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An Emergency Communications Safety Net: Integrating 911 and Other Services

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Linda K. Moore
Analyst in Telecommunications and Technology Policy
Resources, Science, and Industry Division

Congressional Research Service

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Summary

The present capability and future effectiveness of America's network of emergency telecommunications services are among the issues under review by Congress and other entities. Emergency calls (911) on both wireline (landline) and wireless networks are considered by many to be part of the public safety network. As technologies that can support 911 improve, many are seeing the possibility of integrating 911 into a wider safety net of emergency communications and alerts.

One of the intents of Congress in passing the Wireless Communications and Public Safety Act of 1999 (P.L. 106-81), and of the Federal Communications Commission (FCC) in implementing the act, is to make 911 technology universally available nationwide. A 2002 report, known as the Hatfield Report, recognized the need to upgrade 911 infrastructure, discussed the difficulties encountered, and recommended the creation of a 911 bureau at the Executive level. Congress addressed recommendations from the Hatfield Report with provisions passed in the ENHANCE 911 Act of 2004 (P.L. 108-494). This legislation creates a federal program for 911 implementation and coordination and authorizes funds for a matching grant program. Appropriations for the program have yet to be allocated, although some funding is available through other programs. The Department of Transportation, for example, is sponsoring a test of an IP-based network for 911, with funding from the Intelligent Transportation Systems program. Support for the program is also promised from the Digital Transition and Public Safety Fund, created by the Deficit Reduction Act (P.L. 109-171). Title VI, Subtitle D (Emergency Communications), of the Department of Homeland Security Appropriations Act, 2007 (P.L. 109-295) requires the FCC report to Congress on the nationwide capacity for rerouting 911 calls when call centers are disabled by disaster. The report is due within 180 days of enactment; the bill was signed into law October 4, 2006.

Included in S. 4 as Title XVII is language that would authorize the immediate release of $43 million from spectrum auction proceeds designated for 911 improvements by the Deficit Reduction Act. S. 428 (Senator Nelson) focuses on ensuring access to 911 call centers for users of Voice over Internet Protocol (VOIP) telephone service and improving the delivery of 911 services nationwide. Legislation covering call centers includes S. 211 (Senator Clinton), requiring improvements in the capacity of 211 help lines (information and referral services) operated by nonprofit call centers.

Contents

List of Tables

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.[1] 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[2] and interoperable communications for public safety.[3] 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 to set 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, Regulation, and Leadership

To facilitate the effort to provide comprehensive 911 services nationwide, Congress in 1999 passed the "911 Act,"[4] 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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[1] Final Report of the National Commission on Terrorist Attacks Upon the United States, Official Government Edition, 2004, p. 318.

[2] See CRS Report RL32527, *Emergency Communications: The Emergency Alert Systems(EAS) and All-Hazard Warnings*, by Linda K. Moore.

[3] See CRS Report RL33838, Emergency *Communications: Policy at a Crossroads*, by Linda K. Moore.

[4] 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).[5] 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.[6] 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.

FCC Study. 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.[7] 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 might be the basis for policy initiatives include

- 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.

Regulation. Since October, 1, 2001, wireless carriers have been expected to meet FCC guidelines for providing W-E911 to PSAPs. The FCC took an important first step toward adopting rules for W-E911 in 1996 with a first *Report and Order* (FCC 96-264) citing provisions of the Communications Act[8] as the basis for its action. To facilitate the effort to provide comprehensive 911 services nationwide, Congress in 1999 passed the "911 Act,"[9] which mandated 911 as the emergency number nationwide and made numerous provisions for its implementation. Among

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[5] 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.

[6] National Emergency Number Association (NENA), "9-1-1 Fast Facts," at [http://www.nena.org/pages/Content.asp?CID=144&CTID=22]. Viewed June 13, 2007.

[7] Available at [http://www.fcc.gov/911/enhanced/reports/]. Viewed June 13, 2007.

[8] 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."

[9] P.L. 106-81, Wireless Communications and Public Safety Act of 1999.

other provisions, the law requires the FCC to work with the states and the many other affected parties to deploy comprehensive W-E911 service.

