

E911, The Case for Federal Funding

By Paulette Burgess

“9-1-1, please state your number and location. What’s your emergency?”

U.S. Senators Conrad Burns (R. Mont.) and Hillary Clinton (D. NY) have proposed a bill that, if passed into law, would promote national safety and reignite the wireless industry to the tune of \$500 million a year in grants. The bi-partisan legislation presents a milestone for carriers and consumers alike. But first, a heartwarming story.

Two years ago, Mark Vargo of Three Rivers, Michigan, received a frantic Direct Connect call from his neighbor. She had suffered an allergic reaction to a bee sting and needed help urgently. “With only seconds to act, Mark utilized multiple features on his Nextel phone to get help quickly. [Nextel’s] Direct Connect walkie-talkie service allowed Mark’s neighbor to contact him instantly, while Nextel’s cellular service helped Mark get through to 911 immediately.”

It’s the sort of promotional story wireless companies trot out each year as part of the Cellular Telecommunication & Internet Association’s (CTIA) National Wireless Safety Week. But, it’s also misleading. The overwhelming majority of 911 calls made from cell phones fail to supply the dispatcher at the Public Safety Answering Point (PSAP) with the essential information necessary to deploy emergency assistance. Ironic, considering that the FCC lists 911 access as a primary reason consumers purchase cell phones. In fact, women’s shelters around the country routinely handout donated cell phones programmed to call 911—and only 911 calls.

The number of 911 calls placed by individuals using wireless phones has more than doubled since 1995, to over 50 million a year. This accounts for roughly 30 percent of all 911 calls, and that percentage is growing.

For every Mark Vargo story, there are several others that lack made-for-TV happy endings. As Gary Allen, editor of *Dispatch Monthly* magazine reported, “Even Moscow isn’t immune from the type of call that seems to be routine here in America: a man called the police four times from his wireless phone, saying he was trapped in the back of a

moving garbage truck. Police speculate he was thrown into the truck by robbers.” His body was never recovered, Allen added. Or, consider the cautionary tale of one high-profile national wireless carrier that suffered a programming error, which caused its 911 calls, nearly 4,000 in all, to be routed to a PSAP in Austin, Texas for two hours. A misplaced semi-colon in the software triggered the snafu.

But don't scapegoat technology—or the carriers—for such scenarios.

Don't set the table until dinner is ready

Enhanced 911, or “E911”, the ability of a wireless 911 call to reach the correct PSAP, and the PSAP's ability to access the caller's phone number and proximate location, became an official mandate in 1996, when CTIA and three national public safety organizations filed a Consensus Agreement with the FCC. “The Consensus Agreement proposed a two-step implementation schedule for wireless E911, which was drafted into the [FCC's] wireless E911 rules. The rules established schedules for wireless carriers to provide both basic and enhanced 911 services.”¹ Under Phase I, wireless carriers must provide PSAPs with a callback number and the location of the cell site/sector receiving a 911 call. Under Phase II, the wireless carriers are required to provide to PSAPs the location of all 911 calls by longitude and latitude beginning October 1, 2001.

October 1, 2001 has come and gone. And in the meantime the PSAPs are still desperate for Enhanced 911 capability. The technology is available, both in a handset solution and network-based solution. And the carriers are in a fierce marketplace, where E911 is one more value added service with which they can lure consumers away from the competition. So what's the problem? The problem is that wireless carriers don't have to make their cell phones E911 compliant until six months *after* receiving a valid request from a PSAP.

In a report that came out of the Senate Committee on Commerce, Science, and Transportation late last year, Senator John McCain (R. Ariz) submitted, “It is estimated that only 10 percent of the PSAPs nationwide have made requests to receive wireless E911 location information (Phase II requests). One major reason for the delay in PSAP requests is that PSAPs are not ready to receive the E911 information that will be sent to

them by wireless carriers. In order to receive this information, PSAPs must first make software and hardware upgrades in their operations centers, as well as make appropriate trunking arrangements with local wireline telephone companies to enable wireless E911 data to pass from the wireless carrier to the PSAP.”² The carrier is under no obligation to incur the costs associated with upgrading its own equipment and infrastructure until the PSAP makes a valid request. A PSAP’s request isn’t valid until the PSAP can show it has the means of recovering its costs.

