

ARTICLE

REGULATION AND PUBLIC POLICY IN THE FULL DEPLOYMENT OF THE ENHANCED EMERGENCY CALL SYSTEM (E-911) AND THEIR INFLUENCE ON WIRELESS CELLULAR AND OTHER TECHNOLOGIES

JAMES E. HOLLOWAY*
ELAINE SEEMAN**
MARGARET O'HARA***
ARNO FORST****

TABLE OF CONTENTS

| | |
|---|-----|
| I. INTRODUCTION | 94 |
| II. PUBLIC POLICY CONCERNS OF FAILED PUBLIC AND PRIVATE SECTOR OBLIGATIONS | 95 |
| A. <i>The Gravity of the Public Policy Concern for Individuals and the Nation</i> | 96 |
| B. <i>Federal and State Public Policy Concerns Regarding E-911</i> | 98 |
| C. <i>Two E-911 Emergency Call Systems in America</i> | 98 |
| III. CELLULAR STANDARD AND AUTOMATIC LOCATION TECHNOLOGIES AND THEIR EFFECTS ON PSAPS | 101 |
| A. <i>Wireless Technology and Multiple Cellular Standards</i> | 101 |
| B. <i>Automatic Location Information Technology</i> | 103 |
| C. <i>A Market Solution to E-911 in the Commercialization of ALI Technology</i> | 104 |
| IV. AN ANALYSIS OF FEDERAL REGULATION AND POLICY | 106 |
| A. <i>Wireless Communications and Public Safety Act of 1999 and Its Policy Objectives</i> | 107 |
| B. <i>The ENHANCE 911 Act of 2004 and Its Implementation Objectives</i> | 110 |
| C. <i>The ENHANCE 911 Act and Financial Incentives to Effect Implementation</i> | 112 |
| V. IMPLEMENTING FEDERAL REGULATION BY THE FCC | 114 |
| A. <i>Providing PSAPs with Serving Cell Information and a Callback Number</i> | 115 |
| B. <i>Providing PSAPs with the Location of All 911 Callers</i> | 116 |
| C. <i>PSAPs as the Triggering Force for Local Deployment of E- 911</i> | 118 |
| VI. THE FCC AND CARRIER OBLIGATIONS AND STATE MANDATES | 119 |

| | | |
|------|---|-----|
| A. | <i>The Authority of the FCC and Other Agencies in E-911 Implementation</i> | 120 |
| B. | <i>Limiting the Cost and Accountability of States in Implementing E-911</i> | 122 |
| C. | <i>Private and Public Sectors' Failures in Implementing E-911</i> | 124 |
| VII. | CONCLUSION | 125 |

I. INTRODUCTION

Many geographical regions lack *wireless* enhanced emergency call services (“E-911”): Automatic number identification (“ANI”), the capability to identify the phone number of the cell phone from which the call originated, and automatic location information (“ALI”), the capability to determine the caller’s location.¹ The market for wireless phone services is continuously expanding. More and more customers are replacing their traditional home wireline telephone connection with wireless telephone services.² Therefore, with each passing day, the absence of enhanced emergency call services including ANI and ALI, significantly increases the risk of public and personal harm in the post 9/11-threat environment.³ Such harm includes unnecessary loss of human

* Professor, Business Law, Department of Finance, East Carolina University, Greenville, North Carolina 27858. B.S., North Carolina Agricultural & Technical State University, 1972; M.B.A., East Carolina University, 1984; J.D., University of North Carolina at Chapel Hill, 1983.

** Assistant Professor, Management Information Systems, Department of Decision Sciences, East Carolina University, Greenville, North Carolina 27858. B.A., Indiana University of Pennsylvania, 1973; M.B.A., East Carolina University, 1997; Ph.D., Indiana State University, 2002.

*** Associate Professor, Management Information Systems, Department of Decision Sciences, East Carolina University, Greenville, North Carolina 27858. B.S., Secondary Education, 1973, Seton Hall University, PhD, University of Georgia, 1996.

**** Ph.D. Candidate, Accounting, Virginia Commonwealth University, Richmond, Virginia; Assessor jur., Germany, 1999; MLI., University of Wisconsin, 1996.

¹ See Anne Marie Squeo, *Cellphone Hangup: When You Dial 911, Can Help Find You?*, WALL ST. J., May 12, 2005, at A1; Darren Handler, *An Island of Chaos Surrounded by a Sea of Confusion: The E-911 Wireless Device Location Initiative*, 10 VA. J.L. & TECH. 1, ¶¶ 8-12, 34 (2005), at http://www.vjolt.net/vol10/issue1/v10i1_a1-Handler.pdf; Peter P. Ten Eyck, *Dial 911 and Report a Congressional Empty Promise: The Wireless Communications and Public Safety Act of 1999*, 54 FED. COMM. L. J. 53, 54-55 (2002).

² Squeo, *supra* note 1. Squeo notes that “[a]bout 6% of the nation’s 182 million cellphone users have gotten rid of their home phones, according to industry analysts, who say the percentage will continue to rise. . . .” *Id.* See also Jesse Drucker, Almar Latour & Dennis K. Berman, *Taking On Giants, Sprint Nextel Seeks to Exploit Wireless Growth*, WALL ST. J., Dec. 16, 2004, at A1 (“About a third of all phone users receive more than half of all their calls on cellphones, according to the Bureau of Labor Statistics. These percentages are growing fast, particularly among young users.”)

³ See Squeo, *supra* note 1, at A1; see Meg McGinity, *Weaving Wireless Safety Net*, COMMUNICATIONS OF THE ACM, at 15, 16 (Sept. 2004) available at <http://portal.acm.org/>

life, severe personal injuries, failure to verify and respond to reported crimes and security incidents, and undetected breaches of homeland security. The increased risk of public and personal harm raises a national public policy concern for the safety and welfare of wireless telephone subscribers who pay fees or taxes for wireless enhanced emergency call services but who do not know that emergency care may never arrive should a life-threatening personal emergency or nation-threatening security incident occur.

This article examines the technology, law and public policy of a federal communications policy that has far-reaching consequences for public and personal safety through the expansion of communications technology. Part II identifies the concerns of federal communications policy for *wireless* enhanced emergency call services. Part III discusses the emergence and development of 911 and E-911 systems from both public interest and technological perspectives. Part IV discusses the nature of cellular standards and automated location technologies and how their variations affect local exchange carriers ("LECs") and public safety answering points ("PSAPs") by creating costly technical requirements. Part V discusses the two recent pieces of federal communications legislation, emerging federal public policy, and the lack of state and local efforts to enhance wireless emergency call services.

The question remains whether present federal communications policy ensures adequate homeland security, motivates states to protect public safety, and generates an appropriate private sector response. Part VI addresses these questions through a discussion of the Federal Communications Commission's ("FCC") efforts to implement enhanced emergency call services prior to the enactment of recent federal legislative policies and examines newly created roles of federal executive departments and their agencies in planning, financing and implementing E-911. Part VII discusses and comments on federal policy concerns, including technology, regulatory and market needs, and how government may force accountability on wireless carriers, LECs, and PSAPs, with respect to subscribers and the public for the implementation of E-911 by using federal and state mandates. Part VIII concludes that several forces may affect how public policy, regulatory standards and government oversight impact the development, deployment and adoption of wireless cellular and information technologies. However, combined policy effects do not justify another decade of waiting for local PSAPs to make requests of wireless carriers to transmit subscribers' location information that saves lives and protects the homeland.

II. PUBLIC POLICY CONCERNS OF FAILED PUBLIC AND PRIVATE SECTOR OBLIGATIONS

The overarching public policy concern addressed in this article is whether federal communications policy ensures adequate homeland security, causes the

states to protect the most basic civil rights, and forces wireless carriers and local exchange carriers to address a critical public safety problem. Notwithstanding most recent federal telecommunications policy legislation, the FCC recognized in 1996 the public importance of establishing an effective wireless emergency call system to protect public safety.⁴ The FCC saw the need to develop and require ANI and ALI technology for the wireless emergency call system to provide a comparable level of utility as the wireline emergency call system.⁵

A. *The Gravity of the Public Policy Concern for Individuals and the Nation*

The gravity of the public policy concern that places both nation and individual in harm's way dictates that Congress do more for a "prompt deployment throughout the United States of a seamless, ubiquitous, and reliable end-to-end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs."⁶ This is the policy goal set forth in the purpose of the Wireless Communications and Public Safety Act of 1999 ("Wireless Safety Act")⁷ and reinforced in December 2004 by the Ensuring Needed Help Arrives Near Caller Employing 911 Act of 2004 ("ENHANCE 911 Act").⁸ Congress enacted the Wireless Safety Act to "encourage and facilitate . . . deployment . . . of a seamless, ubiquitous, and reliable end-to-end infrastructure . . .,"⁹ but Congress purposely chose not to "authorize or require the [Federal Communications] Commission to impose obligations or costs on any person . . ."¹⁰ Herein lies the crux of a menacing public policy concern that grows worse as the nation moves into the twenty-first century with broader public needs, new domestic threats and emerging communications challenges.¹¹ Notwithstanding

⁴ *In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, FCC 96-264 (July 26, 1996) (Report and Order and Further Notice of Proposed Rulemaking) <http://www.fcc.gov/Bureaus/Wireless/Orders/fcc96264.txt>

⁵ J.M. Zagami, S.A. Parl, A.J. Bussgand, & K.D. Mellillo, *Providing Universal Location Services Using a Wireless E-911 Location Network*, IEEE COMM. MAG. at 66-71 (1998).

⁶ 47 U.S.C § 615(b) (2000).

⁷ Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286 (codified at 47 U.S.C §§ 615 *et seq.*; 47 U.S.C § 222; 47 U.S.C § 251).

⁸ Ensuring Needed Help Arrives Near Callers Employing [ENHANCE] 911 Act of 2004, Pub. L. No. 108-494, Title I, 118 Stat. 3986 (codified at scattered parts of 47 U.S.C.).

⁹ 47 U.S.C § 615(b).

¹⁰ 47 U.S.C § 615(a).

¹¹ By contrast, the European Union ("EU") pursues a very distinct approach in implementing automatic number technology ("ANI") and automatic location technology ("ALI"). Instead of the *hard regulation* approach used in the United States, involving accuracy requirements for different environments, setting dates for mandatory implementation, and developing general principles for financing, the EU chose an

congressional recognition of threats and dangers in the ENHANCE 911 Act,¹² enumerating bureaucratic mismanagement, poor coordination and a lack of state funding¹³ does not fully address the several years' delay in establishing automatic number and caller location identification.¹⁴ Congress gave the FCC, Department of Transportation, Department of Commerce and other agencies insufficient authority to address institutional, political and infrastructural issues.¹⁵ This situation is incompatible with the new security threat environment¹⁶ and the daily increase in thousands of new wireless subscribers,¹⁷ yet it has not been addressed voluntarily in a timely manner by state and local governments.¹⁸

alternative *soft regulation* approach. Relevant EU legislation was preceded by commissioning outside consultants to inquire into the technical feasibility of alternatives and to solicit the input of the industry. Under the European Union's approach, providers of public telephone service are only required "to use their best effort to determine and forward the most reliable caller location information available for all calls to the European emergency call number 112." Commission Recommendation 2003/558/EC of July 25, 2003 on the processing of caller location information in electronic communication networks for the purpose of location-enhanced emergency call services. 2003/558/EC ¶ 5 [hereinafter *Commission Recommendation 2003/558/EC*]. Detailed technical accuracy requirements are notably absent. Instead, network operators should, when initiated by the network, forward to public services answering points ("PSAPs") "the best information available as to the location of the caller, to the extent technically feasible." Commission Recommendation 2003/558/EC, *supra*, ¶ 4. The EU approach is further characterized by a strong push towards the development of common technical solutions and practices to facilitate the introduction of enhanced emergency call services, create interoperable solutions and decrease the costs of implementation. To this end, relevant EU legislation stresses the need for a continued dialogue between public network operators, service providers, and public authorities. A parallel study is currently underway by the present authors inquiring into the effectiveness of the EU approach compared to the U.S. one.

