

Emergency Communications: Broadband and the Future of 911

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Summary

Today's 911 system is built on an infrastructure of analog technology that does not support many of the features that most Americans expect to be part of an emergency response. Efforts to splice newer, digital technologies onto this aging infrastructure have created points of failure where a call can be dropped or misdirected, sometimes with tragic consequences. Callers to 911, however, generally assume that the newer technologies they are using to place a call are matched by the same level of technology at the 911 call centers, known as Public Safety Answering Points (PSAPs). However, this is not always the case. To modernize the system to provide the quality of service that approaches the expectations of its users will require that the PSAPs, and state, local, and possibly federal emergency communications authorities invest in new technologies. As envisioned by most stakeholders, these new technologies—collectively referred to as Next Generation 911 or NG9-1-1—should incorporate Internet Protocol (IP) standards. An IP-enabled emergency communications network that supports 911 will facilitate interoperability and system resilience; improve connections between 911 call centers; provide more robust capacity; and offer flexibility in receiving and managing calls. The same network can also serve wireless broadband communications for public safety and other emergency personnel, as well as other purposes.

Recognizing the importance of providing effective 911 service, Congress has passed three major bills supporting improvements in the handling of 911 emergency calls. The Wireless Communications and Public Safety Act of 1999 (P.L. 106-81) established 911 as the number to call for emergencies and gave the Federal Communications Commission (FCC) authority to regulate many aspects of the service. The most recent of these laws, the NET 911 Improvement Act of 2008 (P.L. 110-283), required the preparation of a National Plan for migrating to an IP-enabled emergency network. Responsibility for the plan was assigned to the E-911 Implementation Coordination Office (ICO), created to meet requirements of an earlier law, the ENHANCE 911 Act of 2004 (P.L. 108-494). Authorization for the ICO terminated on September 30, 2009. ICO was jointly administered by the National Telecommunications and Information Administration and the National Highway Traffic Safety Administration.

The FCC has included recommendations for advancing NG9-1-1 as part of the National Broadband Plan it presented to Congress on March 16, 2010. It has proposed that the FCC take on an expanded role in assuring that NG9-1-1 services meet future consumer expectations for broadband-based communications. Congress may evaluate whether additional actions are needed on its part in order to support a cohesive policy for transitioning to NG9-1-1.

Other types of citizen-activated emergency calls are handled in call centers. Increasingly many calls for assistance are placed by dialing 211. The number has been provisionally designated for community information and referrals. Service levels and response times for 211 calls would benefit from a transition to IP-enabled networks and in many cases could share infrastructure with 911 networks.

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Introduction: An Outdated System

The underlying systems for 911 calls today operate almost exclusively on analog technology, using an architecture of circuits and switches developed when the American Telephone & Telegraph Company was a regulated monopoly providing most of the nation's telephone service.[1] Modern communications innovations such as digitization, packet switching, and Internet Protocol (IP) standards are alien concepts in an outdated system design that, critics maintain, "literally chokes off the use of all but the most rudimentary features of modern end-user devices and stifles the development of more specialized equipment and services."[2] Systems for 911, unable to accommodate the latest advances in telecommunications technology, are increasingly out-dated, costly to maintain, and in danger of failure.[3]

Consumer expectations for accurate and timely response to 911 calls are based on the advanced features available on most communications devices, not on the reality of a faltering legacy system. The analog system cannot carry text messages, for example. Calls are delayed or dropped when analog and digital systems do not mesh. Information on the location of the call is lost because the digital details cannot be transmitted by the underlying telecommunications infrastructure or understood by the computers at Public Safety Answering Points (PSAPs).[4] As summarized in a National Emergency Number Association (NENA) report, "Simply put, the 9-1-1 system has not kept up with technology and is badly in need of modernization."[5]

The Next Generation: NG9-1-1

There is a general consensus that present and future digital communications for 911 services would be best supported by Next Generation 911 technology (NG9-1-1). The term NG9-1-1 is widely used to refer to the modernization of all parts of the 911 system, including hardware, software, data, and operational policies and procedures, all supported by multi-purpose emergency service networks. These IP-enabled networks rely on the same type of network connections as business and consumer access to the Internet and can share capacity with other users. A broadband connection built to a school, library, or hospital, can also reach a 911 call center. Deploying NG9-1-1 is seen as an integral part of national broadband policy.[6] Network facilities dedicated to 911, or even exclusively to public safety, are not considered cost-effective.[7]

[1] Dale Hatfield, Brad Bernthal, and Phil Weiser, *Health of the US 9-1-1 System,* sponsored by the 9-1-1 Industry Alliance, 2008, Part II, "Section B. Background and Evolution of Our Nation's 9-1-1 System," page 20. Report at http://www.911alliance.org/9IA_Health_of_US_911%20_2_.pdf.

[2] *Ibid.*, page 19.

[3] *Ibid.* Part II, "Section D. Constraints and Shortcomings Associated with the Current 9-1-1 System." See also, "An SOS for 9-1-1 Systems in Age of High-Tech," by Shaila Dewan, The New York Times, April 6, 2007.

[4] PSAPs are the call centers that receive and relay 911 calls.

[5] NENA, Next Generation Partner Program, A Policy Maker Blueprint for Transitioning to the Next Generation 9-1-1 System: Issues and Recommendations for State and Federal Policy Makers to Enable NG9-1-1, September 2008, page 2. Report at http://www.nena.org/sites/default/files/NG9-1-1PolicyMakerBlueprintTransitionGuide-Final_0.pdf.

[6] FCC, *Connecting America: The National Broadband Plan*, Executive Summary, released March 15, 2010 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296858A1.pdf.

[7] Reducing costs by sharing network resources is frequently supported in policy reports such as one by NENA, Next Generation 9-1-1 Transition Policy Implementation Handbook; a guide for identifying and implementing policies to enable NG9-1-1, March 2010 at http://www.nena.org/sites/default/files/transition%20policy_final_2010v10.pdf.

Future decisions about the technology, deployment, and funding of NG9-1-1 must therefore take into consideration the opportunities for sharing resources with other broadband initiatives.

Implementing NG9-1-1 will require not only the development of an IP-enabled network and systems but will also entail changes in operational procedures, training, funding models, and state—and possibly federal—regulations and laws. The National Emergency Number Association (NENA) began planning for the future of 911 under the banner of NG9-1-1 in 2000.[8] NENA started work on standards development for NG9-1-1 in 2003 and since then has taken the lead in defining, designing, and developing NG9-1-1 systems and solutions in partnership with other associations, as well as representatives from industry, government, and the public safety community. Support for NG9-1-1 now comes from a relatively broad base, including

- State and local managers for emergency communications and 911.
- Associations such as NENA, COMCARE,[9] the National Association of Regulatory Utility Commissioners (NARUC),[10] the Association of Public-Safety Communications Officials International, Inc. (APCO),[11] and the National Association of State 911 Administrators (NASNA).[12] Many other international, national, and state and local associations are also actively involved in supporting NG9-1-1.[13]
- Alliances such as the 911 Alliance,[14] the Alliance for Telecommunications Industry Solutions (ATIS),[15] the Internet Engineering Task Force (IETF),[16] and the E9-1-1 Institute, which provides support to the Congressional E9-1-1 Caucus.[17]
- Corporations and other commercial organizations serving public safety and emergency communications.[18]
- The Intelligent Transportation Systems (ITS) Public Safety Program and the National Highway Traffic Safety Administration (NHTSA) within the U.S. Department of Transportation (DOT).

Notably, NENA and DOT have partnered to encourage the deployment of NG9-1-1. Among DOT's contributions in support of NG9-1-1 was the funding and supervision of five proof-of-

[8] NENA NG9-1-1 Project at http://www.nena.org/pages/ContentList.asp?CTID=65.

[9] COMCARE, Emergency Response Alliance at http://www.comcare.org/.

[10] Information at http://www.naruc.org/about.cfm.

[11] Information at http://www.apcointl.org/new/commcenter911/.

[12] Information at http://www.nasna911.org/current-issues.php.

[13] For example, the European Union supports the European Emergency Number Association—EENA 112, see http://www.eena.org/.

[14] At http://www.911aliance.org.

[15] At http://www.atis.org/esif/.

[16] At http://www.ietf.org/overview.html.

[17] At http://www.e911institute.org/e911caucus.html; additional information at the E911 Institute web page http://www.e911institute.org/index.html.

[18] For example, members of the NENA Next Generation Partner Program as listed in *A Policy Maker Blueprint for Transitioning to the Next Generation 9-1-1 System: Issues and Recommendations for State and Federal Policy Makers to Enable NG9-1-1*, *op. cit.*

concept pilots to test key components of NG9-1-1 in PSAPs.[19] In addition to the pilots established by DOT, at least six states and the District of Columbia are reported to have IP-based networks for emergency communications that will support NG9-1-1 systems.[20]

The emergency communications network being tested is envisioned as IP-based, using standardized protocols, and providing a nationwide overlay of system links that can operate at the national, regional, tribal, state, or local level to best meet the needs of specific circumstances. A network overlay for 911 systems can, for example, facilitate interoperability and system resilience by bringing extra resources to devastated areas where 911 call centers are damaged or overwhelmed with calls. On a daily basis, it can provide foreign language assistance at any time, anywhere.[21] Other benefits include better connections between 911 call centers, emergency responders, and alert and warning systems; more robust capacity; and the flexibility to receive calls for help in any format.

