

## An Island of Chaos Surrounded by a Sea of Confusion: *The E911 Wireless Device Location Initiative*

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### ABSTRACT

In most circumstances, dialing 911 from a wireless phone does not give the caller's exact location. While this may not pose an insurmountable problem when one is able to communicate additional location information such as a street location, a problem becomes evident when one is lost in a snow storm on a road, fleeing an assailant where location is constantly changing rather than fixed, or offshore in a watercraft where the lack of physically identifying factors prevent location identification. Addressing the ability of emergency first-responders to pinpoint a wireless caller's location is a system known as the Enhanced 911 (E911) Wireless Device Location Initiative. E911 is an ambitious and arguably much-needed national safety net for locating wireless callers via satellite global positioning or cellular tower triangulation technologies on a local, state, and national level. Quite simply, the ability to locate an individual's wireless call for help is a challenging but necessary capability, especially when operating within an antiquated analog infrastructure that is over-taxed by an ever-increasing digital world. This article explores the federal and state issues which plague full implementation of wireless E911 and suggestions by key stakeholders on how best to confront deployment roadblocks. In addition, this article seeks to inform and persuade the public and private sectors of the necessity of such a system, in addition to the benefits such a network would provide to aid in combating some of today's asymmetric terrorist threats that are at the forefront of our nation's national security.

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## I. INTRODUCTION

Phone Number: 911  
Call Destination: Emergency  
Minutes Used: 1.0<sup>1</sup>

¶1 “We’re taking in water. . . . We’re on the Long Island Sound in a boat off the coast of City I. . . .Oh, my God, we’re going to die!”<sup>2</sup> This haunting 911 call came from the cellular phone of a seventeen-year-old boy who, along with three friends, perished in the freezing waters off Long Island Sound after their boat capsized.<sup>3</sup> Their pleas for help would go without response because the dispatcher could not determine the caller’s location. Simply put, the city’s 911 system was not capable of relaying the longitude and latitude<sup>4</sup> of wireless calls so as to be able to dispatch help to the exact location offshore.

¶2 Search and rescue personnel emphasize that being able to save a victim is, by nature, a function of time. Any location-aiding device, which can narrow the search area greatly, increases the likelihood of reaching a victim in time.<sup>5</sup> The tragic death of the young boys off Long Island Sound is but one of many instances that have prompted Congress, the public, and a multitude of industry stakeholders to push for a system capable of providing wireless caller location data to emergency response centers.

¶3 The purpose of this Article is two-fold. First, it provides a platform for public awareness regarding the state of our nation’s wireless 911 service capability. Second,

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1. These were the particulars from a young boy’s cell phone bill as read by his mother three weeks after he drowned off the coast of Long Island, NY. *See Teens’ 911 Call Failed Them but May Get Help to Others*, N. Y. DAILY NEWS, Mar. 9, 2003, at 10, available at <http://www.nydailynews.com/news/vpfriendly/story/65670p-61140c.html> (last visited Jan. 3, 2005).

2. *Id.*

3. *Id.*

4. *See* David P. Stern, *Latitude and Longitude*, at <http://www-istp.gsfc.nasa.gov/stargaze/Slatlong.htm> (last visited Jan. 3, 2005).

5. *See, e.g.*, Ben Charny, *Could E911 Have Helped in Disaster?*, CNET NEWS.COM, Sept. 12, 2001, at [http://news.com.com/Could+E911+have+helped+in+disaster/2100-1033\\_3-272923.html](http://news.com.com/Could+E911+have+helped+in+disaster/2100-1033_3-272923.html) (last visited Jan. 3, 2005).

this article will show that there is an immediate need for federal regulation in the wireless 911 service sector. Further, it is the position of this article that there should be one federal agency with a supervisory umbrella over nationwide deployment.

¶4 Part II will provide a synopsis of 911 service in the United States from its inception to the current state of implementation in various forms. Part III will present a schematic overview of wireless phone routing as it pertains to emergency calls from a consumer awareness standpoint. Part IV will discuss the current tribulations plaguing the realization of emergency wireless call location systems. Similarly, there will be a focus on the relation between federal and state agencies, consumer advocacy groups, and other key industry stakeholders. Part V discusses various suggestions to accelerate nationwide Enhanced 911 (E911) wireless service deployment more seamlessly and ubiquitously. Part VI concludes with a summation of findings and a closing perspective on E911 deployment.

## II. The Evolution of 911 in the United States

¶5 It has been suggested that Alexander Graham Bell made the first telephonic call for help.<sup>6</sup> After Bell dropped some battery acid on his clothes, he famously uttered, “Mr. Watson, come here, I want you!” His assistant heard the words over the phone set-up and rushed to his aid.<sup>7</sup>

¶6 The first real push for a nationwide emergency response phone number came in 1957, at the request of the National Association of Fire Chiefs, as a means to provide one number to report fires.<sup>8</sup> Then in 1967, the President’s Commission on Law Enforcement and Administration of Justice recommended the implementation of a single number for reporting emergencies.<sup>9</sup> This recommendation, coupled with broad interest in such an emergency number system, spurred the President’s Commission on Civil Disorders to look to the Federal Communications Commission (FCC) for an answer.<sup>10</sup>

¶7 In conjunction with the FCC, American Telephone and Telegraph Company (AT&T) came up with a combination of numbers designated as “911” to serve as a nationwide emergency code.<sup>11</sup> The 911 digit combination was decided upon for two reasons. First, it is easy to remember and quick to dial, and second, it has never been issued as an area code or any other type of service code.<sup>12</sup> It was only one year later, in 1968, that the first 911 call was made in the United States by Senator Rankin Fite in

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6. See generally *History of 911*, DISPATCH MONTHLY, available at [http://www.911dispatch.com/911\\_file/history/911history.html](http://www.911dispatch.com/911_file/history/911history.html) (last visited Jan. 3, 2005) [hereinafter *History of 911*].