¹² See ENHANCE 911 Act of 2004, Pub. L. No. 108-494, Title I, § 102, 118 Stat. 3986, 3986.

¹³ See *id.* at Title I, § 103, 118 Stat. 3986, 3986-87.

¹⁴ See Squeo, *supra* note 1 (recognizing that some commentators believe it will take another four years to implement wireless emergency call services).

¹⁵ See Handler, *supra* note 1, at 2-3, Eyck, *supra* note 1, at 54-55.

¹⁶ See Pub. L. No. 108-494, Title I, § 102, 118 Stat. 3986, 3986. Section 102 states:

The Congress finds that—

(1) for the sake of our Nation's homeland security and public safety, a universal emergency telephone number (911) that is enhanced with the most modern and state-of-the-art telecommunications capabilities possible should be available to all citizens in all regions of the Nation;

Id.

¹⁷ See Squeo, *supra* note 1, at A10 (recognizing that "6% of the nation's 182 million cellphone users have gotten rid of their home phones, according to industry analysts, who say the percentage will continue to rise." *Id.*).

¹⁸ See *id.* at A1 (finding that nine states had either completed or almost completed the

B. Federal and State Public Policy Concerns Regarding E-911

The commercial development of cellular telephone standards and government-obligated deployment¹⁹ of ANI and ALI technologies for wireless E-911 is presently state and local driven. Wireless providers are obligated to respond to requests by PSAPs for these providers to provide wireless emergency call services regardless of the cost to these providers.²⁰ New technology capable of providing accurate automatic location information for wireless phones is available to enhance emergency call services.²¹ However, the implementation of E-911 to provide ANI and ALI for wireless calls to PSAPs remains a complex challenge under federal communications policy and its reliance on voluntary state and local planning, implementation and maintenance. Working under intensely competitive conditions,²² wireless service providers are deploying new cellular and location technologies under FCC regulations that are not forceful.²³ The federal and state governments generally expect these companies to comply with government-imposed E-911 obligations with little public financial support.²⁴

Simply put, public safety and national security cannot wait for years until state and local governments voluntarily comply with federal policy regarding the deployment, implementation, and management of E-911. The utility and forcefulness of federal policies to enhance emergency call services for public safety, welfare, and security in the United States remain an open public policy concern.

C. Two E-911 Emergency Call Systems in America

The emergence and development of the 911 and E-911 systems involve both public interest and technological perspectives. The technological perspective takes into consideration the fact that public obligations imposed on business can often be costly to develop and implement when the private sector cannot create or find marketable commercial uses for technology. The technological perspective also involves the impact of new technology on public safety and security. The public interest perspective identifies federal, state, and local governments' roles in using new communication and location technology to

implementation of enhanced 911 to locate wireless callers).

¹⁹ See 47 U.S.C. § 222 (2000).

²⁰ See 47 C.F.R. § 20.18 (d) & (e) (2005); see *infra* Part V.B (analyzing the implementation of E-911 emergency services).

²¹ See *infra* Part III.B (explain the nature and capabilities of location technology).

²² See Drucker, et al., *supra* note 1, at A8 (examining mergers within the wireless industry between Sprint and Nextel and Cingular and AT&T and recognizing that growth within wireless industry will involve competition among newly merged and other companies).

²³ See *infra* Part V.C (discussing the implementation of E-911 policies by the FCC).

²⁴ See *infra* Part VI. B (discussing cost recovery litigation by wireless carriers to *force* the FCC to impose a national cost recover mechanism to implement federal wireless E-911 policies).

protect citizens and the nation. This perspective also analyses how policy-makers respond to the development and deployment of communication and location technology under market forces, legal issues, and public policy concerns.

As a whole, the E-911 emergency call system consists of local and state governments and wireless and local exchange carriers working together to use technological components to protect and provide public safety and security.²⁵ The first component is the PSAPs that contain emergency or law enforcement personnel and communications and computer equipment and software to receive 911 and E-911 calls. There are approximately six thousand centrally located PSAPs²⁶ that employ professional operators to assist callers and forward details of callers' emergencies to the appropriate emergency services personnel, such as police department, fire department, and rescue squad.²⁷ The second component is switching and signaling equipment that is provided by telecommunications carriers to recognize the 911 emergency code. This component also includes the LECs' relaying and routing of 911 emergency calls to the PSAPs.²⁸

The traditional 911 emergency system requires the operator to query callers about their location. Since this consumes valuable time that could be used for life saving procedures, and since in some circumstances the callers may be unable to relate this information, many state and local governments have, over the past decade, installed both ANI and ALI that identify the caller's telephone number and location, respectively.²⁹ This enhanced version of 911, called E-911, transmits to the PSAPs both the caller's telephone number and location. E-911 permits wireline callers to receive quicker responses from emergency services units and thus frees up valuable time for emergency care.³⁰ Virtually all municipal, county and regional PSAPs already use E-911 to locate wireline callers.³¹ However, only 41% of the 6,000 PSAPs can locate wireless callers who request emergency services but cannot give their location.³²

Currently, America's PSAPs receive over 63 million emergency calls from

²⁵ See Elaine Seeman, *A Gap Analysis of Wireless E-911 Services in North Carolina*, Indiana State University, Terre Haute (2002) (Dissertation UMI Number 3103008)(UMI Dissertation Publishing, a division of ProQuest Information and Learning, is the official offsite digital national repository for dissertations and master's theses, through its landmark agreement with the Library of Congress.)

²⁶ See, e.g., Squeo, *supra* note 1.

²⁷ See Ecyk, *supra* note 1, at 56-57.

²⁸ See *id.* at 56.

²⁹ *Id.* at 57 (citing *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Report and Order and Further Notice of Proposed Rulemaking*, 11 F.C.C.R. 18676, ¶¶ 3, 4 Comm. Reg. (P & F) 967 (1996)).

³⁰ *Id.*

³¹ See Squeo, *supra* note 1, at A1.

³² *Id.*

wireless telephones.³³ This number is expected to increase as many homeowners switch from wireline to wireless telephones.³⁴ Furthermore, Voice over Internet Protocol (“VoIP”) telephone services may not connect to the current E-911 emergency system.³⁵ VoIP services create special problems for local LECs and PSAPs: “[VoIP] services allow a consumer in, say, Boise, Idaho, to get a phone number with a Boston area code, which raises questions about where a 911 call would be routed. . . .”³⁶ The FCC has ordered VoIP carriers to connect to the 911 system.³⁷ In fact, some LECs were offering to allow VoIP carriers to connect to their 911 networks.³⁸

In some urban and rural areas, service providers erect cellular telephone towers linearly along highways, streets and roads.³⁹ However, wireless carriers that use triangulation to locate callers need three nonlinear fixed cellular towers.⁴⁰ These carriers cannot currently provide automatic location services for LECs to relay and route to PSAPs, endangering customer and public safety

³³ See Squeo, *supra* note 1 (“With the explosive growth of wireless technology, more than a third of the 190 million calls placed to 911 each year now come from cellphones.”).

³⁴ See *id.*; see Ecyk, *supra* note 1, at 57 (citing 145 Cong. Rec. H728, 732 (daily ed. Feb. 24, 1999) (statement of Rep. Green); Commissioner Gloria Tristani, Address at the Association of Pub. Safety Comm. Officials-Int'l (Aug. 14, 2000) available at <http://www.fcc.gov/Speeches/Tristani/2000/spgt010.html>; see also H.R. Rep. No. 106-25, at 5 (1999); Matthew Mickle Werdegar, *Lost? The Government Knows Where You Are: Cellular Telephone Call Location Technology and the Expectation of Privacy*, 10 STAN. L. & POL'Y REV. 103, 104 (1998)).

³⁵ Squeo, *supra* note 1; see generally, <http://www.fcc.gov/voip/>, last visited Feb. 17, 2006 (providing public information on the nature of VoIP and FCC regulation of VoIP service providers). The FCC issued an Order that requires VoIP service providers to provide E-911. In the Matters of IP-Enabled Services E911 Requirements for IP-Enabled Service Providers, First Report and Order and Notice of Proposed Rulemaking, Federal Communication Commission, ¶ 1, (June 3, 2005) [hereinafter *E-911 VoIP First Order*]. The pertinent paragraph of this FCC Order states that:

1. In this Order, we adopt rules requiring providers of interconnected voice over Internet Protocol (VoIP) service to supply enhanced 911 (E911) capabilities to their customers. Interconnected VoIP providers may satisfy this requirement by interconnecting indirectly through a third party such as a competitive LEC, interconnecting directly with the Wireline E911 Network, or through any other solution that allows a provider to offer E911 service. The characteristics of interconnected VoIP services have posed challenges for 911/E911 and threaten to compromise public safety. Thus, we require providers of interconnected VoIP service to provide E911 services to all of their customers as a standard feature of the service, rather than as an optional enhancement. We further require them to provide E911 from wherever the customer is using the service, whether at home or away from home. (footnotes omitted)

E-911 VoIP First Order, *supra*, ¶ 1.

³⁶ Squeo, *supra* note 1.

³⁷ E-911 VoIP First Order, *supra* note 35, ¶ 1.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

and security.⁴¹ As a result, the FCC has requested wireless carriers who rely on triangulation to provide ALI, such as Verizon, Nextel, and Sprint, to use GPS to locate callers requesting emergency services but unable to give their location.⁴²

III. CELLULAR STANDARD AND AUTOMATIC LOCATION TECHNOLOGIES AND THEIR EFFECTS ON PSAPs

The nature of cellular standards and automatic location technologies and their effects on PSAPs inform the policy concern and affect its resolution by policy-makers at federal, state, and local levels. Despite early success in automatic location technologies, state and local governments have been left with costly technical and market problems in preparing both PSAPs and local citizens to comply with E-911.

A. *Wireless Technology and Multiple Cellular Standards*

The implementation of wireless E-911 emergency systems is complicated by wireless carriers' use of different technologies. For example, as a result of recent merger, one wireless carrier has two different cellular standard technologies.⁴³ Consequently, LECs and PSAPs need different software, relays, and routers to handle each type of wireless technology, thus making implementation of E-911 slower and more costly than expected.⁴⁴

Wireless cellular standards include three major digital technologies:⁴⁵ Time Division Multiple Access ("TDMA"), Code Division Multiple Access ("CDMA"), and Global System for Mobile Communications ("GSM").⁴⁶ TDMA divides each cellular channel into three time slots in order to increase

⁴¹ *Id.* "In March [2004], a man died in a Long Island snowstorm after calling 911 from an older cellphone that couldn't transmit his coordinates, even though the local call center had satellite-locator technology." *Id.*

⁴² Squeo, *supra* note 1.