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 (Automatic Location Identification, or ALI).[10] From 1997 through 2000, the FCC made several changes in its accuracy requirements, impacting the carriers' ability to develop the needed ALI technology.[11] In particular, the FCC set up different timetables for carriers using network-based technologies for supplying locations 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 will be discussed in the next section of this report.

After the publication of the Hatfield Report in 2002, the FCC undertook several new initiatives to bolster its role in supporting 911. These included creating an Enhanced 911 (E911) Coordination Initiative to bring together relevant stakeholders to foster cooperation. The FCC also supports the National Reliability and Interoperability Council, a Federal Advisory Committee that provides best practices and other guidelines for telecommunications operations, including homeland security and public safety.[12] NRIC VII, which ended December 2005, had four focus groups for E911 issues, including one studying interfacing PSAPs with the wider universe of public safety networks.[13]

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[10] 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.

[11] 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 ("Third Report and Order," October 6, 1999).

[12] See [http://www.nric.org/]. Viewed June 13, 2007.

[13] 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]. Viewed June 13, 2007.

Leadership. In its 1996 blueprint for implementing W-E911, the FCC noted that introducing the service nationwide would require coordination and "cooperative efforts by state and local governments, PSAP administrators, wireless carriers and equipment manufacturers." 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 (DOT) in recent years has moved forward to assist wireless E-911 as an extension of its highway safety programs. In 2002, DOT created a pro-active program to foster cooperation and dialog among key participants. Among other actions, a partnership between DOT and three public safety associations was formed in support of a Wireless Implementation Program.[14] In 2005, DOT announced plans to produce a national framework and deployment plan for a Next Generation 911 (NG911) system, to be developed over a three-year period.[15] In 2006, NG911 began the process for testing an IP-based network to support 911.[16] The National Traffic Safety Administration, which is managing the development effort with Booz Hamilton, reportedly is seeking to test the prototype of the network.[17] The IP-network will extend the reach of 911 with the ability to relay 911 calls to distant call centers, of needed. The network will be able to accommodate video and data as well as voice transmissions with a variety of devices.

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 designates 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 is established, the co-administrators would 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 expiring on October 1, 2009.

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[14] For details on DOT programs, see [http://www.nena.org/pages/ContentList.asp?CTID=6]. Viewed June 13, 2007.

[15] Program updates are provided at [http://www.its.dot.gov/ng911/index.htm]. See also "Summary of Responses to Next Generation 9-1-1 Request for Information," at [http://www.its.dot.gov/ng911/ng911_rfisummary.htm]. Both viewed June 13, 2007.

[16] Technical Requirements at [http://www.nena.org/media/files/08-752_20061221.pdf]. Viewed June 13, 2007.

[17] "NHTSA Calls Next Generation 911 Nearly Field-Test Ready," Communications Daily, March 14, 2007.

Although the program has never been activated and has received no funding through authorizations, funding is scheduled 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. Senator Ted Stevens introduced S. 93 to release funds for 911 as designated in the Deficit Reduction Act. The bill would authorize the NTIA to borrow against the $43.5 million from spectrum auction proceeds designated for 911 improvements, making the funds available immediately. This language was approved and passed by the Senate on March 13, 2007 as an amendment to S. 4, Improving America's Security Act of 2007 (Senator Reid). The amendment, which appears as Title XVII, further requires "regulations updating the criteria to provide priority for public safety answering points not capable, as of the date of enactment of that Act, of receiving 911 calls."[18] It is estimated that there are about 225 locations in the United States where emergency calls are handled without the benefit of 911 technology. Under this provision, 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 technologies that are the original focus of the ENHANCE 911 Act.

There are no similar provisions regarding 911 in H.R. 1.

Issues Regarding 911 Implementation and Funding

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 if it is created, or, independently, through the Department of Transportation. The FCC also continues to take regulatory steps to improve the delivery and availability of 911.

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 al areas. The FCC rules permit a wireless carrier 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);

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[18] S. 4, Title XVII, Sec. 1702(b) and Sec. 1703.

