red Cross has developed a training program to leverage digital volunteers that can be called upon to scale up digital operations for emergency situations, such as Hurricane Sandy.

Likewise, volunteer organizations such as community emergency response teams and auxiliary communications volunteers (e.g., amateur radio operators; also called Hams) play key roles in emergency communications and preparedness. Volunteer emergency communications operators and groups using amateur radio have been providing backup communications to event planners, public safety officials, and emergency managers at all levels of government for nearly 100 years. Often, amateur radio services have been used when other forms of communications have failed or have been disrupted. Today, nearly all the States and territories have incorporated some level of participation by amateur radio auxiliary communication operators into their Tactical Interoperable Communications Plans and Statewide Communication Interoperability Plans; this allows them to quickly integrate the operators into response efforts, which can strengthen communications and operations during incidents of any scale.

[66] For a list of all core capabilities, refer to the *National Preparedness Goal*, www.fema.gov/ppd8.
[67] FEMA. *National Response Framework*, June 2013, pg. 8. http://www.fema.gov/national-response-framework.

Partnership and Advisory Groups

Partnership groups are key mechanisms for successful implementation of the National Emergency Communications Plan and execution of the national emergency communications mission. They provide best practices and subject matter expertise to the government, and allow emergency response stakeholders to cultivate working relationships and help shape strategic and operational plans to improve emergency communications. With the changes in the emergency communications landscape, as noted in Section 2.0 of the National Emergency Communications Plan, the pool of partnerships and their roles and responsibilities for supporting emergency communications continues to evolve and expand. Table A4-1 includes a listing of key partnership organizations and advisory bodies:

Table A4-1. Emergency Communications Partnerships and Advisory Groups

Group	Description of Roles and Responsibilities
Canada – United States Communications Interoperability Working Group	The Canada – United States Communications Interoperability Working Group is a joint effort between Canada and the United States. It is co-chaired by Public Safety Canada and DHS' Office of Emergency Communications. The Interoperability Working Groups goal is to support each country's national interoperability strategy and work to resolve bilateral issues of common interest concerning cross-border communications and information exchange.
Communications Security, Reliability and Interoperability Council	The Communications Security, Reliability and Interoperability Council is an advisory committee that provides recommendations to the FCC to ensure, among other things, optimal security and reliability of communications systems, including telecommunications, media, and public safety.
Critical Infrastructure Partnership Advisory Council	The Critical Infrastructure Partnership Advisory Council is a DHS program established to facilitate effective coordination of critical infrastructure activities among the Federal Government; the private sector; and State, local, tribal, and territorial governments.
Emergency Communications Preparedness Center	As the Federal interagency focal point for interoperable and operable emergency communications coordination, the Emergency Communications Preparedness Center's mission is to improve emergency communications collaboration across the Federal Government, and align initiatives with national goals, policy, and guidance. The 14 Federal departments and agencies that comprise the Emergency Communications Preparedness Center represent the Federal Government's broad role in emergency communications, including planning, policy, operations, grants, and technical assistance.

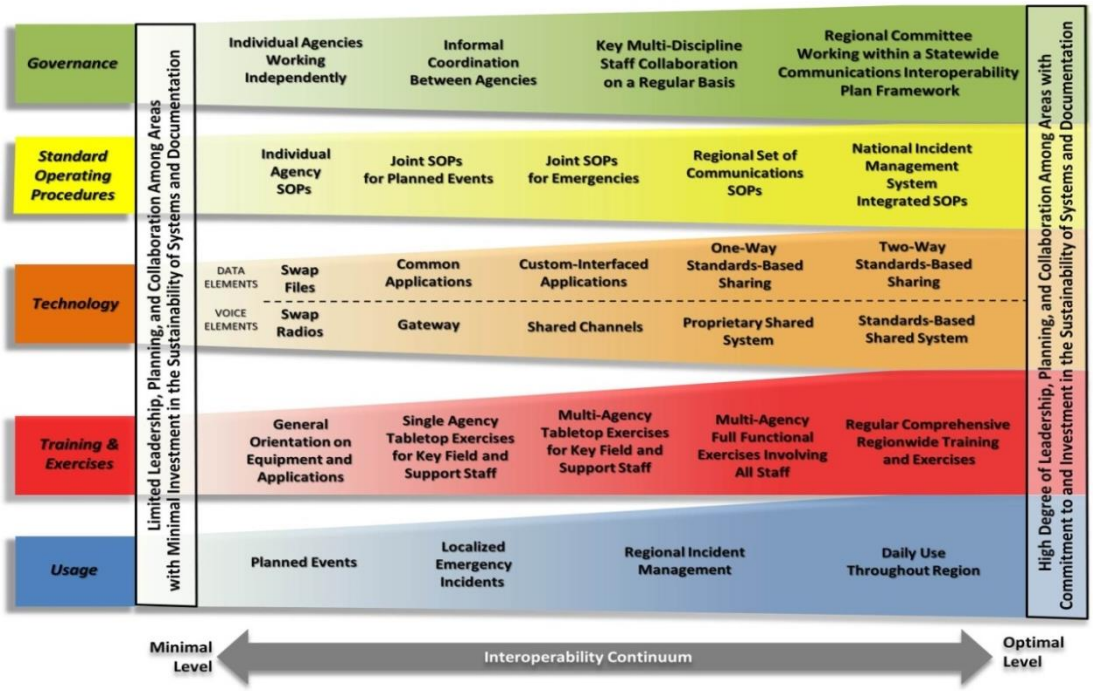
Group	Description of Roles and Responsibilities
National Council of Statewide Interoperability Coordinators	Comprised of all Statewide Interoperability Coordinators, the National Council of Statewide Interoperability Coordinators assists State and territory interoperability coordinators with promoting the critical importance of interoperable communications and the sharing of best practices to ensure the highest level of interoperable communications across the Nation.
National Public Safety Telecommunications Council	Composed of State and local public safety representatives, the National Public Safety Telecommunications Council is a federation of national public safety leadership organizations dedicated to improving emergency response communications and interoperability through collaborative leadership.
National Security/Emergency Preparedness Communications Executive Committee	Executive Order 13618, *Assignment of National Security and Emergency Preparedness Communications Functions*, established the National Security and Emergency Preparedness Executive Committee in July 2012 as a forum—comprised of representatives from at least eight designated Federal agencies—to recommend policy and advise the President on national security and emergency preparedness communications issues.
National Security Telecommunications Advisory Committee	The President's National Security Telecommunications Advisory Committee is composed of private sector executives who represent major communications and network service providers, as well as information technology, finance, and aerospace companies. Through DHS, the National Security Telecommunications Advisory Committee provides private sector-based analyses and recommendations to the President and the Executive Branch on policy and enhancements to national security and emergency preparedness communications.
One DHS Emergency Communications Committee	The One DHS Emergency Communications Committee coordinates intra-DHS emergency communications activities and addresses the many challenges facing the Department's emergency communications programs. The committee aligns these efforts and also provides a forum to identify priorities and synergies. It consists of senior officials from the 22 DHS components.
Public Safety Advisory Committee	The Public Safety Advisory Committee is a standing advisory committee that assists the First Responder Network Authority in carrying out its duties and responsibilities. The Public Safety Advisory Committee is comprised of 40 representatives from various public safety organizations that are part of the DHS SAFECOM program.
Regional Emergency Communications Coordination Working Group	The Regional Emergency Communications Coordination Working Groups serve as the single coordination point for emergency communications at the regional level. A Regional Emergency Communications Coordination Working Group has been established in each of the 10 FEMA regions. Each Regional Emergency Communications Coordination Working Group has unique membership dependent on regional government structure and processes.