⁴³ See Shawn Young & Christopher Rhoads, *Can Sprint Keep Nextel Customers Happy?*, WALL ST. J., Dec. 10, 2004, at B1 (Sprint's technology, CDMA, is not compatible with Nextel's technology, iDEN.).

⁴⁴ See Squeo, *supra* note 1, at A10. LECs are local wireline companies and were not a part FCC policy-making on E-911 but wanted new technology for wireless E-911 upgrades to be compatible with their old technology. *Id.* LECs are the technology middle entity between the wireless carriers and PSAPs. See *id.* LECs need new technology to route the wireless carriers' signals to the PSAPs especially when wireless carriers are using different cellular standards. See *infra* Part III.A.

⁴⁵ There are other cellular technologies used by wireless carriers within the United States that are not discussed here.

⁴⁶ See M. D. Milnes, *Wireless Telephony: Cellular, PCS, and MSS*, in COMMUNICATION TECHNOLOGY UPDATE 51, 51-84 (August E. Grant & Jennifer H. Meadows eds., 6th ed. 2000).

the amount of data that can be carried.⁴⁷ TDMA is used by multiple cellular telephone systems throughout the world; however, each of these systems implements TDMA in a somewhat different and often incompatible way.⁴⁸ An alternative method is CDMA, which takes the entire allocated frequency range for a given service and multiplexes information for all users across the spectrum range at the same time.⁴⁹ With CDMA, signals are broken into small, digitized segments and encoded to identify each call.⁵⁰ CDMA allows numerous signals to occupy a single transmission channel thereby optimizing the available bandwidth.⁵¹ Similar to TDMA, GSM employs a form of time division access.⁵² Time Division Multiplexing (“TDM”) is used in GSM on each frequency channel to divide the channel into time slots.⁵³ GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot.⁵⁴ The most widely used of the three technologies is GSM.⁵⁵

Federal wireless 911 policy does not favor one cellular standard or technology over another.⁵⁶ The FCC could simplify E-911 implementation, assuming it is permissible under the U.S. Constitution, if wireless carriers

⁴⁷ Milnes, *supra* note 46, at 51.

⁴⁸ See Ivy Yvonne Kelly, *The Multipath Fingerprint Method for Wireless E-911 Location Finding* (2000) (unpublished Ph.D. dissertation, University of Texas, Austin) (Dissertation UMI Number 9983253).

⁴⁹ Milnes, *supra* note 46, at 254.

⁵⁰ *Id.*

⁵¹ See *id.*

⁵² Christopher Drane, Malcolm Macnaughtan, & Craig Scott, *Positioning GSM Telephones*, IEEE COMM. MAG., Apr. 1998, at 46, 49.

⁵³ *Id.* at 69.

⁵⁴ *Id.*

⁵⁵ Milnes, *supra* note 46, at 254.

⁵⁶ *In re* Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., 12 FCC Rcd 22665, ¶¶ 5 & 123 (1997) [hereinafter *In re Revision*, 12 FCC Rcd]. The FCC has relied on technology neutral standards to avoid interference with competition and thus has relied on general performance standards to encourage the deployment of technology. See *In re* Revision, 12 FCC Rcd, ¶ 5. The FCC states that:

5. . . . We also reemphasize that our rules are intended to be technology-neutral, and to encourage the most efficient and effective technologies to report the location of wireless handsets, the most important E9-1-1 feature both for those seeking help in emergencies and for the public safety organizations that respond to emergency calls.

Id. ¶ 5. The FCC also states that:

123. One further point deserves mention. In setting deadlines and benchmarks for ALI, our policy has been to be technologically and competitively neutral. As we indicated in the E9-1-1 First Report and Order, our intention was to adopt general performance criteria, rather than extensive technical standards, to guide the development of wireless 9-1-1 services. Our goal is to ensure the rapid, efficient, and effective deployment of ALI as part of E9-1-1

Id. ¶ 123.

agreed to only use two wireless cellular standards. The FCC encourages deployment of technology by wireless carriers, but also seeks to avoid interfering in product development and competition among carriers.⁵⁷ Notwithstanding, its technology neutral regulations and general performance standards, the FCC still obligates wireless carriers to bear the financial burdens of creating and deploying new technologies necessary to implement E-911,⁵⁸ actually dampening effective implementation according to the carriers.⁵⁹

B. Automatic Location Information Technology

ALI includes handset-based, network-based, and hybrid systems. Handset-based location systems use the Global Positioning System (“GPS”).⁶⁰ GPS is a space-based radio navigation system consisting of twenty-four earth-orbiting satellites that broadcast information used by the receiver, a chip embedded in the wireless phone, to calculate the receiver’s latitude, longitude, and – when more than three satellites are available – altitude.⁶¹ The location coordinates are determined by satellite position relative to the center of the earth.⁶² A chip embedded in the wireless phone receives signals from three or more satellites and calculates the location.⁶³ The accuracy of GPS is proportional to the number of satellites within line of sight that can be used to ascertain the caller’s location.⁶⁴

Network-based techniques for locating cell phone calls do not require handset modification.⁶⁵ These techniques generally use some method of triangulation since the distance between cellular towers and phones can be calculated based on the known speed of radio signals.⁶⁶ There are several network-based location solutions in use, under development, or in testing.⁶⁷ These include Cell of Origin, Angle of Arrival (“AOA”), Time Difference of Arrival (“TDOA”), and Radio Frequency (“RF”) Fingerprinting.⁶⁸ Network-based ALI requires three or more nonlinear towers to triangulate location; a wireless carrier with towers in a straight line, such as along streets and roads,

⁵⁷ John Ellis, *Digital Matters: Here's how wireless technology works for me*, FAST COMPANY, July 2000, at 304, 304-06.

⁵⁸ *U.S. Cellular Corp. v. FCC*, 254 F.3d 78, 80 (D.C. Cir. 2001) (rejecting a challenge to the FCC requirement that carriers pay for cost of E-911).

⁵⁹ See *infra* Part VI.B (discussing FCC’s refusal to establish or mandate a national cost recovery mechanism for wireless carriers that implement E-911).

⁶⁰ Eric Knorr, *M-Business guide to location*, M-BUSINESS, 66, 66-79 (Jan. 2001).

⁶¹ See Kelly, *supra* note 48, at 22-23. .

⁶² See *id.* at 20.

⁶³ See *id.* .

⁶⁴ See *id.* at 25.

⁶⁵ See *id.* at 26.

⁶⁶ See *id.*

⁶⁷ See *id.* at 21.

⁶⁸ See *id.*

cannot effectively deploy network-based ALI.⁶⁹

Lastly, hybrid systems are a combination of the network-based and handset-based systems. One example is Enhanced Observed Time Difference (“E-OTD”).⁷⁰

ALI technologies must work with any cellular standard, but the FCC has already informed some wireless carriers that network-based technology does not provide an adequate level of public safety for callers.⁷¹ However, federal policy does not favor any one ALI technology. Wireless carriers must decide, at their own cost and expense and subject to FCC oversight, which ALI technology is appropriate for a particular rural or urban area.⁷²

C. A Market Solution to E-911 in the Commercialization of ALI Technology

ALI technology has commercial potential to assist subscribers with particular safety, security, shopping, or other location needs.⁷³ Wireless carriers could use ALI technology to note the presence of subscribers at predetermined or selected locations within a fixed-vicinity, such as a shopping mall, stadium complex, highway area, or large discount retail store.⁷⁴ ALI allows wireless carriers to notify subscribers of shopping advantages and alert them to safety and security hazards.⁷⁵ These business or consumer benefits

⁶⁹ Squeo, *supra* note 1.

⁷⁰ See Kelly, *supra* note 48, at 59.

⁷¹ *Id.*

⁷² See *In re* Revision, 12 FCC Rcd, *supra* note 56, ¶¶ 5 & 123.

⁷³ See generally Hiroaki Koshima & Joseph Hosehn, *Personal Locator Services Emerge*, IEEE SPECTRUM, Feb. 2000, 41, 41-48 (using location technology sold by cellular carriers to locate missing children and mentally retarded persons); John Rockhold, *The Business of Where*, WIRELESS REVIEW, Sept. 15, 2001, at 14 (using location technology to track employees and vehicles).

The European Union (EU) is relying on these market forces to bring about high accuracy location technologies for commercial purposes that would subsequently also be used to enhance the emergency call service. The EU wanted to avoid placing pressure on carriers to implement expensive technologies for which no widely applicable and working business models and, accordingly, no cost recovery mechanisms were available. Carriers would only be obliged to provide PSAPs with location information that was of the same quality and accuracy as that used by carriers to support their commercial location-based services. In short, enhanced wireless emergency call services in the EU are trailing the rollout of commercial ALI applications. Coordination Group on Access to Location Information by Emergency Services (CGALIES), Report on implementation issues related to access to location information by emergency services (E112) in the European Union, (Jan. 28, 2002), Sec. 1.3. (implemented by Commission Recommendation, 2003/558/EC, *supra* note 11, at 49), available at <http://www.telematica.de/cgalies/> (last visited Feb. 23, 2006).

⁷⁴ See Zeff Stanton, *A New Spin on Location Services*, TELECOMM. AMERICAS, Sep. 2004, 36, 36-37 (recognizing the income producing potential of location based services).

⁷⁵ See *id.* at 36-37 (discussing the impact of highly accurate location technology on location base services). “Instead of wondering ‘where am I?’ in relationship to ‘where am I going?’

provide commercial opportunities for wireless carriers.

ALI technology using GPS may be easier to commercialize because GPS is already being commercially exploited by automobile manufacturers, logistic operations, tracking services, and the military.⁷⁶ The existing commercialization of GPS technology enhances the likelihood of finding joint commercial uses for ALI technology by wireless carriers and retail operations, such as providing wireless subscribers with savings of money, fuel, and time when shopping. The commercialization of ALI technology should give wireless carriers and LECs sufficient profit incentives to develop wireless and ALI technologies and increase the rate of implementation of E-911.

Notwithstanding some strong privacy issues,⁷⁷ we suspect that the broad commercial or market applications of ALI technologies by wireless carriers and LECs to provide or support location-based services, such as shopping and child tracking, would be a financial impetus to lessen unnecessary and dangerous delays faced or created by local and state governments in the implementation of E-911.⁷⁸ Commercializing ALI would provide wireless carriers with increased revenues to offset the cost of complying with an otherwise unfunded public obligation.⁷⁹ However, because market applications and revenue capabilities for location-based services would be prevalent in urban and other densely populated areas, we conclude that rural and sparsely populated areas that do not have E-911 location services or less accurate location technology would nonetheless need special federal and state government funds and assistance to deploy and upgrade in a timely manner location technologies for implementing E-911. Otherwise, these governments could continue to impose costs on wireless carriers and LECs and require them to rely on cost recovery from subscribers to implement E-911.⁸⁰

we will ask 'who or what is within close proximity of my current location?' . . ." *Id.* at 36. Stanton sees it as a "paradigm shift in the way we view our world." *Id.*

⁷⁶ See *id.* at 36. GPS is no longer available only to military, thus creating numerous commercial uses. *Id.*; see Koshima & Hosehn, *supra* note 73, at 41-48; see Rockhold, *supra* note 73, at 14.