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.[19] 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.[20]

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.[21] The FCC submitted a detailed report in April 2005 but made no recommendations regarding technology.[22] In the same time frame, the FCC granted a blanket waiver to Tier III companies regarding coverage of their customer base (see next section).

The Association of Public-Safety Communications Officials International, Inc. (APCO) conducted an independent test of the accuracy of location information received by PSAPs.[23] APCO has 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 recommends that accuracy requirements be set at the level of Metropolitan Statistical Areas and Rural Statistical

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[19] See submitted comments, Tier III Coalition for Wireless E911, December 3, 2002, on the FCC Electronic Comment Filing System (ECFS), proceeding "02-46"; available online at [http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513390405]. Viewed June 13, 2007.

[20] P.L. 108-494, Section 107 (a).

[21] P.L. 108-494, Section 106.

[22] 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]. Viewed June 13, 2007.

[23] "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. Viewed June 13, 2007.

Areas.[24] The FCC's Advisory Council, NRIC VII, has recommended that accuracy requirements be measured at the state level.[25]

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. By 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 must be using Phase II compliant phones.

A petition filed jointly with the FCC by CTIA-The Wireless Association[26] and the Rural Communications Association (RCA) summarizes the difficulties being met by carriers depending on handset technology to comply with Phase II. 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.[27] The CTIA/RCA petition requests the FCC to suspend the 95% market penetration rate for carriers that are meeting compliance rules for new phones. Alternatively, the FCC could set up a streamlined waiver process for companies falling short of the 95% requirement. Some Tier III companies have received waivers from this requirement.[28] Carriers that use network technology to meet Phase II requirements are not affected by the deadline.

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[24] APCO filing with FCC, Supplement to Request for Declaratory Ruling, FCC Docket 94-102, February 4, 2005.

[25] NRIC VII, Focus Group 1A Report #1, Revised, March 29, 2005 at [http://www.nric.org/meetings/docs/meeting_20050329/FG1A%200205%20Report%201%20Revised.pdf]. Viewed June 13, 2007.

[26] Formerly known as the Cellular Telecommunications & Internet Association.

[27] 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]. Viewed June 13, 2007.

[28] Joint Petition for Suspension or Waiver of the Location-Capable Handset Penetration Deadline, Rural Cellular Association and CTIA - The Wireless Association, FCC, Docket No. 94-102, June 30, 2005.

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.

911 Funding. The bulk of the costs for implementing wireless E911 is covered by the telecommunications industry and by consumers, primarily as 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 E911 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.[29] 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.

Table 1. E911 Funds Diverted to General Funding

State	Amount(s)	Year(s)
California	$50 million	2001
District of Columbia	$9.45 million over three years	2000-2003
Maryland	$1 million	2002
North Carolina	$2.5 million; $5 million	2001; 2002
New York	$45 million; $162 million	2001; 1991-2000
Oregon	$7 million	2002
South Carolina	$5 million	2003
Texas	$40 million	2001
Virginia	$30 million	2002

Source: CTIA, March 2003

[29] An overview of user fees, by state, is available on the NENA website at [http://www.nena.org/media/files/9-1-1UserFees.pdf]. Viewed June 13, 2007.

According to the CTIA, of the 18 states known to have wireless E911 programs funded at the state level, nine transferred these funds to a general fund. The table above was prepared in early 2003 and is not comprehensive. California, for example, borrowed $63.1 million from its 911 fund in 2003.[30] On a smaller scale, the Maine Legislature voted to transfer $123,301 to the 2003 General Fund from the state's Emergency Services Communication Bureau's E-911 Fund.[31]

The act provides a mechanism for funding 911 with a program of matching grants.[32] To penalize states and other jurisdictions that use 911 fees for other purposes, the act would deny grants to entities that diverted funds.[33] 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.[34] In its final report,[35] the GAO provides an overview of state-by-state implementation of Phase I and Phase II for E911 and the collection of fees to fund these services. The report identified some states that reported using 911 fees for other purposes;[36] 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 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, is pursuing 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

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[30] "911 Cell Phone Plan Gets a Push," by Edward Epstein, San Francisco Chronicle, August 11, 2003, page A4.