Summary of 911 Legislation and Policy

This section summarizes how past federal 911 legislative and policy actions have established a base for the transition to IP-enabled systems. Three major laws supporting improvements in the handling of 911 emergency calls have been enacted since 1999. These and other laws support policy objectives and strategies that provide the base upon which future policy might be built. Analyzing the legislation as a continuum, these key goals emerge: equality of service and access to 911; mechanisms to improve funding for PSAPs and monitor collections and disbursements; federal leadership in developing better 911 capabilities; and transition to IP-enabled 911 systems. The major bills enacted into law are

- The Wireless Communications and Public Safety Act of 1999 (P.L. 106-81), often referred to as the 911 Act.
- The Ensuring Needed Help Arrives Near Callers Employing 911 Act of 2004 (P.L. 108-494), also titled the ENHANCE 911 Act of 2004.
- The New and Emerging Technologies 911 Improvement Act of 2008 (P.L. 110-283), also titled the NET 911 Improvement Act of 2008.

[19] Participants that tested the network prototype are: City of Rochester, NY—Emergency Communications Department; Seattle, WA—King County E-911 System; St. Paul, MN—Metropolitan Emergency Services Board, Ramsey County Emergency Communications Center; State of Montana—Public Safety Services Bureau; and State of Indiana—Office of State Treasurer, Indiana Wireless 911 Board. Results of the tests are presented in U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Proof of Concept Testing Report," NG9-1-1, September 17, 2008 at http://www.its.dot.gov/NG911/pdf/NG911_POCTesTReport091708.pdf.

[20] These are Florida, Indiana, Minnesota, New Mexico, and Rhode Island. Source: NENA, Status of NG9-1-1 Related IP Networks, Demos and Trials at http://www.nena.org/pages/Content.asp?CID=373&CTID=65. Indiana is also participating as one of the DOT pilot projects to test the interface between state IP-networks and the national overlay being considered in DOT's NG9-1-1 program. According to DOT, Vermont has also established an IP backbone and numerous regional/local networks are upgrading to an IP-based network. Source: e-mail communication from Will Otero, Director, Legislative Affairs, National Highway Traffic Safety Administration, October 21, 2008.

[21] For example, the *Washington Post* reported that in 2007, in Fairfax County, VA, 911 calls were translated into 66 different languages. "Cellphones Drive Jump in 911 Use; Workloads and Costs Soar with Increased Calls and Translation Needs," by Amy Gardner, October 26, 2008, at http://www.washingtonpost.com/wp-dyn/content/article/2008/10/25/AR2008102502052.html.

Provisions in other recently enacted laws have also contributed to the growing base of legislation in support of 911.

- The 21st Century Emergency Communications Act, Title VI, Subtitle D, in the Department of Homeland Security Appropriations Act, 2007 (P.L. 109-295) required that PSAPs be included as members of Regional Emergency Communications Coordination Working Groups established by the act.[22]
- The Homeland Security Appropriations Act, 2007 (P.L. 109-295) required the FCC to prepare a report on state, local, and tribal plans for backup service for 911 and E-911 when PSAPS are disabled.[23]
- The Deficit Reduction Act (P.L. 109-171),[24] as amended by the Implementing Recommendations of the 9/11 Commission Act of 2007 (P.L. 110-53)[25] and the NET 911 Improvement Act of 2008,[26] provided up to $43.5 million for grants for 911.
- The Implementing Recommendations of the 9/11 Commission Act of 2007 (P.L. 110-53) included financial support of PSAPs as eligible uses for Urban Area Security Initiative and State Homeland Security Grant programs.[27]
- The Food, Conservation, and Energy Act of 2008 (P.L. 110-234) included language that authorized loans to improve 911 and other emergency communications capabilities in rural areas.[28]

The 911 Act and Federal Communications Commission Regulations

To assist the effort to provide comprehensive 911 services nationwide, Congress in 1999 passed the Wireless Communications and Public Safety Act (P.L. 106-81), often referred to as the 911 Act. This act mandated 911 as the national emergency number[29] and provided for parity of wireless 9-1-1 services with the protections and authorizations already extended to wireline services.[30] Among its provisions, the law required the FCC to work with the states and the many other affected parties to deploy comprehensive wireless enhanced 911 (W-E911) service. Enhanced 911 service provides 911 call centers with Automatic Number Identification (ANI) and Automatic Location Identification (ALI).[31] Most wireline phone services provide ANI/ALI information.[32]

[22] P.L. 109-295, Sec. 671 (b) "Title XVIII, "Sec. 1805, "(b) "(1) "(F); 120 STAT. 1439.

[23] P.L. 109-295, Sec. 674; 120 STAT. 1444.

[24] P.L. 109-171, Sec. 3011; 120 STAT. 27.

[25] P.L. 110-53, Sec. 2302 and 2303; 121 STAT. 543.

[26] P.L. 110-283, Sec. 102 (1); 122 STAT. 2623.

[27] P.L. 110-53 Sec. 2008; 121 STAT. 283.

[28] P.L. 110-234, Sec. 6107; 122 STAT. 1198.

[29] P.L. 106-81, Sec. 3. (a); 113 STAT. 1287

[30] P.L. 106-81, Secs. 4 and 5; 113 STAT. 1288-89.

[31] Automatic Number Identification (ANI) recognizes and displays the telephone number from which the call is placed. Automatic Location Identification (ALI) provides—in the case of wireline—the address associated with the telephone number or—in the case of wireless—the approximate geographic coordinates of the caller.

[32] An estimated 96% of counties in the United States provide some form of 911 service, of which 93% support (continued...)

The 911 Act set the broad goal of facilitating "the prompt deployment throughout the United States of a seamless, ubiquitous, and reliable end-to-end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs."[33] The FCC had taken a first step toward adopting rules for wireless enhanced 911 in 1996, citing provisions of the Communications Act[34] as the basis for its action. After Congress passed the 911 Act, the FCC plotted a course for reaching wireless in two phases. For Phase I, the wireless carriers were given a year to prepare for PSAP requests for Automatic Number Identification (ANI) and location-finder capabilities using technology existing at the time. By 2001, for Phase II, the carriers were to have identified and implemented new location-finder technologies (ALI). A 1999 FCC ruling established October 1, 2001, as the deadline for wireless carriers to meet guidelines for connecting 911 calls to PSAPs.[35]

FCC Study: The Hatfield Report

Delays and complications in implementing rules for 911 prompted the FCC to commission a study to examine deployment of 911 services in general and the cause of problems with wireless 911 calls in particular. The report—known as the Hatfield Report, from its author, Dale N. Hatfield—was submitted to the FCC on October 15, 2002.[36] Observations in the report that later became the basis for Congressional initiatives included

- The critical nature of location information in enhanced 911 in supporting first responders in emergencies.
- The "seriously antiquated" condition of the infrastructure that underlies 911 for both wireline and wireless emergency calls.
- The need for a national 911 office to act as a "champion" at the federal level.

A follow-up study was published in 2007 with support from the 9-1-1 Alliance, an industry group.[37]

The ENHANCE 911 Act of 2004

Congress responded to the issues raised by the 2002 Hatfield Report, the 9/11 Commission,[38] and by others, with the Ensuring Needed Help Arrives Near Callers Employing (ENHANCE) 911 Act

(...continued)

enhanced 911 for wireline services. Source: National Emergency Number Association (NENA), "9-1-1 Fast Facts," at http://www.nena.org/pages/Content.asp?CID=144&CTID=22.

[33] P.L. 106-81, Sec. 2. (b); 113 STAT. 1287.

[34] U.S.C. Title 47, Chapter 5, § 151, Communications Act of 1934. The FCC's charter includes "promoting safety of life and property through the use of wire and radio communication." *Report and Order and Further Notice of Proposed Rulemaking*, adopted June 12, 1996, at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-96-264A1.pdf.

[35] FCC, *E911 Third Report and Order*, FCC 99-245, released October 6, 1999, at http://www.fcc.gov/Bureaus/Wireless/Orders/1999/fcc99245.pdf.

[36] "A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services" at http://www.locatemodelcities.org/library/HatfieldReport.pdf.

[37] "Health of the US 9-1-1 System" at http://www.911alliance.org/9IA_Health_of_US_911%20_2_.pdf.

[38] The 9/11 Commission recommended that 911 call centers be included in planning for emergency responses. *Final Report of the National Commission on Terrorist Attacks Upon the United States*, Official Government Edition, 2004, p. (continued...)

of 2004 (P.L. 108-494). The act identified and addressed a number of concerns about the deployment of 911, including compliance, coverage in rural areas, and the use of fees levied by states and localities to help cover the cost of providing 911 services.

In response to the Hatfield Report's call for a federal champion, the act created the E-911 Implementation Coordination Office (ICO) to be jointly administered by the National Telecommunications and Information Administration (NTIA) and the NHTSA. Among other responsibilities, the ICO was to oversee a grants program for the "implementation and operation of Phase II E-911 services."[39] Although funds were authorized in the law, no appropriations were forthcoming until a sum was allocated by the Deficit Reduction Act of 2005.[40] In FY2008, DOT budgeted $1.25 million for the operation of the ICO.[41]

The NET 911 Improvement Act of 2008

In the 110th Congress, both the House and Senate passed bills focused on ensuring access to 911 call centers for users of Voice Over Internet Protocol (VOIP) services, and improving the delivery of 911 services nationwide. These bills became the New and Emerging Technologies (NET) 911 Improvement Act of 2008 (P.L. 110-283). The key provisions of the law are

- Duty to provide 911 and E-911 as established in the 1999 law extended to include IP-enabled voice services in accordance with existing FCC regulations at the time of passage of the act or as modified in the future.[42]
- Parity of access to communications networks needed to complete 911 calls.[43]
- Parity of protection from liability—provided for wireline and wireless carriers—extended to include communications through VOIP providers and other emergency service providers.[44]
- National plan for migration to an IP-enabled 911 network, developed by the E-911 Implementation Coordination Office.[45]
- Protection of the rights of states and other political subdivisions to levy fees on 911 services.[46]
- Requirement that FCC report annually on collection of state fees and other levies on 911 and E-911 services.[47]

(...continued)

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[39] P.L. 108-498, Sec. 104, "Sec. 158, "(b) "(1); 118 STAT. 3987-3988.

