

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of )  
 )  
Wireless E911 Location Accuracy ) PS Docket No. 07-114  
Requirements )

**COMMENTS OF APCO INTERNATIONAL  
In Advance of  
FCC WORKSHOP ON E9-1-1 PHASE II LOCATION ACCURACY**

The Association of Public-Safety Communications Officials-International, Inc. (“APCO”) hereby submits the following comments in response to the Commission’s *Public Notice*, DA 13-1873, released September 9, 2013, seeking information regarding wireless E9-1-1 location accuracy for indoor locations. The *Public Notice* also announces a related workshop on E9-1-1 Phase II Location Accuracy, scheduled for October 2, 2013.<sup>1</sup>

Founded in 1935, APCO is the nation’s oldest and largest public safety communications organization. Most APCO members are state or local government employees who manage and operate communications systems -- including Public Safety Answering Points (PSAPs), dispatch centers, radio networks, and information technology -- for law enforcement, fire, emergency medical, forestry conservation, highway maintenance, disaster relief, and other public safety agencies. APCO has long been involved Commission proceedings regarding 9-1-1 capability and other aspects of public safety communications.

APCO has frequently urged the Commission, wireless carriers, and location technology providers that improvements must be made in location accuracy for 9-1-1 calls made from indoor

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<sup>1</sup> APCO will also participate in the October 2 Workshop.

locations. More and more American homes are “cutting the cord” and relying exclusively on wireless devices for all of their voice communications. Recent data suggests that nearly a third of U.S. households may no longer have wireline service.<sup>2</sup> As a direct result, an increasing percentage of 9-1-1 calls from indoor locations are being made with wireless devices, both from wireless-only households and from workplace/commercial locations.<sup>3</sup> The predominant location technology for most of those wireless calls, “Assisted GPS” or “A-GPS,” has been generally effective in outdoor locations. However, as the technology implies, A-GPS relies in large part on having direct line-of-sight for GPS signals, which do not penetrate buildings well in most cases. Thus, it is indisputable that a wireless 9-1-1 call from an indoor location will generally provide significantly less accurate location information than a call from an outdoor location.

The *Public Notice* references a study submitted by the California chapter of the National Emergency Number Association (CALNENA), which asserts that location accuracy for wireless 9-1-1 calls has decreased overall based on data submitted by several PSAPs. Major wireless carriers have filed comments challenging some of the methodology of the CALNENA report.<sup>4</sup> However, the key point for the Commission, which is beyond dispute, is that the growing reliance on wireless devices for making 9-1-1 calls from indoor locations is limiting, and will continue to limit, the location accuracy for those calls. In this regard, APCO has been actively participating in collaborative efforts, including the Commission’s Communications, Security, Reliability, and Interoperability Council (CSRIC), to develop solutions to the wireless 9-1-1

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<sup>2</sup> Wall Street Journal, Sept. 5, 2013 (referencing Census data indicating that only 71% of households had wireline telephones in 2011, a number that has presumably declined further).

<sup>3</sup> See *Public Notice*, note 2.

<sup>4</sup> Letters from Verizon Wireless (Sept. 11, 2013), AT&T (Sept. 9, 2013), and T-Mobile (Sept. 4, 2013). The carriers argue that the PSAPs studied in the CALNENA report did not “rebid” location information, which would have led to better results. APCO, which did not participate in the CALNENA report, recommends that its members implement rebidding processes to improve location accuracy for 9-1-1 calls.

indoor location problem. APCO encourages the Commission to continue fostering the work of CSRIC.

The following contains APCO's initial responses to some of the questions in the *Public Notice* that pertain to PSAPs. Much of the *Public Notice* requires information more readily available to carriers and other parties.