7. *Id.*

8. National Emergency Number Association, *The Development of 9-1-1*, available at [http://www.nena.org/PR\\_Pubs/Devel\\_of\\_911.htm](http://www.nena.org/PR_Pubs/Devel_of_911.htm) (last visited Jan. 3, 2005).

9. *Id.*

10. *Id.*

11. *Id.*

12. *Id.*

Haleyville, Alabama.<sup>13</sup>

¶ 8 Conceptually, 911 services can be broken into four main categories, each based upon the type of data transmitted as well as the infrastructure supporting each version. The four categories of 911 service are: Basic 911, E911, Wireless Phase I, and Wireless Phase II, the last two of which refer to cellular and other wireless device 911 service.<sup>14</sup> Both Phase I and Phase II are made possible by utilizing mathematical formulae, which integrate triangulation. Any location on earth can be expressed by two angles known as longitude and latitude, which are measured in degrees, minutes, and seconds. While latitude lines run equal distance north and south of the equator, longitude lines (meridians) extend from pole to pole.<sup>15</sup>

¶ 9 Basic 911, as the name implies, is the most basic and earliest form of 911. When dialed, the call is routed to 911 call centers, otherwise known as public safety answering points (PSAPs).<sup>16</sup> With this embryonic form, the burden falls upon the caller to relay the phone number and location to the dispatcher at the PSAP.<sup>17</sup>

¶ 10 An estimated 200 million 911 calls are made per year and approximately 5% of the more than 6,000 PSAPs have either Basic 911 or none at all.<sup>18</sup> In contrast, 95% of the nationwide PSAPs have E911.<sup>19</sup> E911, though used interchangeably with wireless 911 in some writings, deals only with wireline systems, e.g., your typical household phones.<sup>20</sup>

¶ 11 E911 overcame two hurdles that limit Basic 911. First, the advent of Automatic Number Identification (ANI) capability, which transmits the caller's phone number to the PSAP automatically, enables E911 to reduce crucial time spent by the dispatcher trying to extract that information from the caller.<sup>21</sup> The second advantage of E911 over Basic 911

13. *Id.*

14. GENERAL ACCOUNTING OFFICE, UNEVEN IMPLEMENTATION OF WIRELESS ENHANCED 911 RAISES PROSPECT OF PIECEMEAL AVAILABILITY FOR YEARS TO COME 6-8 (2003), *available at* <http://www.gao.gov/new.items/d0455.pdf> (last visited Jan. 3, 2005) [hereinafter GAO REPORT].

15. For those interested in Latin derivations, meridian is derived in part by "meri" meaning middle and "diem" meaning day, which once meant noon. Thus, ante-median and post-median are referred to now as what we think of as a.m. and p.m. *See Stern, supra* note 4.

16. PSAPs can be quite large and sophisticated with various levels of compartmentalization while others are small both in personnel and the level of technological capabilities. Typically the larger facilities are located in large urban areas. *See* GAO REPORT, *supra* note 14, at 6 n.10.

17. E9-1-1 Institute, *Facts and Figures*, *available at* <http://www.e911institute.org/theIssues/index.html> (last visited Jan. 3, 2005). The E9-1-1 Institute, a not-for-profit organization, supports the Congressional E911 Caucus, which serves as an educational source to communities, lawyers, and constituents about the wireless 911 systems. *See* E9-1-1 Institute, *at* <http://www.e911institute.org/index.html> (last visited Jan. 3, 2004).

18. E9-1-1 Institute, *Facts and Figures*, *available at* <http://www.e911institute.org/theIssues/index.html> (last visited Jan. 3, 2005).

19. *Id.*

20. *Id.*

21. *See generally* Dale N. Hatfield, *A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services* 3-4, *available at* [http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6513296239](http://gulfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513296239) (last visited

is the integration of databases allowing for the transmission of a caller's street address. The database containing such information is the Automatic Location Identification (ALI) database, which was already part of the infrastructure since telephone companies needed to know whom to charge for what calls. It simply became a matter of relaying such information to local 911 call centers either over the "conversation" network or a separate signaling network.<sup>22</sup>

¶ 12 The Cellular Telecommunications and Internet Association (CTIA) estimates that nearly 46,000 Americans become wireless subscribers everyday.<sup>23</sup> Additionally, it is estimated that over the next five years the number of 911 calls made by wireless phones will approach 100 million, which would be the majority of all 911 calls.<sup>24</sup> Interest in regulating the wireless industry as it relates to 911 services goes as far back as 1993, when the FCC was involved in proposing rules for broadband Personal Communications Service (PCS).<sup>25</sup>