Robert A. Calaff, Senior Corporate Counsel for T-Mobile USA, Inc., explained to the FCC how frustrating—especially from a business standpoint—the PSAP’s lack of readiness can be. “Frequently the result has been that T-Mobile initiates the implementation—and incurs substantial costs, such as for trunking between its facilities and the selective router or the ALI database—only to learn subsequently that there is an issue as to the validity of the request [made by the PSAP].”³

The expensive legacy of analogue

The hefty price tag of updating a system that was premised upon analog is without question the largest impediment to nationwide E911. In a study commissioned by the FCC, Dale N. Hatfield, a noted telecommunications consultant and former FCC Chief of the Office of Engineering and Technology, summarized the situation as thus: “The issue is, simply, that, by and large, the existing wireline E911 infrastructure is seriously antiquated.”⁴

The current 911 system began taking shape nearly 40 years ago, with most installations being deployed during the 1970s and ‘80s. It is, essentially, “a separate network burdened with point-to-point analog circuits, in-band signaling, and low speed analog data lines. . . . In fact, one key part of the architecture – the use of CAMA-based selective routers and trunks to deliver ANI information to the PSAPs – was designed for an entirely different purpose. While the Nation should be forever grateful to the engineers and others who designed the original 911 system, it must be recognized that it was – and remains – somewhat of a ‘kluge.’ ”⁵ Nevertheless, it is *our* kluge, and a critical building block in the implementation of wireless E911. Thus, there is no avoiding the substantial

costs of retrofitting the additional network elements and software needed to handle the ever-increasing volume of wireless E911.

But, some stakeholders point out that those costs are not equally shared throughout the wireless industry. This is primarily due to the logistics of location technology. In his report, Hatfield recognized that smaller, rural carriers have additional operational and technical problems than their larger counterparts in implementing E911 service. First, the layout of base station sites in rural areas are usually further apart, covering a larger area, leading to a weaker signal; moreover, they are commonly placed along highways “in a string of pearls configuration,” making collection of the triangulated data necessary for calibrating a caller’s location next to impossible.

The Rural Telecommunications Group (RTG) is a consortium of rural telecommunications providers who have joined together to speed the delivery of new, efficient, and innovative telecommunications technologies to the populations of remote and underserved sections of the country. Caress D. Bennet, counsel for RTG, explained that, while its members are committed to the implementation of Phase II E911, “Sometimes the upgrades necessary to achieve such compliance border on the economically irrational.” She uses the example of one member in particular that needs to purchase a \$500,000 Nortel product to upgrade its switch. “With a limited customer base, this RTG member has to spend approximately \$1,700 per customer to upgrade its switch. This figure does not even include the additional Phase II handset, cell site, network signaling, switching and location equipment, and software upgrade costs that will be added on when they implement their Phase II solution.” To fully recover the expense for this single switch upgrade, the rural wireless carrier would have to increase each customer’s bill by approximately \$14 per month for the next ten years. This doesn’t include interest payments.⁶

If the impetus for E911 was solely commercial, the small, rural carrier could hedge its bets by simply lowering its prices and electing to not provide E911 with its package of services. But E911 is a federal mandate, one premised on citizen safety and, following the September 11 terrorist attacks, national security. There is no “opt out” provision for meeting the demands of Phase II.

The public thinks they have it

Wireless consumers have unrealistically high expectations about the benefits of their cell phones in times of emergency. “They expected their wireless 911 call to be located *before* Phase II was invented. Now, with Phase II deployed in some cities, they expect it even *more*,” stated Allen. “Hopefully the rate of installation can keep up with the public's expectations, and we can all get back to worrying about other issues.”

With the prohibitive costs to carriers and PSAPs alike, Allen’s hopes look thin.