⁷⁷ For a discussion of E-911 and privacy issues regarding location technology, see generally Aaron Futch & Christine Soares, iBrief, Media & Communications, *Enhanced 911 Technology and Privacy Concerns: How Has the Balance Changed Since September 11*, 2001 DUKE L. & TECH. REV. 38 (2001) ("This iBrief will explore the nature of the E-911 technology, the FCC implementation requirements and the concerns of privacy groups regarding its implementation."); Werdegar, *supra* note 34 (discussing privacy issues prior to Wireless Communications Act and concluding that there is inadequate protection of privacy for cellular telephone subscribers).

⁷⁸ See Stanton, *supra* note 74, at 36-38 (demonstrating that navigation-based, tracking services and other location services can generate an increase in revenue over a five-year period).

⁷⁹ See generally *infra* Part VI.B (discussing agency and court actions refusing to impose cost recovery mechanisms on local and state governments to offset wireless carriers' cost).

⁸⁰ See *U.S. Cellular Corp. v. F.C.C.*, 254 F.3d 78, 81 (D.C. Cir. 2001). In *U.S. Cellular*,

IV. AN ANALYSIS OF FEDERAL REGULATION AND POLICY

The FCC, under its authority to implement and manage the 911 emergency call system,⁸¹ recognized in 1996 the need to incorporate wireless subscribers into that system.⁸² In 1999, Congress intervened and enacted the Wireless Safety Act to promote the enhancement of wireless emergency call services.⁸³ Federal communications legislation greatly affects FCC and other federal agencies' authority to influence state and local governments' planning, financing and implementing of wireless E-911 emergency systems in both urban and rural areas.⁸⁴ The Wireless Safety Act limits FCC authority to

wireless carriers argued that the network-based method would be difficult based on the location of towers in rural areas and that hand-set technology was not technologically feasible and even if cost recovery mechanisms were in place they might be adequate to cover the cost of providing the location of emergency callers. *See id.* at 81. Both the FCC and D.C. Circuit Court of Appeals rejected this argument of wireless carriers, especially rural carriers. *See id.* at 88 (citing *Second Recons. Order*, 14 FCC Rcd 20850 ¶ 57) ("Without specific evidence, the Commission was entitled to conclude that petitioners failed to demonstrate that rural carriers would disproportionately suffer from eliminating the carrier cost recovery requirement.").

⁸¹ *See* 47 U.S.C. § 251 (e)(3) & 615 (a) (2000). The subsection of 47 U.S.C. § 251 reads as follows:

(3) Universal emergency telephone number

The Commission and any agency or entity to which the Commission has delegated authority under this subsection shall designate 9-1-1 as the universal emergency telephone number within the United States for reporting an emergency to appropriate authorities and requesting assistance. The designation shall apply to both wireline and wireless telephone service. In making the designation, the Commission (and any such agency or entity) shall provide appropriate transition periods for areas in which 9-1-1 is not in use as an emergency telephone number on October 26, 1999.

Id. Earlier authority was listed by the FCC in several provisions of Title 47. *See* Revision to the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Notice of Proposed Rulemaking, 9 F.C. C. R 6170, ¶ 4 (Legal Basis) (1994) [hereinafter *911 Notice of Proposed Rulemaking*]. The FCC listed its authorization to regulate 911 under "47 U.S.C. [§§] 151, 154, 155, 201-05, 208, 215, 218, 226, 227, 302, 303, 313, 314, 332, 403, 404, 410, 522." 911 Notice of Proposed Rulemaking, *supra*, ¶ 4. The FCC is delegated broad authority to regulate wireless and wireline communications, includes carriers, systems, equipment, organizations, interconnections and other matters. *See* 47 U.S.C. § 151 (2000).

⁸² *See* Revision to the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Report and Order and Further Notice of Proposed Rulemaking, 11 F.C. C. R 18676, ¶ 10, (Sept. 10, 1996) [hereinafter *Enhanced 911 Report and Order*] (codified at 47 C.F.R. § 20.18 (2005)).

⁸³ 47 U.S.C. § 615. Congress delegates to the FCC the authority to encourage and support the deployment of "comprehensive end-to-end emergency communications infrastructure and programs . . ." *Id.*

⁸⁴ *Id.* "In encouraging and supporting that deployment, the Commission shall consult and cooperate with State and local officials responsible for emergency services and public safety The Commission shall encourage each State to develop and implement coordinated

encourage and support local and state governments, while the ENHANCE 911 Act includes more federal agencies in planning and monitoring state planning and implementation of E-911⁸⁵ and promises some financial support for local and state governments.⁸⁶ Yet state and local governments are five years behind schedule in implementing earlier FCC mandates.⁸⁷ Consequently, we analyze the Wireless Safety Act,⁸⁸ ENHANCE 911 Act⁸⁹ and their enforcement by the FCC and its implementation of its regulations⁹⁰ to ascertain whether present federal communications policy ensures timely, effective deployment of cellular and location technologies and timely, dependable upgrades of PSAPs or statewide default answering points⁹¹ to provide reliable E-911 emergency service and motivates states to protect the public safety of wireless subscribers.⁹²

A. *Wireless Communications and Public Safety Act of 1999 and Its Policy Objectives*

Congress enacted the Wireless Communications and Public Safety Act of 1999 (“Wireless Safety Act”) to accomplish the following communications policy objective:

[t]o promote and enhance public safety through use of 9-1-1 as the universal emergency assistance number, further deployment of wireless 9-1-1 service, support of States in upgrading 9-1-1 capabilities and related functions, encouragement of construction and operation of seamless, ubiquitous, and reliable networks for personal wireless services, and for other purposes.⁹³

statewide deployment plans . . .” *Id.*

⁸⁵ See *infra* Part IV.A.

⁸⁶ See *infra* Part IV.B and C.

⁸⁷ See 47 C.F.R § 20.18 (2005) (“Once a PSAP request is received, the licensee shall, in the area served by the PSAP, within six months or by October 1, 2001, whichever is later.”); see Enhanced 911 Report and Order, *supra* note 82, ¶ 10 (mandating implementation of Phase II, which requires carriers to transmit location of callers, five years after the effective date of the rule, 47 C.F.R § 20.18).

⁸⁸ See 47 U.S.C. § 615.

⁸⁹ See 47 U.S.C. § 942.

⁹⁰ See *infra* Part V.

⁹¹ 47 C.F.R. § 20.18(b) (2005). FCC regulations implementing Universal Emergency Telephone Number, 47 U.S.C. § 251 (e) (3), states that:

(d) Statewide default answering point. An emergency answering point designated by the State to receive 911 calls for either the entire State or those portions of the state not otherwise served by a local PSAP.

47 C.F.R. § 64.3000 (2005).

⁹² See *infra* Parts VI & VII.

⁹³ Preamble, Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286, 1286 (codified at 47 U.S.C §§ 615 *et seq.*; 47 U.S.C § 222; 47 U.S.C § 251).

Congress found that establishing and maintaining end-to-end communication infrastructure reduces public and individual harm, time lost, and health care costs;⁹⁴ the timely deployment of emergency telecommunications requires coordination, funding and integration of emergency services;⁹⁵ emerging technologies can be critical components in reducing emergency response time;⁹⁶ improving public safety affects interstate and foreign trade and is a local, state, and federal public objective;⁹⁷ enabling prompt notification of emergency care facilities improves emergency care services;⁹⁸ and constructing and operating a wireless communications system to promote public welfare should help coordinate emergency service providers, such as police, fire and others.⁹⁹

Congress then spelled out the legislative purpose of the Wireless Safety Act:

(b) Purpose. – The purpose of this Act is to encourage and facilitate the prompt deployment throughout the United States of a seamless, ubiquitous, and reliable end-to-end infrastructure for communications, including wireless communications, to meet the Nation's public safety and other communications needs.¹⁰⁰

Notwithstanding the laudable objectives, findings, and purposes of the Wireless Safety Act, state and local funds for the implementation of Enhanced 911 wireless emergency call services remain either insufficient or just ineffectively allocated to upgrade PSAPs and their technology, equipment, and personnel.¹⁰¹

Foremost, section 3(a) of the Wireless Safety Act amends section 251(e)¹⁰² of the Communications Act of 1934¹⁰³ by adding a provision establishing a Universal Emergency Telephone Number.¹⁰⁴ The FCC or its designees must designate 911 as the universal emergency telephone number.¹⁰⁵ Section 3 states that “[t]he designation shall apply to both wireline and wireless telephone

⁹⁴ Pub. L. No. 106-81, § 2(a)(1), 113 Stat. 1286, 1286 (codified at 47 U.S.C. § 615).

⁹⁵ *Id.* § 2(a)(2), 113 Stat. at 1286.

⁹⁶ *Id.* § 2(a)(3), 113 Stat. at 1286.

⁹⁷ *Id.* § 2(a)(4), 113 Stat. at 1287.

⁹⁸ *Id.* § 2(a)(5), 113 Stat. at 1287.

⁹⁹ *Id.* § 2(a)(6), 113 Stat. at 1287.

¹⁰⁰ *Id.* § 2(b), 113 Stat. at 1287.

¹⁰¹ See Squeo, *supra* note 1, at A10 (“Even when money has been earmarked for modernizing 911, it often has been used for other purposes.”). See also *infra* Part IV.C (discussing an effort by Congress to provide matching funds for implementation of E-911).

¹⁰² Pub. L. No. 106-81, § 3(a), 113 Stat. at 1287 (codified at 47 U.S.C. § 251(e)).

¹⁰³ Pub. L. No. 73-416, 48 Stat. 1064 (codified as 47 U.S.C. § 151 *et seq.*).

¹⁰⁴ Pub. L. No. 106-81, § 3(a), 113 Stat. 1286, 1287 (codified as 47 U.S.C. § 215 (e)(3)).

¹⁰⁵ *Id.*

service.”¹⁰⁶ Section 3(b)¹⁰⁷ identifies the responsibilities, obligation, and authority of the FCC in providing support for a universal emergency telephone number.¹⁰⁸ Section 3(b) requires the FCC to encourage and support states’ efforts to deploy infrastructure and programs, and consult and cooperate with states and encourage states to develop and implement plans to deploy this infrastructure and programs.¹⁰⁹ Section 3(b) also states that “[n]othing in this subsection shall be construed to authorize or require the Commission to impose obligations or costs on any person.”¹¹⁰ Section 3(b) gave the FCC new responsibilities but no new authority to execute its new tasks.¹¹¹

Section 4 of the Wireless Safety Act provides immunity for providers and users of wireless emergency services information in interstate commerce.¹¹² Section 4 preempts state law but limits the liability to that imposed on “any local exchange company and its officers, directors, employees, vendors, or agents.”¹¹³ Section 4 provides immunity to the “wireless carrier and its officers, directors, employees, vendors, and agents” for release of emergency services information “to a PSAP, emergency medical service provider or emergency dispatch provider, public safety, fire service or law enforcement official, or hospital emergency or trauma care facility of subscriber information related to emergency calls or emergency services.”¹¹⁴ User and PSAP immunity from liability is the same as the liability that would exist under “similar circumstances of person using 9-1-1 that is not wireless.”¹¹⁵ Most interesting, provider or carrier liability is not limited to circumstances involving wireline or landline but also includes immunity from claims arising in “Federal and State law (whether through statute, judicial decision, tariffs filed by such local exchange company, or otherwise).”¹¹⁶ Such immunity might have acted as an incentive for wireless carriers to develop and deploy new communication and location technologies, but wireless carriers and PSAPs have responded so slowly in deploying technology and upgrading PSAP that one can reasonably question whether Section 4 could make a slow response more bearable.¹¹⁷

¹⁰⁶ *Id.*

¹⁰⁷ Pub. L. No. 106-81, § 3(b), 113 Stat. 1286, 1287-88 (codified as 47 U.S.C. § 615).