Group	Description of Roles and Responsibilities
SAFECOM Executive Committee and Emergency Response Council	SAFECOM is an emergency communications program of the Department of Homeland Security. As a stakeholder-driven program, SAFECOM is led by an Executive Committee, in support of the Emergency Response Council—groups that are primarily composed of State and local emergency responders and intergovernmental and national public safety communications associations. Both groups regularly convene to discuss interoperability, emergency communications, and provide input on the challenges, needs, and best practices of emergency responders. The Office of Emergency Communications develops policy, guidance, and future initiatives by drawing on Executive Committee and Emergency Response Council expertise, best practices, and recommendations.

APPENDIX 5: SAFECOM INTEROPERABILITY CONTINUUM

Developed with practitioner input from the Department of Homeland Security's (DHS) SAFECOM program, the Interoperability Continuum is designed to assist emergency response agencies and policy makers to plan and implement interoperability solutions for data and voice communications. This tool identifies the five critical success elements that must be addressed to achieve a sophisticated interoperability solution: governance, standard operating procedures, technology, training and exercises, and usage of interoperable communications. The Interoperability Continuum can be used by jurisdictions to track progress in strengthening interoperable communications. In addition, the DHS Office of Emergency Communications has used the Interoperability Continuum to develop the priorities and measure the goals of the National Emergency Communications Plan. For more information, see Section 4.0 *Implementing and Measuring the National Emergency Communications Plan*.

Exhibit A5-1. SAFECOM Interoperability Continuum



Interoperability is a multi-dimensional challenge. To gain a true picture of a region's interoperability, progress in each of the five interdependent elements must be considered. For example, when a region procures new equipment, that region should plan and conduct training and exercises to maximize the use of that equipment. Optimal level interoperability is contingent upon individual agency and jurisdictional needs. The Continuum is designed as a guide for jurisdictions that are pursuing a new interoperability solution, based on changing needs or additional resources; it is an evolving tool that supports national preparedness doctrine including, but not limited to, the *National Incident Management System*, the *National Response Framework*, and the National Emergency Communications Plan. To maximize the Interoperability Continuum's value to the emergency response community, SAFECOM will regularly update the tool through a consensus process involving practitioners, technical experts, and representatives from Federal, State, local, and tribal agencies.

APPENDIX 6: SUMMARY OF PROGRESS IMPLEMENTING THE 2008 NATIONAL EMERGENCY COMMUNICATIONS PLAN

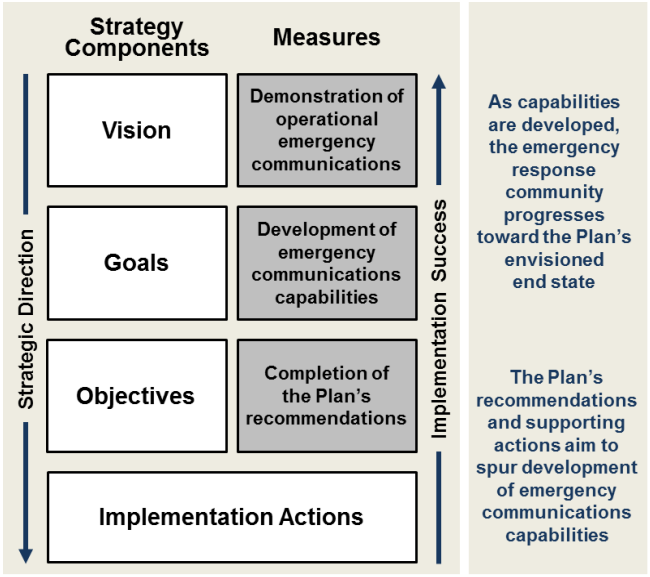
The 2008 *National Emergency Communications Plan* advanced a more strategic approach to strengthening emergency communications by encouraging emergency response agencies at all levels of government to assess their capabilities and target their activities and resources. The National Emergency Communications Plan established a vision for the desired future state of emergency communications and set performance-based goals to measure progress toward that vision.

The 2008 Plan also included 92 milestones that served as key benchmarks for tracking progress.

This appendix reviews the results of these initiatives and other key achievements to improve emergency communications since publication of the 2008 National Emergency Communications Plan. As depicted in Exhibit A6-1, it is organized around the measures of success as outlined in Section 4.0 of the National Emergency Communications Plan:

- Demonstration of operational emergency communications;
- Development of emergency communications capabilities; and
- Completion of 2008 National Emergency Communications Plan initiatives and recommendations.

Exhibit A6-1. National Emergency Communications Plan Measures of Success



Operational Emergency Communications

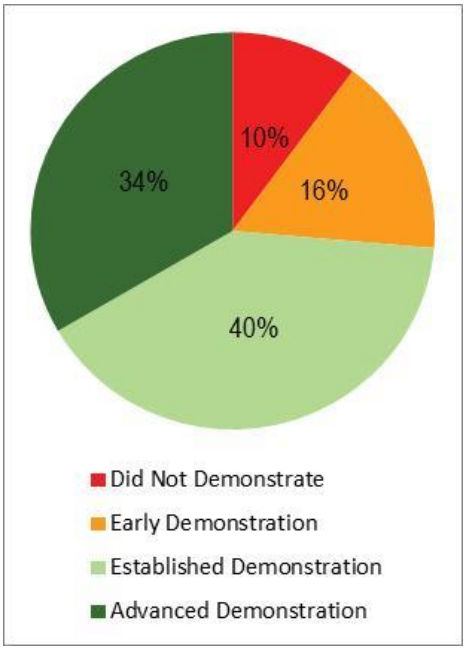
The National Emergency Communications Plan established the first set of national performance goals to evaluate emergency communications during local emergencies and complex events, as well as a process to measure these goals in every State and territory. The process generated unparalleled data on interoperable emergency communications capabilities and gaps. As a result, the Department of Homeland Security (DHS) and Federal, State, local, tribal, and territorial decision-makers can more effectively evaluate the impact of funding decisions and allocate future resources where they are most needed. The goals of the 2008 Plan were:

- ***Goal 1:*** *By 2010, 90 percent of all high-risk urban areas designated within the Urban Areas Security Initiative can demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies.*[68]
- ***Goal 2:*** *By 2011, 75 percent of non- Urban Areas Security Initiative jurisdictions can demonstrate response-level emergency communications within one hour for routine events involving multiple jurisdictions and agencies.*
- ***Goal 3:*** *By 2013, 75 percent of all jurisdictions are able to demonstrate response-level emergency communications within three hours, in the event of a significant incident as outlined in national planning scenarios.*

To measure the first goal, DHS' Office of Emergency Communications worked with 60 urban areas to assess their ability to demonstrate response-level emergency communications during real-world planned events (e.g., large public gatherings, parades, and sporting events). Based on the capabilities documented at these assessments, all 60 metropolitan areas demonstrated response-level emergency communications in accordance with National Emergency Communications Plan Goal 1. The demonstrations illustrated how the metropolitan areas' organizational and technical investments had improved their respective emergency communications capabilities.[69]

For jurisdictions outside of large metropolitan areas, the Office of Emergency Communications worked with all 56 States and territories to conduct a national assessment of emergency communications capabilities at the county level, including county-equivalents and parishes, municipalities, and townships. The Office of Emergency Communications designed the assessment to help States and territories better understand emergency communications capabilities at the local level, identify where progress is being made, and target resources to address current needs and challenges.