The naivety over a cell phone’s emergency call capabilities extends well beyond the consumptive masses. In March of this year, California Assemblywoman Patricia Bates called for an audit of the state’s wireless 911 system; it was, she claimed, the first step of an investigation into complaints of answering delays being suffered by cellular phone subscribers. Bates said the system is “clearly overwhelmed,” as evidenced by the fact that wireless callers often had to wait several minutes before reaching a 911 operator. Wireless 911 calls currently are routed through a California Highway Patrol call center, which, according to Bates, handled more than eight-million calls last year. “The audit would identify the areas where on-hold times are longest and ‘shed light’ on the obstacles that have slowed the state’s wireless enhanced 911 services upgrade,” she reportedly stated.⁷

The cause is really not so sublime that it merits an audit. The cause, *drum roll please*, is money. A month after Bates’ call for action, the National Governors’ Association (NGA) released a report that concluded E911 systems installations and services aren't well-documented and need better organization and funding. The NGA paper encourages state governors to implement initiatives that will help them to get a better handle on how E911 programs are being installed and funded in their states and to identify opportunities to fund those installations. The fact of the matter is that, currently, E911 funding amounts to a quilt-like pattern of varying sources and mechanisms that provide little if any guarantee to the PSAPs, carriers, and wireless consumers who are counting on nationwide capability.

For instance, last July the Department of Agriculture announced a multi-million dollar loan program for three states in order to facilitate the improvement of

telecommunication services in their rural areas. North Dakota, South Dakota, and Texas could access a combined \$60 million—payable back at four percent interest.

“The Bush Administration is committed to investing in rural America,” said Agriculture Secretary Ann M. Veneman. “These loans will help support the rural infrastructure by providing reliable and affordable telephone and telecommunications services.”

“[They] will be used to deploy new fiber and copper cable, and make needed improvements to transmission systems in the three states,” said USDA Under Secretary for Rural Development Thomas C. Dorr.⁸

Just two months earlier, the same department granted \$20 million for telecommunications improvements, *to be spread out over 40 communities throughout 17 states*. This averages out to a half-million dollars per community, a mere drop in the bucket.

This piecemeal approach doesn’t allow for PSAPs and carriers to make long term infrastructure plans with any degree of certainty, nor does it give them the confidence to sign long term supply agreements with equipment manufacturers. Stakeholders need a more assured source of funding.

How desperate is the situation? Georgia was awarded \$1.6 billion from the \$206 billion multi-state Tobacco Industry settlement of 2000. Since August of 2002, the state has allocated several million dollars of that Tobacco money to its poorest counties for the installation of wireline and wireless E911 centers and networks.

Most states are not so creative. The primary approach to funding E911 deployments has been with the wireless 911 surcharge, according to Steve Marzolf, president of the National Association of State 911 Administrators (NASNA). Unfortunately, numerous instances of states raiding their E911 funds for other purposes have made this as precarious an alternative as the other avenues for funding.

McCain noted this in his committee report, citing New York’s cash raid as a perfect example of why Senators Burns’ and Clinton’s proposed Senate Bill 1250 should become law.

“In New York, for example, nearly \$200 million collected as E911 surcharges have been diverted for other public safety purposes, while the State’s PSAPs have

remained underfunded and unready to request E911 service from carriers. Although State administrators supporting these diversions argue that their decisions are justified given more pressing State funding needs, investigators also have found some egregious examples of such funds being used to cover expenses for dry cleaning and lawn moving services for State police.”⁹

A funding solution

Upon introduction of the bill, Clinton stated, “This legislation will make sure funding for E911 improvements are used for that purpose. I am committed to getting funding to programs that need it so we can ensure that everyone gets the response they need during an emergency.”

Named “The Enhanced 911 Emergency Act of 2003,” this bill is remarkable not only because it is a bipartisan solution drafted in a climate defined by harsh political divisions, but also because it came out of committee completely untouched. Not a single amendment was added. Essentially, S.1250 provides for the following:

- Authorizes \$500 million per year for grants to enhance emergency communications services through planning, infrastructure improvements, equipment purchases, and personnel training and acquisition. Fifty percent matching grants would be available to state, local, and tribal governments.
- Administered by the National Telecommunications and Information Administration (NTIA), the grant program would require consultation with the US Department of Homeland Security. Preference in grants would go to applications that coordinated with PSAPs and integrated public and commercial services.
- The FCC is required to review, twice a year, fees for enhancing 911 services. States would be required to certify that no E911 fees are being used for other purposes.
- Creation of the NTIA Task Force - Requires the Administrator of NTIA to establish an Emergency Communications Task Force to facilitate coordination between federal, state, and local communications systems.

- The FCC is required to notify Congress of states that divert E911 funds and the NTIA is required to withhold grant funds to states that are found by the FCC to divert E911 funds.