[40] See further discussion in **Appendix A**. 911 Legislation and Policy under "Mechanisms to Improve Funding for PSAPs."

[41] E-mail communication from Will Otero, Director, Legislative Affairs, National Highway Traffic Safety Administration, October 21, 2008.

[42] P.L. 110-283, Sec. 101, "Sec. 6 "(a); 122 STAT. 2620.

[43] P.L. 110-283, Sec. 101, "Sec. 6 "(b); 122 STAT. 2620.

[44] P.L. 110-283, Sec. 201; 122 STAT. 2624.

[45] P.L. 110-283, Sec. 102; 122 STAT. 2623.

[46] P.L. 110-283, Sec. 101, "Sec. 6, "(f) "(1); 122 STAT. 2621.

[47] P.L. 110-283, Sec. 101, "Sec. 6, "(f) "(2); 122 STAT. 2622.

Prior to the passage of the 911 Act in 1999, the FCC had already established regulations for 911 compliance for a new category of service providers—wireless carriers. Similarly, the FCC had established requirements for VOIP—another new category of service provider—in advance of the passage of the NET 911 Improvement Act of 2008.[48] The act confirmed the FCC's authority to require VOIP service providers to comply with 911 connectivity requirements established for wireline and wireless voice and to include VOIP calls in its regulatory and oversight activities for 911. In accordance with requirements to issue regulations covering parity of access and related technical needs and capabilities for VOIP calls, the FCC issued a Report and Order on October 21, 2008.[49]

Funding and Grants

Among the multiple factors and challenges of implementing NG9-1-1 are the costs of planning, replacing, and upgrading systems, and maintaining and operating these new systems. Policies and legislation intended to improve 911 service may need to address the substantial investments required to provide these improvements, including, for example, financial assistance in acquiring the needed technology. The twin policy goals of quality and equality may have bumped against the limits of the technologies currently in place. Significant new gains in accessibility and level of service appear to depend on implementing new technologies that are not supported by the current network architecture.

An analysis of cost, value, and risk prepared for DOT, by the consulting firm Booz Allen Hamilton, found that capital and operating costs for improving the existing 911 system would be comparable to the cost of migrating to NG9-1-1 under several scenarios.[50] Furthermore, several trends were identified that would provide additional value, primarily

- NG9-1-1 provides greater opportunities for cost savings and increased operational efficiencies than the current 911 environment.
- NG9-1-1 has greater potential to meet the public's expectations for accessibility than the current 911 environment.
- NG9-1-1 has greater scalability and flexibility than the current 911 environment.
- NG9-1-1 has greater potential to increase public and responder safety through inter-connectivity and interoperability than the current 911 environment.

[48] Notably, VOIP providers must: deliver all calls to a local 911 center; provide ANI/ALI information if the call center can receive it; and inform customers of limitations in VOIP service for delivering calls to 911. The FCC has a website with information about VOIP, E-911, and past FCC actions at http://www.voip911.gov/.

[49] FCC, *Report and Order*, WC Docket No. 08-171, released October 21, 2008. A detailed discussion of the FCC's interpretation of the act's requirements is provided in the *Report and Order* at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-249A1.pdf.

[50] U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Final Analysis of Cost, Value, and Risk," March 8, 2009, at http://www.its.dot.gov/ng911/pdf/USDOT_NG911_4-A2_FINAL_FinalCostValueRiskAnalysis_v1-0.pdf.

Investment in Infrastructure

The costs to improve 911 through investments in infrastructure can be categorized by several major and distinct functions of 911.[51] For the purposes of this analysis, four cost centers and typical sources of funding are summarized below. These are: devices, local networks, call centers, and interfaces with first responders.

Wireless Devices

The cost of developing cell phones and other wireless devices that comply with FCC requirements for caller information for 911 calls are borne by the communications service providers and their suppliers, and by their customers. Some programs, primarily state and local, offer assistance to consumers to help cover the costs of owning and operating a wireless device.

Local Networks

To accommodate the needs of enhanced 911, local networks that provide routers and other infrastructure invest in upgrades to their facilities. Expenditures by these networks for investments to route 911 calls may be reimbursed through a state's 911 fund or may be passed on to the PSAPs that purchase access to the lines. Charges to PSAPs for communications services tend to rise as more features are added by their local exchange. In some areas of the country there is little competitive pressure to upgrade these links; the lack of access to an up-to-date infrastructure is one reason why some areas of the country do not have enhanced 911 or even basic 911 services. The American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5) provided for grants for investments in broadband infrastructure. Public safety agencies are included under the act as potential beneficiaries of funding.[52] The infusion of grant money to build broadband and IP-enabled networks will help to expand the potential reach of NG9-1-1. ARRA did not, however, address the long-term funding needs to develop and maintain a national NG9-1-1 system. The FCC's National Broadband Plan (also a requirement of the ARRA) did address in part the question of upgrading local networks to handle broadband transmission and of funding the deployment of broadband and NG9-1-1, as noted below, "Creating the Base for Change."

Call Centers

To accommodate the information delivered through enhanced 911, PSAPs are required to invest in call-processing equipment, computers, databases, and other equipment. The capital for these investments may come from 911 or E-911 fees paid by subscribers into state 911 funds; the funds are also used for operating costs. State grants and local fund-raising initiatives are other sources for capital investment and operating costs.[53]

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[51] *Health of the US 9-1-1 System,* for example, describes three major element of the process: "call delivery," "call processing," and "radio dispatch." Page 36 *et seq*. Report at http://www.911alliance.org/9IA_Health_of_US_911%20_2_.pdf.

[52] P.L. 111-5, Division B, Title VI, Sec. 6001 (b) (4) 123 STAT 513.

[53] See **Appendix A**, "Mechanisms to Improve Funding for PSAPs."

Interfaces with First Responders

The final step in processing a 911 call is to relay information to emergency responders. After the point of interface into the local first responder network, the effectiveness of the 911 system depends on the capacity of the response network. The emergency communications networks for public safety are also often constrained by the capabilities of old equipment as well as other operational limitations, such as insufficient radio frequency spectrum and lack of communications interoperability among different first responder groups. The upgrading of these networks are often considered by state and local policy makers as separate from improvements in 911 systems although some states have used 911 funds to help pay for public safety communications networks.

Federal Grants

The federal grant program administered by the ICO awarded over $40 million in matching grants on September 25, 2009.[54] Grants were available to all states, Washington, DC, Puerto Rico, and the U.S. Territories; however, not all states met eligibility requirements and some states chose not to apply. States receiving funds must use them within three years.[55] Twenty-eight states, Puerto Rico, and American Samoa received grants.[56] Grant funds may be used for purchases of hardware and software for enhanced 911 and IP-enabled systems, as well as training in connection with these investments, as identified in each plan submitted by a State. Grant funds may also be used to acquire alerting systems that can send warning messages to wireless devices.

Creating the Base for Change

Through the laws that it has enacted, Congress has established the principle that 911 calls should provide the same level of information and responsiveness no matter what the communications device, the location of the call, or the physical abilities of the caller. Congressional actions and FCC regulations have sought to expand the capacity of the existing 911 infrastructure to accommodate more types of devices, to improve caller location information, to provide wireless support in more areas—with more precision—and to accommodate persons with disabilities.

Private and public sector investments in IP-enabled systems support the twin goals of equality and quality. Only a digitized system with seamless IP-based connectivity can fully support the needs of groups that are currently poorly served by 911 systems, including those with disabilities, residents and travelers in rural areas, and workers and residents in high rise buildings. The current analog system, for example, can only support text messages to 911 in work-around arrangements; yet, text messaging is ideal for people with certain types of disabilities and many consider it to be a more viable means of communication than voice in times of high demand and widespread service outages, situations that often follow a disaster. Better information on the source of a call, made possible by IP technologies, might be a boon for rural and urban areas, where different

[54] U.S. Department of Transportation, Office of Public Affairs, News, "States and U.S. Territories Receive $40 Million in Grants to Improve 911 Services," September 25, 2009.

[55] 47 CFR Part 400, E-911 Grant Program, § 400.10 Closeout. Federal Register, Vol. 74, No. 107, June 5, 2009 at http://www.ntia.doc.gov/frnotices/2009/FR_e911grants_090605.pdf.

[56] Recipients are listed in **Appendix C**.

technological problems lead to the same consequence: inadequate location identification for incoming 911 calls.

The NET 911 Improvement Act of 2008 required the ICO to "develop and report to Congress on a national plan for migrating to a national IP-enabled emergency network capable of receiving and responding to all citizen-activated emergency communications and improving information-sharing among all emergency response entities."[57] The plan was to have been delivered no more than 270 days after enactment of the bill, a late April 2009 deadline. The plan was to be developed in consultation with a broad range of representatives for public safety, persons with disabilities, equipment and service providers and others.[58] Congress required in the NET 911 Improvement Act of 2008 that the National Plan "assess, collect, and analyze the experiences" of trial deployments such as those conducted for NG9-1-1 by the Department of Transportation.[59] The various analyses of IP-based systems prepared as part of DOT's NG9-1-1 assessment provided the core of the ICO's national plan for migrating to IP-enabled 911.

