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

In the Matter of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
Association of Public Safety Communications Officials-International, Inc. Request for Declaratory Ruling	)	
	)	
911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196

To: The Commission

COMMENTS OF RURAL CELLULAR ASSOCIATION

Rural Cellular Association ("RCA")[1], by its attorney, respectfully submits comments in response to Section III.B. of the Commission's *Notice of Proposed Rulemaking* in the above-captioned proceedings.[2] These comments address questions that would arise if the Commission were to adopt its tentative conclusion that wireless carriers must comply with Section 20.18(h) at the Public Safety Answering Point ("PSAP) level, and enforcement is delayed.[3]

[1] RCA is an association representing the interests of nearly 100 small and rural wireless licensees providing commercial services to subscribers throughout the nation. Its member companies provide service in more than 135 rural and small metropolitan markets where approximately 14.6 million people reside. RCA was formed in 1993 to address the distinctive issues facing wireless service providers.

[2] These Comments specifically address Section III.B of the *Notice* regarding whether the Commission should clarify Section 20.18(h) of the Commission's rules, specifying standards for wireless E911 Phase II location accuracy and reliability. *See Notice of Proposed Rulemaking*, PS Docket No. 07-114, CC Docket No. 94-102, WC Docket No. 05-196, released June 1, 2007 ("*Notice"* or "*NPRM*"). These comments were prepared with the assistance of Arthur L. Prest of Arthur L. Prest & Associates; and Adam Thomas, law student, University of Pittsburgh.

[3] Notably, RCA urged the Commission not to amend Section 20.18(h) of the rules at this time in Comments and Reply Comments filed in response to Section III.A. of the NPRM. It is premature to adopt a PSAP-level location accuracy standard until wireless carriers have the technical capability to comply on that basis in the vast majority of areas they serve. RCA nevertheless will respond to questions posed in Section III.B. of the NPRM to assist the Commission develop a full record on this important public safety issue.

I. Introduction

From the perspective of rural wireless carriers RCA submits comments on four of the issues identified in the *NPRM*. First, the Commission seeks comment on the reasonable amount of time the Commission should permit carriers to achieve compliance with Section 20.18(h) at the Public Service Answering Point ("PSAP") level.[4] RCA will explain why that period of time cannot now be predicted. Even if the needed technology appeared tomorrow, the transition time would be a matter of years, not months. Second, comment is invited on a tentative conclusion that "the public interest would be better served by a single location accuracy requirement rather than the current separate accuracy requirements for network-based and handset-based technologies."[5] RCA is supportive of the goal reflected in this tentative conclusion but until assisted-GPS handsets are generally in use by GSM network users, it is unrealistic to expect and indeed require GSM carriers to achieve the same level of accuracy as CDMA carriers (holding aside the problems CDMA carriers face with location capabilities in "urban canyons" or inside buildings, for example, where the satellite cannot "see" the customer). As such, RCA cannot support a rule change to standardize the location accuracy requirement for handset-based and network-based systems before compliance is technically and economically viable in the vast majority of areas. Third, the Commission seeks information to better its understanding of the capabilities and limitations of existing location technologies and prospective improvements in location accuracy thereof.[6] RCA provides comment on current technology competencies and suggests adhering to realistic expectations regarding hybrid solutions. Last, RCA agrees with the Commission's tentative conclusion that "to the extent that an interconnected Voice over Internet

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4 *NPRM* at para. 8.

5 *Id* at para. 10.

6 *Id* at para. 11.

Protocol ("VoIP") service may be used in more than one location, providers must employ an automatic location technology that meets the same accuracy standards that apply to those CMRS services."[7]

Any new standards the Commission may adopt regarding location accuracy could disproportionately impact small and regional wireless carriers. RCA urges the Commission to temper expectations and to consider the very real and practical limitations faced by rural carriers in their efforts to deliver accurate location information to PSAPs. The single most important public safety tool offered by wireless carriers in rural America is voice service availability. It would be highly counterproductive to adopt aggressive location accuracy requirements that in turn cause small carriers to pull back on service availability in their attempts to comply.[8]

II. Background

RCA members have long sought to improve public safety by steadily extending and improving their breadth of coverage. Their further commitment to bettering public safety through enhanced location accuracy is confirmed by RCA's participation in the Network Reliability & Interoperability ("NRIC") Focus Group 1A that studied and provided recommendations to the Commission on E911 location accuracy measurement issues. RCA is also a board member and sponsor of the E9-1-1 Institute, an organization committed to advancing E911–related safety initiatives concerning wireless technology within all branches of government.