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *See id.*

¹¹² Pub. L. No. 106-81, § 4, 113 Stat. 1286, 1288 (codified as 47 U.S.C. § 615a).

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *See generally infra* Part V.A. (discussing the causes for the slow implementation of E-911). In *U.S. Cellular*, the carrier argued that a lack of protection from liability had been a substantial cause of the delay in implementing E-911. Both the court of appeals and FCC

Congress exercises civil rights and economic powers to enact the Wireless Safety Act.¹¹⁸ It states the sources of its legislative power as follows:

(d) Basis for Enactment. – This section is enacted as an exercise of the enforcement power of the Congress under section 5 of the Fourteenth Amendment to the Constitution and the power of the Congress to regulate commerce with foreign nations, among the several States, and with Indian tribes.¹¹⁹

Section 5 of the Wireless Safety Act amends Section 222¹²⁰ of the Communications Act of 1934 to allow carriers to disclose callers' location information for emergency services.¹²¹ Section 6¹²² contains definitions of the parties, facilities, and emergency 911 services as used in the provisions for emergency call services.¹²³

B. *The ENHANCE 911 Act of 2004 and Its Implementation Objectives*

Congress enacted the ENHANCE 911 Act of 2004 to expand the E-911 wireless communications policy, not to increase its forcefulness.¹²⁴ The ENHANCE 911 Act's objectives are "to improve, enhance, and promote the nation's homeland security, public safety, and citizen activated emergency response capabilities by enhanced 911 services, to further upgrade [PSAP] capabilities and related functions in receiving E-911 calls, and to support the

rejected the argument that exposure to tort liability was a substantial cause. this argument would have led to the conclusion that the cost recovery mechanism could not have been a substantial cause in delaying implementation of E-911. *See U.S. Cellular*, 254 F.3d at 86. These carriers had requested the FCC to consider a proposed rule. *In re* Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., Memorandum Opinion and Order, 12 FCC Rcd 22665, ¶¶ 131-142 (1997) (refusing to preempt state tort liability).

One could reason that minimum risk exposure to tort and financial liabilities should never be a disincentive for carriers and municipalities to implement an effective E-911 emergency call system. Still municipalities and carriers have assumed, in our opinion, some questionable risk exposure caused by the untimely deaths of wireless subscribers who had sought emergency assistance using their cellular telephones. *See Squeo*, *supra* note 1. Thus one cannot entirely rule out an ethical lapse or truly poor decision-making.

¹¹⁸ Pub. L. No. 106-81, § 4, 113 Stat. 1286, 1288 (codified as 47 U.S.C. § 615a).

¹¹⁹ *Id.*

¹²⁰ Pub. L. No. 106-81, § 5, 113 Stat. 1286, 1288-89 (codified as amendments to 47 U.S.C. § 222).

¹²¹ *Id.*

¹²² Pub. L. No.106-81, § 6, 113 Stat. 1286, 1289-90 (codified as 47 U.S.C. § 615b).

¹²³ *Id.* For an analysis of the Wireless Safety Act, *see Eyck*, *supra* note 1, at 53.

¹²⁴ *See* Pub. L. No 108-894, 18 Stat. 3986, 3986-87, § 103 (Dec. 23, 2004) (codified in 47 U.S.C. §942 Notes). The purposes of the ENHANCE 911 Act are to coordinate and insure implementation of 911 by imposing investigatory duties on federal agencies. *See* 47 U.S.C. §942 Notes.

construction and operation of a ubiquitous and reliable citizen activated system.”¹²⁵ Section 102 contains the legislative findings that E-911 should be available to all citizens to protect public safety and homeland security; public resources and coordination need to be available; fees collected for 911 services should be earmarked for that purpose; and federal leadership is needed to implement E-911.¹²⁶ Finally, section 103 lists the purpose of the ENHANCE 911 Act as “(1) to coordinate 911 services and E-911 services, at the Federal, State, and local levels; and (2) to ensure that funds collected on telecommunications bills for enhancing emergency 911 services are used only for the purposes for which the funds are being collected.”¹²⁷

Section 104 of the ENHANCE 911 Act amends the National Telecommunications and Information Administration Organization Act¹²⁸ by providing for the coordination of the implementation of E-911 by a federal office.¹²⁹ Section 104 requires that the Assistant Secretary for Transportation and Administrator of the National Highway Traffic Safety Administration establish a program creating an intergovernmental communication system that also includes communication with the private sector, such as carriers, manufacturers, and vendors.¹³⁰ Section 104 includes the establishment of an E-911 Implementation Coordination Office to implement this section.¹³¹ Section 104 also requires the Assistant Secretary and Administrator to establish a five-management plan for coordination of E-911 implementation programs. Section 104 obligates the Assistant Secretary and Administrator to “advise and assist eligible entities in the preparation of implementation plans required”¹³² and “oversee the use of funds provided by such grants in fulfilling such implementation plans.”¹³³

Section 104 includes a termination provision,¹³⁴ which leads one to believe

¹²⁵ Preamble, ENHANCE 911 Act of 2004, Pub. L. No. 108-494, Title I, 118 Stat. 3986, 3986 (codified in scattered sections of 47 U.S.C.).

¹²⁶ *Id.* § 102, 118 Stat at 3986.

¹²⁷ Pub. L. No. 108-494, § 103, 118 Stat. 3986, 3986-87.

¹²⁸ Pub. L. No. 108-494, § 104, 118 Stat. 3986, 3987-90 (codified at 47 U.S.C. § 942); Telecommunications Authorization Act of 1992, 102 Pub. L. No. 538, Title I, 106 Stat. 3533, (codified at 47 U.S.C. § 901 *et seq.*).

¹²⁹ *See* Pub. L. No. 108-494, § 104, 118 Stat. 3986, 3987-90 (codified at 47 U.S.C. § 942).

¹³⁰ *See id.*

¹³¹ *See id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.* at 118 Stat. 3989 (codified at 47 U.S.C. § 942(d)).

(d) Authorization; termination.

....

(2) Termination. The provisions of this section shall cease to be effective on October 1, 2009.

Id. Moreover, the ENHANCE Act was enacted on December 23, 2004. *Id.* at 118 Stat 3987

that Congress expects the E-911 problems to be corrected by 2009.¹³⁵ The provision states, “this section shall cease to be effective on October 1, 2009.”

¹³⁶ Section 104 also defines E-911 Services and Phase II E-911 wireless emergency call services:

(4) E-911 services. – The term ‘E-911 services’ means both phase I and phase II enhanced 911 services, as described in section 20.18 of the Commission’s regulations (47 C.F.R. § 20.18), as in effect on the date of enactment of the ENHANCE 911 Act of 2004, or as subsequently revised by the Federal Communications Commission.

(5) Phase II E-911 services. – The term ‘phase II E-911 services’ means only phase II enhanced 911 services, as described in such section 20.18 (47 C.F.R. § 20.18), as in effect on such date, or as subsequently revised by the Federal Communications Commission.¹³⁷

Next, section 105 of the ENHANCE 911 Act requires the Government Accounting Office to study and report on the imposition and use of fees by state and local governments.¹³⁸ Section 106 requires the FCC to study and report to Congress particular information on the history and status of waivers that have been offered under Phase II.¹³⁹ Finally, section 107 authorizes the FCC to grant waivers to “provider of commercial mobile service . . . that had 500,000 or fewer subscribers as of December 31, 2001.”¹⁴⁰

C. *The ENHANCE 911 Act and Financial Incentives to Effect Implementation*

Section 104 of the ENHANCE 911 Act creates “Phase II E-911 Implementation Grants”¹⁴¹ that obligate the Assistant Secretary and the Administrator, after consultation with the Secretary of Homeland Security and the Chairman of the FCC to “provide grants to eligible entities for the

(codified at 47 U.S.C. § 942(a)(2)). Section 104, 47 U.S.C. § 942, obligated two federal officials to create a five management plan to facilitate coordination and communication of the implementation of E-911 among various public agencies and private organizations. 118 Stat. 3987 (codified at 47 U.S.C. § 942(a)(1)). Moreover, section 104 ceases to exist or be effective when the management plan for the coordination of implementation and the authorization for matching funds terminate on October 1, 2009. *Id.*

¹³⁵ *See id.*

¹³⁶ *Id.*

¹³⁷ *Id.* (the Act was enacted Dec. 23, 2004).

¹³⁸ *See id.* Title I, § 105, 118 Stat. at 3990 (“initiate a study of . . . the imposition of taxes, fees, or other charges imposed by States or political subdivisions of States that are designated or presented as dedicated to improve emergency communications.”).

¹³⁹ *See id.*, Title I, § 106, 118 Stat. at 3990-91.

¹⁴⁰ *See id.*, Title I, § 107, 118 Stat. at 3991. *See also* 47 U.S.C. § 332(d) (2000) (defining ‘commercial mobile service’).

¹⁴¹ *Id.*, Title I, § 104(b), 118 Stat. at 3987-88 (codified at 47 U.S.C. § 942(b)).

implementation and operation of Phase II E-911 services.”¹⁴² The federal government will provide up to fifty percent of the financing for the implementation project; however, federal funds cannot be used for any of the remaining costs.¹⁴³ Moreover, the federal government imposes coordination as a condition on the receipt of a grant by requiring the following:

(3) Coordination required. – In providing grants under paragraph (1), the Assistant Secretary and the Administrator shall require an eligible entity to certify in its application that –

(A) in the case of an eligible entity that is a State government, the entity –

(i) has coordinated its application with the public safety answering points (as such term is defined in section 222(h)(4) of the Communications Act of 1934) located within the jurisdiction of such entity;

(ii) has designated a single officer or governmental body of the entity to serve as the coordinator of implementation of E-911 services, except that such designation need not vest such coordinator with direct legal authority to implement E-911 services or manage emergency communications operations;

(iii) has established a plan for the coordination and implementation of E-911 services; and

(iv) has integrated telecommunications services involved in the implementation and delivery of phase II E-911 services; or

(B) in the case of an eligible entity that is not a State, the entity has complied with clauses (i), (iii), and (iv) of subparagraph (A), and the State in which it is located has complied with clause (ii) of such subparagraph.¹⁴⁴

Finally, Section 104 imposes another condition on matching grants: States cannot reallocate fees, taxes, or other charges collected on the use of wireless telephone services:¹⁴⁵

Each applicant for a matching grant under this section shall certify . . . that no portion of any designated E-911 charges imposed by a State or other taxing jurisdiction within which the applicant is located are being obligated or expended for any purpose other than the purposes for which such charges are designated or presented during the period beginning 180 days immediately preceding the date of the application and continuing

