

ATTACHMENT ONE REGULATORY HISTORY

Beginning in 1996, the Commission required Commercial Mobile Radio Service (CMRS) providers to implement basic 911 and Enhanced 911 services. Under the Commission's wireless E911 rules, CMRS providers are obligated to provide the telephone number of the originator of a 911 call and information regarding the caller's location to any Public Safety Answering Point (PSAP) that has requested such information.⁵⁴ The recently amended Section 20.18(h) of the Commission's rules states that licensees subject to the wireless E911 requirements shall comply with the following standards for Phase II location accuracy and reliability: (1) For network-based technologies: 67 percent of calls within 100 meters, 90 percent of calls within 300 meters; (2) For handset-based technologies: 67 percent of calls within 50 meters, 90 percent of calls within 150 meters.

In June of 2005, the Commission released a *First Report and Order and Notice of Proposed Rulemaking* adopting rules requiring providers of interconnected VoIP service to supply E911 capabilities to their customers as a standard feature from wherever the customer was using the service.⁵⁵ There was little more than nine months from the date that the FCC issued its NPRM in that proceeding, to the date it adopted rules to bring interconnected VOIP services into the Nation's 911 public safety network. The rules adopted in the VoIP 911 Order apply only to providers of interconnected VoIP services, which the Commission defined as services that (1) enable real-time, two-way voice communications; (2) require a broadband connection from the user's location; (3) require Internet protocol-compatible customer premises equipment (CPE); and (4) permit users generally to receive calls that originate on the public switched telephone network (PSTN) and to terminate calls to the PSTN. Interconnected VoIP service providers generally must provide consumers with E911 service and transmit all 911 calls, including Automatic Number Identification (ANI) and the caller's Registered Location for each call, to the PSAP designated statewide default answering point, or an appropriate local emergency authority. In 2008, Congress codified these requirements and granted the Commission authority to modify them.⁵⁶

In June of 2007, the Commission released the *Location Accuracy NPRM*, seeking comment on several issues relating to wireless E911 location accuracy and reliability

⁵⁴ See 47 C.F.R. § 20.18(d)-(e), (h); see also *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, 17417-23 ¶¶ 66-77 (1999) (concerning requirements for location accuracy at that time).

⁵⁵ *In the Matters of IP-Enabled Services; E911 requirements for IP-Enabled Service Providers*, WC Docket No. 04-36, WC Docket No. 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245, 10246 (2005) (*VoIP 911 Order and VoIP 911 NPRM*); *aff'd sub nom. Nuvio Corp. v. FCC*, 473 F.3d 302 (D.C. Cir. 2007).

⁵⁶ 47 U.S.C. § 615a-1(b) ("An IP-enabled voice service provider that seeks capabilities to provide 9-1-1 and enhanced 9-1-1 service from an entity with ownership or control over such capabilities, to comply with its obligations under subsection (a), shall, for the exclusive purpose of complying with such obligations, have a right of access to such capabilities, including interconnection, to provide 9-1-1 and enhanced 9-1-1 service on the same rates, terms, and conditions that are provided to a provider of commercial mobile service (as such term is defined in Section 332(d) of the Communications Act of 1934), subject to such regulations as the Commission prescribes under subsection (c)."); *id.* at § 615(a)-1(c) ("The Commission – (1) within 90 days after July 23, 2008, shall issue regulations implementing such Act, including regulations that – (A) ensure that IP-enabled voice service providers have the ability to exercise their rights under subsection (b).").

requirements.⁵⁷ Specifically, the Commission sought comment on the capabilities and limitations of existing and new location technologies; the advantages of combining handset-based and network-based location technologies (a hybrid solution); the prospect of adopting more stringent location accuracy requirements; and the capabilities of compliance testing methodologies in different environments, such as indoor versus outdoor use and rural versus urban areas. The Commission also invited comment on how to address location accuracy issues for 911 calls placed when roaming, particularly when roaming between carriers using different location technologies. The Commission also requested comments on a number of tentative conclusions and proposals, including establishing a single location accuracy standard rather than the separate accuracy requirements for network and handset-based technologies, adopting a mandatory schedule for accuracy testing, and applying the same location accuracy standards that apply to circuit-switched CMRS services to interconnected VoIP services used in more than one location.

