

# CRS Report for Congress

## An Emergency Communications Safety Net: Integrating 911 and Other Services

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Prepared for Members and  
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# An Emergency Communications Safety Net: Integrating 911 and Other Services

## Summary

Future 911 systems will use Internet protocols (IP) to facilitate interoperability and system resilience, and to provide 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. The National Emergency Number Association (NENA) began planning for these changes under the banner of Next Generation 911, or NG9-1-1, in 2000. Support for NG9-1-1, with its emphasis on IP protocols to provide interoperability and redundancy, now comes from a broad base that includes public safety associations, state and local 911 managers, industry, the Congressional E-9-1-1 Caucus, and the Department of Transportation (DOT). Among DOT's contributions to NG9-1-1 is the funding and supervision of six pilots to test key components of NG9-1-1 with Public Safety Answering Points (PSAPs). PSAPs are the call centers that receive and direct the response to 911 calls.

Three major bills supporting improvements in the handling of 911 emergency calls have become law: the Wireless Communications and Public Safety Act of 1999 (P.L. 106-81); the ENHANCE 911 Act of 2004 (P.L. 108-494); and the New and Emerging Technologies 911 (NET 911) Improvement Act of 2008 (P.L. 110-283, passed as H.R. 3403, as amended.). From the perspective of national policy, an important provision of the 2008 law is the requirement for the preparation of a National Plan for migrating to an emergency network using Internet Protocols (IP). The plan is to be prepared by the E-911 Implementation Coordination Office created to meet requirements of the ENHANCE 911 Act. Provisions in other recently enacted laws have also contributed to the growing base of legislation in support of 911.

The value of this base may be diminished, however, unless additional measures are taken to assure an ongoing national policy. The NG9-1-1 Project sponsored by DOT is expected to end by early 2009. The E-911 Implementation Coordination Office is scheduled to terminate on September 30, 2009. Although the National Plan is likely to be completed by September 2009, this would leave no time to implement recommendations; many other goals set for the Office by Congress will likely also not be met. If the E-911 Implementation Coordination Office and DOT programs are not extended or replaced, the only federal agency with a role in implementing national policies to improve 911 systems and services will be the Federal Communications Commission (FCC). The FCC has so far used its powers primarily to regulate wireless carriers — and more recently VOIP service providers — with requirements for provision of 911 connections. It is the E-911 Implementation Coordination Office that Congress has charged with the responsibility of developing national policy and planning for PSAPs. The National Plan could provide the framework for deploying NG9-1-1, and for other policy decisions. Congress may choose to revisit policy questions and support for 911 to assure that 911 systems and networks are upgraded to become a fully functioning part of the United States' emergency communications safety net.

## Contents

911: Legislation and Regulation .....	1
Initial Regulation .....	2
FCC Study: The Hatfield Report .....	3
The ENHANCE 911 Act .....	4
Leadership .....	4
Issues Regarding 911 Implementation .....	5
Problems with Compliance in Rural Areas .....	5
Improving Location Information .....	7
911 Funding by States .....	8
Voice Over Internet Protocol (VoIP) .....	9
Citizen-Activated Emergency Calls .....	10
The Next Generation of Emergency Communications .....	11
Congress and the Emergency Communications Safety Net .....	12
Funding .....	12
Funding for 911 in Rural Areas .....	13
NET 911 Improvement Act .....	13
Other Legislation Related to Call Centers .....	14

# An Emergency Communications Safety Net: Integrating 911 and Other Services

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. 911 networks might be part of a nationwide capacity that provides communications interoperability; they might be linked to other networks that also receive citizen-activated calls for help or assistance; they could also be incorporated into emergency alert broadcasts. Proposals for how to provide a fully integrated emergency response system have not crystallized into a consensus. *The 9/11 Commission Report* recommended that 911 call centers — also called Public Safety Answering Points, or PSAPs — be included in planning for emergency responses.<sup>1</sup> Congress, which has since 1999 passed two bills to further the deployment of 911, is reviewing ways to expand 911 capabilities and make it more accessible and effective. Congress is also evaluating ways to improve emergency alerts<sup>2</sup> and interoperable communications for public safety.<sup>3</sup> Operational convergence of emergency communications seems to many to be inevitable, a question of “when,” not “if.” This report deals primarily with 911 and its recent history. It discusses the existing situation of 911’s capacity to respond in emergencies, some proposals to improve the system, and recent legislative activity. Proposals include better connections between 911 call centers and emergency responders, building a more robust capacity, incorporating Internet protocols, developing the capacity for back-up call centers after disasters have occurred, and coordinating 911 with other types of call centers, such as the 211 centers that provide municipal services.