¹⁴² *Id.*

¹⁴³ *See id.*

¹⁴⁴ *Id.*

¹⁴⁵ *See id.*, Title I, § 104(c), 118 Stat. at 3988-89 (codified at 47 U.S.C. § 942(c)).

through the period of time during which the funds from the grant are available to the applicant.¹⁴⁶

If the applicant uses the taxes, fees or charges for purposes other than the implementation of E-911, the applicant must repay the grant funds.¹⁴⁷ The ENHANCE 911 Act states that:

Each applicant for a grant under this section shall agree, as a condition of receipt of the grant, that if the State or other taxing jurisdiction within which the applicant is located, during any period of time during which the funds from the grant are available to the applicant, obligates or expends designated E-911 charges for any purpose other than the purposes for which such charges are designated or presented, all of the funds from such grant shall be returned to the Office.¹⁴⁸

Section 104 further provides that:

the Department of Transportation, for the purposes of grants under the joint program operated under this section with the Department of Commerce, not more than \$250,000,000 for each of the fiscal years 2005 through 2009, not more than 5 percent of which for any fiscal year may be obligated or expended for administrative costs.¹⁴⁹

V. IMPLEMENTING FEDERAL REGULATION BY THE FCC

Notwithstanding the most recent congressional telecommunications policy, in 1996 the FCC recognized the public importance of establishing a wireless emergency call system to protect public safety by including features of the wireline emergency call system. Part V first discusses the FCC's efforts to implement enhanced emergency call services prior to the Wireless Safety Act and ENHANCE 911 Act and then examines newly created roles of Federal Executive Departments and their agencies in planning, financing and implementing E-911. We show that recent federal communications legislation delegates to the Departments of Transportation and Homeland Security authority and expands the FCC's authority to increase involvement and participation in planning, funding and implementation of Phase II of E-911.¹⁵⁰

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*

¹⁴⁸ *Id.*

¹⁴⁹ *Id.* See Squeo, *supra* note 1 (stating that Departments of Transportation and Commerce officials stated that it was highly unlikely that funds would be available to operate the office and fund matching grants); *see also supra* note 18 (explaining that a private not-for-profit organization urge Congress to fund the ENHANCE 911 Act).

¹⁵⁰ *See* 47 U.S.C § 942 (requiring federal agencies to plan, coordinate and monitor implementation of E-911 and authorizing the appropriation of funds to support and encourage implementation of E-911).

A. *Providing PSAPs with Serving Cell Information and a Callback Number*

The federal government has been involved with emergency 911 services since 1967 when the President's Commission on Law Enforcement and Administration of Justice assigned the FCC the task of establishing a single emergency number.¹⁵¹ The FCC's statutory mandates include promoting the national defense¹⁵² and most recently consulting and cooperating with states to protect the safety of life and property¹⁵³ through the use of wire and radio communication.¹⁵⁴ FCC regulations obligate telecommunications carriers to transmit 911 calls.¹⁵⁵

In mid-1996, the FCC required wireless carriers to provide wireless 911 callers the same level of emergency service that was available to wireline callers.¹⁵⁶ This emergency service would enable emergency dispatchers at

¹⁵¹ See Ecyk, *supra* note 1, at 56-57 (citing Bertram A. Maas, "911" Emergency Assistance Call Systems: Should Local Governments Be Liable for Negligent Failure to Respond?, 8 GEO. MASON U. L. REV. 103, 103 n.1 (1985)).

¹⁵² See Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56; Communications Act of 1934, Pub. L. No. 73-416, § 1 48 Stat. 1064, 1064 ("For the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available . . . a rapid, efficient, Nation-wide . . . wire and communication service . . . for the purpose of the national defense . . . there is hereby created a commission to be known as the 'Federal Communications Commission'.").

¹⁵³ See Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286. The Wireless Safety Act requires the FCC to encourage and support State efforts to implement E-911 emergency call systems. 47 U.S.C. § 615. It also requires the FCC to consult and cooperate with, among others, ". . . public safety, fire service and law enforcement officials, consumer groups and hospitals emergency and trauma care personnel . . ." *Id.*

¹⁵⁴ See Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286; Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56; Communications Act of 1934, Pub. L. No. 73-416, § 1 48 Stat. 1064, 1064.

¹⁵⁵ 47 C.F.R. § 64.3001 (2005). FCC regulations state:

§ 64.3001 Obligation to transmit 911 calls.

All telecommunications carriers shall transmit all 911 calls to a PSAP, to a designated statewide default answering point, or to an appropriate local emergency authority as set forth in § 64.3002.

Id. The appropriate local authority as defined by FCC regulations is the PSAP, and if no PSAP, a statewide default answering point. 47 C.F.R. § 64.3002 (2005).

¹⁵⁶ James M. Zagami, Steen A. Parl, Julian J. Bussgang & Karen Devereaux Melillo, *Providing Universal Location Services Using a Wireless E911 Location Network*, IEEE COMM. MAG., Apr. 1998, at 66, 66-71. See also 47 C.F.R. § 20.18 (b) (2005). FCC regulations state:

Basic 911 Service. [Commercial Mobile Radio Services] . . . providers subject to this section must transmit all wireless 911 calls without respect to their call validation process to a Public Safety Answering Point, or, where no Public Safety Answering Point has been designated, to a designated statewide default answering point or appropriate local emergency authority pursuant to § 64.3001 of this chapter, provided

PSAPs to locate callers from wireless phones. This included a five-year plan for implementation of wireless E-911 in two major phases to satisfy both public safety and wireless carrier feasibility perspectives. Phase I regulations required wireless carriers to provide PSAPs with serving cell information and a callback number.¹⁵⁷ They obligated the carrier to “provide the telephone number of the originator of a 911 call and the location of the cell site or base station receiving a 911 call from any mobile handset accessing their systems to the designated Public Safety Answering Point through the use of ANI and Pseudo-ANI.”¹⁵⁸ Phase I limited carrier obligations when the carrier cannot determine the directory number of the handset. Specifically, FCC regulations state that “[w]hen the directory number of the handset used to originate a 911 call is not available to the serving carrier, such carrier's obligations under the paragraph (d)(1)¹⁵⁹ of this section extend only to delivering 911 calls and available call party information, including that prescribed in paragraph [(d)](l) of this section, to the designated Public Safety Answering Point.”¹⁶⁰

B. Providing PSAPs with the Location of All 911 Callers

Phase II regulations required wireless carriers to provide PSAPs with the location of all 911 callers by longitude and latitude in accordance with FCC mandated accuracy and reliability standards.¹⁶¹ Such requirements depend on whether the carrier chose a network-based or handset-based solution to

that “all wireless 911 calls” is defined as “any call initiated by a wireless user dialing 911 on a phone using a compliant radio frequency protocol of the serving carrier.”

47 C.F.R. § 20.18 (b) (2005).

¹⁵⁷ See 47 C.F.R. § 20.18 (d) (2005). FCC regulations on 911 services state that:

(d) Phase I enhanced 911 services. (1) As of April 1, 1998, or within six months of a request by the designated Public Safety Answering Point as set forth in paragraph (j) of this section, whichever is later, licensees subject to this section must provide the telephone number of the originator of a 911 call and the location of the cell site or base station receiving a 911 call from any mobile handset accessing their systems to the designated Public Safety Answering Point through the use of ANI and Pseudo-ANI.

(2) When the directory number of the handset used to originate a 911 call is not available to the serving carrier, such carrier's obligations under the paragraph (d)(1) of this section extend only to delivering 911 calls and available call party information, including that prescribed in paragraph (l) of this section, to the designated Public Safety Answering Point.

§ 20.18(d) & (d)(2).

¹⁵⁸ See § 20.18(d) (2005).

¹⁵⁹ See *id.* § 20.18(d)(1). This subsection states: “As of April 1, 1998, or within six months of a request by the designated Public Safety Answering Point as set forth in paragraph (j) of this section, whichever is later, licensees subject to this section must provide the telephone number of the originator of a 911 call and the location of the cell site or base station receiving a 911 call from any mobile handset accessing their systems to the designated Public Safety Answering Point through the use of ANI and Pseudo-ANI.” *Id.*

¹⁶⁰ See § 20.18(d)(2).

¹⁶¹ See 47 C.F.R. § 20.18 (e).

determine location. The original 1996 Phase II requirements did not anticipate advances in location technology, and thus new ALI technology led to the FCC amending its E-911 regulations to permit handset-based technology to compete with network-based solutions in providing automatic location information.¹⁶² These FCC regulations impose reliability and accuracy standards on location information provided by wireless carriers to LECs and then PSAPs.¹⁶³ Phase II regulations require wireless carriers to meet the following location accuracy and reliability standards:

- (1) For network-based technologies: 100 meters for 67 percent of calls, 300 meters for 95 percent of calls;
- (2) For handset-based technologies: 50 meters for 67 percent of calls, 150 meters for 95 percent of calls.
- (3) For the remaining 5 percent of calls, location attempts must be made and a location estimate for each call must be provided to the appropriate PSAP.¹⁶⁴

The ENHANCE 911 Act focuses federal legislative attention on planning, coordinating, financing and implementing Phase II of wireless E-911, but expects closure to Phase II in October 1, 2009.¹⁶⁵

Phase II has been fraught with technology differences, intergovernmental conflict and public-private disputes. This conflict prone environment is created by the existence of four or more cellular standards and two or more automatic location technologies that must be relayed or routed through LECs to PSAPs.¹⁶⁶ Multiple standards used by wireless carriers, insufficient communication between the public and private parties, and rapidly changing technologies make the implementation of wireless caller location a formidable

¹⁶² See § 20.18(g).

¹⁶³ See § 20.18(h).

¹⁶⁴ See *id.*

¹⁶⁵ See 47 U.S.C. § 942 (2000).

¹⁶⁶ See *supra* Part III and accompanying notes. Local Exchange Carriers (LECs) play an important role in E-911 emergency call system.

LECs own and operate most of the 911 selective routers, ALI databases, the trunks to carry 911 calls, and sometimes the Customer Premises Equipment (CPE) upon which the PSAP's 911 system is based. The service between the LEC and PSAP is contractual in nature and paid by the PSAP typically through a special tariff filed with the State public utility commission. Because most LEC-based systems are designed to support 8-digit dialing patterns utilizing CAMA (Centralized Automatic Message Accounting) signaling (*sic*), the Report contends that LECs need to be accountable for the operational readiness of their 911 systems. . . .

