

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Wireless E911 Location Accuracy Requirements)	PS Docket No. 07-114
)	
Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems)	WT Docket No. 94-102
)	
Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling)	
)	
911 Requirement for IP-Enabled Service Providers)	WC Docket No. 05-196
)	

REPLY COMMENTS OF VERIZON WIRELESS

Verizon Wireless hereby submits reply comments on the Public Safety and Homeland Security Bureau's request to refresh the record in the above-referenced proceeding addressing wireless location accuracy standards during emergency calls.¹

INTRODUCTION

The Commission is appropriately seeking updated information, given the more than two years since adoption of the *E911 Accuracy Order*,² and that more than a year

¹ *Public Notice*, Public Safety and Homeland Security Bureau Seeks to Refresh the Record Regarding Service Rules for Wireless Enhanced 911 Phase II Location Accuracy and Reliability, DA 09-2397, PS Docket No. 07-114, November 6, 2009 ("*November Public Notice*").

² *Wireless Location Accuracy Requirements, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling, 911 Requirements for IP-Enabled Service Providers*, PS Docket No. 07-114, CC Docket No. 94-102, WC Docket No. 05-196,

has passed since Verizon Wireless, AT&T, NENA and APCO submitted (and public comment was sought on) alternative county-based Phase II location accuracy proposals.³ The initial round of comments on the Bureau's *November Public Notice* added little in the way of empirical data or other information to the record formed as a result of the *Remand Notice* last October, especially with respect to the Handset Proposal advanced by Verizon Wireless, NENA and APCO (as well as Sprint Nextel) for carriers currently already employing handset-based solutions. The 2008 record submitted in response to the *Remand Notice*, however, did include suggestions to alter the Handset Proposal in some material respects.⁴

The Commission has consistently “reaffirm[ed] ... that a policy of technological and competitive neutrality best promotes the public safety and welfare goals of this proceeding, especially in the critical area of ALI.”⁵ Indeed, while the Commission has allowed for variations in Phase II deployment and handset penetration schedules, it has never imposed disparate Phase II accuracy requirements based on a carrier's size.⁶

Report and Order, 22 FCC Rcd 20105 (2007) (“*E911 Accuracy Order*”), *stayed sub. nom.*, *Rural Cellular Ass’n v. FCC*, Order, No. 08-1069, slip op. at 1 (D.C. Cir. Mar. 25, 2008) (per curiam), *vacated and remanded*, slip op. at 1 (D.C. Cir. Sept. 17, 2008) (per curiam).

³ See Public Notice, *Comment Sought on Proposals Regarding Service Rules for Wireless Enhanced 911 Phase II Location Accuracy and Reliability*, PS Docket No. 07-114, DA 08-2120 (PSHSB rel. Sept. 22, 2008) (“*Remand Notice*”); APCO, NENA and Verizon Wireless, *Ex Parte* Letter in PS Docket No. 07-114, filed Aug. 20, 2008 (the “*Handset Proposal*”); APCO, NENA, and AT&T Mobility, Letter in PS Docket No. 07-114, filed Aug. 25, 2007.

⁴ Notably, last year the Rural Telecommunications Group (RTG) supported adoption of a single location accuracy standard by requiring use of handset technology with limited grandfathering of network-based solutions with a three year transition period for GSM carriers. Comments by RTG, October 6, 2008, at iii, 6-10.

⁵ See *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Third Report and Order, 14 FCC Rcd 17388, ¶ 82 (1999). The Commission ratified this policy again in the 2003 *E911 Scope Order*, where it adopted criteria for determining how new services should be incorporated into its E911 policies, stating that such criteria would be “extremely useful in ensuring technological and competitive neutrality” See *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket 94-102, IB Docket No. 99-67, Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 25340, 25347 ¶¶ 18-19 (2003)

⁶ See *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Phase II Compliance Deadlines for Non-Nationwide CMRS Carriers*, Order to Stay, 17

Consistent with this long-standing policy objective, whether the Commission retains the Handset Proposal in whole or in part, it should adopt a uniform set of rules for *all* handset-based carriers, Tiers I, II and III alike. In addition, once a critical mass of former network-based carriers and their subscribers have migrated to handsets with Assisted GPS (“AGPS”) chipsets, the Commission should reconcile its rules to impose a single, uniform AGPS-based location accuracy standard, given its evident superiority over network-based solutions.

To the extent possible, the Commission should strive to develop accuracy rules that: (1) hold all carriers to *similar standards* regardless of technology that can one day be harmonized into *one standard*; and (2) are technically feasible given known challenges posed by certain terrains. The first step toward this objective is in ensuring that all carriers employing handset-based solutions are held to the same accuracy standard. First, AGPS technology is not new and, indeed, has become a virtually standard feature in CDMA and UMTS (Universal Mobile Telecommunications System) handsets offered today. These legacy AGPS systems have the same attributes and will either perform well or be challenged in particular terrain, regardless of which carrier has deployed them. Second, technical feasibility is not dictated by carrier size.