In October of 2008, as required by the NET 911 Improvement Act (NET 911 Act), the Commission released a *Report and Order* adopting rules providing “interconnected VoIP providers rights of access to any and all capabilities necessary to provide 911 and E911 service from entities that own or control those capabilities.”⁵⁸ In the NET 911 Improvement Act Report and Order, the Commission declined to “issue highly detailed rules listing capabilities or entities with ownership or control of these capabilities”⁵⁹ because the nation’s 911 system varies depending on the locality and “overly specific rules would fail to reflect these local variations.”⁶⁰ The Commission also declined “to expand the applicability of the rights granted in the NET 911 Improvement Act to entities beyond those encompassed within that statute.”⁶¹

On March 16, 2010, the Commission’s staff released the National Broadband Plan, which recommended that the Commission examine approaches for leveraging broadband technologies to enhance emergency communications with the public by moving towards Next Generation 911 (NG911), because NG911 will provide a “more interoperable and integrated emergency response capability for PSAPs, first responders, hospitals and other emergency response professionals.”⁶² Further, the National Broadband Plan notes that the Commission is “considering changes to its location accuracy requirements and the possible extension of...ALI...requirements to interconnected VoIP services.”⁶³ The National Broadband Plan

⁵⁷ *Wireless E911 Location Accuracy Requirements; Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems for IP-Enabled Service Providers*, PS Docket No. 07-114, CC Docket No. 94-102, WC Docket No. 05-196, Notice of Proposed Rulemaking, 22 FCC Rcd 10609, 10613-16 ¶¶ 8-19 (2007) (*Location Accuracy NPRM*).

⁵⁸ *Implementation of the NET 911 Improvement Act of 2008*, WC Docket No. 08-171, Report and Order, 23 FCC Rcd 15884, 15885 (2008) (*NET 911 Improvement Act Report and Order*).

⁵⁹ *Id.* at ¶ 22.

⁶⁰ *Id.*

⁶¹ *Id.* at n.66.

⁶² See Federal Communications Commission, National Broadband Plan, Chapter 16, “Public Safety,” Section 16.3, “Leveraging Broadband Technologies to Enhance Communications with the Public,” at 313, <http://download.broadband.gov/plan/national-broadband-plan-chapter-16-public-safety.pdf> (National Broadband Plan).

⁶³ *Id.* at 326.

recommends that the Commission “expand [the Location Accuracy NPRM] proceeding to explore how NG911 may affect location accuracy and ALI.”⁶⁴

On September 23, 2010, the Commission adopted the E911 Location Accuracy Second Report and Order, which addressed, among other things, wireless E911 location accuracy. The Commission sought comment on additional location accuracy issues affecting wireless, VoIP, and emerging broadband voice services.⁶⁵ The E911 Location Accuracy Second Report and Order required CMRS providers to satisfy the E911 Phase II location accuracy requirements at either a county-based or PSAP-based geographic level. The order provided for implementation of this standard over an eight-year period with interim benchmarks. The Commission determined, however, that the revised location accuracy requirements would apply *only to outdoor measurements* and not to accuracy measurements for indoor, “[b]ecause indoor poses unique obstacles to handset-based location technologies.”⁶⁶

In that rulemaking decision the FCC also required all wireless carriers, regardless of location technology, to provide “confidence and uncertainty” data on a per-call basis upon PSAP request.⁶⁷ The Commission also extended the requirement to deliver confidence and uncertainty data to those entities that are responsible for transporting this data between wireless carriers and PSAPs, including LECs, Competitive Local Exchange Carriers (CLECs), owners of E911 networks, and emergency service providers.

In the *Location Accuracy FNPRM and NOI*, the Commission sought comment on several issues with respect to amending the Commission’s wireless 911 and E911 requirements and extending 911 and E911 requirements to additional VoIP and wireless services, including: whether the Commission should consider more stringent location parameters for wireless E911 Phase II location accuracy and reliability; potential modifications to the accuracy standard, including adoption of a unitary or single standard; the methodology carriers should use to verify compliance, both initially and during ongoing testing; the format in which accuracy data should be automatically provided to PSAPs; how to address location accuracy while roaming; how to improve location information and accuracy in more challenging environments such as indoors; and whether the Commission’s location accuracy standards should include an elevation (z-axis) component.⁶⁸ In the NOI, the Commission requested comment on a number of 911 and E911 issues related to VoIP services, including whether the Commission should require interconnected VoIP service providers to automatically identify the geographic location of a customer without the customer’s active cooperation and whether the Commission should apply its E911 regulations to VoIP services that are not fully interconnected to the PSTN.⁶⁹

⁶⁴ *Id.*

⁶⁵ *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Second Report and Order, 25 FCC Rcd 18909 (2010).

⁶⁶ *Id.* at ¶ 29.

⁶⁷ *Id.* at ¶ 12.

⁶⁸ *Wireless E911 Location Accuracy Requirements*, P.S. Docket No. 07-114, Further Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 18957, at ¶ 2 (2010) (“*Location Accuracy FNPRM and NOI*”).

⁶⁹ *Id.* at ¶ 5.