[31] Maine 2003 Legislative Service, 121st Legislature, 2003 Me. Legis. Serv. Ch. 2 (H.P. 372) (L.D. 483) (WEST), Section AA-3, West Group 2003.

[32] P.L. 108-494, Section 104, Section 158 (b).

[33] P.L. 108-494, Section 104, Section 158 (c).

[34] P.L. 108-494, Section 105.

[35] *States' Collection and Use of Funds for Wireless Enhanced 911 Services*, Government Accountability Office, March 2006, GAO-06-338.

[36] Ibid., Figure 5, page 18.

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.[37]

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.[38] NENA states that VOIP is "poised to become the predominant technology used in the telecommunications industry."[39]

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.[40] The 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.[41] WERT also provided communication support after Hurricanes Katrina and Rita. 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.[42] The 311 code was created by the FCC in 1997 to take non-

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[37] The FCC has a website about VOIP, E911, and FCC actions at [http://www.voip911.gov/].

[38] *Interim VOIP Architecture for Enhanced 9-1-1Services*, NENA 08-001, December 2005 [http://www.nena.org/9-1-1TechStandards/Standards_PDF/NENA_08-001_V1_12-06-05.pdf]. Viewed February 9, 2007.

[39] Ibid., page 1.

[40] 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]. Viewed June 13, 2007.

[41] Ibid., Section 1, Recommendation PCC-2, page 9 and Section 6, Public Call Center, page 40 *et seq.*

[42] For example, the automobile industry operates call centers for its services for automatic crash notification, roadside assistance and other emergency aid (telematics); operators will (continued...)

emergency police calls as a means to reduce congestion on 911 lines.[43] 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.[44] 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.[45]

The Next Generation of Emergency Communications. NENA is pressing for what it calls "NG-E9-1-1," referring to next generation technologies. NENA wants to address the technical, operational and policy issues associated with modernizing the E911 system and integrating new technologies, such as voice over IP, instant messaging, short message service messaging, Wi-Fi, geographic information systems and video.[46] As noted above, the Department of Transportation is seeking to develop an IP network plan for NG911 as part of the Intelligent Transportation Systems Program. The National Interoperability and Reliability Council for the FCC has urged the development of a common platform that would link 911 to an interoperable communications network based on Internet technologies. The Alliance for Telecommunications Industry Solutions has a forum on emergency service interoperability.[47]

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.[48] 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.

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[42] (...continued)
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.

[43] "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]. Viewed June 13, 2007.

[44] 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].

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

[46] "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]. Viewed June 13, 2007.

[47] See [http://www.atis.org/esif/missionscope.asp]. Viewed June 13, 2007.

[48] "NENA and APCO Announce Next Generation (NG) 9-1-1 Partnership," May 2, 2007 at [http://www.nena.org/media/files/NGNENA-APCOAllianceRelease.pdf]. Viewed June 13, 2007.

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.

Title VI, Subtitle D, of the appropriations bill for the Department of Homeland Security (P.L. 109-295) includes 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.

Bills introduced in the 110th Congress include S. 428 (Senator Nelson) and S. 211 (Senator Clinton). Key provisions in S. 428 include liability protections for PSAPs and for VOIP operators, similar to what now exists for wireline and wireless calls to 911. The bill would ensure that VOIP's be ensured fair access to switched networks that connect callers to PSAPs. There are provisions that would affirm the right of states and localities to tax VOIP callers for 911 services, within limits. IP and telecommunications service providers are to have access to a database that will list selective routers used to connect 911 calls to PSAPs. The bill was approved by the Senate Commerce, Science and Transportation Committee in mark up on April 25, 2007.

The Calling for 2-1-1 Act of 2007 (S. 211, Senator Clinton) would facilitate nationwide availability of 211. The bill recognizes the potential role of 211 call centers in providing "community preparedness and response."[49] 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.

[49] S. 211, Section 2 (10), Section 2 (10).