The national plan prepared by the ICO[60] was required to describe positive steps to include 911 in the transition to IP-enabled technologies and to provide recommendations where congressional action could facilitate the process.[61] The plan as submitted describes a number of steps for governance but it is not clear what role, if any, a federal department or agency will have in deploying the new technologies. The transition could occur through the combined efforts of states with little participation by the federal government.

Based on the legislation calling for the 911 transition plan, Congress had expected the plan to make recommendations, including congressional actions, if needed. Instead, the plan reiterated DOT's framework for areas where action might be taken without providing specific guidance to Congress. The plan was presented on September 25, 2009, leaving no time for the ICO to develop more detailed plans for action before its authority ended on September 30.

NG9-1-1 Transition: Department of Transportation

As an extension of its Emergency Medical Service (EMS) mission, the National Highway Traffic Safety Administration (NHTSA), within the U.S. Department of Transportation (DOT), has provided the bulk of federal support in assisting wireless E-911. In 2002, under the leadership of then-Secretary of Transportation Norman Y. Mineta, DOT created the Wireless E9-1-1 Steering Council to foster cooperation and dialog among key participants.[62] In 2005, DOT announced plans to produce a national framework and deployment plan for an NG9-1-1 system, to be developed over a three-year period. The new initiative built on earlier wireless 911 projects within DOT. The NG9-1-1 program has been administered within the Research and Innovative Technology Administration (RITA), part of DOT's Intelligent Transportation Systems (ITS)

[57] P.L. 110-283, Sec. 102, (3) "(d) "(1); 122 STAT. 2623.

[58] P.L. 110-283, Sec. 102, (3) "(d) "(3); 122 STAT. 2624.

[59] P.L. 110-283, Sec. 102 (3) "(d) "(2) "(H) ; 122 STAT. 2623.

[60] The National E9-1-1Implementation Coordination Office, *A National Plan for Migrating to IP-Enabled 9-1-1 Systems*, September 2009 at http://www.e-911ico.gov/NationalNG911MigrationPlan_sept2009.pdf.

[61] P.L. 110-283, Sec. 102 (3) "(d) "(2) "(F) and (G); 122 STAT. 2623.

[62] U.S. Department of Transportation, Wireless E9-1-1 Steering Council, *Wireless E9-1-1 Priority Action Plan,* Foreword, at http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13884.html.

program. Management of the program has been shared between the ITS Public Safety Program and NHTSA, with assistance from the consulting firm, Booz Allen Hamilton.[63]

DOT has published technical requirements and a concept of operations for NG9-1-1, has implemented a strategic outreach plan, has worked to develop and validate requirements for the NG9-1-1 system, has produced a system design document,[64] and has developed a transition plan.[65] In the concept of operations, DOT stated

> The primary goal of the NG9-1-1 System is to save lives, health, and property by improving emergency services access and response in the United States. The state of the NG9-1-1 System also has a major effect on transportation security, mobility, and efficiency.[66]

The major features of the envisioned NG9-1-1 System that support this goal are described as

- Quicker receipt of more robust information.
- Better and more useful information from any networked communications device.
- Geographic-independent call access, transfer, and backup among PSAPs and between PSAPs and other authorized emergency organizations.
- Increased coordination and partnerships within the emergency response community.
- Increased aggregation and sharing of data, resources, procedures, and standards to improve emergency response.
- Maximized use of available public capital and operating costs for emergency communications services.[67]

NHTSA continues its commitment to working with emergency responders and the 911 community. It plans to build on the relationships it has developed with local, state, federal, and private stakeholders to support the development of NG9-1-1. Among its immediate objectives is managing a national 911 resource center to support the development of new emergency access systems, including a model state 911 law and a compilation of NG9-1-1 standards.

NG9-1-1 Transition: NENA

NENA has prepared a handbook that identifies six transition policy issues that could be could be considered starting points in the transition to NG9-1-1.[68] NENA has urged that these issues be

[63] Background at http://www.its.dot.gov/NG911/.

[64] U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Final System Design Document," February 2009, at http://www.its.dot.gov/NG911/pdf/USDOT_NG911_FINAL_System_Design.pdf.

[65] U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Transition Plan," February 2, 2009, at http://www.its.dot.gov/NG911/pdf/NG911_Transition_PlanFinal.pdf.

[66] U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Concept of Operations," April 2007, page 8, at http://www.its.dot.gov/ng911/pdf/NG911ConOps_April07.pdf.

[67] U.S. Department of Transportation, Intelligent Transportation Systems, "Next Generation 9-1-1 System Initiative: Transition Plan," February 2, 2009, at http://www.its.dot.gov/NG911/pdf/NG911_Transition_PlanFinal.pdf.

[68] NENA, Next Generation 9-1-1 Transition Policy Implementation Handbook; a guide for identifying and (continued...)

considered as part of a larger review of strategy and implementation plans. To this end, the handbook has listed proposed actions, implementation checklists, and other specific steps in support of each goal. The objectives are

- Establish a state-level organization to plan, coordinate, and implement a ubiquitous Next Generation 9-1-1 system.
- Provide sufficient resources to implement and operate the NG9-1-1 system.
- Modify and update current legislation, regulations, and tariffs to ensure a competitive E9-1-1 environment and a transition to a full NG9-1-1 system.
- Establish statewide Emergency Services IP networks (ESInets), and ensure that state and regional authorities recognize the need for statewide IP-enabled networks for NG9-1-1 and other emergency services.
- Verify that information delivered over Next Generation 9-1-1 Systems can be appropriately delivered to PSAPs and shared with emergency response organizations while conforming to applicable confidentiality, disclosure, and information retention statutes and rules.
- Assure that state and federal liability statutes cover all public and private entities involved in the end-to-end provisions of NG9-1-1 and emergency communications systems and services.

To achieve these objectives and carry out the recommended activities, NENA has suggested the formation of regional, state, or multi-state working groups. The handbook has emphasized that decisions about delivering 911 services at the local level would remain with the PSAPs. The ESInets that the handbook has proposed would require a higher level of governance to assure functions such as coordination and interoperability.

Although NG9-1-1 is being developed as an open standards/open interface system it is necessary to establish standards that assure full interoperability among all systems and system components. To this end, NENA has established a Certification and Accreditation program for NG9-1-1. To draw all stakeholders into the process, NENA sponsored its first Industry Collaboration Event, to test equipment and standards, in November 2009.[69]

NG9-1-1 Transition: FCC

The ARRA required the FCC to prepare a national broadband plan. Among the requirements for the plan, Congress specified that it should include

> a plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector

(...continued)

implementing policies to enable NG9-1-1, March 2010 at http://www.nena.org/sites/default/files/transition%20policy_final_2010v10.pdf.

[69] See http://www.nena.org/ng9-1-1/ice.

> investment, entrepreneurial activity, job creation and economic growth, and other national purposes.[70]

The National Broadband Plan (NBP) was submitted to Congress on March 16, 2010. In line with instructions from Congress, the plan included a section on public safety broadband communications that covered NG9-1-1, the Emergency Alert System, broadband radio networks for first responders, cybersecurity, and protection of critical infrastructure.[71]

In most sections of the NBP, the FCC has recommended actions for Congress and for other agencies, as well as laying out new steps that the FCC could take. As regards NG9-1-1, the plan suggested that Congress might consider enacting a federal legal and regulatory framework for NG9-1-1. It requested that the FCC be given the authority to implement this framework. To help meet funding requirements, the report suggested that Congress might take actions to assure that fees collected to fund 911 services are not used for other purposes. The plan also recommended that Congress consider reauthorizing the ICO to "help ensure that NG9-1-1 is deployed in an interoperable and reliable fashion."[72]

The NBP requested that, by December 1, 2011, NHTSA prepare a report to identify the costs of deploying NG9-1-1 and sources of funding. The NBP specified that the report should detail costs for particular 911 requirements and specify how costs would be shared among PSAPs, broadband service providers, and third-party providers for NG9-1-1. The FCC proposed that the report also include a technical analysis and cost study of different delivery platforms, including VOIP. Based on the information compiled for the report, NHTSA should make recommendations to Congress for public funding, according to the FCC proposal.[73]

The plan also provided specific actions for the FCC to take. The NBP announced the FCC's intentions to address IP-based NG9-1-1 by refreshing a current proceeding on location technology[74] and opening a new proceeding to address how NG9-1-1 can accommodate communications technologies, networks, and architectures beyond traditional voice-centric devices.[75] These proceedings might include consideration of a national strategy for NG9-1-1 deployment and how it should meet consumer expectations.[76]

[70] P.L. 111-5, § 6001 (k) (2) (D); 123 STAT. 516.

[71] FCC, *Connecting America: The National Broadband Plan*, Public Safety, released March 16, 2010 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf.

[72] *Ibid.*, Recommendation 16.14, page 326.

[73] *Ibid.,* Recommendation 16.13, page 325.

[74] On September 23, 2010 the FCC issued a *Second Report and Order* on wireless E911 location accuracy requirements, PS Docket No. 07-114 at http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db1018/FCC-10-176A1.pdf.

[75] On September 23, 2010 the FCC issued a Further Notice of Proposed Rulemaking on wireless E911 location accuracy requirements (PS Docket No. 07-114) and a *Notice of Inquiry* (PS Docket No. 05-196) concerning IP-enabled service requirements, at http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0927/FCC-10-177A1.pdf.

[76] *Ibid.*, Recommendation 16.15, page 326.