¶ 13 In 1994, the National Emergency Number Association (NENA),<sup>26</sup> the Association of Public-Safety Communications Officials (APCO),<sup>27</sup> the National Association of State Nine-One-One Administrators (NASNA), and the Personal Communications Industry Association (PCIA) filed a report ex parte in the PCS proceeding regarding wireless 911 implementation.<sup>28</sup> Various stakeholders in the industry, from public safety organizations to the wireless telecommunications lobby, convened later that same year for a Joint Experts Meeting (JEM), which culminated in the release of the JEM report to the FCC.<sup>29</sup> Then in 1996, the CTIA, along with other national public safety organizations, filed a Consensus Agreement with the FCC for the implementation of the same level of 911 access for wireless phones as is available for wireline users.<sup>30</sup>

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Jan. 3, 2005) (report prepared for the FCC by the former chief of the FCC's Office of Engineering and Technology).

22. *Id.* at 4-5. See also E9-1-1 Institute, *supra* note 18.

23. National Emergency Number Association, *Wireless 9-1-1 Overview*, available at <http://www.nena.org/wireless911/overview.htm> (last visited Jan. 3, 2005). See generally Cellular Telecommunications and Internet Association, at <http://www.wow-com.com> (last visited Jan. 3, 2005). The CTIA is an international organization which represents service providers, manufacturers, and others relating to wireless communication in cellular, personal communication services, enhanced specialized mobile radio, and mobile satellite services. See <http://www.wow-com.com/membership/index.cfm> (last visited Jan. 3, 2004).

24. National Emergency Number Association, *Wireless 9-1-1 Overview*, available at <http://www.nena.org/wireless911/overview.htm>.

25. Hatfield, *supra* note 21, at 6.

26. The National Emergency Number Association (NENA), a not-for-profit corporation, promotes research, planning, education, and implementation of the universal telephone number system. NENA's primary objectives are the protection of human life, property, and the maintenance of community welfare. See [http://www.nena.org/About\\_Contact/index.htm](http://www.nena.org/About_Contact/index.htm) (last visited Jan. 3, 2004).

27. APCO International is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications and whose purpose is to serve the people who manage, operate, maintain, and supply the communications systems used to safeguard the lives and property of citizens everywhere. See <http://www.apcointl.org/about/> (last visited Jan. 3, 2005).

28. See Hatfield, *supra* note 21, at 6.

29. *Id.*

30. *Id.*

¶ 14 Congress passed the Wireless Communications and Public Safety Act of 1999 (911 Act), which called upon the FCC to work with state and local officials, the telecommunications industry, and consumer groups.<sup>31</sup> Part of the 911 Act's purpose is to encourage the deployment of a reliable infrastructure for wireless communications that can meet the nation's public safety needs.<sup>32</sup> Concurrently, the Alliance for Telecommunications Industry Solutions (ATIS)-sponsored Committee T1P1 and the Telecommunications Industry Association's (TIA) subcommittee TR-45.2 worked on technological hurdles for implementing wireless 911 service.<sup>33</sup>

¶ 15 In 1996, when the FCC adopted its wireless 911 rules for routing wireless phone location and number data to PSAPs, it was thought that wireless providers would be relying on a network-based solution to triangulate caller location. Yet it became evident that another method, namely Global Positioning System (GPS) chips integrated into the phones, could provide more accurate location information. This led the FCC to roll back its original deadline dates for wireless carriers to implement caller location information.<sup>34</sup>

¶ 16 The FCC promulgated a two-phase approach to wireless 911 calls.<sup>35</sup> Phase I is structured so that when a PSAP, or 911-call center, submits a valid request to a wireless carrier, there is a six month window in which the wireless carrier must start submitting to that PSAP the telephone number of wireless callers and the cell site or base station transmitting the call.<sup>36</sup> Phase II requires the same 6-month response time by a wireless carrier once a PSAP makes a request.<sup>37</sup> Phase II provides the same data as Phase I and, more importantly, provides the longitude and latitude of the wireless caller.<sup>38</sup> The FCC's latest rollout for deployment of Phase II began October 1, 2001 and is scheduled to be completed by December 31, 2005; however, the FCC has granted waivers to the timetable for wireless providers subject to quarterly reporting requirements.<sup>39</sup> It would not be prudent to infer that the FCC has not been taking a proactive role in monitoring

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31. GAO REPORT, *supra* note 14, at 3 n.4.

32. See generally Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286 (1999) (amending the Communications Act of 1934, 47 U.S.C. §§ 222, 251 (2004)). Section 6(4) of the Wireless Communications and Public Safety Act defines wireless suppliers as "provider[s] of commercial mobile services or any other radio communications service that the Federal Communications Commission requires to provide wireless 911 service." See also Federal Communications Commission, *FCC Takes Steps to Implement the Wireless Communications and Public Safety Act of 1999* (2000), available at [http://www.fcc.gov/Bureaus/Wireless/News\\_Releases/2000/nrw10029.html](http://www.fcc.gov/Bureaus/Wireless/News_Releases/2000/nrw10029.html) (last visited Jan. 4, 2005) (unofficial announcement of FCC action to implement Wireless Communications and Public Safety Act of 1999).

33. See Hatfield, *supra* note 21, at 6-7.

34. *Id.* at 7.