Exhibit A6-2. Operational Performance Assessment Results



The Statewide Interoperability Coordinators were responsible for coordinating the assessment process with their States' counties, including measuring, collecting, and validating data from local emergencies, including unplanned incidents (e.g., tornadoes, vehicle accidents, missing persons, and earthquakes) or planned events.

States and territories submitted performance reports covering more than 2,800 counties and county-equivalents, which

[68] As defined by the 2008 National Emergency Communications Plan, response-level communications is the capacity of individuals with primary operational leadership responsibility to manage resources and make timely decisions during an incident.

[69] The National Emergency Communications Plan Goal 1 National Report is available at: http://www.dhs.gov/xlibrary/assets/necp_goal_1_findings_accessible.pdf.

involved 30,000 individual public safety agencies. This represented about 87 percent of the 3,226 jurisdictions that were within the scope of the assessment. Among the jurisdictions that used real-world incidents, about 40 percent of them—or 484 counties—assessed communications performance during natural disasters, including floods, earthquakes, hurricanes, and tornado outbreaks. This effectively satisfied the requirement for the National Emergency Communications Plan Goal 3, as 86 percent of those jurisdictions demonstrated response-level communications during major disasters within three hours. Exhibit A6-2 provides a break-down of the overall results, also summarized below.

- 34 percent of counties demonstrated "Advanced" response-level communications capabilities, meaning that in the reported scenario, the county was generally able to consistently maintain response-level communications during routine incidents and events involving multiple jurisdictions, disciplines, and agencies and would be able to effectively address a significant incident were it to occur.
- 40 percent of counties demonstrated "Established" response-level communications capabilities, meaning that in the reported scenario, the county consistently provided response-level communications during routine incidents and events involving multiple jurisdictions, disciplines, and agencies.
- 16 percent of counties demonstrated "Early" response-level communications capabilities, meaning that in the reported scenario, the county largely used ad hoc communications coordination with few documented plans or procedures during routine incidents and events involving multiple jurisdictions, disciplines, and agencies.
- 10 percent of counties did not demonstrate any response-level communications capabilities, meaning that in the reported scenario, the county did not demonstrate response-level communications due to a lack of planning, policies, and technical solutions for interoperability areas of emergency communications.

> "This plan [the National Emergency Communications Plan] and other significant Federal efforts represent an increasingly strategic approach by the Federal government to enhance emergency communications and address existing vulnerabilities… Department of Homeland Security (DHS) and other Federal agencies have recently taken significant and strategic steps."
>
> – **Government Accountability Office,** Report GAO-09-604, June 2009

The National Emergency Communications Plan performance assessments clearly showed the progress that jurisdictions have made over the past several years toward establishing interoperable emergency communications during incidents, events, and exercises. It is important to note that for jurisdictions that were able to demonstrate response-level communications, the level of proficiency varied greatly; with this in mind, the Office of Emergency Communications has worked with the States, territories, and jurisdictions to identify gaps through technical assistance, guidance documents, and similar support efforts.

Emergency Communications Capabilities

To assess jurisdictions' emergency communications more broadly, the Office of Emergency Communications requested that counties or equivalents report on their overall communications

capabilities that align to the elements of the *SAFECOM Interoperability Continuum*.[70] For comparison purposes, the Office of Emergency Communications designed the capability assessments to closely mirror the 2006 SAFECOM National Interoperability Baseline Survey. The survey results revealed progress in several key areas, including:

- **Governance:** The percentage of jurisdictions involved in formal decision-making groups and strategic planning for emergency communications had doubled.
- **Standard Operating Procedures:** The percentage of jurisdictions with formal interoperability standard operating procedures —meaning procedures that are published and activated during incident response—increased from 51 percent to 86 percent of respondents.
- **Use of Interoperable Communications:** The capability results showed that the percentage of jurisdictions that regularly achieve interoperability had increased from 65 percent to 84 percent of respondents in 2011.

Exhibit A6-3. Capability Results

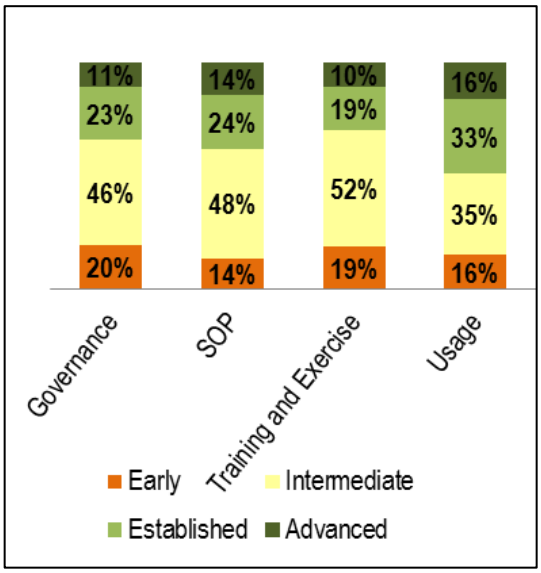


Exhibit A6-3 shows the overall capability results across four lanes of the *SAFECOM Interoperability Continuum*. The Office of Emergency Communications and the States have used the data collected through the performance reports in combination with capability data to develop a more complete understanding of emergency communications across the Nation. In general, the results showed that those counties that demonstrated response-level communications had higher overall capability results than those counties that did not demonstrate the goal.

Achievement of National Emergency Communications Plan Initiatives and Milestones

The 2008 National Emergency Communications Plan includes seven objectives intended to close existing capability gaps and achieve the document's long-term vision. In addition, the Plan included supporting initiatives for each objective, along with recommended milestones to define the timelines and outcomes. The following section reviews the achievement of key National Emergency Communications Plan initiatives and milestones.

[70] For more information on the *SAFECOM Interoperability Continuum*, refer to Appendix 5.