Public comments filed in response to the FCC's *Location Accuracy FNPRM* throughout the fall of 2011 (and in subsequent *ex parte* presentations filed throughout 2012 and 2013) have been evenly aligned. In general, public safety organizations favored adopting indoor location accuracy requirements.⁷⁰ Many of these organizations, such as the Alliance for Telecommunications Industry Solutions and APCO International, Inc., supported the adoption of new indoor location accuracy testing requirements.⁷¹ The Public Safety Communications Office of the California Technology Agency suggested that the Commission defer to CSRIC to develop operational benchmarks based on location accuracy performance in order to enhance consumer decision making on device capabilities, and to develop technological approaches to improve indoor location accuracy.⁷² The International Association of Chiefs of Police, the International Association of Fire Chiefs, the National Sheriff's Association, and the Joint National EMS Leadership Conference ("the Associations") stated that first responders receive accurate location information 98% of the time; however, they are 50% less likely to receive precise location information when someone calls from a mobile phone.⁷³ Consequently, the Associations favor the Commission's immediate adoption of indoor accuracy rules and protocols.⁷⁴ The National Emergency Number Association (NENA) said that the Commission should consider requiring pilot testing of indoor location performance, using a representative sample on each carrier's network, before determining whether broader indoor testing requirements should be adopted.⁷⁵

Companies that develop location technology for the wireless communications industry also favored prompt adoption of indoor location accuracy requirements. Cellular Specialties, Inc. and NextNav (a.k.a. CommLabs, Inc.) discussed new location technologies that they are developing to improve the accuracy of indoor location during 911 calls from mobile phones.⁷⁶

Other commenters opposed the adoption of indoor location accuracy standards at that time. Certain wireless carriers argued that the Commission should not adopt any indoor location accuracy requirements until CSRIC studied indoor location accuracy issues and developed technical recommendations for improving indoor location accuracy.⁷⁷ Similarly, MetroPCS, CTIA—The Wireless Association and Qualcomm, Inc., encouraged the Commission to refrain from adopting mandated testing requirements for indoor location accuracy; they would prefer to allow industry groups to work with CSRIC to develop voluntary, flexible standards.⁷⁸ AT&T

⁷⁰ See Boulder Regional Emergency Telephone Service Authority Petition for Rulemaking (Nov. 21, 2012); Public Safety Communication Office of the California Technology Agency Comments ("PSCO") at 3-4; International Association of Chiefs of Police, International Association of Fire Chiefs, National Sheriff's Association, and Joint National EMS Leadership Conference ("The Associations") Comments at 2; NENA Comments at 13-14.

⁷¹ See Alliance for Telecommunications Industry Solutions Comments at 6 (encouraging the Commission to refer to its standards in *Approaches to Wireless E9-1-1 Indoor Location Performance Testing*); see also APCO International Notice of Ex Parte (Apr. 12, 2013).

⁷² PSCO Comments at 3-4.

⁷³ The Associations Comments at 3.

⁷⁴ *Id.* at 2.

⁷⁵ NENA Comments at 13.

⁷⁶ See Cellular Specialties, Inc. Comments at 2; see also Progeny LMS, LLC and NextNav Notice of Ex Parte (June 10, 2012).

⁷⁷ See MetroPCS Reply Comments at 2; SouthernLINC Wireless Reply Comments at 9-10; Sprint Nextel Comments at 8-9; T Mobile Reply Comments at 4; Verizon and Verizon Wireless Reply Comments at 7; Motorola Mobility Comments at 9.

⁷⁸ See MetroPCS Reply Comments at 2; CTIA—The Wireless Association Comments at 2; Qualcomm, Inc. Comments at 11.

submitted comments against the adoption of new indoor accuracy requirements, stating that no deadlines or timeframes are needed and that the Commission should take a “wait-and-see” approach to allow the marketplace to develop a standards process.⁷⁹

Shortly before the FCC launched the *Location Accuracy FNPRM*, CSRIC’s Working Group 4C released its March 2011 report entitled “Technical Options for E9-1-1 Location Accuracy.”⁸⁰ CSRIC is the Federal Advisory Committee created by the FCC to provide guidance and expertise on the nation’s communications infrastructure and public safety communications. CSRIC Working Group 4C was responsible for examining E911 and public safety location technologies currently in use, identifying current performance and limitations for use in next generation public safety applications, examining emerging E911 public safety location technologies, and recommending options to the FCC for the improvement of E911 location accuracy timelines. The CSRIC 4C Report made a number of recommendations including that the FCC should: establish an E911 Technical Advisory Group to address specific location technology issues for 911, such as how to improve indoor location accuracy; actively engage in discussions on how to implement 911 auto-location for nomadic VoIP services; and consider extending E911 and location obligations to providers of over-the-top VoIP applications that are not subject to the FCC’s interconnected VoIP regulations.