The Potential Role of the Department of Homeland Security

The Department of Homeland Security Appropriations Act, 2007 (P.L. 109-295) provided for coordination of emergency communication grants,[77] and for the formation of Regional Emergency Communications Coordination (RECC) Working Groups.[78] The requirement to establish regional working groups responded in part to requests from the public safety community to include the second tier of emergency workers in planning for interoperable communications. Non-federal members of the RECC groups are to include first responders, state and local officials and emergency managers, and 911 call center personnel.[79] The Department of Homeland Security (DHS) is the lead agency for the RECC plans and for other emergency communications planning initiatives, notably the National Infrastructure Protection Plan, FEMA Disaster Emergency Communications planning, and the National Emergency Communications Plan.[80]

National Emergency Communications Plan

As part of the grants process for interoperable communications, Congress required the preparation of a National Emergency Communications Plan (NECP).[81] DHS issued the NECP in July 2008.[82] The primary purpose of the plan is to provide an overarching strategy for emergency communications preparedness. To meet preparedness goals, the NECP provides guidelines and deadlines for emergency managers at all levels of government. The improvement of 911 systems and PSAP communications is among the plan's objectives for Disaster Communications Capabilities. Specifically, Initiative 7.2 of the NECP states that agencies with operational responsibilities "should evaluate the readiness posture of communications centers (e.g., Public Safety Answering Points)" for vulnerabilities. According to the plan, "System planning activities should account for the availability of alternative and backup communications solutions and redundant pathways (i.e., provided by different vendors) to support communications if primary capabilities become unavailable." A recommended first milestone for this initiative is for RECC Working Groups to work with state and local agencies to assess priority vulnerabilities that could weaken critical mission response. Later milestones that apply to PSAPs and 911 systems include

- Develop plans and procedures to enhance emergency 911 systems and PSAP communications.
- Identify alternate and/or backup capabilities in emergency communications plans defined by all federal, state, local, and tribal agencies.[83]

[77] P.L. 109-295, Title VI, Sec. 671(b), "Title XVIII, "Sec. 1804; 120 STAT. 1438.

[78] P.L. 109-295, Title VI, Sec. 671(b), "Title XVIII, "Sec. 1805; 120 STAT. 1439.

[79] P.L. 109-295, Sec. 671(b), "Title XVIII, "Sec. 1805 "(b) "(1); 120 STAT. 1439.

[80] DHS, *National Emergency Communications Plan*, July 2008, Exhibit A3-1: Key Emergency Communications Policy and Planning Initiatives, page A-11. Plan at http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf.

[81] P.L. 109-295, Sec. 671 (b) "Title XVIII, "Sec. 1802; 120 STAT. 1435-1436.

[82] DHS, *National Emergency Communications Plan*, July 2008, at http://www.dhs.gov/xlibrary/assets/national_emergency_communications_plan.pdf.

[83] *Ibid.*, Objective 7: Disaster Communications Capabilities, Initiative 7.2, page 38.

These goals for states to improve 911 systems are compatible with DOT's efforts with 911 and NG9-1-1; the DOT programs are referenced in the plan.[84]

Regional Emergency Communication Coordination

Title VI of the Homeland Security Appropriations Act, 2007 (P.L. 109-295). Title VI—the Post-Katrina Emergency Management Reform Act of 2006—reorganized the Federal Emergency Management Agency (FEMA), gave the agency new powers, and clarified its functions and authorities within DHS.[85] Among the new initiatives required by the law was the creation of Regional Emergency Communications Coordination (RECC) Working Groups as part of ten Regional Offices. These groups could provide a platform for coordinating emergency communications plans among states and were intended to include representatives from many sectors with responsibility for public safety and security.

The formation of the regional working groups, the RECCs, responded in part to requests from the public safety community to expand interoperable communications planning to include the second tier of emergency workers. Non-federal members of the RECC are to include first responders, state and local officials and emergency managers, and PSAPs. Additionally, RECC working groups are to coordinate with a variety of communications providers (such as wireless carriers and cable operators), hospitals, utilities, emergency evacuation transit services, ambulance services, amateur radio operators, and others as appropriate.

The RECC Working Groups could play a part in forming future policies for the transition to NG9-1-1. The working groups could provide another opportunity for federal leadership in assisting 911, especially in coordinating the transition to IP-enabled emergency communications with the deployment of new broadband infrastructure.

National Broadband Plan

Broadband is generally used to refer to fast transmission speeds, and the National Broadband Plan (NBP) establishes benchmarks for minimum speeds for broadband services. The NBP also equates broadband with the characteristics of ubiquity, efficiency, and effectiveness. Much of the plan emphasizes the importance of having broadband access to the Internet to meet social and economic goals. IP-enabled networks for emergency communications require broadband infrastructure to operate effectively; however, they need not connect with the Internet. Using the Internet Protocol, an IP-enabled network provides applications that meet specific needs. An IP-enabled network for emergency communications has been defined as an "emergency communications network or system based on a secured infrastructure that allows secured transmission of information, using Internet Protocol, among users of the network or system."[86] Such a network, if fully realized, could support many types of emergency communications needs, including first responder networks and emergency alerts.

[84] *Ibid.*, Exhibit A3-2: Federal Tactical and Emergency Communications Systems and Services, pages A12-A13.

[85] Information on the FEMA reorganization is provided in CRS Report RL33729, *Federal Emergency Management Policy Changes After Hurricane Katrina: A Summary of Statutory Provisions*, coordinated by Keith Bea.

[86] 47 CFR Part 400, E-911 Grant Program, § 400.2 Definitions. Federal Register, Vol. 74, No. 107, June 5, 2009 at http://www.ntia.doc.gov/frnotices/2009/FR_e911grants_090605.pdf.

The NBP has discussed some of the ways that federal investment in broadband infrastructure might be leveraged for community and state broadband services and it has explored the impact of broadband technology on emergency communications services. The plan has recognized the common elements of broadband use in emergency communications but it has not explicitly addressed the possibility of unifying them as a common infrastructure project. In the NBP, the FCC has made recommendations that support the transition to NG9-1-1 but it has not provided a policy statement that captures the vision of shared capacity, with many applications riding on the same infrastructure. Others, however, have described the future as a grid (Global Information Grid, Department of Defense)[87] or an Emergency Services Internet (ESInet, NENA).[88]

Congressional Policy for NG9-1-1

The implementation of IP-enabled NG9-1-1 embraces many complex and inter-related decisions about, for example, governance, standards and technology, funding, and leadership. Congress has addressed some of these issues in the context of existing 911 infrastructure and technology, and has recognized the need to plan for the transition to the next generation. This transition will, over time, present many new policy issues. Congressional policy goals for the future could include

- Addressing emergency communications needs and goals with a policy that recognizes the convergence of technologies, especially IP-based networks and standards, that will place first responder networks, 911 systems, and emergency alert systems on common, interoperable platforms.
- Identifying the federal role in implementing national policies for emergency communications without eroding state or local authority.
- Defining the role of the Department of Homeland Security, especially the Regional Emergency Communications Coordination Working Groups that it supports, in guiding policies to sustain and improve 911 as part of its Emergency Communications Plan.
- Reviewing the federal regulatory role in promoting competition in the provision of network services to PSAPs.[89]
- Designating radio frequency spectrum to provide connectivity to PSAPS, for example by using wireless technologies such as microwave transmission in place of fiber-optic cables.
- Addressing the quality of interfaces with other emergency communications networks, especially the radio links to first responders, and their spectrum needs.

[87] A full-color description is provided in "Vision for a Net-Centric, Service-Oriented, DoD Enterprise" at http://cio-nii.defense.gov/docs/GIGArchVision.pdf. Department of Defense, *Global Information Grid Architectural Vision*, June 2007.

[88] NENA, Next Generation 9-1-1 Transition Policy Implementation Handbook; a guide for identifying and implementing policies to enable NG9-1-1, March 2010 at http://www.nena.org/sites/default/files/transition%20policy_final_2010v10.pdf.

[89] The wireline circuits that complete the connection to the PSAPs are usually owned and operated by either an Incumbent Local Exchange Carrier (ILEC) or a Competitive Local Exchange Carrier (CLEC), operating under different regulatory requirements and protections. The Wireline Competition Bureau of the FCC oversees federal regulation of ILECs and CLECs.

- Providing funding solutions.
- Establishing national guidelines or requirements for minimum levels of 911 service.
- Establishing a program to assure that the quality of 911 services improves steadily, nationwide.

Emergency communications professionals in the public and private sector deem it essential that the full potential of a broadband emergency communications grid, what NENA calls the ESInet, be recognized and supported by policy makers at all levels of government.

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Appendix A. 911 Legislation and Policy

This section provides further detail and documentation about 911 requirements enacted by Congress and related administrative activities.

Equality of Service and Access to 911

Many of the FCC's regulatory efforts have supported this principle by requiring that different providers of voice communications services be able to provide 911 facilities with basic information about a caller, specifically call-back number (Automatic Number Information, ANI) and location (Automatic Location Identification, ALI).[90]

Equality of Access Devices

The 911 Act assured that wireless carriers would have similar obligations and protections in transmitting 911 calls as the wireline common carriers.[91] The NET 911 Improvement Act of 2008 extended these obligations and protections to include Voice Over Internet Protocol (VOIP).[92] The Federal Communications Commission (FCC) is responsible for promulgating and enforcing regulations to assure that cell phone and VOIP calls, as well as those from wireline phones, convey required information to the appropriate Public Safety Answering Point (PSAP). Providing position information that locates cell phone or VOIP callers in a manner comparable to wireline information is one of the challenges for parity among devices.