2008 National Emergency Communications Plan Objectives	Key Accomplishments – National Emergency Communications Plan Initiatives and Milestones
Formal Governance Structures and Clear Leadership Roles	• The number of States and territories with full-time Statewide Interoperability Coordinators increased after release of the 2008 National Emergency Communications Plan • DHS published the *Establishing Governance to Achieve Statewide Communications Interoperability: A Guide for Statewide Communication Interoperability Plan Implementation* • More States and territories established Statewide Interoperability Governing Bodies and Statewide Interoperability Executive Committees that incorporated recommended membership criteria • DHS coordinated with SAFECOM to develop the *SAFECOM Recommended Guidance for Federal Grant Programs* (later versions titled *SAFECOM Guidance on Emergency Communications Grants*) annually since Fiscal Year 2009 • The Office of Emergency Communications established the Regional Coordination Program and appointed Regional Coordinators in all 10 Federal Emergency Management Agency (FEMA) Regions • In 2009, the Office of Emergency Communications held a National Conference on Emergency Communications with 475 representatives from the emergency response community and private sector
Coordinated Federal Activities	• The Emergency Communications Preparedness Center formalized its charter and issued its first strategic agenda in 2010 • The Emergency Communications Preparedness Center Grants Focus Group improved coordination of Federal financial assistance programs that fund emergency communications • DHS established the One DHS Emergency Communications Committee to coordinate departmental emergency communications activities • In coordination with other Federal departments and agencies, the Office of Emergency Communications compiled a comprehensive catalog of Federal Technical Assistance programs for emergency communications • DHS and Public Safety Canada established the Canada – United States Communications Interoperability Working Group
Common Planning and Operational Protocols	• The Office of Emergency Communications worked with all States and territories to implement and update their Statewide Communications Interoperability Plan annually • DHS developed the *Plain Language Guide: Making the Transition from Ten Codes to Plain Language* and corresponding guidance for Federal grant programs to further the use of common language • The Office of Emergency Communications developed a reference library of over 200 examples of agreements and standard operating procedures, as well as a suite of templates for emergency communications • DHS worked with more than 150 jurisdictions to develop Tactical Interoperable

2008 National Emergency Communications Plan Objectives	Key Accomplishments – National Emergency Communications Plan Initiatives and Milestones
	Communications Pans to document policies associated with establishing interoperable communications within the Urban Areas Security Initiative regions
Standards and Emerging Communications Technologies	• DHS Office for Interoperability and Compatibility established the Project 25 Compliance Assessment Program, a partnership with the National Institute of Standards and Technology, industry representatives, and the emergency response community • Office for Interoperability and Compatibility coordinated with FEMA on standards development and adoption, conformity assessment, industry capability analysis, stakeholder support, and technology evaluation for the Integrated Public Alert and Warning System • Office for Interoperability and Compatibility published the *Radio over Wireless Broadband Pilot Project Report*, which evaluated a pilot project to test new products and technologies for potential emergency response use • Office for Interoperability and Compatibility published a specifications profile for Voice Over Internet Protocol Bridging System Interface • The Emergency Communications Preparedness Center developed a *Federal Broadband Mission Needs Assessment*, which evaluates Federal broadband communications mission needs and identifies how broadband communications can enhance operational effectiveness • The Office of Emergency Communications completed Technical Assistance broadband workshops in numerous States and territories to help them plan for the Nationwide Public Safety Broadband Network
Emergency Responder Skills and Capabilities	• The Office of Emergency Communications , in partnership with the Office for Interoperability and Compatibility, FEMA, and other stakeholders, developed and implemented a standardized training curriculum for All-Hazards Communication Unit Leaders that complies with the *National Incident Management System*[71] • More than 4,000 emergency responders completed the DHS' All-Hazards Communication Unit Leader course and more than 1,000 have taken the Department's Communications Technician course • The Office of Emergency Communications Technical Assistance Program helped States, territories, local jurisdictions, and tribal nations to design, execute, and evaluate communications exercises • More than 100,000 copies of the *National Interoperability Field Operations Guide* were distributed to public safety agencies, which provides radio frequency information to assist those establishing or repairing emergency communications in a disaster area

[71] Refer to the *Incident Command System Communications Unit Implementation and Best Practices - A Guide for Program Development.* See http://www.publicsafetytools.info for more information.

2008 National Emergency Communications	Key Accomplishments – National Emergency Communications Plan Initiatives and Milestones
System Life Cycle Planning	• DHS developed a comprehensive *Emergency Communications System Life Cycle Planning Guide* to assist agencies with designing, implementing, supporting, and maintaining public safety communications systems • DHS published the *Interoperability Business Case: An Introduction to Ongoing Local Funding*, a guidance document to help emergency response officials develop compelling business cases to support funding for ongoing local interoperability efforts • The Office of Emergency Communications coordinated with Federal, State, and local stakeholders to collect best practices to develop a lifecycle planning template for grant applicants
Disaster Communications Capabilities	• FEMA published the *State Emergency Communications Planning Methodology and Best Practices*, which provides guidance, best practices, and methodologies for incorporating vulnerability assessments into emergency communications planning, including planning for alternative and backup capabilities when primary systems become unavailable • FEMA developed statewide emergency communications annexes to the Regional Emergency Communications Plans in all 10 FEMA Regions

APPENDIX 7: SOURCE DOCUMENTS AND REFERENCES

This appendix lists the key source documents that the Department of Homeland Security (DHS) used to inform and shape the concepts, goals, and recommendations of the 2014 National Emergency Communications Plan. This list is not exhaustive; rather, it highlights the primary source documents that were developed since the 2008 National Emergency Communications Plan. The references are grouped by author and then in chronological order.

White House	
Cyberspace Policy Review: Assuring a Trusted and Resilient Information and Communications Infrastructure http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf	2009
National Security Strategy http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf	2010
Digital Government Strategy: Building A 21st Century Platform To Better Serve the American People http://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy.pdf	2012

Federal Departments and Agencies	
U.S. Department of Defense (DOD): *Department of Defense Mobile Device Strategy Memorandum* http://www.defense.gov/news/dodmobilitystrategy.pdf	2012
DHS/Federal Emergency Management Agency (FEMA): *National Incident Management System* http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf	2008
DHS/Office of Emergency Communications: *Establishing Governance to Achieve Statewide Communications Interoperability - A Guide for Statewide Communication Interoperability Plan Implementation* http://www.safecomprogram.gov/oec/establishing_governance_guide.pdf	2008
DHS/FEMA: *The Response to the 2011 Joplin, Missouri Tornado - Lessons Learned Study* https://www.llis.dhs.gov/sites/default/files/Joplin%20Tornado%20Response%20Lessons%20Learned%20Report%20Final.pdf	2011
DHS/FEMA: Think Tank Discussion Series on Improving the Emergency Management System http://www.fema.gov/medialibrary/collections/2364	2012
DHS/FEMA: *A Whole Community Approach to Management - Principles, Themes, and Pathways for Action* http://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf	2011
DHS/Office of Emergency Communications: *Emergency Communications System Life Cycle Planning Guide* http://www.safecomprogram.gov/oec/oec_system_life_cycle_planning_guide_final.pdf	2011
DHS/Office of Emergency Communications: *National Emergency Communications Plan Urban Area Communications Key Findings and Recommendations* http://www.dhs.gov/national-emergency-communications-plan-National Emergency Communications Plan_-goals	2011
DHS/Office of Emergency Communications: *Public Safety Communications Evolution Brochure* http://www.safecomprogram.gov/oec/public_safety_communications_evolution_brochure.pdf	2011
DHS/FEMA: *National Preparedness Report* http://www.fema.gov/national-preparedness-report	2012 2013