In re Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., Memorandum and Order, 14 FCC Rcd 20850, ¶ 83, p. 32 (Dec. 8, 1999) [hereinafter *E-911 FCC Second Memorandum and Order*] (citing *Ex parte* filing, Aug. 9, 1999, Report of CTIA, PCIA, APCO, NENA, and NASNA, at 15-18; erratum *ex parte* filing, Aug. 10, 1999 (Implementation Report)).

task. There are more than six thousand 911 call centers in the United States.¹⁶⁷ Wireless carriers are national or regional in scope and their service areas exceed the boundaries of any one call center. *In a typical region served by one LEC, there may be six or seven wireless carriers using varying cellular technologies and their supporting location solutions, multiple PSAPs and millions of subscribers.*¹⁶⁸

C. *PSAPs as the Triggering Force for Local Deployment of E-911*

Wireless carriers must comply with Phase II obligations when requested by the PSAP. FCC regulations state that:

Once a PSAP request is received, the licensee shall, in the area served by the PSAP, within six months or by October 1, 2001, whichever is later:

(i) Install any hardware and/or software in the CMRS network and/or other fixed infrastructure, as needed, to enable the provision of Phase II enhanced 911 service; and

(ii) Begin delivering Phase II enhanced 911 service to the PSAP.¹⁶⁹

The FCC imposed the E-911 mandate but chose to leave funding to the market, that is, to the wireless carriers.¹⁷⁰ However, no wireless carrier fully met the October 1, 2001, deadline.¹⁷¹ As of May 12, 2005, Phase II compliance was slowly being deployed with only six states and the District of Columbia fully Phase II compliant.¹⁷² But in December 22, 2005, the National Emergency Number Association (“NENA”) reported that “more than two-thirds of the nation’s population now resides in area where wireless 9-1-1 include delivery of the caller’s call back number and location to . . . PSAP[but] . . . a large area of the country (57.3% of counties) [are] not yet providing this important service to wireless customers.”¹⁷³

¹⁶⁷ Squeo, *supra* note 1.

¹⁶⁸ Emphasis added.

¹⁶⁹ 47 C.F.R. § 20.18 (g)(2) (2005).

¹⁷⁰ See *U.S. Cellular Corp. v. F.C.C.*, 254 F.3d 78 (D.C. Cir. 2001).

¹⁷¹ See *In re* Revision of the Commission Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Fourth Memorandum Opinion and Order, 15 F.C.C.R. 17442, 22 Comm. Reg. (P & F) 3 (Sept. 8, 2000) [hereinafter *E-911 Fourth Memorandum*]. The FCC made several changes to the Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Third Report and Order, 14 FCC Rcd 17388 (1999) (E-911 Third Report and Order), to enhance compliance and implementation of E-911 by wireless carriers. See E-911 Fourth Memorandum, at 2-3.

¹⁷² See Squeo, *supra* note 1.

¹⁷³ National Emergency Number Association, *Two-Thirds of Population Now Covered by Phase II Wireless E9-1-1: NENA releases current wireless 9-1-1 Statistics*, Press Releases, (Dec. 22, 2005) http://www.nena.org/Press_Room/releasesnew/12.20.05%20wireless%20statistics.pdf, last visited May 2, 2006 [hereinafter *Two-Thirds Covered*].

[A] PSAP will be deemed capable of receiving and utilizing the data elements associated with the service requested, if it can demonstrate that it has . . . [o]rdered the necessary equipment and has commitments from suppliers to have it installed and operational . . . and . . . [m]ade a timely request to the appropriate local exchange carrier for the necessary trunking, upgrades, and other facilities.¹⁷⁴

The FCC can grant waivers to carriers that are not ready to provide identification and location data to PSAP.¹⁷⁵ The ENHANCE 911 Act requires the FCC to report to Congress on the status of waivers granted to wireless carriers during Phase II of E-911 implementation.¹⁷⁶

VI. THE FCC AND CARRIER OBLIGATIONS AND STATE MANDATES

Wireless Carriers and PSAPs did not meet Phase II requirements by the

National Emergency Number Association (NENA) is not-for-profit trade organization that represents the emergency telephone number call system industry.

NENA's Mission is to foster the technological advancement, availability and implementation of a universal emergency telephone number system (9-1-1). In carrying out its mission, NENA promotes research, planning, training and education. The protection of human life, the preservation of property, and the maintenance of general community security are among NENA's objectives.

NENA, *What is NENA?*, <http://www.nena.org/pages/Content.asp?CID=119&CTID=38>, last visited May 2, 2006 [hereinafter *What is NENA*].

¹⁷⁴ 47 C.F.R. § 20.18 (j)(2)(A) & (B) (2005).

¹⁷⁵ See ENHANCE 911 Act of 2004, Pub. L. No. 108-494, Title I, § 106, 118 Stat. 3986.

¹⁷⁶ *Id.* The pertinent language of Section 106, 47 U.S.C. § 942, states:

SEC. 106. REPORT ON THE DEPLOYMENT OF E-911 PHASE II SERVICES BY TIER III SERVICE PROVIDERS.

Within 90 days after the date of enactment of this Act, the Federal Communications Commission shall submit a report to the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate detailing—

- (1) the number of tier III commercial mobile service providers that are offering phase II E-911 services;
- (2) the number of requests for waivers from compliance with the Commission's phase II E-911 service requirements received by the Commission from such tier III providers;
- (3) the number of waivers granted or denied by the Commission to such tier III providers;
- (4) how long each waiver request remained pending before it was granted or denied;
- (5) how many waiver requests are pending at the time of the filing of the report;
- (6) when the pending requests will be granted or denied . . .

Id. Tier II are non-nationwide carriers that have more than over 500,000 subscribers as of year-end 2001, and Tier III carriers are all other non-nationwide carriers. See *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, Order to Stay, ¶¶ 22-23, (July 26, 2002) (*E-911 Small Carriers Order*).

required date of December 2005.¹⁷⁷ This problem requires federal policy and regulatory intervention and market and commercial applications that will motivate wireless carriers and states to become more accountable to subscribers for injuries, deaths and security breaches caused by the inefficiencies of the current wireless E-911 system. Obviously, neither the traditional federal carrot and stick approach, nor the new federal communications policy that is only partially funded, are working.

A. *The Authority of the FCC and Other Agencies in E-911 Implementation*

The Wireless Safety Act states that “[n]othing in this subsection shall be construed to authorize or require the Commission [FCC] to impose obligations or costs on any person.”¹⁷⁸ The FCC imposes deadlines and fines¹⁷⁹ on the communication industry for failure to provide location information when state and local governments that receive the information have yet to deploy adequate communications infrastructure and programs.¹⁸⁰ Yet, the Wireless Safety Act fails to impose forceful obligations on the states that have decided to delay implementation of E-911 until they can afford it, notwithstanding the fact that this policy seriously harms their citizens.¹⁸¹ Local and state public policy concerns seem inadequate to force states to implement E-911 in a timely manner. Unfunded matching grant provisions of the ENHANCE 911 Act demand a greater legislative effort by Congress, including more assertive or forceful mandates for states and carriers.

¹⁷⁷ See Two-Thirds Covered, *supra* note 173.

¹⁷⁸ *Id.* at Title I, § 106 118 Stat. 3986.

¹⁷⁹ See 47 U.S.C. §§ 158 & 159 (authorizing the FCC to impose regulatory fees to cover the costs of operations and administration). The FCC also imposes monetary sanctions on media and wireless carriers for violations of FCC regulations and orders. See 47 U.S.C §§ 502 & 503 (authorizing forfeitures and fines).

The FCC has imposed fines and forfeitures for violations of E-911 rules and orders. See FCC, *FCC Proposes to Fine T-Mobile USA, Inc. \$1.25 Million for E911 Violations*, Mar. 5, 2003, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-231740A1.pdf, last visited May 2, 2006; FCC, *Wireless 911 and E911 Violations*, Enforcement Actions, <http://www.fcc.gov/eb/E911/Violations.html>, last visited May 2, 2006 (listing violations of E-911 rules and regulations from June 30, 2000 through April 26, 2006).

¹⁸⁰ Dale N. Hatfield, *A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services*, http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513296239, Oct. 2002 (Mr. Hatfield, a Telecommunications Consultant, prepared the report for the Federal Communications Commission. “The purpose of this report is to convey the results of an independent inquiry into the technical and operational issues affecting the deployment of wireless Enhanced 911 (“E-911”) services in the United States. The inquiry was carried out by the author on behalf of the Federal Communications Commission (“Commission”) over a six month period beginning on April 15, 2002.”).

¹⁸¹ Squeo, *supra* note 1.

The Hatfield Report¹⁸² and *U.S. Cellular Corp. v. FCC*¹⁸³ point out some of the delays or causes for the failure to implement E-911 in a timely manner. First, the carriers and PSAPs did not have complete protection from liability under state law and had been cautiously slow to provide data to PSAPs and other lawful users until enactment by Congress of the Wireless Safety Act.¹⁸⁴ Second, LECs were not included in planning and implementation of E-911.¹⁸⁵ Third, disputes among wireless carriers, LECs and PSAPs regarding technology and upgrading technology in implementing E-911.¹⁸⁶ In *U.S. Cellular Corp.*, the FCC argues that in 2001, the “carrier cost recovery requirement [was] . . . a significant cause of delay . . .”¹⁸⁷ Meanwhile, Phase II is expected to take another half decade to complete,¹⁸⁸ and a few states and the federal government are not willing to use and appropriate funds for E-911 implementation.¹⁸⁹ Therefore, the FCC may need to return to cost recovery or funding of E-911 by carriers and PSAPs to address the public policy concern, thus seeking to use cost as an incentive for motivating both sides of the E-911 implementation equation, rather than as a hindrance.¹⁹⁰ The ENHANCE 911

¹⁸² Hatfield, *supra* note 180.

¹⁸³ 254 F.3d 78 (D.C. Cir. 2001).

¹⁸⁴ *See id.* at 86 & 86-87.

¹⁸⁵ *See id.*; Hatfield, *supra* note 180.

¹⁸⁶ *See U. S. Cellular*, 254 F.3d at 86; Hatfield, *supra* note 180.

¹⁸⁷ *See U. S. Cellular*, 254 F.3d at 86.

¹⁸⁸ *See* 47 U.S.C. § 942 (d)(2) (stating that the authorization of funding for the ENHANCE 911 Act under 47 U.S.C 942 (d)(1) will expire on October 1, 2009).

¹⁸⁹ *See* Squeo, *supra* note 1 (explaining that some states had used their funds for purposes other than E-911 implementation). *See also* NENA, *Over 35 National Organizations Request Full Funding for ENHANCE 911 Act In Letter to Congress*, Press Release, Feb. 24, 2005, <http://www.nena.org/UserFiles/File/ENHANCE%20911%20Act%20Funding%20Support%20Letter%20Release%202.24.pdf> [hereinafter *NENA Request for Funds*]. In its Press Release, NENA states that:

The ENHANCE 911 Act authorized . . . up to \$250 million per year for grants to upgrade enhanced emergency communications services. The Digital Television and Public Safety Act of 2005 [Pub. L. 109-171, 120 Stat. 4, § 3001, § 3011 (codified in the Communications Act of 1934, 47 U.S.C. § 309(j)(8)(E))], provided \$43.5 million for ENHANCE 911 Act grants, but that money will come through a spectrum auction that is to take place "no later than January 28, 2008". Thus, while a significant amount of money will likely be made available for grants in 2008 or 2009, no money has been appropriated to date for PSAP grants.

. . . As new technologies continue to develop, such as voice over IP (VoIP), more challenges for the 9-1-1 system emerge. A primary reason for these limitations is due to a lack of funding for 9-1-1.

NENA Request for Funds, *supra*.

¹⁹⁰ *In re* Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., Memorandum and Order, 14 FCC Rcd 20850, p. 42 (Dec. 8, 1999) [hereinafter *E-911 FCC Second Memorandum and Order*] (finding that carrier cost recovery could become an obstacle to implementation of E-911).

Act gives authority to the Department of Transportation and requires consultation with the Department of Commerce in matching grants administration for E-911 implementation. Relying on the wisdom of Congress to include other agencies in funding matters, the FCC may need to rethink cost recovery or funding for some regions of the country.