"We applaud the leadership of Senators Burns and Clinton in helping to ensure that this vital issue remains squarely in front of our nation's lawmakers," stated John Melcher, President of National Emergency Number Association. "Establishing a secure, reliable and adequate funding mechanism for E911 is an essential step for protecting our families, communities, and homeland security."

If signed into law, Senate Bill 1250 would advance the sort of public-private partnership the telecommunications industry—the carriers, equipment manufacturers, hardware and software engineer companies, and other E911 stakeholders—urgently needs. It presents a win-win for everyone involved. With the Senate recess just two months away, stakeholders need to communicate their support for the bill as soon as possible. "We're hoping to see action on it before the August recess," said Christine Kristin Smith, a staffer with Sen. Burns' D.C. office. This is so important. These are lives we're dealing with."¹⁰

Clinton summed up the legislation best: "When an emergency occurs, Americans put all of their trust and faith in three numbers: 9-1-1. This is one of the primary reasons many Americans cite for purchasing a cell phone, but too many of our response centers lack the equipment, technology, and resources to respond to an emergency call made from a cell phone."

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¹: From the report by Dale N. Hatfield, October 15, 2002, commissioned by the FCC (WT Docket No. 02-46) ("Hatfield Report). "As explained by the Commission in the Public Notice establishing this inquiry, under those rules, PSAPs that are able to utilize E911 information must request wireless carriers to implement Phase I and Phase II E911 in order for those carriers' E911 obligations to be triggered. Under Phase I, which PSAPs could request beginning April 1, 1998, wireless carriers must provide PSAPs with a callback number and the location of the cell site/sector receiving a 911

call. Under Phase II, the wireless carriers were required to provide to PSAPs the location of all 911 calls by longitude and latitude beginning October 1, 2001. At the time the Commission adopted its original rules, it was anticipated that the wireless carriers would use network-based location technologies for meeting the Phase II ALI requirement. It established a location accuracy requirement of 100 meters for 67 percent of the calls and 300 meters for 95 percent of the calls. Subsequently, technological advances allowed for the development of handset-based solutions. On October 6, 1999, the Commission revised its rules to accommodate these developments but, in doing so, imposed a more stringent accuracy requirement for handset-based solutions; namely, 50 meters for 67 percent of calls and 150 meters for 95 percent of calls.¹² It also established separate deployment schedules for network-based and handset-based solutions. Generally speaking, once a wireless carrier has received a request for Phase II service, it has six months to install the necessary equipment and begin delivering the service to the requesting PSAP. In the case of network-based solutions, the wireless carrier must provide Phase II service for at least 50 percent of the PSAP's coverage area or population with the six month period and for 100 percent of the PSAP's coverage area or population within 18 months."

². Senate Committee on Commerce, Science, and Transportation's Report on S.1250, August 26, 2003; 108th Congress.

³ "Comments of T-Mobile USA, Inc." CC Docket No. 02-46; November 15, 2002; p. 5.

⁴. "Hatfield Report," at 15.

⁵ Id.

⁶. "Comments of the Rural Telecommunications Group," before the Federal Communications Commission (WT Docket No. 02-46); page 4.

⁷. http://iwce-mrt.com/ar/radio_california_lawmaker_wants/

⁸ USDA Rural Development's mission is to deliver programs in a way that will support increasing economic opportunity and improve the quality of life of rural residents. As a venture capital entity, Rural Development provides equity and technical assistance to finance and foster growth in homeownership, business development, and critical community and technology infrastructure. Further information on rural programs is available at a local USDA Rural Development office or by visiting USDA's web site at www.rurdev.usda.gov.

⁹. Senate Committee on Commerce, Science, and Transportation's Report on S.1250, August 26, 2003; 108th Congress.

¹⁰. It should be noted that, even if the Senate Bill stagnates, the House of Representatives has a similar pending, titled "E-911 Implementation Act of 2003, To improve homeland security, public safety, and citizen activated emergency response capabilities through the use of enhanced 911 wireless services, and for other purposes." Sponsored by House Representative John Shimkus of Illinois, it also has been widely received, with no less than 42 cosponsors. The key difference between the two competing pieces of legislation is the dollar amount; S.1250 allows for up to \$500 million per year for grants to enhance emergency communications while H. R. 2898. allows up to only \$100 million annually.