Federal Departments and Agencies	
DHS/Office of Inspector General: *DHS' Oversight of Interoperable Communications* http://www.oig.dhs.gov/assets/Mgmt/2013/OIG_13-06_Nov12.pdf	2012
DHS/Office of Emergency Communications: *Incident Command System Communications Unit Implementation and Best Practices - A Guide for Program Development* http://www.publicsafetytools.info	2012
DHS/Office of Emergency Communications: *National Summary of Fiscal Year 2011 Statewide Communications Interoperability Plan Implementation Reports* http://www.dhs.gov/statewide-communication-interoperability-plans	2012
DHS/Science and Technology Directorate: *Multi-Band Radio Pilot Report, Operational Assessment* http://www.firstresponder.gov/TechnologyDocuments/Multi%20Band%20Radio%20Pilot%20Report.pdf	2012
DOD: *Mobile Applications Security Requirements Guide Overview*	2012
U.S. Department of Transportation, National Highway Traffic Safety Administration: National 9-1-1 Program State of 9-1-1 Webinar Series http://www.9-1-1.gov/webinars.html	2012
FCC: *Recommendations of the Technical Advisory Board for First Responder Interoperability* http://www.fcc.gov/document/recommendations-interoperability-board	2012
FCC: *Uses and Capabilities of Amateur Radio Service Communications in Emergencies and Disaster Relief* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-12-1342A1.pdf	2012
DHS/FEMA: *Lessons Learned Report on Boston Marathon Bombings - The Positive Effect of Planning and Preparation on Response* https://www.llis.dhs.gov/sites/default/files/Boston%20Marathon%20Bombings%20Positive%20Effects%20of%20Preparedness_0.pdf	2013
DHS/FEMA: *National Response Framework*, Second Edition www.fema.gov/national-response-framework	2013
DHS/Office of Emergency Communications: *Annual SAFECOM Guidance on Emergency Communications Grants* http://www.safecomprogram.gov/grant.html	2013
DHS/Office of Emergency Communications: *Emergency Communications Preparedness Center Annual Strategic Assessment - Report to Congress for 2012*	2013
DHS/Office of Emergency Communications: *Emergency Communications Preparedness Center Recommendations to Federal Agencies: Financial Assistance for Emergency Communications* http://www.911.gov/pdf/2011_ECPC_Grants_Recommendations_to_Fed_Agencies_Final.pdf	2013
DHS/Office of Emergency Communications: *National Interoperability Field Operations Guide v1.4* www.publicsafetytools.info/start_nifog_info.php	2013
DHS/Office of Emergency Communications: *Progress Report on Implementing the National Emergency Communications Plan – Fiscal Year 2012 Report to Congress*	2013
DHS/Office of Emergency Communications: *Region IV States and Arkansas & Louisiana Strategic Interstate Communications Resource Allocation Plan*	2013
DHS/Office of Infrastructure Protection: *National Infrastructure Protection Plan* 2013 Version http://www.dhs.gov/national-infrastructure-protection-plan	2013
DHS Science and Technology Directorate: *Lessons Learned: Social Media and Hurricane Sandy Virtual Social Media Working Group and DHS First Responders Group* https://www.llis.dhs.gov/sites/default/files/Lessons%20Learned%20-%20Social%20Media%20and%20Hurricane%20Sandy.pdf	2013
FCC Field Hearing on Superstorm Sandy, New York, NY, and Hoboken, NJ, February 5, 2013 http://www.fcc.gov/events/superstorm-sandy-field-hearing	2013

Federal Departments and Agencies	
FCC: *Impact of the June 2012 Derecho on Communications Networks and Services Report and Recommendations* http://www.fcc.gov/document/derecho-report-and-recommendations	2013
FCC: *Legal and Regulatory Framework for Next Generation 911 Services Report to Congress and Recommendations* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-319165A1.pdf	2013

Congressional Panels, Testimonies, and Reports	
Congressional Research Service: *An Emergency Communications Safety Net: Integrating 9-1-1 and Other Services* http://assets.opencrs.com/rpts/RL32939_20080825.pdf	2008
Congressional Research Service: *Social Media and Disasters: Current Uses, Future Options, and Policy Considerations* http://www.fas.org/sgp/crs/homesec/R41987.pdf	2011
U.S. Senate Committee on Homeland Security and Governmental Affairs' Subcommittee on Disaster Recovery and Intergovernmental Affairs, Written Statement of Craig Fugate, Administrator, FEMA: *Understanding the Power of Social Media as a Communication Tool in the Aftermath of Disasters*, May 5, 2011 http://www.dhs.gov/news/2011/05/04/written-statement-craig-fugate-administrator-federal-emergency-management-agency	2011
U.S. Senate Committee on Appropriations' Subcommittee on Homeland Security, Written Statement of Craig Fugate, Administrator, FEMA: *Evolution of Emergency Management and Communication*, June 8, 2011 https://www.fema.gov/pdf/about/programs/legislative/testimony/2011/6_8_2011_evolution_of_emergency_management_and_communication.pdf	2011
Congressional Research Service: *Funding Emergency Communications: Technology and Policy Considerations* http://www.fas.org/sgp/crs/homesec/R41842.pdf	2012
Congressional Research Service: *The First Responder Network and Next-Generation Communications for Public Safety: Issues for Congress* http://www.fas.org/sgp/crs/homesec/R42543.pdf	2013
U.S. House of Representatives Committee on Homeland Security, "The Boston Bombings: A First Look," May 9, 2013 http://homeland.house.gov/hearing/hearing-boston-bombings-first-look	2013
U.S. House of Representatives Committee on Homeland Security Subcommittee on Emergency Preparedness, Response, and Communications Committee, Hearing on "Emergency MGMT 2.0: How Social Media & New Tech Are Transforming Preparedness, Response, & Recovery," June 4 and July 9, 2013 http://homeland.house.gov/hearing/subcommittee-hearing-emergency-mgmt-20-how-socialmedia-new-tech-are-transforming	2013
U.S. Senate Committee on Homeland Security and Governmental Affairs, Hearing on "Lessons Learned from the Boston Marathon Bombings: Preparing for and Responding to the Attack," July 10, 2013 http://www.hsgac.senate.gov/hearings/lessons-learned-from-the-boston-marathon-bombings-preparing-for-and-responding-to-the-attack	2013
U.S. Senate Committee on Homeland Security and Governmental Affairs, Hearing on "DHS Oversight and Coordination of Research and Development Efforts Could Be Strengthened," Written Statement of Dave C. Maurer, Director, U.S. Government Accountability Office http://www.gao.gov/assets/660/655898.pdf	2013