## 911: Legislation and Regulation

To facilitate the effort to provide comprehensive 911 services nationwide, Congress in 1999 passed the “911 Act,”<sup>4</sup> which mandated 911 as the emergency number nationwide and made numerous provisions for its implementation. Among other provisions, the law requires the Federal Communications Commission (FCC) to work with the states and the many other affected parties to deploy comprehensive

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<sup>1</sup> Final Report of the National Commission on Terrorist Attacks Upon the United States, Official Government Edition, 2004, p. 318.

<sup>2</sup> See CRS Report RL32527, *The Emergency Alert System (EAS) and All-Hazard Warnings*, by (name redacted).

<sup>3</sup> See CRS Report RL33747, *Emergency Communications Legislation: Implications for the 110<sup>th</sup> Congress*, by (name redacted).

<sup>4</sup> P.L. 106-81, Wireless Communications and Public Safety Act of 1999.

wireless enhanced 911 (W-E911) service. Enhanced 911 service provides 911 call centers — known as Public Safety Answering Points, or PSAPs — with Automatic Number Identification (ANI) and Automatic Location Identification (ALI).<sup>5</sup> Most, but not all wireline phones are automatically enabled for ANI/ALI display; an estimated 99% of the population in the United States has access to some type of 911 service and 96% of counties with 911 coverage have enhanced 911 for wireline services.<sup>6</sup> Since October, 1, 2001, wireless carriers have been expected to meet FCC guidelines for providing W-E911 to PSAPs. Most areas of the United States now have at least some wireless enhanced 911 coverage.

**Initial Regulation.** The FCC took an important first step toward adopting rules for wireless enhanced 911 in 1996 with a first *Report and Order* (FCC 96-264) citing provisions of the Communications Act<sup>7</sup> as the basis for its action. After Congress passed the 911 Act, the FCC plotted a course for reaching W-E911 in two phases. For Phase I, the 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). From 1997 through 2000, the FCC made several changes in its accuracy requirements, impacting the carriers' ability to develop the needed ALI technology.<sup>8</sup> In particular, the FCC set up different timetables for carriers using network-based technologies for supplying location information and those using technologies that required new handsets. Since December 31, 2005, for carriers using handset-based solutions, 100% of new mobile phones supplied to customers are required to be Phase II compliant and 95% of the carriers' customers must have Phase II technology. Difficulties in meeting the latter requirement are discussed in a later section of this report.

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<sup>5</sup> 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.

<sup>6</sup> National Emergency Number Association (NENA), “9-1-1 Fast Facts,” at [<http://www.nena.org/pages/Content.asp?CID=144&CTID=22>].

<sup>7</sup> 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.” An electronic copy of the *Report and Order and Further Notice of Proposed Rulemaking*, adopted June 12, 1996, is available at [[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-96-264A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-96-264A1.pdf)].

<sup>8</sup> For example, in 1997, the FCC recognized the possibility of handset-based solutions for Phase II, whereas previously it had discussed only network solutions (“E911 Reconsideration Order,” December 1, 1997). Handset-based technology requires alterations to the handset and new network software. Included in this category for regulatory purposes are solutions requiring new handsets and new network hardware — sometimes referred to as a hybrid solution. Solutions that work with the installed base of existing handsets and require investments in network hardware only are considered network-based. In 1999, the FCC set criteria for handset-based technology, setting stricter standards for its accuracy than for network-based solutions (“E911 Third Report and Order,” FCC 99-245, released October 6, 1999) at [<http://www.fcc.gov/Bureaus/Wireless/Orders/1999/fcc99245.pdf>].

**FCC Study: The Hatfield Report.** Delays and complications in implementing W-E911 prompted the FCC to commission a study to examine the state of 911 capacity in general and the cause of problems with wireless 911 in particular. “Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services,” known as the Hatfield Report, was submitted to the FCC on October 15, 2002.<sup>9</sup> The author, Dale N. Hatfield, formerly Chief, Office of Engineering and Technology at the FCC, was assisted in his research by staff in the FCC’s Commercial Wireless Division of the Wireless Telecommunications Bureau. As its title indicates, the report’s focus is primarily on technical and operational issues.

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.