Another challenge is presented by connections to third-party service providers. For example, telematics systems installed in cars, such as OnStar; direct emergency calls automatically to a customer service operator who then places the call to 911, usually identifying the appropriate call center from a database. Video Relay Service for the hearing impaired is another example of an intermediary placing the call to a PSAP. Access to PSAP contact information for third-party service providers continues to be an issue of concern to companies that provide services that include contacting 911 for assistance. To address this concern, the National Emergency Number Association (NENA) maintains a registry of PSAP information that it makes available to validated call centers as well as PSAPs.[93] The NET 911 Improvement Act of 2008 specifically authorized, but did not require, the FCC to compile a list of contact information of public safety answering points and make the information available where releasing it would benefit public safety.[94] The NET 911 Improvement Act of 2008 also extended parity of protection to duly authorized emergency communications service providers that voluntarily offer these services.[95]

[90] Also discussed in earlier section, "The 911 Act and Federal Communications Commission Regulations."

[91] P.L. 106-81, Secs. 3, 4, and 5. 113 STAT. 1286 et seq.

[92] P.L. 110-283, Sec. 101, "Sec. 6 "(a) and "(b) and Sec. 201; 122 STAT. 2620 and 122 STAT. 2624.

[93] North American 9-1-1 Resources Database, information at http://www.nena.org/pages/ContentList.asp?CTID=40.

[94] P.L. 110-283, Sec. 101, "Sec. 6 "(g); 122 STAT. 2622.

[95] P.L. 110-283, Sec. 201 (b) "(9) "(B); 122 STAT. 2625.

Equality of Coverage

The location of a caller often determines the level of response from a PSAP. The likelihood of a 911 call being completed with accurate information depends on two essential components: the capacity of the network and systems to capture and deliver the needed information and the capability of the PSAP to receive it. Providing location information in rural areas, for example, can be difficult for wireless carriers, partly because of inadequate infrastructure.[96] Reflecting concerns that some carriers would stop serving remote areas rather than invest in improving location identification capabilities, the ENHANCE 911 Act of 2004 directed the FCC to grant waivers to Tier III wireless carriers[97] in situations where strict enforcement would decrease access to emergency services.[98]

The ENHANCE 911 Act of 2004 also required the FCC to study the situation of Tier III wireless carriers regarding the waiver process and to provide information on effective technologies for implementing Phase II of W-E911.[99] The FCC submitted a detailed report in April 2005 but made no recommendations regarding technology.[100]

Improving Location Information

In addition to problems in rural areas, noted above, high-density urban areas also have location problems, such as when a 911 call is made from inside a high-rise building. Even if wireless E-911 is in place at the appropriate PSAP, location identification can provide a street address but not a floor level. Location information is readily available for wireline phone subscribers, as most telephone service providers have identifiable addresses stored in their databases. (Many rural areas have invested in converting generic rural addresses, such as rural routes or post office boxes, into house-specific coordinates for 911 location information.)

The Association of Public-Safety Communications Officials International, Inc. (APCO) conducted an independent test of the accuracy of location information received by PSAPs that indicated many failings in the provision of location information from wireless calls.[101] Partially in response to the APCO study, the FCC opened a new proceeding and in November 2007 proposed rules for carriers to provide more accurate location information to PSAPs.[102] Verizon, AT&T, and

[96] Problems have included the switch from analog to digital technology for cellular services (digital technology provides significantly better location-finding capability but analog transmissions have a wider reach), the difficulty of installing a sufficient number of cell towers to provide "triangulation" for location technologies; and the predominance of cell towers placed along major highways (sometimes referred to as a "string of pearls"), also a complication for proper triangulation.

[97] For enforcement purposes, the FCC divided wireless carriers into three tiers: Tier III (small); Tier II (mid-sized); and Tier I (the largest carriers—Verizon, Cingular, T-Mobile, and Sprint Nextel).

[98] P.L. 108-494, Section 107 (a); 118 STAT. 3991.

[99] P.L. 108-494, Section 106; 118 STAT. 3390.

[100] Amended report submitted April 1, 2005. The FCC concluded that technologies currently in use were all suitable and that the choice depended on a variety of factors. "FCC Amended Report to Congress on the Deployment of E9-1-1 Phase II Services by Tier III Service Providers" at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-257964A1.pdf.

[101] "APCO Wireless Accuracy Testing Discovers Critical Information to the 9-1-1 Caller," http://www.apcointl.org/news/2006/20060822APCOWirelessAccuracyTestDiscovery.html Press release, August 22, 2006. The final report on findings was released in April 2007, http://www.locatemodelcities.org/documents/LOCATE_Final_Report.pdf.

[102] FCC News, "FCC Clarifies Geographic Area Over Which Wireless Carriers Must Meet Enhanced 911 Location (continued...)

other carriers and industry groups questioned whether the FCC's ruling was technically feasible and recommended a 911 working group to develop and agree upon standards for location accuracy and other features of 911.[103] The FCC withdrew the contested rules and in September 2008 sought comments on new service rules for location accuracy.[104] The FCC has not issued a final ruling and *ex parte* comments continue to be posted.

The NET 911 Improvement Act of 2008 directed the FCC to work with PSAPs, the industry, and the E-911 Implementation Coordination Office to improve standards and best practices for a number of goals related to location identification. The NET 911 Improvement Act of 2008 also requires that the National Plan identify location technologies for nomadic devices and for office buildings and multi-dwelling units.[105]

Improving PSAP Capabilities

To meet anticipated new requirements for location information at the PSAP level, wireless carriers will need to improve the technology they use. PSAPs must also invest in technology in order to receive more detailed information. Guidance and assistance for these tasks are provided primarily at the state and local level. NENA and APCO are active in providing frameworks for decision-making, and technical reports.[106] The Seventh National Reliability and Interoperability Council (NRIC), a federal advisory committee to the FCC, provided best practices and other analyses for PSAPs to improve 911 operations.[107] It also urged the development of a common platform that would link 911 to an interoperable communications network based on Internet technologies.[108] The FCC's February 2008 summit for 911 circulated a list of best practices for PSAPs.[109] The 2009 summit for 911 discussed deployment and operational guidelines for next generation IP-enabled 911.[110] To address PSAP needs, the National Plan required by the NET 911

(...continued)

Accuracy Requirements," September 11, 2007. FCC, *Report and Order*, adopted September 11, 2007, released November 20, 2007,CC Docket No. 94-102; http://hraunfoss.fcc.gov/edocs_public/Query.do?mode=advance&rpt=full for all document links.

[103] See comments at FCC Electronic Comment Filing System from, for example, CTIA, AT&T (various divisions), Verizon Wireless, Inc., and Sprint Nextel Corporation. Docket No. 07-114. This letter filed by CTIA on September 6, 2007 is one example: http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519722596.

[104] FCC Public Notice, "Comment Sought on Proposals Regarding Service Rules for Wireless Enhanced 911Phase II Location Information and Accuracy," September 22, 2008, DA 08-2129, Docket No. 07-114 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-08-2149A1.pdf.

[105] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(D); 122 STAT. 2623.

[106] NENA: information on courses, standards documents, and other resources for 9-1-1 Professionals at http://www.nena.org/; APCO: Communications Center and 9-1-1 Services at http://www.apcointl.org/new/commcenter911/.

[107] NRIC VII, Focus Group I, "Enhanced 911," subcommittee reports published in 2004-2005, at http://nric.org/fg/index.html.

[108] NRIC VII, Focus Group 1D, "Communications Issues for Emergency Communications Beyond 911; Report #1—Properties and network architectures that communications between PSAPs and emergency services personnel must meet in the near future," December 6, 2004, pp. 12, 26-27, at http://nric.org/meetings/docs/meeting_20041206/FG1D%20Final%20Report.pdf.

[109] 911 Call Center Operations and Next Generation Technologies Summit, February 6, 2008; recommendations at http://www.fcc.gov/pshs/summits/911/improving911callcenterops2.html.

[110] Summit, February 25, 2009, see http://www.fcc.gov/pshs/summits/ or http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-288446A1.pdf.

Improvement Act of 2008 must contain "specific mechanisms for ensuring the IP-enabled emergency network is available in every community.... "[111]

Equality for the Disabled

The NET 911 Improvement Act of 2008 has required the National Plan to identify solutions for providing 911 support and access to those with disabilities.[112] The FCC currently enforces Title IV of the Americans with Disabilities Act (P.L. 101-336) for access to telecommunications services.[113] Requirements for wireless carriers to accommodate TTY calls to 911 have been part of the FCC regulations since rules were first promulgated in 1996.[114] The FCC is endeavoring to improve 911 support provided through Internet-based forms of the Telecommunications Relay Service that allow persons with hearing and speech disabilities to communicate with hearing users of telephone services.[115]

Mechanisms to Improve Funding for PSAPs

The ENHANCE 911 Act of 2004 provided a mechanism for funding 911 with a program of matching grants.[116] Authorizations of up to $250 million annually for program activities and grants were established for fiscal years 2005 through 2009, with authority for authorizations set to expire on October 1, 2009. Despite the authorization, no appropriations were made, although some funding was provided through the Digital Transition and Public Safety Fund, created by the Deficit Reduction Act of 2005 (P.L. 109-171). The National Telecommunications and Information Administration (NTIA) is responsible for administering distributions from the fund, as designated by Congress in the act. Up to $43.5 million was designated specifically for 911, payable from the proceeds of spectrum auctions that took place in early 2008.[117] The Implementing Recommendations of the 9/11 Commission Act of 2007 authorized the NTIA to borrow against the $43.5 million from spectrum auction proceeds[118] and included an amendment that favors Public Safety Answering Points not capable of receiving 911 calls.[119] There are 91 counties in the United States where emergency calls are handled without the benefit of any 911 technology.[120] The NET 911 Improvement Act of 2008 further amended the guidelines for grant eligibility by adding "migration to an IP-enabled emergency network" as a qualifying program for grant funds.[121] The program will be administered by the NHTSA.[122] In addition to establishing a grants program to help PSAPs install 911 systems, the ENHANCE 911 Act of 2004 provided a

[111] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(C); 122 STAT. 2623.