National Associations, Advisory Boards and Groups	
National Governors Association *2009 State Homeland Security Advisors Survey* http://www.nga.org/files/live/sites/NGA/files/pdf/1002HSASURVEY.PDF	2009
Transportation Safety Advancement Group: *Next Generation 9-1-1 What's Next Forum Report and Frequently Asked Questions* http://www.tsag-its.org/docs/2011/08/NG9-1-1%20WN%20FAQ%20-%20August%202011.pdf	2011

National Associations, Advisory Boards and Groups	
National Emergency Management Association Report: *Social Media in the Emergency Management Field - 2012 Survey Results* http://www.cna.org/sites/default/files/research/SocialMedia_EmergencyManagement.pdf	2013
The National Security Telecommunications Advisory Committee: *Report to the President on the National Security and Emergency Preparedness Implications of a Nationwide Public Safety Broadband Network* https://www.dhs.gov/sites/default/files/publications/npsbn-final-report-05-22-13_0.pdf	2013

APPENDIX 8: 2008 NATIONAL EMERGENCY COMMUNICATIONS PLAN IMPLEMENTATION CRITERIA

Section 4.0 of the National Emergency Communications Plan outlines the Department of Homeland Security's (DHS) strategy for implementing and measuring the National Emergency Communications Plan in coordination with stakeholders. This includes an assessment of operational communications and a broader evaluation of emergency communications capabilities based on the *SAFECOM Interoperability Continuum* and the capabilities identified in Section 2.3 of the 2008 National Emergency Communications Plan.

This appendix presents the criteria that were used to measure both operational performance and capability levels under the 2008 Plan. To ensure consistency, DHS plans to use the criteria as the foundation to assess nationwide emergency communications. Given changes in the operating environment, DHS will work with the emergency response community to update the criteria as necessary to reflect the use of new technologies and other key developments.

Table A8-1. Operational Performance Criteria

Common Policies and Procedures	
Criteria 1	• Interagency communications policies and procedures were common or consistent amongst all responding agencies
Criteria 2	• Established interagency communications policies and procedures were followed throughout the incident
Criteria 3	• Interagency communications policies and procedures across all responding agencies were consistent with the *National Incident Management System*
Criteria 4	• A priority order for use of interagency communications resources was followed as established in standard operation procedures or plans, such as the Tactical Interoperable Communications Plan
Criteria 5	• A primary interagency operations talk path was clearly established by procedure or communicated to responders early in the incident
Criteria 6	• Common terminology and plain language were used in all interagency communications
Criteria 7	• Clear unit identification procedures were used
Criteria 8	• Common channel names were used for designated interoperability channels
Criteria 9	• Multiple organizations with inherent responsibility for some portion of the incident were present and joined in a unified command with a single individual designated with the Operations Section Chief responsibilities
Criteria 10	• Span of control was maintained amongst the primary operational leadership: the Operations Section Chief and first-level subordinates

Communications System Quality and Continuity	
Criteria 11	• Communications Unit Leader roles and responsibilities were carried out by the Incident Commander/Unified Command or designee. This includes: – Necessary communications resources were effectively ordered using documented procedures; and – A communications plan was established by procedure or developed early in the incident
Criteria 12	• No more than 1 out of 10 transmissions was repeated among the primary operational leadership due to the failure of initial communications attempts
Criteria 13	• Upon failure or overload of any primary communications mode, a backup was provided
Criteria 14	• Primary operational leadership communicated adequately to manage resources and make timely decisions during the incident or event

Table A8-2. Capability Criteria

Capability	Early Implementation	Intermediate Implementation	Established Implementation	Advanced Implementation
Governance	Area decision-making groups are informal and do not yet have a strategic plan to guide collective communications interoperability goals and funding	Some formal agreements exist and informal agreements are in practice among members of the decision-making group for the area; strategic and budget planning processes are beginning to be put in place	Formal agreements outline the roles and responsibilities of an area-wide decision-making group, which has an agreed upon strategic plan that addresses sustainable funding for collective, regional interoperable communications needs	Area-wide decision-making bodies proactively look to expand membership to ensure representation from broad public support disciplines and other levels of government, while updating their agreements and strategic plan on a regular basis

Capability	Early Implementation	Intermediate Implementation	Established Implementation	Advanced Implementation
Standard Operating Procedures – Policies, Practices, and Procedures	Area-wide interoperable communications standard operating procedures are not developed or have not been formalized and disseminated	Some interoperable communications standard operating procedures exist within the area and steps have been taken to institute these interoperability procedures among some agencies	Interoperable communications standard operating procedures are formalized and in use by all agencies within the area. Despite minor issues, standard operating procedures are successfully used during responses and/or exercises	Interoperable communications standard operating procedures within the area are formalized and regularly reviewed. Additionally, the *National Incident Management System* procedures are well established among all agencies and disciplines. All needed procedures are effectively utilized during responses and/or exercises
Training and Exercise – Emergency Responder Skills and Capabilities	Area-wide public safety agencies participate in communications interoperability workshops, but no formal training or exercises are focused on emergency communications	Some public safety agencies within the area hold communications interoperability training on equipment and conduct exercises, although not on a regular cycle	Public safety agencies within the area participate in equipment and Standard Operating Procedure training for communications interoperability and hold exercises on a regular schedule	Area public safety agencies regularly conduct training and exercises with communications interoperability curriculum addressing equipment and standard operating procedures that is modified as needed to address the changing operational environment
Usage	First responders across the area seldom use solutions unless advanced planning is possible (e.g., special events)	First responders across the area use interoperability solutions regularly for emergency events, and in limited fashion for day-to-day communications	First responders across the area use interoperability solutions regularly and easily for all day-to-day, task force, and mutual aid events	Regular use of solutions for all day-to-day and out-of-the-ordinary events across the area on demand, in real time, when needed, as authorized

Capability	Early Implementation	Intermediate Implementation	Established Implementation	Advanced Implementation
Technology	Interoperability within the area is primarily achieved through the use of gateways (mobile/fixed gateway, console patch), shared radios, or use of a radio cache	Interoperability within the area is primarily achieved through the use of shared channels or talk groups	Interoperability within the area is primarily achieved through the use of a proprietary shared system	Interoperability within the area is primarily achieved through the use of standards-based shared system (e.g., Project 25)

APPENDIX 9: GLOSSARY

After-Action Report. A professional document formulated in partnership with participants in a process. Evaluators, sponsoring agencies, and key participants from government agencies participate in the formulation of the after-action report. It furnishes a historical record of findings and forms the foundation for refinements to plans, policies, procedures, training, equipment, and overall preparedness of an entity. The report depicts the process, preliminary observations, and major issues, and makes recommendations for improvements.

Applications. A set of features and a user interface that may be realized by fixed or mobile devices. User services are logical building blocks of application-layer functionality.

Agreements. Formal mechanisms to govern interagency coordination and the use of interoperable emergency communications solutions.