35. GAO REPORT, *supra* note 14, at 11-12.

36. See *id.* at 7. "Cell" is a term of art used by wireless providers that refers to subdivided geographic areas, each of which has a base station and several antennae for transmitting and receiving radio signals. *Id.* at 2 n.2.

37. Association of Public-Safety Communications Officials International, *Consumer Information*, available at <http://www.apcointl.org/consumer/index.html> (last visited Jan. 3, 2005).

38. *Id.* See also E9-1-1 Institute, *supra* note 18.

39. See Federal Communications Commission, *911 Services*, available at <http://www.fcc.gov/911/enhanced> (last visited Jan. 3, 2005) [hereinafter *FCC 911 Services*].

deployment by the granting of waivers. In April of 2003, for example, T-Mobile was fined by the FCC for not meeting the Phase I deadline when it failed to comply with the requirement of a six month window to respond to a PSAP request.<sup>40</sup>

¶ 17 From a technological standpoint, Phase II can be further divided into two subcategories depending on the type of location relay source each wireless service provider chooses to utilize. As previously discussed in Part II, the initial method conceived—and which is currently being implemented—is a network-based solution.<sup>41</sup> Under this approach, the wireless caller's location is determined via triangulation<sup>42</sup> by the nearest cell towers to the caller. The network-based technologies are TDOA (time difference on arrival), E-OTD (enhanced observed time difference), and AOA (angle of arrival).<sup>43</sup>

¶ 18 The second version, and the more accurate location initiative of the two, uses handset-based options: GPS (global positioning systems) and AGPS (assisted global positioning systems).<sup>44</sup> This version requires a wireless device, which can be anything from a personal digital assistant (PDA) to a cell phone or laptop computer, to have a GPS chip embedded in it. Either continuously<sup>45</sup> or when making a 911 call, the GPS chip will receive data from a network of twenty-four satellites to determine the phone's latitude and longitude.<sup>46</sup>

¶ 19 AGPS can be conceptualized as a turbo-charged GPS receiver. AGPS involves an outside system, such as a reference network, which helps a GPS receiver determine its location.<sup>47</sup> By utilizing an outside source to assist the GPS receiver, the speed and accuracy of the computing power is increased far beyond that found in a stand-alone mode.<sup>48</sup>

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40. *Wireless 911*, DISPATCH MONTHLY, available at [http://www.911dispatch.com/911\\_file/wireless911.html](http://www.911dispatch.com/911_file/wireless911.html) (last visited Jan. 3, 2005) [hereinafter *Wireless 911*].

41. *Id.*

42. See GAO REPORT, *supra* note 14, at 8 n.11 (triangulation is made possible by the interface of several base stations providing vector analysis by crisscrossing signals to locate the source of the call).

43. *Wireless 911*, *supra* note 40.

44. *Id.* The ability to track wireless phones on a continual basis (i.e., not just when calling 911), simply by having a wireless device turned on, has many privacy advocates concerned. For interesting comments on general privacy issues, see American Civil Liberties Union, *Surveillance & Wiretapping*, available at <http://www.aclu.org/Privacy/Privacylist.cfm?c=130> (last visited Jan. 3, 2005).

45. See *Global Positioning System Location Determination*, DISPATCH MONTHLY, available at [http://www.911dispatch.com/911\\_file/gps.html](http://www.911dispatch.com/911_file/gps.html) (last visited Jan. 3, 2005).

46. See Peter H. Dana, *Global Positioning System Overview*, available at [http://www.colorado.edu/geography/gcraft/notes/gps/gps\\_f.html](http://www.colorado.edu/geography/gcraft/notes/gps/gps_f.html) (last visited Jan. 3, 2005).

47. See, e.g., Jimmy LaMance, Javier DeSalas, & Jani Jarvinen, *Assisted GPS: A Low-Infrastructure Approach*, GPS WORLD, Mar. 1, 2002, available at <http://www.gpsworld.com/gpsworld/article/articleDetail.jsp?id=12287> (last visited Jan. 3, 2005).

48. *Id.*

### III. REGULATORY IMPACT ON CONSUMERS: DIALING 911 FROM WIRELESS DEVICES

¶20 Presently, the FCC has approved two primary methods for locating a wireless call. The first, a handset-based approach, is the more accurate of the two and relies on a global positioning chip embedded in the wireless phone to relay its location. From a consumer standpoint, wireless users need to find out whether their phone model has incorporated such technology.<sup>49</sup> Wireless carriers that have committed to this approach include Sprint PCS,<sup>50</sup> ALLTEL, Nextel, and Verizon Wireless. Furthermore, under FCC mandate, wireless carriers utilizing the GPS hand-held approach must be able to locate 911 calls 67% of the time within 50 meters and 95% of 911 calls within 150 meters.<sup>51</sup>

¶21 The second method for locating wireless calls relies on a network-based approach, which uses various cellular towers to triangulate a caller's location. Since there is no GPS link and thus location is more roughly approximated, the FCC's parameters for location data are wider under this approach. For instance, the variance can be as great as 100 meters for 67% of the calls and as high as 300 meters for 95% of the calls. Wireless carriers which have chosen this method of 911 caller location include Cingular, AT&T Wireless, and T-Mobile.<sup>52</sup>