In July of 2011, the FCC adopted its Third Report and Order and Second Further Notice of Proposed Rulemaking.⁸¹ There, the FCC noted that according to publicly available reports “indoor wireless calls have increased dramatically in the past few years, to an average of 56 percent of all calls, up from 40 percent in 2003.”⁸² The Commission further stated:

While we recognize the importance of indoor testing, we believe that further work is needed in this area and seek comment on whether the Commission should require indoor location accuracy testing and, if so, using what standards. Can outdoor testing methodologies be used in indoor environments, or should the standards for outdoor and indoor location accuracy testing be different? Are traditional sampling and drive testing methods used for outdoor testing appropriate for indoor testing, or do we need new testing methodologies tailored to indoor environments? What indoor location accuracy testing methodologies are available today, and what are the costs and benefits associated with each? We also seek comment on the percentage of emergency calls that are placed indoors today and a quantification of how much an indoor location accuracy testing standard could improve the ability of emergency responders to locate someone in an emergency. We also refer the indoor testing issue to the CSRIC for further development of technical recommendations. We direct that the CSRIC provide initial findings

⁷⁹ AT&T Comments at 10.

⁸⁰ Technical Options for E9-1-1 Location Accuracy, Communications Security, Reliability and Interoperability Council Working Group 4C Final Report, March 14, 2011, available at: http://transition.fcc.gov/pshs/docs/csric/CSRIC_4C_Comprehensive_Final_Report.pdf (last accessed May 23, 2011) (CSRIC 4C Report).

⁸¹ *Third Report and Order, supra* at 2.

⁸² *Id.* ¶ 86 (footnote omitted, emphasis added).

and recommendations to the Commission, taking into account the cost effectiveness of any recommendations, within nine months of the referral of this issue to the CSRIC.⁸³

In March of 2013, the FCC adopted a *Notice of Proposed Rulemaking*, to ensure the reliability and resiliency of the communications infrastructure necessary to ensure continued availability of the Nation's 911 system, particularly during times of major disaster.⁸⁴ The FCC adopted that NPRM in response to the findings and recommendations presented in the Public Safety and Homeland Security Bureau's (PSHSB or Bureau) January 10, 2013, report titled "Impact of the June 2012 Derecho on Communications Networks and Services: Report and Recommendations" (*Derecho Report*). In the NPRM, the FCC noted that Congress has tasked the Commission with more specific responsibilities relating to 911 service, in order to "ensur[e] that 911 service is available throughout the country,"⁸⁵ and in order to encourage and facilitate a "reliable" nationwide "infrastructure for communications ... to meet the Nation's public safety and other communications needs."⁸⁶

Also in March of 2013, CSRIC Working Group 3 released its "Indoor Location Test Bed Report" ("Test Bed Report"). That CSRIC report will be addressed in greater detail below.⁸⁷

On May 8, 2013, the Commission adopted a *Report and Order* in PS Docket Nos. 11-153 and 10-255.⁸⁸ The *Report and Order* adopted rules requiring all Commercial Mobile Radio Service providers and certain providers of interconnected text messaging services to provide an automatic "bounce-back" text message in situations where a consumer attempts to send a text message to 911 in a location where text-to-911 is not available. The automatic bounce-back message will provide consumers with an immediate response that text-to-911 is not supported and to contact emergency services by another means, such as by making a voice call.

To summarize this 15-year regulatory history of E911, in its early stages technical and regulatory change was slow and incremental; it took years to design, test and implement E911 enhancements before they could be ready for public use. Over the past few years, the rate of progress and improvement for E911 services has been dramatically quicker. As we have seen with interconnected VOIP services, when supported by FCC regulatory and technical guidance it has been possible for the communications and public safety sectors to bring previously uncovered services and geographic areas into the E911 public safety network in very little time. That is the framework that should guide the FCC's efforts with respect to indoor location accuracy.

⁸³ *Id.* at ¶ 87.

⁸⁴ FCC Pub. Safety & Homeland Sec. Bureau, Impact of the June 2012 Derecho on Communications Networks and Services: Report and Recommendations (PSHSB, rel. Jan. 10, 2013), available at: <http://www.fcc.gov/document/derecho-report-and-recommendations> (*Derecho Report*).

⁸⁵ See *Nuvio Corp. v. FCC*, 473 F.3d 302, 311 (D.C. Cir. 2007) (Kavanaugh, J., concurring) (citing ENHANCE 911 Act of 2004, Pub. L. No. 108-494, § 102, 118 Stat. 3986, and stating that a universal 9-1-1 number with enhanced capabilities should be available to all citizens in all regions of the nation).

⁸⁶ Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, § 2(b), 113 Stat. 1286.

⁸⁷ CSRIC Test Bed Report at 54.

⁸⁸ *In the Matter of Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment*, PS Docket No. 11-153, Report and Order, FCC 13-64 (2013).