Assessment. The process of acquiring, collecting, processing, examining, analyzing, evaluating, monitoring, and interpreting the data, information, evidence, objects, measurements, images, and sound, among others, whether tangible or intangible, to provide a basis for decision-making.

Amateur Radio Service. A radio communication service for the purpose of self-training, intercommunication, and technical investigations carried out by amateurs, who are duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

Auxiliary Communications. Backup emergency radio communications provided by volunteers who support public safety and emergency response professionals and their agencies.

Broadband. High-speed Internet that allows users to access the Internet and Internet-related services at significantly higher speeds than those available through dial-up Internet access services. Broadband allows users to access information via the Internet using one of several high-speed transmission technologies: Digital Subscriber Line; Cable Modem; Fiber; Wireless; and Satellite. Transmission is digital, meaning that text, images, and sound are all transmitted as bits of data. The transmission technologies that make broadband possible move these bits much more quickly than traditional telephone or wireless connections.

Common Alerting Protocol. The Common Alerting Protocol is a digital format for exchanging emergency alerts that allows a consistent alert message to be disseminated simultaneously over many different communications systems.

Communications Unit. Within the Incident Command System, an organizational unit in the Logistics Section that is responsible for effective incident communications planning, especially in the context of a multi-agency incident. Additionally, this unit installs and tests all communications equipment, supervises and operates the incident communications center, distributes and recovers communications equipment assigned to incident personnel, and maintains and repairs communications equipment on site.

Continuity of Communications. The ability of emergency response agencies to maintain communications capabilities when primary infrastructure is damaged or destroyed.

Core Capabilities. Distinct critical elements necessary to achieve the *National Preparedness Goal*.

Critical Infrastructure. Systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or medical, or safety, or any combination of those matters. (Source: *2013 National Infrastructure Protection Plan*)

Cross-Discipline. Involving emergency response providers from different disciplines (e.g., police, fire, emergency medical services).

Cybersecurity. The prevention of damage to, unauthorized use of, or exploitation of, and, if needed, the restoration of electronic information and communications systems and the information contained therein to ensure confidentiality, integrity, and availability. Includes protection and restoration, when needed, of information networks and wireline, wireless, satellite, public safety answering points, and 9-1-1 communications systems and control systems. (Source: *2013 National Infrastructure Protection Plan 2013: Partnering for Critical Infrastructure Security and Resilience*)

Dispatch Center. Agency or interagency dispatch centers, 9-1-1 call centers (e.g., public safety answering points), emergency control or command dispatch centers, or any naming convention given to the facility and staff that handles emergency calls from the public and communication with emergency management/response personnel.

Emergency Communications. The means and methods for exchanging communications and information necessary for successful incident management.

Emergency Management Assistance Compact. A congressionally ratified mutual aid compact that legally establishes a national system to facilitate resources across State lines during an emergency or disaster.

Emergency Response Providers. *The Homeland Security Act of 2002* defines emergency response providers as Federal, State, and local governmental and nongovernmental emergency public safety, fire, law enforcement, emergency response, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities.

Emergency Support Functions. Used by the Federal Government and many State governments as the primary mechanism at the operational level to organize and provide assistance. Emergency Support Functions align categories of resources and provide strategic objectives for their use. Emergency Support Functions utilize standardized resource management concepts such as typing, inventorying, and tracking to facilitate the dispatch, deployment, and recovery of resources before, during, and after an incident.

Exercises. Instruments to train for, assess, practice, and improve performance in prevention, protection, mitigation, response, and recovery capabilities in a risk-free environment. Exercises can be used for testing and validating policies, plans, procedures, training, equipment, and interagency agreements; clarifying and training personnel in roles and responsibilities; improving interagency coordination and communications; improving individual performance; identifying gaps in resources; and identifying opportunities for improvement.

First Responder Network Authority. An independent authority within the National Telecommunications and Information Administration that is responsible for ensuring the building, deployment, and operation of the first high-speed, nationwide public safety broadband network.

First Responders. See "emergency response provider." (The *Implementing the 9/11 Commission Recommendations Act of 2007* states that the term first responder shall have the same meaning as the term emergency response provider, which is defined in the *Homeland Security Act of 2002*.)

Government Emergency Telecommunications Service. Service that provides national security and emergency preparedness personnel priority access and prioritized processing in the local and long distance segments of the Public Switched Telephone Network, greatly increasing the probability of call completion. Government Emergency Telecommunications Service is intended to be used in an emergency or crisis situation when the Public Switched Telephone Network is congested and the probability of completing a normal call is reduced.

Governance. Relates to consistent management, cohesive policies, guidance, processes, and decision-rights for a given area of responsibility.

Incident Action Plan. An oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.

Incident Command System. A standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. The incident command system is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small and large, complex incidents. The incident command system is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.

Information Sharing Environment. Broadly refers to the people, projects, systems, and agencies that enable responsible information sharing for national security.

Internet Protocol-Based Technologies. Any component, device, application, or system designed to function on an Internet Protocol network.

Interoperability. Ability of emergency responders to communicate among jurisdictions, disciplines, frequency bands, and levels of government as needed and as authorized. System operability is required for system interoperability.

Jurisdiction. A range or sphere of authority. Public safety agencies have jurisdiction at an incident related to their legal responsibilities and authority. Jurisdictional authority at an incident can be political or geographical (e.g., Federal, State, tribal, local boundary lines) or functional (e.g., law enforcement, public health, medical).

Land Mobile Radio Systems. Terrestrially-based wireless narrowband communications systems commonly used by Federal, State, local, tribal, and territorial emergency responders, public works companies, and even the military to support voice and low-speed data communications.

Lifecycle Planning. The process of designing, implementing, supporting, and maintaining a land mobile radio or mobile data-based public safety communications system. Enables practitioners to better forecast long-term funding requirements and helps to set the framework for establishing and maintaining a public safety system.

Long-Term Evolution. The next evolution of commercial broadband wireless communications technology, which was developed to address the demand for high-speed, data intensive communications, such as situational awareness, advanced analytics, database queries, and video applications.

Mission Areas. Groups of core capabilities, including Prevention, Protection, Mitigation, Response, and Recovery. (Source: *National Preparedness Goal*)

Multi-jurisdictional. Involving agencies from different jurisdictions (e.g., across State, county, or regional boundaries).

Mutual Aid Agreement or Assistance Agreement: Written or oral agreement between and among agencies, organizations, or jurisdictions that provides a mechanism to quickly obtain emergency assistance in the form of personnel, equipment, materials, and other associated services. The primary objective is to facilitate rapid, short-term deployment of emergency support prior to, during, or after an incident.

National Emergency Communications Plan. The *Homeland Security Act of 2002*, as amended, requires DHS to develop the National Emergency Communications Plan; the Plan serves as the Nation's strategic plan for improving emergency response communications and efforts in the United States.

National Incident Management System. Provides a systematic, proactive approach and template to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the

effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life or property and harm to the environment.