**Hatfield Report Up-Date.** In 2005, Dale Hatfield began a follow-up study on 911 topics, which was discontinued in 2006. On April 10, 2007, Mr. Hatfield testified regarding the work he had begun for the FCC.<sup>10</sup> He provided five preliminary conclusions that would have been part of the report, if it had been completed. The recommendations for actions by the FCC that were enumerated in written testimony were

- Reach agreement on a common testing methodology to assess the accuracy of location information provided by wireless technology, especially for wireless calls from inside buildings.
- Track and analyze location data by type of environment, such as urban, suburban, and rural; possibly reported to Congress on a regular basis.
- Encourage the development of technologies that will meet the needs of rural wireless calls to 911.
- Investigate ways to improve interior location information for wireless and VoIP calls.

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<sup>9</sup> Available at [<http://www.fcc.gov/pshs/services/911-services/>].

<sup>10</sup> Senate Committee on Commerce, Science, and Transportation, Hearing on “Voice over Internet Protocol (VoIP) and the Future of 9-1-1 Service,” April 10, 2007. Among other actions taken by Congress, the circumstances surrounding the discontinuance of the study were also explored in hearings in the House of Representatives by the Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, “Oversight of the Federal Communications Commission,” March 14, 2007; and by the Committee on Appropriations, Subcommittee on Financial Services and General Government, “The Federal Communications Commission,” April 17, 2007.

- Work with carriers to ensure that customers understand the limitation of existing wireless 911 call support.

A comparable version of the final study was subsequently published with support from the 9-1-1 Alliance, an industry group.<sup>11</sup>

## The ENHANCE 911 Act

Congress responded to the issues raised in The Hatfield Report and by the 9/11 Commission and others with the ENHANCE 911 Act of 2004 (P.L. 108-494). It created a E-911 Implementation Coordination Office within the federal government. It also addressed a number of concerns that had been raised 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. The act designated the Director of the National Telecommunications and Information Administration (NTIA) and the Administrator of National Highway Traffic Safety as co-administrators of an E-911 Implementation Coordination Office. 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.” 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.

**Leadership.** In its 1996 blueprint for implementing W-E911, the FCC noted that introducing the service nationwide would require coordination and cooperation with state and local governments and other stakeholders. The FCC nonetheless has limited its leadership role to encouraging states and communities to work together in developing coordinated plans for W-E911. Charged in the 911 Act to take positive steps to address the implementation of 911 services, the FCC has primarily played the role of regulator and mediator.

The Department of Transportation (USDOT) in recent years has moved forward to assist wireless E-911 as an extension of its highway safety programs. In 2002, USDOT created a pro-active program to foster cooperation and dialog among key participants. Among other actions, a partnership between USDOT and three public safety associations was formed in support of a Wireless Implementation Program.<sup>12</sup> In 2005, USDOT announced plans to produce a national framework and deployment plan for a Next Generation 911 (NG9-1-1) system, to be developed over a three-year period.<sup>13</sup> In 2006, NG9-1-1 began the process for testing an IP-based network to support 911.<sup>14</sup> The program is administered within the Research and Technology Administration, part of USDOT’s Intelligence Transportation Systems (ITS) program. Management of the program is shared between the ITS Public Safety

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<sup>11</sup> “Health of the US 9-1-1 System” at [[http://www.911alliance.com/9IA\\_Health\\_of\\_US\\_911%20\\_2\\_.pdf](http://www.911alliance.com/9IA_Health_of_US_911%20_2_.pdf)]. Alliance web page at [<http://www.911alliance.org>].

<sup>12</sup> For details on DOT programs, see [<http://www.nena.org/pages/ContentList.asp?CTID=6>].

<sup>13</sup> Program updates are provided at [<http://www.its.dot.gov/ng911/index.htm>].

<sup>14</sup> Technical Requirements at [[http://www.nena.org/media/files/08-752\\_20061221.pdf](http://www.nena.org/media/files/08-752_20061221.pdf)].

Program and the National Traffic Safety Administration, with assistance from the consulting firm, Booz Allen Hamilton. The IP-network could extend the reach of 911 with the ability to relay 911 calls to distant call centers, if needed.<sup>15</sup> The long-term goal of the program is to define the system architecture and develop a transition plan that considers responsibilities, costs, schedule and benefits for deploying the NG9-1-1 System nationwide. So far, USDOT has published a preliminary concept of operations for NG9-1-1, has implemented a strategic outreach plan, has begun work to develop and validate requirements for the NG9-1-1 system, has defined the system architecture, and has developed the transition plan. In December 2006, a two-year, \$4.4 million contract was awarded for the development of the architecture and transition plan for implementing a nationwide system.<sup>16</sup> The National Traffic Safety Administration, which is managing the development effort with Booz Allen, is seeking to test the prototype of the network. Partners in the Proof of Concept portion of the project 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. Testing of specific requirements by these PSAPs is expected to begin in April 2008 and extend for three to six months.<sup>17</sup>

## Issues Regarding 911 Implementation

While some key issues concerning the development of 911 have been specifically addressed by the ENHANCE 911 Act, others remain. Some could be addressed by the E-911 Implementation Coordination Office or, independently, through the Department of Transportation. The FCC also continues to take regulatory steps to improve the delivery and availability of 911. Several bills have been introduced in the 110<sup>th</sup> Congress to address some of the issues raised in this report; these are summarized in the next section.