[112] P.L. 110-283, Sec. 102 (3) "(d) "(2) "(I); 122 STAT. 2624.

[113] More information at http://www.fcc.gov/cgb/dro/.

[114] TTY refers to a text telephone; another common term is TDD, for Telecommunications Device for the Deaf.

[115] FCC, *Report and Order and Further Notice of Proposed Rulemaking*, WC Docket No. 05-196, adopted June 11, 2008. At http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-151A1.pdf.

[116] P.L. 108-494, Sec. 104, "Sec. 158 "(b); 118 STAT. 3987.

[117] P.L. 109-171, Sec. 3011; 120 STAT. 27.

[118] P.L. 110-53, Sec. 2302; 121 STAT. 543.

[119] P.L. 110-53, Sec. 2303; 121 STAT. 543.

[120] Provided by NENA, telephone discussion with Patrick Halley on October 21, 2008.

[121] P.L. 110-283, Sec. 102 (1); 122 STAT. 2623.

[122] Published in the Federal Register October 3, 2008, link at http://www.ntia.doc.gov/frnotices/2008/FR_E911grants_081003.pdf.

mechanism to penalize states and other jurisdictions that diverted fees collected for 911 to other purposes.[123] This provision was in response to reports of abuses documented by CTIA - The Wireless Association in 2003;[124] later abuses have also been documented.[125] To discourage this practice, the ENHANCE 911 Act of 2004 structured its matching grants program to refuse federal grants to jurisdictions where funds collected for 911 were used for other purposes.[126] As required in the act,[127] the Government Accountability Office prepared a report about state and local 911 systems that included an analysis of surcharges and their uses.[128]

The NET 911 Improvement Act of 2008 established an annual requirement for the FCC to prepare a survey of the collection and disbursement of fees collected for 911 and by states and political subdivisions and to report if fees are diverted.[129] The purpose of the reporting requirement is to "ensure efficiency, transparency, and accountability." The act also specifically allows states to collect a fee on VOIP services with the proviso that the fees must be used for 911 or E-911.[130]

Federal Funding for 911 in Rural Areas

The Food, Conservation, and Energy Act of 2008 (P.L. 110-234), referred to as the 2008 Farm Bill, included language that can provide loans to improve 911 and other emergency communications capabilities in rural areas. The provision amends the Rural Electrification Act lending authority[131] to include

> "facilities and equipment to expand or improve in rural areas—
>
> "(1) 911 access;
>
> "(2) integrated interoperable emergency communications, including multiuse networks that provide commercial or transportation information services in addition to emergency communications services;
>
> "(3) homeland security communications;
>
> "(4) transportation safety communications; or

[123] P.L. 108-494, Sec. 104, "Sec. 158 "(c); 118 STAT. 3988.

[124] The CTIA maintains a database of expenditures from 911 and E-911 funds, available upon request through CRS.

[125] FCC, "Second Annual Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges," August 13, 2010 at http://www.fcc.gov/Daily_Releases/Daily_Business/2010/db0817/DOC-300946A1.pdf and "Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges," July 22, 2009 at http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-292216A2.pdf.

[126] P.L. 108-494, Sec. 104 "Sec. 158; 118 STAT. 3987-3990.

[127] P.L. 108-494, Sec. 105; 118 STAT. 3990.

[128] GAO, *States' Collection and Use of Funds for Wireless Enhanced 911 Services,* March 2006, GAO-06-338. A second report carried further documentation, *Summary of State Wireless E911 Funds*, March 2006, GAO-06-400SP.

[129] P.L. 110-283, Sec. 101, "Sec. 6, "(f), "(2); 122 STAT. 2622.

[130] P.L. 110-283, Sec. 101, "Sec. 6, "(f), "(1); 122 STAT. 2622.

[131] Interim rule with request for comment in effect January 16, 2009. See Rural Development Guaranteed Loans, Federal Register, December 17, 2008, link at http://frwebgate6.access.gpo.gov/cgi-bin/PDFgate.cgi?WAISdocID=863218460594+0+2+0&WAISaction=retrieve.

> "(5) location technologies used outside an urbanized area."[132]

The bill allows government-collected fees such as state and local fees for 911 to be used as surety against loans.[133] It also permits loans to companies that will provide communications equipment, if local governments with jurisdiction are not allowed to acquire the debt.[134]

Funding for 911 by States and Communities

A large share of the costs for implementing 911 services is covered by the telecommunications industry and by state and/or local taxes or surcharges assessed on wireline and wireless telephone bills.[135] Most states have some form of 911 or E-911 fund that receives revenue from telephone bill surcharges and distributes it to various jurisdictions; some states also compensate telephone companies for 911-related expenses. Another source of funding, at the local or county level, is an increase in property taxes with the additional monies going to PSAPs. Call center operators also hold fund-raisers like fish fries and bake sales.

Federal Leadership in Improving 911 Capabilities

Language in support of a leadership role by a federal agency to guide 911 policy appears in each of the major bills that Congress has passed. The ENHANCE 911 Act of 2004, for example, stated

> Enhanced 911 is a high national priority, and it requires Federal leadership, working in cooperation with state and local governments and with the numerous organizations dedicated to delivering emergency communications services.[136]

The ENHANCE 911 Act of 2004 recognized the role of the U.S. Department of Transportation (DOT) in providing sustained support of 911 by making it a co-administrator of the E-911 Implementation Coordination Office (ICO). The FCC has also played a visible role in supporting 911, much of it through regulation.

The Role of the FCC

Charged in the 911 Act of 1999 to take positive steps to address the implementation of 911 services, the FCC has primarily played the role of regulator of wireless communications service providers, promulgating and enforcing regulations to provide ANI/ALI information. Beginning in 2003, the FCC has held occasional public forums to discuss 911 deployment and possible actions.[137]

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[132] P.L. 110-234, Sec. 6107 "Sec. 315 "(a); 122 STAT. 1198.

[133] P.L. 110-234, Sec. 6107 "Sec. 315 "(b); 122 STAT. 1198.

[134] P.L. 110-234, Sec. 6107 "Sec. 315 "(c); 122 STAT. 1198.

[135] A summary of surcharges is at http://www.nena.org/media/files/9-1-1UserFees4_1.pdf.

[136] P.L. 108-494, Sec. 102 (4) 118 STAT. 3986.

[137] Agenda for the first meeting of the Wireless E911 Coordination Initiative, April 23, 2003 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-03-1172A1.pdf. Subsequent public meetings were held on October 29-30, 2003; February 12, 2004; April 27-28, 2004; November 15, 2006 (on access for the disabled); and February 6, 2008.

After the establishment of the Public Safety and Homeland Security Bureau in 2006, the FCC took action on another requirement of the 911 Act: to "encourage each State to develop and implement coordinated statewide deployment plans, through an entity designated by the governor, and to include representatives of the foregoing organizations and entities in development and implementation of such plans."[138] It has contacted each state governor and requested information about points of contact for emergency communications. As these are provided, the FCC posts them on a website established for that purpose.[139]

The 2007 appropriations bill for the Department of Homeland Security included a requirement that the FCC submit a report to Congress on the capacity, nationwide, for rerouting 911 calls when call centers are disabled by disaster. The law specified that the report would cover the "status of efforts of State, local, and tribal governments to develop plans for rerouting 911 and E911 services in the event that public safety answering points are disabled during natural disasters, acts of terrorism, and other man-made disasters."[140]

In the required report, the FCC focused on administrative mechanisms not system capacities, indicating that most states had some form of backup plan. The report did not explore the limitations of existing technology nor consider possible changes to improve backup capacity. The report was submitted to Congress in September 2007 but has not been made public.

The Role of the E-911 Implementation Coordination Office

The keystone of the ENHANCE 911 Act of 2004 was the mandate to establish a program "to facilitate coordination and communications between Federal, State, and local emergency communications systems, emergency communications personnel, public safety organizations, telecommunications carriers, and telecommunications equipment manufacturers and vendors involved in the implementation of E-911 services."[141] The act designated the director of the National Telecommunications and Information Administration (NTIA) and the Administrator of the National Highway Traffic Safety Administration (NHTSA) to direct the program as co-administrators of an E-911 Implementation Coordination Office. The two offices were to develop a management plan to be submitted to Congress.[142] Once the office was established, the co-administrators were required to report to Congress annually on activities "to improve coordination and communication with respect to the implementation of E-911 services."[143] Absent funding from specifically-designated appropriations, the program as required by Congress was not established at the time. NHTSA, in conjunction with DOT's Intelligent Transportation Systems program, moved forward with the Next Generation 911 Initiative. Once funding became available as part of the Deficit Reduction Act, the NTIA moved to sign a memorandum with DOT and prepare regulations for the grants programs for public comment. The NET 911 Improvement Act of 2008 gave the ICO the new responsibility of creating a National Plan for the migration to IP-enabled emergency communications network to support 911 and other citizen-activated calls.

[138] P.L. 106-81, Sec. 3 (b); 113 STAT. 3.

[139] At http://www.fcc.gov/pshs/services/911-services/state.html.

[140] P.L. 109-295, Sec. 674; 120 STAT. 144.

[141] P.L. 108-494, Sec. 104, "Sec. 158, "(a) "(1) "(A); 118 STAT. 3987.

[142] P.L. 108-494, Sec. 104, "Sec. 158, "(a) "(2);118 STAT. 3987.