¶22 It is crucial that cellular phone users understand what kind of information their wireless phone will transmit when dialing 911. In a few areas, 911 centers automatically receive the phone number of the caller and the general location of the call but in many locations this is not the case.<sup>53</sup> The system that is currently being implemented nationwide to tackle such wireless technological and operational hurdles falls under the rubric Wireless Enhanced 911, also known by its abbreviation as E911.<sup>54</sup>

¶23 Consumers need to recognize that their wireless provider will only answer part of the question relating to how emergency calls are routed via cellular phones. Each state's 911 call centers must be upgraded to allow for receipt of caller location data, a responsibility that falls largely on each state and local government to devote resources and implement working networks to facilitate E911's availability.<sup>55</sup> In other words, just because a wireless provider relays the data necessary to give a caller's location does not

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49. See generally Federal Communications Commission, *What You Need to Know About Calling 911 from your Wireless Phone*, available at <http://ftp.fcc.gov/cgb/consumerfacts/e911.html> (last visited Jan. 3, 2005) [hereinafter *FCC Consumer Facts*].

50. Personal Communication Service (PCS) is a wireless digital network which operates in the 1900 MHz frequency band; Sprint's PCS utilizes Code Division Multiple Access (CDMA) technology whereby each digital signal is split into chips of data, each of which is tagged with a particular code. During transmission, the chips are diffused out and then reassembled at the termination point, which allows for many signals to be co-located in the same frequency band. See Spread Spectrum Scene, *Spread Spectrum Online Glossary*, at <http://www.sss-mag.com/glossary/page2.html#C> (last visited Jan. 3, 2005).

51. See *FCC Consumer Facts*, *supra* note 49.

52. *Id.*

53. *Id.*

54. See *FCC 911 Services*, *supra* note 39.

55. See generally *FCC Consumer Facts*, *supra* note 49.



mean the 911 call center will be able to use this information if it does not have the hardware and software to read such location data.<sup>56</sup>

¶24 The advantages to the consumer in having an infrastructure that can locate a wireless caller in a personal emergency help not just the caller. For instance, a caller that can dial 911 when observing a forest fire will no doubt aid firefighters if they can immediately and accurately determine the longitude and latitude to send first responders.<sup>57</sup> Likewise, in a post-September 11th world the ability to pinpoint the location of a wireless caller's report of suspicious activity is imperative.<sup>58</sup> Thus, a caller-reported fire can be more quickly extinguished; similarly, rapid response to a terrorist threat can also save lives if such information can be transmitted instantaneously.<sup>59</sup>

¶25 It is only after realizing what information a wireless phone will pass on when dialing 911 that a consumer can best utilize its capabilities. If a wireless caller falls into a field where the only information passed on to a 911 center is the number of the cellular phone, the caller needs to be able to give some form of location information, such as an address or general location. Unfortunately, this is often impossible when a caller is stranded on a road or incoherent after a car accident. This is precisely one of the reasons why a targeted location initiative for wireless calls is being implemented.<sup>60</sup>

#### IV. IMPLEMENTATION ISSUES: FULL STEAM AHEAD OR "FLOUNDERING IN A SEA OF BUREAUCRACY"?<sup>61</sup>

¶26 The technological hurdles are only half the battle over the implementation of such a far-reaching system like the wireless E911 initiative. What remains is the absence of a single governing agency with supervisory jurisdiction over the entire process. As the Government Accountability Office (GAO) stated in a recent report to the Senator Conrad Burns, Chairman of the Subcommittee on Communications in the Committee on Commerce, Science, and Transportation, the unfortunate prospect of mere piecemeal availability for wireless E911 is likely unless changes are put forth.<sup>62</sup>

¶27 To shed some light on the complexity of the issue, note the litany of stakeholders involved in the regulatory process: the U.S. Department of Transportation, uninitialized phone marketers,<sup>63</sup> Intelligent Transport System groups, public safety associations, local county and state communication centers, local politicians, wireline carriers, public safety

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56. *Id.*

57. Hatfield, *supra* note 21, at 15.

58. *Id.*

59. *Id.*

60. *See generally FCC 911 Services, supra* note 39.

61. *See, e.g.,* Paul Perillie, *Cell-Phone 911 Improvements Tied up in Politics*, LONG ISLAND PRESS, Feb. 6, 2003, available at [http://www.longislandpress.com/v01/i04030206/coverstory\\_01.asp](http://www.longislandpress.com/v01/i04030206/coverstory_01.asp) (last visited Jan. 3, 2005) (phrase located within an article on wireless 911).

62. GAO REPORT, *supra* note 14, at 1-4.

63. These are companies that sell 911-only phones to consumers. *See The Web of Wireless 911 & Location Technology*, DISPATCH MONTHLY, available at [http://www.911dispatch.com/911\\_file/wireless\\_911web.html](http://www.911dispatch.com/911_file/wireless_911web.html) (last visited Jan. 3, 2005).

equipment manufacturers, wireless handset manufacturers, wireless carriers, location technology companies, telematics companies, privacy advocates,<sup>64</sup> Congress, the FCC, and the FBI.<sup>65</sup>