**Problems with Compliance in Rural Areas.** Wireless carriers face specific problems in implementing location-finding technology and providing coverage in rural areas. Problems include the use of analog as opposed to digital cellular services (digital technology provides significantly better location-finding capability), 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. For these and other reasons, location identification in more densely populated areas provides a greater degree of accuracy than for coverage in rural areas. The FCC rules currently permit a wireless carrier

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<sup>15</sup> Background at [<http://www.its.dot.gov/ng911/index.htm>]. “Concept of Operations” at [[http://www.its.dot.gov/ng911/pdf/NG911ConOps\\_April07.pdf](http://www.its.dot.gov/ng911/pdf/NG911ConOps_April07.pdf)].

<sup>16</sup> January 2007 status report at [[http://www.its.dot.gov/itsnews/fact\\_sheets/ng911.htm](http://www.its.dot.gov/itsnews/fact_sheets/ng911.htm)].

<sup>17</sup> “US DOT Announces Partnerships For Next Generation 9-1-1 Initiative — Proof of Concept,” e-mail announcement, Laurie Flaherty, Department of Transportation, January 16, 2008.



to meet location-accuracy requirements by averaging location performance systemwide. Carriers that specialize in meeting the market needs of rural customers do not have the option of averaging their system's accuracy with better-performing data from urban/suburban areas. As a consequence, many are struggling to meet the FCC's requirements for accuracy in location identification.

**Location Accuracy.** Wireless carriers must meet standards for accuracy (ability of the technology to locate the caller within a specified number of meters); market penetration (for example, all new handsets); and timeliness (for example, complying with a PSAP request within six months). To avoid penalties, carriers that cannot comply with W-E911 requirements must request waivers. For enforcement purposes, the FCC has divided wireless carriers into three tiers. Small (Tier III) and mid-sized carriers (Tier II) are treated as one group with its own administrative schedule for compliance. Tier I carriers are the largest carriers (Verizon, Cingular, T-Mobile, and Sprint Nextel) that collectively have over 80% of the wireless market nationwide. These are considered as a separate group and closely monitored by the FCC for compliance.

Because of difficulties in meeting FCC requirements for wireless E-911, a coalition of Tier III companies asked the FCC to ease standards for location accuracy for Tier III carriers, especially those in rural areas.<sup>18</sup> Reflecting concerns that some carriers would stop serving remote areas rather than invest in improving location identification capabilities, the ENHANCE 911 Act directed the FCC to grant waivers in situations where strict enforcement would decrease access to emergency services.<sup>19</sup>

The ENHANCE 911 Act 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.<sup>20</sup> The FCC submitted a detailed report in April 2005 but made no recommendations regarding technology.<sup>21</sup> In the same time frame, the FCC granted a blanket waiver to Tier III companies regarding coverage of their customer base (see next section).

**Coverage of Customer Base.** In addition to meeting standards for accuracy of location information, carriers using handset solutions for location identification must meet levels of distribution of Phase II compliant handsets to their customer base. Since December 31, 2005, all new mobile phones provided to customers must have Phase II location information technology and 95% of a carrier's customer base

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<sup>18</sup> Comments, Tier III Coalition for Wireless E911, WT Docket 02-46, December 3, 2002, [[http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6513390405](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513390405)].

<sup>19</sup> P.L. 108-494, Section 107 (a).

<sup>20</sup> P.L. 108-494, Section 106.

<sup>21</sup> 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](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-257964A1.pdf)].

must be using Phase II compliant phones. Carriers that use network technology to meet Phase II requirements are not affected by the deadline.