[143] P.L. 108-494, Sec. 104, "Sec. 158, "(a) "(4);118 STAT. 3987.

Citizen-activated calls for help currently go to 911, to 311, to 211, and to other call centers in both the public and private sector.[144]

Transition to IP-Enabled 911 Systems: The NET 911 Improvement Act of 2008

The NET 911 Improvement Act of 2008 has required that the ICO "shall develop and report to Congress on a national plan for migrating to a national IP-enabled emergency network capable of receiving and responding to all citizen-activated emergency communications and improving information-sharing among all emergency response entities."[145] The plan was to have been delivered in April 2009.[146] The plan was to have been developed in consultation with a broad range of representatives for public safety, person with disabilities, equipment and service providers and others.[147] Some of the requirements for the plan have been referenced in the preceding sections of this report. They are recapped below, organized by the policy goal that each provision would support.

Equality

- Provide mechanisms to ensure that the IP-enabled emergency network is available in every community and is coordinated at the local, state, and regional level.[148]
- Identify location technology for nomadic devices and for office buildings and multi-unit dwellings.[149]
- Identify solutions for those with disabilities, steps to be taken, and a timeline for action.[150]
- Analyze efforts to provide automatic location information and provide recommendations for necessary regulatory or legislative changes.[151]

Funding

- Identify barriers that must be overcome and funding mechanisms to address barriers.[152]

[144] An overview of 211 is provided in **Appendix B**.

[145] P.L. 110-283, Sec. 102, (3) "(d) "(1); 122 STAT. 2623.

[146] *Ibid.*

[147] P.L. 110-283, Sec. 102, (3) "(d) "(3); 122 STAT.2624.

[148] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(C); 122 STAT. 2623.

[149] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(D); 122 STAT. 2623.

[150] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(I); 122 STAT. 2624.

[151] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(J); 122 STAT. 2624.

[152] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(B); 122 STAT. 2623.

Transition to IP-Enabled Networks

- Outline the potential benefits of migrating to a national IP-enabled emergency network for citizen-activated calls.[153]
- Include a proposed timetable, an outline of costs, and potential savings for the transition to IP technologies.[154]
- Provide specific legislative language, if necessary, for achieving the plan.[155]
- Provide recommendations on any legislative changes, including updating definitions, necessary to facilitate a national IP-enabled network.[156]
- Assess, collect, and analyze information from trial deployments of IP-enabled emergency networks.[157]

[153] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(A); 122 STAT. 2623.
[154] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(E); 122 STAT. 2623.
[155] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(F); 122 STAT. 2623.
[156] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(G); 122 STAT. 2623.
[157] P.L. 110-283, Sec. 102, (3) "(d) "(2) "(H); 122 STAT. 2623.

Appendix B. Citizen-Activated Calls: 211

The term citizen-activated emergency call refers generally to calls placed by individuals seeking assistance in an emergency. These calls are differentiated from alerts sent by authorities to warn communities of potential danger or to provide instructions after a disaster. Citizen-activated calls for help currently go to 911, to 311, to 211, and to other call centers in both the public and private sector. The 311 code was created by the Federal Communications Commission (FCC) in 1997 to take non-emergency police calls as a means to reduce congestion on 911 lines.[158] The 211 dialing code is reserved by the FCC on a provisional basis as a universal number for community information and referral.[159] The 211 call centers support a variety of social service hot lines—including assistance in foreign-languages—and can also be used to provide information and guidance in emergency situations.[160] A large part of the U.S. population has access to 211 call services but no state has statewide service.[161] Many cities have adopted shared-service communications hubs handling 211 and 311 calls. Service levels and response times for all types of citizen-activated calls would benefit from a transition to IP-enabled networks and in many cases could share infrastructure with 911 networks

Call Centers and Post-Disaster Response

Call centers are identified as a pivotal link in an end-to-end network of emergency communications, information, response, and post-incident care. A report by the Wireless Emergency Response Team (WERT) discussed the valuable help provided to victims of the September 11, 2001 World Trade Center attack through call center services donated by BellSouth.[162] Over 400 hotlines were established in New York City after 9/11, however, creating a confusing network for victims and volunteers.[163]

After Hurricane Katrina, call centers, including 211 call centers, were used to help locate displaced victims and direct them to shelters and social services.[164] A post-hurricane evaluation by the Federal Emergency Management Agency (FEMA) after the 2005 season recommended that states establish 211 systems as part of their plans for response and recovery.[165]

A study of the role of 211 call centers during the Florida hurricane season of 2004[166] documented a number of ways that the call centers were of assistance:

[158] FCC News, "FCC Creates New 311 Code for Non-Emergency Police Calls ... ," Report CC 97-7, February 19, 1997 at http://ftp.fcc.gov/cgb/dro/311news.html.

[159] More information is on the FCC website at Consumer and Governmental Affairs Bureau, Consumer Alerts and Fact Sheets, http://www.fcc.gov/cgb/consumerfacts/211.html.

[160] More information on 211, including links to cost-benefit studies, is available at http://www.211us.org.

[161] In November 2008, the percentage was 78%. Thirty-one states covered more than 90% of the population. Statistics and U.S. map showing coverage is available at http://www.211us.org/status.htm.

[162] Wireless Emergency Response Team (WERT), "Final Report for the September 11, 2001 New York City World Trade Center Terrorist Attack," October 2001, Section 3.14, page 18, at http://www.nric.org/meetings/docs/wert_final_report.pdf.

[163] Cited as Findings in S. 211, Sec. 2, (9) and H.R. 211, Sec. 2, (9).

[164] Findings, H.R. 211, Sec. 2 (10).

[165] FEMA, FEMA Recovery Division 2005 Hurricane Season After Action Report, June 26, 2006.

[166] *Trial by Wind and Water: How 2-1-1 Played a Vital Role During the 2004 Florida Hurricanes*, United Way of (continued...)

- expanded the capacity of Emergency Operations Centers by providing trained information and referral specialists;
- offered additional access points for public information;
- managed information about the availability of services;
- identified unmet and emerging needs;
- helped prioritize and direct resources;
- provided reassurance and crisis support;
- helped mobilize and manage volunteers and donations;
- served as intake points for government agencies and non-profit organizations;
- offered sustained support for long-term recovery efforts.[167]

In addition to disaster recovery efforts, 211 call centers respond to a wide range of social service needs for information and counseling, such as parent support, suicide prevention, health information, traveler's aid, tracking and helping welfare clients, and housing assistance.[168]

Call Centers and Federal Policy

In 2008, the Department of Homeland Security (DHS) awarded a grant to Texas A&M Research Foundation to study 211 calls, initiating what DHS calls the Public Needs Project. The objective of the research was to provide information for state call centers to develop systematic approaches to responding to calls after major disasters. The study was to analyze calls for assistance made to the 26 211 call centers in Texas during a four-month period before, during, and after Hurricanes Katrina and Rita. The study's conclusions could provide the basis for incorporating 211 call centers into federal planning for emergency response and funding for infrastructure. The target date to provide initial conclusions from the study was year-end 2009.[169] The WERT report issued after the September 11 attacks urged that national planning for emergency preparedness and response include the mobilization of private-sector call centers to field calls for information and assistance for non-life-threatening needs.[170]

Call Centers and Congress

Legislation introduced in the 111th Congress includes two bills covering 211 call centers: S. 211 (Senator Clinton) and H.R. 211 (Representative Eshoo). Both would authorize funds and require improvements in the capacity of 211 help lines operated by nonprofit call centers. A question for the 111th Congress might be whether federal funding for 211 call centers meshes with other goals

(...continued)

America at http://www.211us.org/documents/TrialbyWindandWater.pdf.

[167] *Ibid.* Executive Summary.

[168] "50 Ways 2-1-1 Works," complied by United Way of Pennsylvania, at http://www.211us.org/documents/50ways.pdf.

[169] "DHS Seeks Template for Responding to Emergency Calls," by Brian Robinson, FCW.com, August 26, 2008.

[170] "Final Report for the September 11, 2001 New York City World Trade Center Terrorist Attack," op. cit., Section 1, Recommendation PCC-2, page 9 and Section 6, Public Call Center, page 40 et seq.

that are expected to have priority, such as job creation and investment in infrastructure. Recommendations from the DHS study on 211 might advocate additional funding for 211 services because of their role in emergency response. This could provide a different viewpoint for Congress to evaluate funding programs.

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Appendix C. Grants Awards for 911 Programs

Following is the list of award recipients of federal grants for 911 and related programs.[171]

Alabama	$950,000.00	American Samoa	$200,000.00
Arizona	$1,250,725.39	Arkansas	$594,060.05
California	$4,346,352.77	Colorado	$487,500.00
Connecticut	$792,125.65	Florida	$2,669,728.30
Indiana	$1,563,140.00	Iowa	$1,333,456.30
Kansas	$385,450.00	Kentucky	$1,165,593.68
Maryland	$955,680.53	Massachusetts	$1,051,135.47
Michigan	$1,699,999.99	Minnesota	$1,744,926.44
Missouri	$1,694,889.24	Montana	$871,597.80
Nebraska	$484,000.00	New Hampshire	$642,948.39
New Mexico	$888,893.68	North Dakota	$912,722.58
Oklahoma	$1,396,871.63	Pennsylvania	$2,478,157.16
Puerto Rico	$500,000.00	South Dakota	$910,365.39
Tennessee	$1,499,557.54	Texas	$5,390,760.71
Virginia	$1,000,000.00	Washington	$1,464,362.35

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[171] U.S. Department of Transportation, Office of Public Affairs, News, "States and U.S. Territories Receive $40 Million in Grants to Improve 911 Services," September 25, 2009.