National Preparedness Goal. The cornerstone for the implementation of Presidential Policy Directive-8, it establishes the capabilities and outcomes for the Nation to accomplish across five mission areas (Prevention, Protection, Mitigation, Response, and Recovery) in order to be secure and resilient. The Goal establishes distinct core capabilities and corresponding target elements for each mission area.

Nationwide Public Safety Broadband Network. A dedicated, wireless, interoperable, communications long-term evolution-based network (consisting of a core network and radio access network) that allows public safety to receive and share critical information with their counterparts across the Nation.

National Response Framework. A guide to how the Nation responds to all types of disasters and emergencies. It describes specific authorities and best practices for managing incidents that range from the serious but purely local to large-scale terrorist attacks or catastrophic natural disasters.

National Security and Emergency Preparedness Communications Functions. The ability of the Federal Government to communicate at all times and under all circumstances to carry out its most critical and time sensitive missions. This includes the survivable, resilient, enduring, and effective communications, both domestic and international, that are essential to enable the executive branch to communicate within itself and with: the legislative and judicial branches; State, local, tribal, and territorial governments; private sector entities; and the public, allies, and other nations.

Nongovernmental Organization. As noted in the *National Response Framework*, these include voluntary, racial and ethnic, faith-based, veteran-based, and nonprofit organizations that provide sheltering, emergency food supplies, and other essential support services. Nongovernmental organizations are inherently independent and committed to specific interests and values.

Operability. Ability of emergency responders to establish and sustain communications in support of mission operations.

Operating Environment. For the purposes of the National Emergency Communications Plan, this refers to the people, processes, policies, and technologies for emergency communications.

Private Sector Entity. Per the *National Response Framework*, private sector entities include large, medium, and small businesses; commerce, private cultural and educational institutions; and industry, as well as public-private partnerships that have been established specifically for emergency management purposes.

Public Safety Entity. An entity that provides public safety services and that include services provided by emergency response providers, as defined in the *Homeland Security Act of 2002* (see above definition for "emergency response providers"). (Source: *Middle Class Tax Relief and Job Creation Act of 2012*)

Public Safety Services. Includes services defined in the *Communications Act of 1934* as those with the sole or principal purpose of which is to protect the safety of life, health, or property; that are provided—

by State or local government entities; or by nongovernmental organizations that are authorized by a governmental entity whose primary mission is the provision of such services; and that are not made commercially available to the public by the provider. Also includes services provided by emergency response providers, as defined in Section 2 of the *Homeland Security Act of 2002* (see above definition for "emergency response providers").

Public Safety Answering Point. A facility that has been designated to receive 9-1-1 calls and route them to emergency services personnel. A Public Safety Answering Point may act as a dispatch center. Public Safety Answering Point is often used with the term Public Safety Communications Center. (Source: *Communications Act of 1934*, as amended)

Reliability. Achieved in public safety land mobile radio systems through equipment redundancy and minimizing single points of failures through careful system design. System operators stock spare parts and, in some cases, transportable backup systems to restore system failures that do occur. Reliability must be considered at the earliest stages of system design.

Redundancy. Additional or alternate systems, sub-systems, assets, or processes that maintain a degree of overall functionality in case of loss or failure of another system, sub-system, asset, or process.

Resources. Personnel and major items of equipment, supplies, and facilities available or potentially available for assignment to incident operations and for which status is maintained. Resources are described by kind and type and may be used in operational support or supervisory capacities at an incident or at an Emergency Operations Center.

Response-Level Emergency Communications. Per the 2008 National Emergency Communications Plan, response-level emergency communications are the capacity of individuals with primary operational leadership responsibility to manage resources and make timely decisions during a multi-agency incident without technical or procedural communications impediments. In addition to communicating to first-level subordinates in the field, the Operations Section Chief should be able to communicate upwards to the incident command level (e.g., between the Operations Section Chief and Incident Command).

Social Media. Refers to the means of interactions among people in which they create, share, or exchange information and ideas in virtual communities and networks.

Standard Operating Procedures. Generally refers to a reference document or an operations manual that provides the purpose, authorities, duration, and details for the preferred method of performing a single function or a number of interrelated functions in a uniform manner.

Strategic Planning. Planning process that establishes organizational goals and identifies, scopes, and establishes requirements for the provisioning of capabilities and resources to achieve them.

Statewide Communication Interoperability Plan. Stakeholder-driven, multi-jurisdictional, and multi-disciplinary statewide plans that outline and define the current and future vision for communications interoperability within the State or territory. The Statewide Communications Interoperability Plan is a

critical strategic planning tool to help States prioritize resources, establish and strengthen governance, identify future technology investments, and address interoperability gaps.

Statewide Interoperability Coordinator. Serves as the State's single point of contact for interoperable communications and implements the Statewide Communication Interoperability Plan.

Statewide Interoperability Governing Bodies. Serves as the primary steering group for the statewide interoperability strategy. Its mission is to support the National Council of Statewide Interoperability Coordinators in efforts to improve emergency response communications across the State through enhanced data and voice communications interoperability. They often include representatives from various jurisdictions, disciplines, as well as subject matter experts.

Statewide Interoperability Executive Committees. Used interchangeably with Statewide Interoperability Governing Bodies.

Tactical Interoperable Communications Plan. A plan providing rapid provision of on-scene, incident based mission critical voice communications among all first responder agencies (e.g., emergency medical services, fire, and law enforcement), as appropriate for the incident, and in support of an incident command system as defined in the *National Incident Management System.*

Technical Assistance. Support to State, local, tribal, and territorial emergency responders and government officials through the development and delivery of training, tools, and onsite assistance to advance public safety interoperable communications capabilities.

Technology. Per the *SAFECOM Interoperability Continuum*, applies to a capability element that encompasses the systems and equipment that enable emergency responders to share information efficiently and securely during an emergency incident, and addresses the functionality, performance, interoperability, and continuity capabilities of those systems and equipment.

Telecommunications Service Priority. A program that authorizes organizations to receive priority treatment for vital voice and data circuits or other telecommunications services. The Telecommunications Service Priority program provides service vendors a Federal Communications Commission mandate to prioritize requests by identifying those services critical to national security and emergency preparedness. A telecommunications service priority assignment ensures that it will receive priority attention by the service vendor before any non-telecommunications service priority service.

Usage. Per the *SAFECOM Interoperability Continuum*, this applies to the frequency and familiarity with which emergency responders use interoperable emergency communications solutions.

Wireless Priority Service. Service offering that provides national security and emergency preparedness personnel with priority access and prioritized processing in all nationwide and several regional cellular networks, greatly increasing the probability of call completion. It is intended to be used in an emergency or crisis situation when cellular networks are congested and the probability of completing a normal cellular call is reduced.

Whole Community. Per the *National Preparedness Goal*, the term whole community applies to the focus on enabling the participation in national preparedness activities of a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of Federal, State, local, tribal, and territorial governmental partners in order to foster better coordination and working relationships.

APPENDIX 10: ACRONYMS

DHS Department of Homeland Security

FCC Federal Communications Commission

FEMA Federal Emergency Management Agency