A petition filed jointly with the FCC by CTIA-The Wireless Association<sup>22</sup> and the Rural Communications Association (RCA) summarized the difficulties being met by carriers depending on handset technology to comply with Phase II.<sup>23</sup> These include (1) lower replacement rate for phones than anticipated by the FCC; (2) lowered churn rates as more customers remain with existing wireless carriers, keeping the phones they already have; and (3) unwillingness to replace phones in order to obtain location technology capabilities. Customers apparently are satisfied with the current features in their cell phones and are reluctant to replace them with a phone in order to gain location-identification technology. In rural areas, the primary reason might be a desire to keep an analog cell phone because it provides better local coverage; analog signals travel greater distances than digital ones, which is significant in areas with a limited number of transmission towers. (Phase II location technology requires a digital phone.) Among other possible reasons are consumer awareness of low penetration rates of Phase II capabilities at local PSAPs — rendering the location technology ineffective for 911 purposes — and privacy concerns; many citizens are uninformed about how location technology works and some fear that anyone will be able to know where they are, at any time, without their consent.<sup>24</sup>

Reflecting the difficulties reported by carriers, some analog telephone users have encountered service problems when they have switched from analog to digital phones. An undetermined number of customers in suburban and rural areas find that their new digital phones place them out of range of towers that can receive digital signals. Calls — including 911 calls — that went through on their analog phones can no longer be completed. Because of compliance requirements, carriers do not want to provide new analog phones, nor replace broken ones. The protection of rural customers that Congress intended by urging relief for Tier III carriers does not apply to rural customers of larger companies, including locally operated subsidiaries.

**Improving Location Information.** The Association of Public-Safety Communications Officials International, Inc. (APCO) petitioned the FCC to apply a uniform standard for location accuracy in areas served, disallowing national averaging used by large carriers to measure compliance with W-E911. APCO had stated a preference for accuracy measurements performed at the level of individual PSAPs but, as a compromise, recommended that accuracy requirements be set at the

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<sup>22</sup> Formerly known as the Cellular Telecommunications & Internet Association.

<sup>23</sup> Joint Petition for Suspension or Waiver of the Location-Capable Handset Penetration Deadline, CC Docket 94-102, June 30, 2005, at [[http://files.ctia.org/pdf/filings/050630\\_E911\\_Waiver\\_Petition.pdf](http://files.ctia.org/pdf/filings/050630_E911_Waiver_Petition.pdf)].

<sup>24</sup> The latter explanation was not included in the CTIA/RSA petition but it is a concern that the CTIA is aware of and has addressed by supporting voluntary standards. See CTIA, “Consumer Code for Wireless Service” [[http://files.ctia.org/pdf/The\\_Code.pdf](http://files.ctia.org/pdf/The_Code.pdf)].

level of Metropolitan Statistical Areas and Rural Statistical Areas.<sup>25</sup> The FCC's Advisory Council, NRIC VII, had previously recommended that accuracy requirements be measured at the state level.<sup>26</sup> 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.<sup>27</sup> 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 or apartment or room number.

**Location Information at the PSAP Level.** Partially in response to the APCO study, the FCC opened a new proceeding to examine the possibility of tightening the requirements for location information, in June 2007. On September 11, 2007, the FCC announced a new Report and Order covering location accuracy requirements.<sup>28</sup> The order sets annual benchmarks, over a five-year period, so that by 2012 the standard for measuring location accuracy is to be based on the area served by each PSAP. Although some states provide PSAPs through a few state-operated sites (Rhode Island, for example, has one main site and a back-up location to handle 911 calls), many PSAPs operate at the county or city level. There are an estimated 6,000 PSAPs in operation.<sup>29</sup>

To meet the requirement for location information at the PSAP level, wireless carriers will need to improve the technology they use. Verizon, AT&T, and 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.<sup>30</sup>

**911 Funding by States.** The bulk of the costs for implementing wireless E-911 is covered by the telecommunications industry and by consumers, primarily as

<sup>25</sup> Supplement to Request for Declaratory Ruling, CC Docket 94-102, February 4, 2005 [[http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6517082528](http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517082528)].

<sup>26</sup> NRIC VII, Focus Group 1A Report #1, Revised, March 29, 2005 at [[http://www.nric.org/meetings/docs/meeting\\_20050329/FG1A%202005%20Report%201%20Revised.pdf](http://www.nric.org/meetings/docs/meeting_20050329/FG1A%202005%20Report%201%20Revised.pdf)].

<sup>27</sup> "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](http://www.locatemodelcities.org/documents/LOCATE_Final_Report.pdf)].

<sup>28</sup> FCC News, "FCC Clarifies Geographic Area Over Which Wireless Carriers Must Meet Enhanced 911 Location 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](http://hraunfoss.fcc.gov/edocs_public/Query.do?mode=advance&rpt=full)] for all document links.

<sup>29</sup> National Emergency Number Association (NENA), "9-1-1 Fast Facts," at [<http://www.nena.org/pages/Content.asp?CID=144&CTID=22>].