The Commission should keep this area of regulation simple, and continue to be guided by technical feasibility considerations. With simpler, uniform, technically feasible and effective rules, carriers, consumers and PSAPs can better understand the possibilities and limitations for locating wireless callers during an emergency and plan accordingly.

FCC Rcd 14841, ¶ 41 (2002) (declining “to grant any additional relief from the accuracy requirements” to Tier II and III carriers).

DISCUSSION

I. ACCURACY STANDARDS SHOULD BE TECHNICALLY FEASIBLE

The Handset Proposal recognizes that a county's particular topology can impede location accuracy, because the precision of the AGPS location fix depends on the wireless handset's ability to "see" multiple GPS satellites. Verizon Wireless's September 2008 *ex parte* letter described the two notable features of AGPS technology: (1) the technology is highly accurate when four or more satellites are visible to the handset; and (2) when there are not enough satellites visible to the handset (usually two satellites or less), AGPS relies on data from nearby cell sites to supplement or, in some cases, completely replace satellite signals in calculating location measurements.⁷ Location measurements become less accurate as more reliance is placed on cell site triangulation. When cell sites are used to supplement or substitute for satellite signals in this manner, the handset must be able to "see" a minimum of three cell sites that are geometrically spaced in a manner that allows for triangulation – much like the network-based E911 solutions deployed by other carriers. Like the paths from the GPS satellite to the handset, however, topology can compromise the paths between the cell sites and the handset, preventing the higher accuracy levels otherwise achievable where the topology is more open.

In reviewing the issues and the record in this proceeding, the Commission should avoid regulations that are not firmly grounded in technical feasibility. The Commission

⁷ Verizon Wireless *Ex Parte* Letter in PS Docket No. 07-114, filed Sept. 4, 2008. These points summarize the information that Verizon Wireless has put in the record of this proceeding dating back to the original NPRM from 2007. See Verizon Wireless Comments in PS Docket No. 07-114, filed July 5, 2007, at 14-22; Verizon Wireless Reply Comments in PS Docket No. 07-114, filed July 11, 2007, at 4-7. While the specific numerical percentages in the Handset Proposal are based in part on negotiations between the parties, they are also grounded in Verizon Wireless's observations of the performance of AGPS technology over time.

should also seek to avoid setting customer and PSAP expectations that are inconsistent with the true performance of the technology. In the Handset Proposal, Verizon Wireless worked with NENA and APCO to develop a simple set of rules that become more stringent over time, but that can still be accomplished. The parties to the Handset Proposal agreed that it is not technically feasible for carriers to meet either the existing or the proposed accuracy standards in all counties. The Handset Proposal and its exclusion of 15% of counties recognize these realities. It will, however, serve the public interest and the Commission's public safety objectives by requiring a very high level of accuracy for the vast majority of emergency calls to PSAPs.

II. THE COMMISSION SHOULD STANDARDIZE THE HANDSET PROPOSAL TO APPLY UNIFORMLY TO ALL HANDSET-BASED CARRIERS

Verizon Wireless and Sprint Nextel are already subject to the terms of the existing Handset Proposal as company-specific conditions.⁸ Now, the Commission is taking a fresh look at the record in order to adopt a rule of general applicability for the entire industry. Verizon Wireless supports this effort and believes that the Handset Proposal provides an excellent template for a general rule. In various comments on the Handset Proposal, however, several parties argued that certain of its provisions should be altered: that the 15% exclusion should be enlarged;⁹ that the 15% exclusion should not be limited

⁸ See *Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC*, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC Rcd 17444, ¶ 201 (2008); *Sprint Nextel Corporation and Clearwire Corporation*, Memorandum Opinion and Order, 23 FCC Rcd. 17570, ¶ 112(2008).

⁹ See Reply Comments by United States Cellular Corporation (USCC), October 14, 2008, at 3,6. See also, Reply Comments by the Rural Cellular Association (RCA), October 14, 2008, at 3 (proposing that the exclusion be raised to 25% for meeting the earlier 67%/80% requirement and then lowering the exclusion to 20% for the ultimate 67%/90% requirement. In either case, the current 15% exclusion would be increased.). RCA stands by its legal and policy positions from last year and has expressly incorporated

to counties with heavy forestation;¹⁰ and that Tier II and III carriers should get additional time to comply with any new rule. Any changes to the location accuracy methodology requirements of the Handset Proposal should be made uniformly applicable to all handset-based carriers, regardless of size.

Using technical feasibility as its guide, the Commission should explore with the commenting carriers why their requested modifications to the Handset Proposal are necessary. Nearly all of the Joint T-Mobile, RCA and RTG comments address the network-based location technologies employed by GSM carriers. By contrast, the handset-based technology prevalent among CDMA carriers is barely discussed, and no technical discussion or data was provided. In any event, the Commission should not depart from any technically feasible, generally applicable rule based on the size of the carrier. Nothing about the nature of GPS signal acquisition, or the AGPS solution's calculation of geographic coordinates, depends upon the size of the carrier. The science and technology of AGPS is agnostic to carrier size once the basic GPS ecosystem is in place, which, in the case of all carriers employing handset-based systems, has been the case for years. The improvements in system performance that can derive from experience are likewise not dependent upon carrier size.¹¹

its prior comments by reference into the joint pleading it recently filed with T-Mobile and RTG. *See* T-Mobile, RCA, RTG Comments, November 20, 2009, at 21.