¶28 From a technical and operational standpoint, an over-arching concern is the condition of the current E911 wireline infrastructure. Not only is the system antiquated, as it was built in the 1970s, but it is also based upon analog technology.<sup>66</sup> While sufficient for wireline<sup>67</sup> users, it is a poor platform for the ever-expanding digital universe.<sup>68</sup> Building on an analog base limits the capability of the system in terms of “speed, scalability, and adaptability.”<sup>69</sup> In addition, the infrastructure has limited capability to handle the latest technologies, which can transfer 911 data devices such as PDAs, systems like telematics,<sup>70</sup> and networks such as Voice-over-the-Internet Protocol (VoIP).<sup>71</sup>

¶29 As noted *supra* in Part III, the FCC has set deadlines for the rollout of Phase I and

64. Privacy advocates are not only concerned about GPS data relay of caller location in non-emergency situations, but also many of the latest wireless devices are capable of being tracked without GPS-type chips; moreover, the government has yet to clarify the muddy waters of the release and sale of Customer Proprietary Network Information (CPNI). There are conflicting interpretations of what exactly is private and what is not and interpretations vary among wireless carriers. For instance, some find only actual calls are protected but not Web surfing or Bluetooth actions. One wireless carrier has even interpreted non-disclosure so narrowly as to allow the release of the cell tower receiving the call. For an elaboration on this and related issues see Declan McCullagh, *Cellphones Betray Your Every Move*, CNET NEWS.COM, at <http://comment.zdnet.co.uk/declanmccullagh/0,39020670,39115796,00.htm> (last visited Jan. 3, 2005).

65. See *The Web of Wireless 911 & Location Technology*, DISPATCH MONTHLY, available at [http://www.911dispatch.com/911\\_file/wireless\\_911web.html](http://www.911dispatch.com/911_file/wireless_911web.html) (last visited Jan. 3, 2005). Interestingly, it has been noted that the Occupational Safety and Health Administration (OSHA) is looking at E911 implementation from a workplace-safety perspective and may consider that a failure to comply with deployment of services is a violation of the Occupational Safety and Health Act of 1970, as codified in 29 U.S.C. § 654(a)(1) (2004). See RedSky Technologies, *Corporate Liability and 911: Is Your Company Prepared?*, at [http://www.redskytech.com/site\\_articles/current\\_news/E-911%20Liability.pdf](http://www.redskytech.com/site_articles/current_news/E-911%20Liability.pdf) (last visited Jan. 3, 2005).

66. Hatfield, *supra* note 21, at ii.

67. The reason the wireline infrastructure, which pertains to traditional hard-lined phones, is relevant is because wireless 911 calls are routed along the networks of both a wireless and wireline provider before terminating at a PSAP. See *id.*

68. *Id.*

69. *Id.*

70. “Telematics can generally be defined as the use of location technology and wireless communications to enhance the functionality of motor vehicles, and to provide wireless data applications in vehicles. Telematics services provide a number of automotive and mobile applications, including safety and productivity services. Among the applications are automatic crash notification systems that have the capability to automatically call the appropriate emergency dispatch for help.” See Federal Communications Commission, *Year 2000 Biennial Regulatory Review – Amendment of Part 22 of the Commission’s Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiophone Service and other Commercial Mobile Radio Services* 11 n.56 (Sept. 24, 2002), WT Docket 01-108, FCC 02-229, available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-02-229A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-229A1.pdf) (last visited Jan. 3, 2005).

71. Hatfield, *supra* note 21, at ii.

Phase II for wireless carriers<sup>72</sup> but it has limited authority to oversee the implementation of wireless E911 deployment at the more than 6,000 PSAPs, which form an integral link in the overall scheme. This is because PSAPs fall under state and local jurisdiction.<sup>73</sup> As a result, there is no national deadline for PSAPs; furthermore, state and local readiness varies greatly from state to state.<sup>74</sup>

¶30 The lack of PSAP readiness cannot be addressed by simply having them fall under federally-mandated guidelines. Coordination appears to be one of the primary factors affecting PSAP readiness. For example, in a GAO survey conducted in November 2003,<sup>75</sup> PSAP administrators explained the difficulty in finding out even who the wireless carriers were in their area to contact for Phase I and II requests.<sup>76</sup> In fact, one PSAP administrator claimed he had to drive around his county locating cell tower owners to determine which wireless carriers were leasing the tower space.<sup>77</sup>

¶31 The Department of Transportation (DOT), recognizing the relation between highway safety and wireless E911 capabilities,<sup>78</sup> has taken on its own wireless E911 initiative under its Intelligent Transport System (ITS) Public Safety Program. This initiative provides funding, technical assistance, and training to accelerate PSAP readiness for wireless carriers coming into compliance with Phase II under the FCC mandate.<sup>79</sup> The DOT also formed the Wireless E911 Steering Council, which outlined a six-point priority plan for wireless E911 implementation.<sup>80</sup>

¶32 In addition, the DOT is currently working on a joint project with NENA to provide a clearinghouse for a vast database of highly valuable information to such entities as wireless carriers, PSAPs, and wireless E911 service system providers.<sup>81</sup> Ideally,

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72. The FCC's authority to regulate wireless providers is derived from the National Environmental Policy Act of 1969 (NEPA) and the Telecommunications Act of 1996. See Food and Drug Administration, *Cell Phone Facts – Consumer Information on Wireless Phones*, available at <http://www.fda.gov/cellphones> (last visited Jan. 3, 2005). See also Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996). The purpose of the Act is “to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.” *Id.*

73. GAO REPORT, *supra* note 14, at 10.

74. *Id.* at 2, 10.