<sup>30</sup> See comments at FCC Electronic Comment Filing System from, for example, CTIA, AT&T (various divisions), Verizon Wireless, Inc., and Sprint Nextel Corporation.

taxpayers at the state and local level but potentially also as purchasers of wireless handsets and subscriber services, since some of the carriers' costs for E-911 technology may be passed along as price increases. One common source of funds is a surcharge on telephone bills collected at the local or state level, or both. Most states have some form of 911 fund that receives revenue from a surcharge on telephone bills.<sup>31</sup> These funds are used to reimburse PSAPs, and — in some states — telecommunications companies for the costs of developing and maintaining 911 systems. Another source of funding, at the local or county level, is an increase in property taxes with the additional monies going to PSAPS. Call centers also hold fish fries and bake sales. In 2003, the CTIA was among those alerting Congress to concerns that funds collected through telephone bills were being misapplied; it collected data that indicated that millions of dollars were being collected by states for 911 and then used for other purposes.<sup>32</sup>

The Enhance 911 Act provides a mechanism for funding 911 with a program of matching grants.<sup>33</sup> To penalize states and other jurisdictions that use 911 fees for other purposes, the act would deny grants to entities that diverted funds.<sup>34</sup> For this legislative response to be effective requires appropriations for the programs that the act authorizes.

The act also required the Government Accountability Office to study the imposition of taxes and fees for 911 services and the use of these fees.<sup>35</sup> In its final report,<sup>36</sup> the GAO provided an overview of state-by-state implementation of Phase I and Phase II for E-911 and the collection of fees to fund these services. The report identified some states that reported using 911 fees for other purposes;<sup>37</sup> six states and the District of Columbia did not respond to the survey.

**Voice Over Internet Protocol (VoIP).** Voice over Internet Protocol (VoIP) does not automatically provide location information to a PSAP, unlike most wireline and an increasing percentage of wireless 911 phone calls. VoIP uses Internet bandwidth to send voice communications; these can be peer-to-peer, essentially a closed loop, or through a public switched telephone network (PSTN), communicating over telephone lines. To achieve ANI/ALI delivery to a PSAP, there must be a connection to a local telephone switch that links to the appropriate PSAP and the VoIP user must register the phone number and address of the phone line used for VoIP. As the service has become more popular, often replacing a household's

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<sup>31</sup> An overview of user fees, by state, is available on the NENA website at [[http://www.nena.org/media/files/9-1-1UserFees\\_2.pdf](http://www.nena.org/media/files/9-1-1UserFees_2.pdf)].

<sup>32</sup> "911 Cell Phone Plan Gets a Push," by Edward Epstein, *San Francisco Chronicle*, August 11, 2003, page A4.

<sup>33</sup> P.L. 108-494, Section 104, Section 158 (b).

<sup>34</sup> P.L. 108-494, Section 104, Section 158 (c).

<sup>35</sup> P.L. 108-494, Section 105.

<sup>36</sup> *States' Collection and Use of Funds for Wireless Enhanced 911 Services*, Government Accountability Office, March 2006, GAO-06-338.

<sup>37</sup> *Ibid.*, Figure 5, page 18.

wireline phone, it has become evident that the absence of automated location identification represents a serious hole in the 911 public safety net. The FCC, therefore, has pursued actions to assure 911 access for VoIP users, particularly as regards access to PSTN lines to 911 call centers and provision of ANI/ALI data. Current requirements established by the FCC have two parts. First, VoIP providers must contact all subscribers and inform them of the terms on which 911 access is or is not available. Second, VoIP providers are to meet FCC requirements for assuring that 911 calls are delivered to PSAPs and provide ANI/ALI data.<sup>38</sup>

In response to VoIP provider concerns about how to meet the technical requirements of the FCC, the National Emergency Number Association (NENA) has prepared recommendations for developing an architecture to connect VoIP to the existing emergency network infrastructure, both for the interim and long term.<sup>39</sup>

**Static vs. Nomadic VoIP.** A contentious issue revolves around differences in connectivity for static and nomadic services. Static VoIP applies primarily to cable companies that offer VoIP as part of broadband Internet, delivered by coaxial cable. The VoIP service is linked to an Internet connection that is in a fixed place. Nomadic VoIP refers to service that can be used anywhere that there is Internet access. Vonage, for example, a major provider of VoIP, can be used through any Internet Service Provider (ISP); VoIP over wireless (usually Wi-Fi) will work wherever there is a link. Static VoIP requires a one-time registration of a subscriber's phone number and address. Nomadic VoIP has a different set of operating criteria that can accommodate constant revision of location information. Nomadic VoIP is analogous to cell phones in terms of portability.