¹⁰ *See* Reply Comments by United States Cellular Corporation (USCC), October 14, 2008, at 3,7; *See also* Reply Comments by RCA, October 14, 2008, at 5 (limiting this change to smaller carriers.); Comments by Sprint Nextel, October 6, 2008, at 3, n.5; Comments by Motorola, October 6, 2008, at 3-4.

¹¹ Verizon Wireless has embraced the notion of progressive improvements over time in the system performance, which is apparent from the structure of the Handset Proposal. Importantly, this aspect of the Handset Proposal is designed to allow for technological innovation that will come, if at all, to the entire industry.

III. EXCLUSIVE HANDSET ARRANGEMENTS HAVE NO IMPACT ON THE ABILITY OF CARRIERS TO COMPLY WITH GENERALLY APPLICABLE ACCURACY STANDARDS

RCA stated in reply comments on the *Remand Notice* that smaller carriers should be afforded additional time to comply with the Handset Proposal because smaller carriers lack access to high-end handsets that are the subject of exclusivity arrangements.¹² This argument is meritless and factually unsupported. The ubiquity of AGPS-capable CDMA handsets exists regardless of the price point of handsets and the particular business arrangement for some handset models. This is because the Commission required that 100% of all new digital handset activations by handset-based carriers were to be AGPS-capable years ago *and* required that 95% of such carriers' embedded customer base have AGPS-capable phones by December 31, 2005. Moreover, the proliferation of commercial location based services is dependent upon the broad and general availability of GPS-capable phones. Chipset and handset vendors have had to work together to provide ubiquitous AGPS capability for CDMA phones, high-end or low-end, for years. There is a vibrant marketplace for AGPS capable handsets at every price point along the consumer spectrum, and all CDMA carriers must already offer those handsets exclusively.

IV. EVENTUALLY, THE COMMISSION SHOULD REQUIRE ONE ACCURACY STANDARD FOR ALL WIRELESS CARRIERS, REGARDLESS OF TECHNOLOGY

The distinction between carriers employing handset-based versus network-based carriers is eroding. As carriers both introduce new platforms such as Long Term

¹² Reply Comments of RCA, October 14, 2008, at 3-4. Ironically, the exclusivity arrangement that gets the most press, the deal between Apple and AT&T for the I-phone, is not GPS capable.

Evolution (LTE) and Wi-Max (which will cause traffic to migrate over time to IP-based mobile technologies) *and* deploy AGPS-capable handsets for their existing 3G platforms, the distinction becomes less and less significant. For example, carriers now employing network-based solutions are also deploying AGPS in their UMTS networks.¹³ There is already far less distinction between the handset functionalities available in devices offered by W-CDMA carriers and those offered by CDMA carriers, as both now have AGPS capability as a standard feature – unlike the situation in the earlier stages of E911 Phase II deployment when some carriers’ networks and handsets were solely GSM. This evolution of formerly GSM-only carriers to W-CDMA technology grounded in CDMA for 3G platforms represents a convergence of air interface protocols and further justifies a move toward a single, uniform location accuracy rule for similarly situated carriers.

Moreover, the Commission’s longstanding regulatory parity policies and simplification should eventually be achieved in full by applying one single uniform standard. The Handset Proposal and that offered by APCO, NENA and AT&T provide the Commission with salient guidance on how a county-based accuracy standard can be designed to reflect the legacy differences between handset- and network-based E911 location solutions. By that same token, however, they also reflect the reality that as AGPS-capable handsets become increasingly prevalent across all wireless carriers’ subscribers, disparate regulatory standards become unnecessary. Any justification for maintaining these differences will fade over time as network-based carriers sell and activate more and more AGPS-capable handsets for their subscribers, and as legacy non-

¹³ Also referred to as a W-CDMA (Wideband CDMA) network. The W-CDMA-based air interface is being used as a network evolution platform in GSM networks as they evolve from 2G to 3G. Moreover, W-CDMA is a network overlay for GSM operators rather than an add-on to existing GSM networks, as the base technology is Code Division Multiplexing rather than the Time Division Multiplexing used for GSM.

AGPS GSM are phased out. The Commission should thus establish an appropriate trigger for determining when a single, uniform standard should apply to all carriers and determine what that standard should be.

V. CONCLUSION

For the foregoing reasons, the Commission should adopt accuracy rules that: (1) hold all carriers to *similar standards* regardless of technology that can one day be harmonized into *one standard*; and (2) are technically feasible given known challenges posed by certain terrains.

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