75. GAO REPORT, *supra* note 14, at 1. The GAO study was an intense survey of the current state of E911 implementation, factors affecting full deployment, and proper role of federal agencies in facilitating its coming to fruition. The DOT generally agreed with the survey results while the FCC supplied technical data, which is interposed in the report. *Id.* at 6.

76. GAO REPORT, *supra* note 14, at 20-21.

77. *Id.* at 21.

78. See Department of Transportation, *ITS Public Safety Program*, available at <http://www.itspublicsafety.net/wireless.htm> (last visited Jan. 3, 2005); GAO REPORT, *supra* note 14, at 2.

79. Department of Transportation, *supra* note 78.

80. Department of Transportation, Slide Show and Text on Wireless E9-1-1, available at [http://www.itspublicsafety.net/ITS\\_Module2\\_files/800x600/Slide6.html](http://www.itspublicsafety.net/ITS_Module2_files/800x600/Slide6.html) (last visited Jan. 3, 2004). See also GAO REPORT, *supra* note 14, at 27-28.

81. The NENA/DOT Clearinghouse includes such information as example contracts, agreements, and other documents, which aid industry stakeholders in the implementation process of wireless E911 nationally. Department of Transportation, *supra* note 79.

having a central forum for PSAPs to consult will help prod states and localities to implement the necessary equipment for wireless E911. PSAP participation is crucial to the process because although many wireless providers may be Phase II compliant by 2005, such compliance will not guarantee that any locality will have wireless E911 service.<sup>82</sup> As noted, PSAPs are under no federal mandate to request wireless E911 location information from wireless providers; therefore, the entire process of wireless E911 service will vary from state to state and, in some cases, county to county depending on each PSAP's decision to implement the service.<sup>83</sup>

## V. REGULATORY AND BUDGETARY REFORMS

¶ 33 For wireless E911 to fully meet the nation's needs, it is crucial that coordination, funding, and educational programs for both consumers and those directly involved with E911 be ramped up significantly. Progress has been made in several areas since the Hatfield Report's recommendation for a federal funding project, as evidenced by the recent passage of H.R. 2898 by the House of Representatives.<sup>84</sup>

¶ 34 While nationwide deployment of Phase I is roughly 65% of all PSAPs, Phase II accounts for only 18% of PSAPs.<sup>85</sup> The scattered implementation results from discrepancies among within each state, and GAO surveys of state 911 contacts indicate that less than 50% feel they will have wireless E911 service by 2005, collectively suggesting not only that full compliance is years away, but also that wireless callers will not know the service type available to them as they drive across the country.<sup>86</sup>

¶ 35 In response to implementation concerns from stakeholders in both the private and public sectors, NENA unveiled a strategic plan to accelerate the modernization of 911 services at a briefing for reporters at the National Press Club in Washington, D.C. on February 5, 2004.<sup>87</sup> The campaign was put into action under the auspices of NENA's Strategic Wireless Action Team (SWAT).

¶ 36 The Monitor Group, a global professional advisory firm working with SWAT, provided a detailed analysis projecting PSAP readiness, citizens' concerns, and other related matters to wireless E911 realization.<sup>88</sup> The study concluded that only 50% of the more than 6,000 PSAPs will be able to locate wireless callers by 2005; yet, the good news is that the analysis projects that by 2010 the percentage of PSAPs with Phase II

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82. See GAO REPORT, *supra* note 14, at 5, 12.

83. See *id.* at 2.

84. E911 Implementation Act of 2003, H.R. 2898, 108th Cong. (2003), available at <http://www.congress.org/congressorg/webreturn/?url=http://thomas.loc.gov/cgi-bin/query/z?c108:H.R.2898>: (last visited Jan. 3, 2005) [hereinafter E911 Implementation Act].

85. *Id.* at 12.

86. See *id.*

87. See Press Release, National Emergency Number Association, NENA Initiatives Provide Stronger Framework for Modernization of Nation's 9-1-1 Services, available at <http://www.nena.org/pr%5Fpubs/pressreleases/press%20release%20final%202002.03.04.doc> (last visited Jan. 3, 2004).

88. *Id.*

capability could be as high as 80%.<sup>89</sup>

¶ 37 The SWAT initiative also led to the release of a policy report, conducted by the Monitor Group and comprised of input from stakeholders such as telecom carriers, public safety groups, 911 technology providers, and government leaders.<sup>90</sup> One of the implementation concerns upon which all the stakeholders agreed was the need to “future proof” the E911 system. “Future proofing” entails, as discussed in the Hatfield Report,<sup>91</sup> updating the antiquated 911 infrastructure to ensure compatibility with the latest wireless devices and methods such as text messaging.<sup>92</sup>

¶ 38 A lack of adequate funds is another major factor slowing—and in some cases halting—any E911 budgetary allocation. While consumers in forty states pay surcharges on their phone bills to provide a source of revenue, other states have not provided for such a mechanism; however, for those that have set up a fund, some states have siphoned off the funds for use in other programs when facing budget problems.<sup>93</sup> In response to these concerns, the U.S. House of Representatives, on November 4, 2003, approved a bill (H.R. 2898) known as the E911 Implementation Act of 2003.<sup>94</sup>