**Citizen-Activated Emergency Calls.** PSAPs are not the only call centers that handle requests for assistance or information in an emergency. 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) discusses the valuable help provided to victims of the September 11, 2001 World Trade Center attack through call center services donated by BellSouth.<sup>40</sup> Over 400 hotlines were established in New York City after 9/11, however, creating a confusing network for victims and volunteers.<sup>41</sup> The WERT report urges 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.<sup>42</sup>

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<sup>38</sup> The FCC has a website about VoIP, E-911, and FCC actions at [<http://www.voip911.gov/>].

<sup>39</sup> *Interim VoIP Architecture for Enhanced 9-1-1 Services*, NENA 08-001, December 2005 [[http://www.nena.org/media/files/NENA\\_08-001\\_V1\\_12-06-05.pdf](http://www.nena.org/media/files/NENA_08-001_V1_12-06-05.pdf)].

<sup>40</sup> 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](http://www.nric.org/meetings/docs/wert_final_report.pdf)].

<sup>41</sup> Cited as Findings in S. 211, Sec. 2, (9) and H.R. 211, Sec. 2, (9).

<sup>42</sup> *Ibid.*, Section 1, Recommendation PCC-2, page 9 and Section 6, Public Call Center, page (continued...)

After Hurricane Katrina, call centers, including 211 call centers, were used to help locate displaced victims and direct them to shelters and social services. In response to Hurricane Katrina, when over 5,000 children were separated from their families, a National Emergency Child Locator Center was established within the National Center for Missing and Exploited Children (NCMEC), as required by the Homeland Security Appropriations Act, 2007 (P.L. 109-295, Title VI, Subtitle E).<sup>43</sup> The purpose of the center is to identify children separated from their families as the consequence of a disaster and reunite them expeditiously. NCMEC is to operate a toll-free call center, set up a website with information about displaced children, and take other steps to collect and disseminate information about the children and their families.

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.<sup>44</sup> The 311 code was created by the FCC in 1997 to take non-emergency police calls as a means to reduce congestion on 911 lines.<sup>45</sup> Many cities have adopted shared-service communications hubs handling 211 and 311 calls. The 211 dialing code is reserved by the FCC on a provisional basis as a universal number for community information and referral.<sup>46</sup> 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.<sup>47</sup> Roughly two-thirds of the U.S. population has access to a 211 call but most states do not have statewide service.<sup>48</sup>

**The Next Generation of Emergency Communications.** As part of the push to move 911 to the next generation of technologies, NENA is pressing for what it calls “NG-E9-1-1.” NENA wants to address the technical, operational and policy issues associated with modernizing the E-911 system and integrating new technologies, such as voice over IP, instant messaging, short message service

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<sup>42</sup> (...continued)

40 *et seq.*

<sup>43</sup> Sec. 689b, 120 STAT1449-1450.

<sup>44</sup> For example, the automobile industry operates call centers for its services for automatic crash notification, roadside assistance and other emergency aid (telematics); operators will contact a nearby PSAP when necessary. Telecommunications companies that provide satellite telephony (Mobile Satellite Service — MSS) are required by the FCC to operate call centers that can forward 911 calls.

<sup>45</sup> “FCC Creates New 311 Code for Non-Emergency Police Calls...,” FCC News, Report CC 97-7, February 19, 1997 at [<http://ftp.fcc.gov/cgb/dro/311news.html>].

<sup>46</sup> 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>].

<sup>47</sup> More information on 211, including links to cost-benefit studies, is available at [<http://www.211.org>].

<sup>48</sup> In June 2007, the percentage was 65%. Statistics and U.S. map showing coverage is available at [<http://www.211.org/status.html>].

messaging, Wi-Fi, geographic information systems and video.<sup>49</sup> As noted above, the Department of Transportation is seeking to develop an IP network plan for NG9-1-1 as part of the Intelligent Transportation Systems Program. The Seventh National Interoperability and Reliability Council for the FCC also has urged the development of a common platform that would link 911 to an interoperable communications network based on Internet technologies.<sup>50</sup>

On May 2, 2007, NENA and APCO issued a joint statement announcing a new agreement to work together in advancing the transition of 911 to new technologies and capabilities.<sup>51</sup> The two associations have agreed to share information and coordinate activities. They will undertake joint programs in which, among other responsibilities, NENA will focus on technical and architectural components of new 911 systems and APCO will focus on the operational utility of these systems.