B. Limiting the Cost and Accountability of States in Implementing E-911

One economic concern in deploying new technologies for public safety and welfare is the carriers' cost of the new technology and its installation. The FCC leaves the cost recovery for developing ALI and modifying cellular and other technology standards with the wireless carriers and state and local governments, even though these carriers are providing a public benefit or service to state citizens the FCC provides no funding or cost recovery mechanism¹⁹¹ In *U.S. Cellular Corp. v. FCC*,¹⁹² the District of Columbia Circuit addressed the cost-causation issue where a wireless carrier argued that it was not the cause of the cost of implementing E-911 and thus should not be obligated to pay for E-911 implementation.¹⁹³ The court disagreed and

¹⁹¹ See *In re* Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676, p. 8 (July 26, 1996) [hereinafter *E-911 FCC 1996 Report, Order and Notice*] (requiring cost recovery mechanism to be in place but not requiring a specific mechanism and recognizing a negative impact on implementation of an inflexible federal mechanism); *In re* Revision of the Comm'n's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Sys., Memorandum Opinion and Order, 12 FCC Rcd 22665, ¶¶ 143-146 (Dec. 23, 1997) [hereinafter *E-911 FCC First Memorandum and Order*] (refusing to provide a cost recovery mechanism for carrier); E-911 FCC Second Memorandum and Order, *supra* note 185, at 42 (finding that carrier cost recovery could become an obstacle to implementation of E-911 and recognizing that some localities and states had no cost recovery mechanisms).

¹⁹² See *U. S. Cellular*, 254 F.3d at 86.

¹⁹³ *Id.* at 83. The United States Court of Appeals for the District of Columbia Circuit had established and articulated the cost causation principle in *Competitive Telecommunications Ass'n v. FCC*, 318 U.S. App. D.C. 288, 87 F.3d 522, 529 (D.C. Cir. 1996) ("*Comptel*"). The District of Columbia Circuit states that:

we held that when the Commission sets rates, it "must ... specifically justify any rate differential that does not reflect cost." [*Comptel*,] 87 F.3d at 529. In that case, the Commission had established a rate structure that essentially required large long distance carriers to subsidize smaller ones. Concluding that "the attempt to recover costs from [long distance carriers] that did not cause those costs to be incurred would impart the wrong incentives," *id.* at 530-31, we vacated the Commission's order. *Comptel* based its cost causation principle on both APA, [5 U.S.C. §] 706(A)(2), which makes unlawful arbitrary and capricious agency actions, 5 U.S.C. § 706(2)(A), and then-existing versions of Communications Act sections 201 and 202, which presently provide that "charges ... for and in connection with [a] communication service, shall be just and reasonable," 47 U.S.C. § 201(b), and that "it shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges ... for or in connection with [a] communication service," *id.* § 202(a). See *Comptel*, 87 F.3d at 529.

concluded that the FCC imposed the cost to protect public safety, and thus wireless carriers were obligated to pay for the E-911 implementation.¹⁹⁴ The court of appeals recognized that PSAPs need and use the number and location identification information and that wireless carriers are providing this information under an obligation imposed by the FCC and may impose the cost on their subscribers who are the beneficiaries of the information.¹⁹⁵ The District of Columbia Circuit concluded that the FCC had sufficient reasons not to reinstate the cost recovery mechanism in implementing Phase II of E-911.¹⁹⁶

One point of interest in *U.S. Cellular Corp.* was the impact of providing E-911 in rural areas where population density is low and the cost of providing number and location information is expected to be higher than in urban areas if carriers are forced to use network-based solution for location information.¹⁹⁷ The FCC claimed that reinstating the carrier cost recovery mechanism would be an obstacle to implementing Phase II because few states had implemented Phase II and the cost recovery mechanism in place during Phase I did not expedite its implementation.¹⁹⁸ The District of Columbia Circuit agreed with the FCC that PSAPs are not cost causers but rather are public governmental entities providing a public safety.¹⁹⁹

In *U.S. Cellular Corp.*, the wireless carrier made another fatal argument that eliminating the cost recovery mechanism “lead[s] to ‘inefficient economic behavior, because [the government is] not required to internalize the costs of building [E-911 capabilities].”²⁰⁰ Again the court rejected the wireless carrier’s argument as ludicrous and reasoned that the FCC could not be the cause of these carrier’s cost by obligating them to protect the public safety.²⁰¹ Consequently, the development of ALI technology depends on the availability of carrier or private resources, but the benefits are mostly public unless the wireless carriers can pass on the cost to the subscribers or find profitable commercial uses for ALI or both. On the cost recovery issue, if the federal government is willing to match the cost for public entities to implement E-911, it needs to consider the impact of cost on carrier strategic operations and plans for creating new technology, expanding and, perhaps, meeting new competition. Financial incentives for a limited duration are research security

U. S. Cellular, 254 F.3d at 83. The District of Columbia Circuit also states that “[p]etitioners here argue that neither they nor their customers caused the E-911 costs, and therefore that *Comptel* prohibits the Commission from requiring them to pay for the cost of implementation.” *Id.*

¹⁹⁴ *U. S. Cellular*, 254 F.3d at 85.

¹⁹⁵ *Id.* at 84-85.

¹⁹⁶ *Id.* at 88.

¹⁹⁷ *Id.* at 81.

¹⁹⁸ *Id.* at 82.

¹⁹⁹ *Id.* at 84.

²⁰⁰ *Id.* at 85.

²⁰¹ *See id.* at 85.

grants, local or state public subsidizes, and state and federal tax incentives for some urban and rural markets.

Arguably, the U.S. regulatory approach, if not for the internal inconsistencies and implementation inefficiencies, would be more straightforward and goal oriented than the European Union's²⁰² market driven approach. One major strength of the EU approach is that funds of a cash strapped growth industry, still facing enormous investments in network development that only will payoff over a longtime horizon, are not diverted from research and technology and application development. In due time, ALI for emergency calls will evolve naturally with the development of commercial applications, but mandating a rush to establish this functionality for purposes of public policy may have the exact opposite effect. Imagine if the United States' first telephone company, Bell Telephone Company, formed in 1877, had been hit with a government mandate to install public phones to enable citizens to call emergency services within a quarter-mile radius of any home nationwide, regardless of whether the local police station even had a phone connection. One might question whether telephone services under these circumstances would have been as rapidly deployed and adopted as they have been, or whether the necessary diversion of funds (and focus) would have seriously hampered growth.

C. *Private and Public Sectors' Failures in Implementing E-911*

The FCC seeks to encourage competition and technology development and thus permits several cellular standards.²⁰³ PSAPs, therefore, must be able to work with different technologies. The immunity, preemption, and waivers of state laws seem not to encourage wireless carriers to develop the capability to deploy ALI technology to pinpoint a caller's location when they face limited liability for the deaths and injuries of their customers who had requested emergency services when they could not be located. In fact, the wireless telephone industry has not been static and telecommunications companies have merged to form bigger carriers with larger territories and new market objectives.²⁰⁴ The Wireless Safety Act and ENHANCE 911 Act fail to give the FCC and other agencies the power to enforce E-911 when states and carriers do not comply with federal policy that saves individual lives, reduces personal injuries, insures public safety and protects national security.

Federal and state policy-makers must seek a regulatory scheme in implementing E-911 that embodies *cooperative federalism* between federal

²⁰² For discussion of the market-forces reliant on EU enhanced emergency call service policy, see *supra* notes 11 and 73 and accompanying text.

²⁰³ See Ellis, *supra* note at 57, at 304-06.

²⁰⁴ See Drucker *et al.*, *supra* note 2 (discussing impact and implications of the Sprint-Nextel merger and the acquisition of AT&T wireless by Cingular to create the largest wireless company).

and state governments.²⁰⁵ Cooperative federalism permits the federal government to take a more assertive role in implementing E-911 by establishing time schedules and procedural guidance that are enforced through penalties and forfeitures. Moreover, cooperative federalism permits the states to establish substantive obligations that mandate wireless carriers, LECs and PSAPs to implement E-911 to reduce personal injuries, eliminate the loss of human life and improve homeland security. Finally, cooperative federalism would limit states rights concerns regarding the power of the federal government under the Commerce Clause,²⁰⁶ namely the Communications Act of 1934, to intervene in state emergency care system policies and programs solely to protect state citizens from apparent bodily harm and death cause by inoperable E-911 emergency systems under the authority of the local and state government.

VII. CONCLUSION

The Wireless Communications and Public Safety Act of 1999 and ENHANCE 911 Act of 2004 are not forceful enough to require wireless carriers to address E-911 technology and location information problems and demand local and state governments to plan, manage and implement wireless E-911 emergency call services.²⁰⁷ Neither Act effectively furthers federal legislative purposes and policies. The Wireless Safety Act fails to address the need for public funds to offset or subsidize the private costs of developing technologies and the impact of immunity and liability on new public and private actions. Moreover, it fails to address the market expansion of wireless telephones for household and personal use and the creation of commercial or market solutions for technology, new legal issues, the effects on LECs and PSAPs of multiple standards,²⁰⁸ and the public consequences of past wireless business practices inconsistent with present federal policy. The ENHANCE 911 Act addressed a few of these public policy concerns, but its present implications show no significant effects on the timely implementation of Phase II of E-911. Even after the enactment of ENHANCE 911, states have few incentives to change their behavior in the management of state E-911 funds and policy. In fact, only two-third of the population of the United States is

²⁰⁵ See James E. Holloway, *Revisiting Cooperative Federalism in Mandated Employer-Sponsored Health Care Programs under the ERISA Preemption Provision*, 8 QUINNIPIAC HEALTH L. J. 239, 244-47 (2005).

²⁰⁶ U. S. CONST. art. I, § 8, cl. 8.

²⁰⁷ See *supra* Part VI (discussing the effectiveness of federal communication policy implementing E-911).

²⁰⁸ See Shawn Young, *Can Sprint Keep Nextel Customers Happy?*, WALL ST. J., Dec. 10, 2004, at B1 (discussing impact the Sprint-Nextel merger on Nextel's push-to-talk features on its wireless telephones and that Sprint's technology, CDMA, is not compatible with Nextel's technology, IDEN, and does not permit Sprint to use the push-to-talk features).

covered by Phase II as of December 23, 2005.²⁰⁹ The coverage includes large urban areas, such as New York City, and thus smaller urban and many rural areas may yet to be covered under Phase II.²¹⁰ It seems unlikely that the federal government will soon appropriate enough revenue to fund or continue to fund the coordination, implementation and matching grant provisions of the ENHANCED 911 Act.²¹¹ Therefore, there may be no significant change in rate of the implementation of E-911 emergency call services unless some devastating national disaster of the magnitude of 9/11, though we pray not, shows the true nature of governmental attention or effort given to the E-911 public policy concern.²¹²

²⁰⁹ See Two-Thirds Covered, *supra* note 173.

²¹⁰ See *id.*

²¹¹ See NENA Request for Funds, *supra* note 189.

²¹² In contrast to these discouraging findings for the United States, the implementation of ALI throughout the European Union (EU) has progressed much further on the basis of a much different approach. A parallel study is currently underway by the present authors inquiring into the effectiveness of the EU market driven approach compared to the U.S. policy driven one.