*How have wireless providers and PSAPs been affected by the increase in the volume of wireless calls to 911, and how have they modified their practices to account for such changes?*

In the absence of accurate location data associated with a wireless call, the caller must be questioned in detail to provide verbal information regarding their location. This process can be time consuming and callers are sometimes unable to speak or provide correct information (whether due to an injury, stress of the situation, an ongoing threat to their safety, or simply because they are unaware of their exact location). Accurate Phase II location information, when provided, is extremely helpful in those situations. Unfortunately, Phase II information sometimes lacks sufficient accuracy to ensure a rapid and efficient emergency response. This is especially the case for calls from indoor locations, where accuracy is compromised both by the technical limitations of GPS, and the lack of vertical (z-axis) information for tall buildings. Yet, precise location is especially important for indoor calls, as emergency responders are often unable to make visual contact upon arriving at the approximate address (*e.g.*, a call for medical assistance from inside a large apartment or office building/complex, as opposed to an outdoor emergency such as a vehicle accident)

*What is the role of rebid procedures when Phase II information is not delivered to the PSAP with the initial 911 call?*

A rebid is very important to the determination of actionable location information. APCO has developed an ANSI standard (APCO ANS 1.103.1-2008, Effective Practices 380741-45)

addressing the rationale and methods for rebidding wireless 9-1-1 calls, even when the initial call arrives at the PSAP with Phase II location data. The standard advises PSAPs to rebid the Phase II location data to ensure the most accurate information.

*What measures do PSAPs and wireless providers undertake, in terms of ongoing monitoring of Phase II performance, both on an individual call basis and an aggregated basis?*

The monitoring of Phase II performance can take many forms, and depending on the methods utilized, can be very costly to PSAPs. Many smaller PSAPs may not have the expertise or the funding to compile detailed statistics concerning performance and must rely on anecdotal experiences. Larger PSAPs have in some cases provided their own staff to do drive testing on a regular basis. The aforementioned APCO ANS 1.103.1-2008, addresses “Performance Testing” in sections 380781 – 99, providing insights and best practices for performance testing. Since the introduction of these standards, additional methodologies have been utilized. APCO’s experience, including from its prior Project LOCATE initiative, is that properly designing the testing methodology is extremely important in obtaining valid and reliable results.

*In what percentage of wireless 911 calls is Phase II location information successfully delivered to the PSAP? How does current Phase II yield (percentage of wireless 911 calls that include Phase II location information) compare to Phase II yield in the past few years?*

APCO does not have specific data regarding the percentages of calls successfully delivered with Phase II information. However, “yield” is extremely important as it would provide a more useful evaluation of the location information that is provided for all wireless calls to 9-1-1. Thus, accuracy performance testing should include a consideration of “yield.” Such “yield” data could also be used in the calculations developed to determine an indoor location standard (which should be reachable by any technology). As noted in the CSRIC III Work Group 3 Indoor Location Accuracy Report (answer to Question 1 Statement of the Problem,

bullet #3), “we acknowledge yield issues are more problematic in an indoor environment than outdoor because of RF attenuation.”

*How is the ability of PSAPs to respond to 911 calls affected by the availability or unavailability of Phase II location information, the time required to obtain a Phase II fix (including rebids), and the quality of the Phase II information when it is provided?*

Obviously, the longer it takes a telecommunicator/dispatcher to obtain an actionable location, the longer it takes for first responders to reach the individual in need of help. As mentioned above, rebidding is a recommended practice to ensure that the most accurate location information is available to PSAPs. However, the rebidding process can add up to 30 seconds to the call-taking/dispatching process, potentially delaying emergency response to the correct location. For indoor locations, even a rebid may not provide sufficient information for responders to locate the caller quickly in a building (or identify the correct building in a densely developed area).

*What additional measures, including regulatory action, could help improve the delivery of Phase II E911 location information in the near term? In light of the expanding role of wireless technology in communicating with emergency services, are there regulatory gaps in the Commission’s E911 rules? Are there public safety requirements for location accuracy that are not being met by the rules?*

This, of course, is the key question for the Commission, which cannot be fully answered in the short comment period allowed by the *Public Notice*. APCO would certainly support revised rules that require significant improvements in indoor location accuracy over a period of a few years (and ultimately including a z-axis). The location accuracy required by current rules, while very helpful overall, does not provide sufficient information for many indoor locations, leaving the public at risk.

## CONCLUSION

APCO applauds the Commission for its *Public Notice* and upcoming workshop on location accuracy issues. The Commission should proceed as soon as possible with further rulemaking proceedings to require improvements in indoor location accuracy for wireless 9-1-1 calls.

Respectfully submitted,

APCO INTERNATIONAL

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