III. New Requirements Should Not Precede Technical Feasibility and, When Feasible, a Reasonable Transition Period is Necessary

Without full knowledge of what the new location accuracy standards will require, determining an appropriate timeframe in advance is highly speculative if not out and out

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[7] *Id* at para. 18.

[8] RCA's wireless carriers operate in rural markets and in a few small metropolitan areas. No member has as many as 1 million customers, and the vast majority of RCA's members serve fewer than 500,000 customers.

impossible. Commissioner Adelstein expressed the view that setting a deadline for compliance would be "premature from both legal and policy standpoints."[9] As one small carrier noted in an earlier Comment, "it may take network-based carriers literally years to comply if their systems have not been designed and implemented to [meet a predetermined compliance] standard. Some carriers may have to retrofit their systems entirely."[10] A more reasoned approach to setting a timeframe for coming into compliance would be to first verify the availability of appropriate equipment - equipment likely not yet commercially available - that will improve carrier accuracy. From a point in time when a proven solution has been developed, the timeline will still depend upon the length of time it will take the industry as a whole to negotiate, purchase and install this future solution. The construction of additional base stations in low-density areas would most directly improve accuracy in rural areas and lead to compliance at the PSAP level, but that approach can be prohibitively expensive and sometimes impossible (e.g., along Interstate Highways on the coast of California, along the coast of other large bodies of water such as the Great Lakes, or along the edge of a wireless carrier's license area). Rural carriers are willing to continue doing everything in their power to improve accuracy, but setting mandates which require that companies build out economically irrational networks in order to achieve E911 compliance will lead to all the harms addressed by the myriad of carriers in this proceeding's Section III.A Comments.

After resolution of these threshold matters, a tiered timeline should be considered, with Tier I carriers to have the earliest compliance requirement, followed by Tier II and finally Tier III carriers. Additional time should be granted to Tier III carriers so that procurement of as yet hypothetical equipment will be possible; Tier II carriers are pushed to the end of the supply line

[9] *NPRM*, Concurring Statement of Commissioner Jonathan S. Adelstein.
[10] Corr Wireless Comments at 7 (July 5, 2007).

by vendors because small businesses cannot make the high-volume purchases necessary to gain high-priority status.

A direct consequence of setting an amorphous and hypothetical accuracy requirement and then asking for comment on how and when carriers should meet such a requirement is that projected completion estimations are necessarily vague. Unattainable compliance requirements should not be imposed, but, if they are, a significant cushion should be embedded so as to minimize all the harms inherent in non-compliance.

IV. A Single Location Accuracy Standard While Ideal is Not Feasible Before Handset-Based Solutions are Uniformly Available

Imposition of a uniform, technology-neutral, requirement for location accuracy of both handset-based and network-based location systems must be predicated on ability to comply both technically and financially. Accuracy requirements should reflect the best accuracy standard that each system can achieve at approximately equivalent costs. Put simply, identical requirements should only be imposed where contexts are comparable, if not identical. This does not preclude identical requirements at some point in the future, but, at present, the inherent limitations of coverage in rural areas due to substantial economic hurdles make the APCO-Commission proposed uniform requirements financially infeasible given current technology. Identical requirements for different technologies is an unwise decision and patently unfair at this juncture. Ten years ago the Commission set the accuracy requirement for a network-based location solution and wireless carriers spent ten years and untold millions of dollars attempting to build location solutions to meet that requirement. To now say "sorry," we want you to meet a higher level of accuracy even though the evidence is that wireless carriers are struggling to meet the original requirement is nonsensical. RCA suggests that the Commission revisit uniform

requirements when technological improvements and economic efficiencies justify homogeneous obligations.

V. A Hybrid Solution is not a Panacea

While development and deployment of "hybrid" E911 solutions is a step towards more accurate location information, it will not be of the magnitude impliedly expected given the Commission's proposed requirements and obstacles to deployment.