## **Congress and the Emergency Communications Safety Net**

Enhanced technology and heightened awareness of the public safety and homeland security benefits of emergency call centers have raised the bar of expectations both within the public safety community and of the those who need 911 services. The 9/11 Commission, among others, has urged Congress to advance on the goal of integrating 911 with emergency response programs. The 110<sup>th</sup> Congress has taken a number of steps to improve support of 911 development.

**Funding.** Some funding for the E-911 Implementation Coordination Office is to be provided through the Digital Transition and Public Safety Fund, created by the Deficit Reduction Act (P.L. 109-171). Up to \$43.5 million is designated specifically for 911, payable from the proceeds of spectrum auctions scheduled in 2008. The Implementing Recommendations of the 9/11 Commission Act of 2007 (P.L. 110-53) authorized the NTIA to borrow against the \$43.5 million from spectrum auction proceeds designated for 911 improvements, making the funds available immediately.<sup>52</sup> The act included an amendment that privileges public safety answering points not capable of receiving 911 calls.<sup>53</sup> Under this amendment, these areas, many of them remote, will receive priority for problem-solving and funding to enable basic 911 service, which then can benefit from the more advanced

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<sup>49</sup> “NENA Launches Next Generation 9-1-1(NG9-1-1) Transition Planning Effort” at [[http://www.nena.org/media/files/NG\\_9-1-1\\_Transition\\_Planning\\_Announcement\\_1011.27.06.pdf](http://www.nena.org/media/files/NG_9-1-1_Transition_Planning_Announcement_1011.27.06.pdf)].

<sup>50</sup> 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](http://nric.org/meetings/docs/meeting_20041206/FG1D%20Final%20Report.pdf)].

<sup>51</sup> “NENA and APCO Announce Next Generation (NG) 9-1-1 Partnership,” May 2, 2007 at [<http://www.nena.org/media/files/NGNENA-APCOAllianceRelease.pdf>]. See also [<http://www.apcointl.org/new/commcenter911/>].

<sup>52</sup> P.L. 110-53, Sec. 2302.

<sup>53</sup> P.L. 110-53, Sec. 2303.

technologies that are the original focus of the ENHANCE 911 Act. It is estimated that there are about 250 locations in the United States where emergency calls are handled without the benefit of 911 technology.

**Funding for 911 in Rural Areas.** The Food, Conservation and Energy Act of 2008 (H.R. 2419, Peterson), referred to as the Farm Bill, as it will be sent to the President, includes language that can provide loans to improve 911 and other emergency communications capabilities in rural areas.<sup>54</sup> The provision amends the Rural Electrification Act lending authority 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

“(5) location technologies used outside an urbanized area.”<sup>55</sup>

The bill allows government-collected fees such as state and local fees for 911 to be used as surety against loans.<sup>56</sup> It also permits loans to companies that will provide communications equipment, if local governments with jurisdiction are not allowed to acquire the debt.<sup>57</sup>

**NET 911 Improvement Act.** 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) 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.
- Parity of access to communications networks needed to complete 911 calls.
- Parity of protection from liability extended to include communications through VoIP providers and other emergency service providers.
- National plan for migration to an IP-enabled 911 network, developed by the E-911 Implementation Coordination Office.

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<sup>54</sup> Conference Report provided by the House Rules Committee at [[http://www.rules.house.gov/110/text/110\\_hr2419\\_confrpt.pdf](http://www.rules.house.gov/110/text/110_hr2419_confrpt.pdf)]. Viewed May 16, 2008.

<sup>55</sup> H.R. 2419, Sec. 6107, “Sec. 315 “(a).

<sup>56</sup> H.R. 2419, Sec. 6107, “Sec. 315 “(b).

<sup>57</sup> H.R. 2419, Sec. 6107, “Sec. 315 “(c).



- Protection of the rights of states and other political subdivisions to levy fees on 911 services.
- Requirement that FCC report annually on collection of state fees and other levies on 911 and E-911 services.

**Other Legislation Related to Call Centers.** The Calling for 2-1-1 Act of 2007 (S. 211, Senator Clinton and H.R. 211, Representative Eshoo) would facilitate nationwide availability of 211. A grants program would be administered by the Department of Commerce. Applicants would have to include information about cooperation, if any, with other call centers, including 911. The sums authorized would be \$150 million in fiscal years 2008 and 2009 and \$100 million for fiscal years 2010 through 2013.<sup>58</sup>

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<sup>58</sup> S. 211, Sec. 4, (a) and H.R. 211, Sec. 4, (a).

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