¶ 39 The bill addresses funding problems by providing for federal matching grants to state, local, and tribal governments to aid in technological issues stifling the infrastructure and to provide for personnel training and upgrades in hardware and software crucial to fully implementing E911.<sup>95</sup> The bill, approved by unanimous vote of the House, would not provide funds to states that siphon off existing phone bill charges to other programs.<sup>96</sup> Senators Hillary Clinton<sup>97</sup> (D-NY) and Conrad Burns (R-MT) offered companion legislation, S. 1250,<sup>98</sup> which was approved by the Senate Commerce Committee in July 2003.<sup>99</sup>

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89. *Id.*

90. *Id.*

91. Hatfield, *supra* note 21, at 14.

92. National Emergency Number Association, *supra* note 87.

93. *See id.*

94. E911 Implementation Act, *supra* note 84. *See also* E9-1-1 Institute, *Public Safety Group Hails U.S. House Approval of Life-Saving E9-1-1 Legislation; Urges Senate to Follow Suit Quickly* (Nov. 4, 2003), available at <http://www.e911institute.org/theIssues/legislation110403.html> (last visited Jan. 3, 2005).

95. E9-1-1 Institute, *supra* note 94.

96. *Id.*

97. Along with Senators Clinton and Burns, Representative John Shimkus (R-IL) and Representative Anna Eshoo (D-CA) are the co-chairs for the Congressional E911 Caucus. The Caucus, a joint initiative, was created to educate citizens, lawyers, constituents, and communities about the importance of E911 systems. *See* E9-1-1 Institute, *Congressional E9-1-1 Caucus*, available at <http://www.e911institute.org/e911caucus.html> (last visited Jan. 3, 2005). The E911 Institute serves to promote and assist the E911 Caucus as well as to act as a clearinghouse for 911 issues while creating forums for policy discussion. For general information, see the E9-1-1 Institute home page at <http://www.e911institute.org> (last visited Jan. 3, 2005).

98. Enhanced 911 Emergency Communications Act of 2003, S. 1250, 108th Cong. (2003).

99. E9-1-1 Institute, *supra* note 94. The last major action for S. 1250 was Senate preparation for the floor on Aug. 26, 2003. S. 1250 is currently on the Senate Legislative Calendar under General Orders

¶40 Furthermore, along with the coordination problems at the state level, it has been suggested that the statutory framework under which the FCC is forced to operate, by way of the Wireless Communication Act, is outmoded for the latest communication technology.<sup>100</sup> On February 24, 2004, Senator John McCain (R-AZ) addressed such issues at a full committee hearing on VoIP.<sup>101</sup>

¶41 While not a new technology, VoIP has recently developed enough to compete with traditional telephone service and, as such, has been brought to the attention of NENA and APCO, which provide input for E911 providers. Yet, as Senator McCain points out, the FCC is forced to work with this new protocol under a regulatory regime that will “classify as either fish or fowl that which may be neither.”<sup>102</sup>

¶42 Other key areas, namely PSAP readiness, still remain largely under state control. Although here too advances have been made in assisting states by way of the DOT/NENA clearinghouse initiative and FCC PSAP educational seminars, there is no real governing authority over the nation’s more than 6,000 PSAPs.<sup>103</sup>

¶43 Further, as recommended by Dale N. Hatfield in his report to the FCC, the federal government must work closer with state regulatory commissions. Similarly, it must coordinate with the National Association of Regulatory Utility Commissioners (NARUC) to resolve issues such as cost recovery (for state and local governments and wireless providers) and pricing.<sup>104</sup>

## VI. CONCLUSION

¶44 If direct regulation by the federal government is not feasible, even if placed under the Office of Homeland Security as mentioned in the GAO report, there at least should be a concerted effort by the federal government to support the efforts of the Emergency Services Interconnection Forum to address PSAP readiness.<sup>105</sup> Likewise, although the federal government has been increasing its support in terms of both technical and proposed budgetary assistance, there is only so much that federal agencies and Congress can do if the states do not eliminate deployment roadblocks within their respective jurisdictions.

¶45 Thus, the full realization of a wireless 911 emergency system largely resides in the ability of each state to recognize its vital part in a system which will provide safety,

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(Calendar No. 254). See *Major Legislation*, DISPATCH MONTHLY, available at <http://www.911dispatch.com/information/legislation.html> (last visited Jan. 3, 2005).

100. *Voice Over the Internet Protocol (VOIP) Hearing Before the U.S. Senate Committee on Commerce, Science & Transportation*, 108th Cong. (2004) (testimony of Sen. John McCain, Chairman, Senate Comm. on Commerce, Science, and Transp.), available at [http://commerce.senate.gov/hearings/testimony.cfm?id=1065&wit\\_id=2191](http://commerce.senate.gov/hearings/testimony.cfm?id=1065&wit_id=2191) (last visited Jan. 3, 2005).

101. *Id.*

102. *Id.*

103. GAO REPORT, *supra* note 14, at 10.

104. Hatfield, *supra* note 21, at 34.

105. GAO REPORT, *supra* note 14, at 26.

security, and a more productive society. It is this Article's position that the states will recognize—and many already do—the vital importance of such a system. Yet as with many new ideas, it takes time to form a cohesive forum and hopefully this Article will aid in furthering E911 wireless implementation.