The two basic categories of presently deployed technologies are (1) GPS-based, and (2) U-TDOA (uplink TDOA), also known as a network-based solution. Each has pros and cons. GPS-based solutions normally produce reliable location accuracy information in rural areas (under clear-sky conditions), but their accuracy is less reliable when indoor and "urban canyon" conditions are introduced. U-TDOA technologies produce reasonably good location accuracy in urban scenarios (where the large numbers of base stations permit better position determination). However, their performance is less adept in rural scenarios where they suffer from poor geometric dilution of precision (GDOP) situations and non-line of sight (NLOS) propagation effects. Some authors have suggested computational methods to improve the accuracy of time-based location techniques in wireless communications networks based on the statistical properties of the raw location estimates.[11] As these technologies improve, so too can accuracy requirements for network-based location systems.

At this time both GPS-based and network-based solutions have inherent limitations that need to be both understood and improved upon before carriers are required to deploy both of these flawed technologies as a hybrid "solution." In comments filed in response to Section III.A. of the NPRM RCA urged the Commission to convene a Stakeholder Forum that would be

[11] See, for example, Wann Chin-Der and Lin Ming-Hui, *Data fusion methods for accuracy improvement in wireless location systems*, Wireless Communications and Networking Conference, IEEE Vol. 1, Issue 21-25, 471-476 (March 2004).

principally staffed by engineers and technical subject matter experts. Invited participants would include Commission staff, Public Safety, telecommunications industry (wireless and LECs), infrastructure vendors, location vendors (with proven, deployed technology), handset vendors, and Commission staff. *Importantly, the Forum would build upon, not repeat, the work already undertaken at NRIC and at other standards bodies, and APCO's Project LOCATE.* Hybrid approaches would be among the possibilities studied by the Forum, with all due consideration of the capabilities and limitations of GPS-based and network-based solutions.

VI. VoIP Should be Regulated in a Like Manner to CMRS.

On the question of interconnected VoIP services, RCA supports the position that standards for this service should remain equivalent to those for CMRS. VoIP services compete with both landline and wireless voice services. VoIP services have an ever-increasing presence in people's homes and are substituting for landline and wireless voice options.[12] It is both reasonable and appropriate that these interconnected services be treated in the same manner as competing services. However as noted above with respect to traditional wireless networks there are significant location issues with wireless VOIP that need to be resolved and it will probably take years to develop and deploy solutions.

VII. Conclusion

RCA members are eager to improve location accuracy: small carriers have tight social bonds with their communities and their users are their families and friends. It also behooves

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[12] *See* Telephia, Press Release, *VoIP Slowly Gaining Ground as Residential Phone Service, with Vonage Expanding its Share to Nearly Half of the Total Market* (March 14, 2005) *available at* http://www.telephia.com/documents/VONSpring2006FINAL3.14.05.pdf (overall penetration for VoIP increased to nearly 3.9 million households in January 2006); *see also* Telephia, Press Release, *Moving Residences Prompts Consumers to Re-Evaluate their Purchases of Communications and Entertainment Services* (April 17, 2007) *available at* http://www.telephia.com/html/TCS_Movers407.html (in Q4 2006, 49 percent of households who relocated within the past year have chosen non-traditional residential phone options. Twenty-five percent have opted for wireless only; thirteen percent have chosen a cable phone option; and six percent have switched to a VoIP phone service).

these carriers financially to improve services to increase subscribership. However, some of the location accuracy proposals the Commission tentatively supports are inherently flawed and thus preclude RCA from advocating their adoption. In the event the Commission does decide to implement such requirements, it is critical that the time allowed to achieve compliance with Section 20.18(h) be sufficient. This necessitates structuring any timeline around prerequisite technological advances and consideration of the barriers carriers face, especially the Tier III and some Tier II carriers. It is also proper that, when implemented, these requirements reflect limitations inherent in differing technologies. RCA members will continue to work with public safety entities at every level and encourage the adoption of location accuracy improving technologies by consumers. The best method to support these efforts will be the continuation of direction via useful guidelines, preferably promulgated by a Forum staffed by constituent representatives of all stakeholders. In accord with meeting consumer expectation regarding continuity of service, VoIP and CMRS services should be regulated similarly. Commission consideration of all these points will aid significantly in the continuing improvement of E911 services.

Respectfully submitted,

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