

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

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

FOURTH REPORT AND ORDER

Adopted: January 29, 2015

Released: February 3, 2015

By the Commission: Chairman Wheeler and Commissioners Rosenworcel, Pai, and O’Rielly issuing separate statements; Commissioner Clyburn concurring and issuing a statement.

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INTRODUCTION AND EXECUTIVE SUMMARY

In this *Fourth Report and Order*, we adopt measures that will significantly enhance the ability of Public Safety Answering Points (PSAPs) to accurately identify the location of wireless 911 callers when the caller is indoors. We also strengthen our existing E911 location accuracy rules to improve location determination for outdoor as well as indoor calls.

Our actions in this order respond to major changes in the wireless landscape since the Commission first adopted its wireless Enhanced 911 (E911) location accuracy rules in 1996 and since the last significant revision of these rules in 2010. Consumers are increasingly replacing traditional landline telephony with wireless phones;¹ the majority of wireless calls are now made indoors; and the majority of calls to 911 are from wireless phones. This increases the likelihood that wireless 911 calls will come from indoor environments where traditional location accuracy technologies optimized for outdoor calling often do not work effectively or at all. This gap in the performance of 911 location service needs to be closed: the public rightfully expects 911 location technologies to work effectively regardless of whether a 911 call originates indoors or outdoors.

The record in this proceeding also indicates that a range of potential solutions to this gap already exist and have the potential to be implemented over the next few years through concerted effort by Commercial Mobile Radio Service (CMRS) providers and PSAPs. These solutions will both lead to more accurate horizontal location of indoor calls, and add the capacity to provide vertical location information for calls originating in multi-story buildings. In addition, the record makes clear that the potential exists to move beyond coordinate-based location and to provide PSAPs with “dispatchable location” information for many indoor 911 calls, *i.e.*, a street address plus sufficient information, such as floor and room number, to identify the location of the caller in the building.

To be sure, no single technological approach will solve the challenge of indoor location, and no solution can be implemented overnight. The requirements we adopt are technically feasible and technologically neutral, so that providers can choose the most effective solutions from a range of options. In addition, our requirements allow sufficient time for development of applicable standards, establishment of testing mechanisms, and deployment of new location technology in both handsets and networks. Our timeframes also take into account the ability of PSAPs to process enhancements in the location data they receive. Clear and measurable timelines and benchmarks for all stakeholders are essential to drive the improvements that the public reasonably expects to see in 911 location performance.

In determining the appropriate balance to strike in our requirements and timeframes, we give significant weight to the “Roadmap for Improving E911 Location Accuracy” (Roadmap) that was agreed to in November 2014 by the Association of Public Safety Communications Officials (APCO), the

¹ For purposes of this notice, we use the terms “mobile” and “wireless” interchangeably. These terms do not encompass, for example, cordless telephones such as those using the DECT standard or PBX handsets using Wi-Fi connectivity.

National Emergency Number Association (NENA), and the four national wireless CMRS providers,² and supplemental commitments related thereto as discussed below. We give similar weight to the “Parallel Path for Competitive Carriers’ Improvement of E911 Location Accuracy Standards” (“Parallel Path”) that was submitted by the Competitive Carriers Association (CCA).³ We believe the Roadmap and the Parallel Path establish an essential foundation for driving improvements to indoor location accuracy, and we therefore incorporate their overall timelines and many of their provisions into the rules adopted in this order. In addition, to provide greater certainty and accountability in areas that the Roadmap and the Parallel Path do not fully address, the rules we adopt today include additional elements with “backstop” requirements derived from our proposals in the *Third Further Notice* and recent *ex parte* submissions by the parties to the Roadmap.⁴

Incorporating all of these elements, we adopt the following E911 location rules:

Horizontal Location

- All CMRS providers must provide (1) dispatchable location,⁵ or (2) x/y location within 50 meters, for the following percentages of wireless 911 calls within the following timeframes, measured from the effective date of rules adopted in this Order (“Effective Date”):
 - Within 2 years: 40 percent of all wireless 911 calls.
 - Within 3 years: 50 percent of all wireless 911 calls.
 - Within 5 years: 70 percent of all wireless 911 calls.
 - Within 6 years: 80 percent of all wireless 911 calls.
- Non-nationwide CMRS providers (regional, small, and rural carriers) can extend the five- and six-year deadlines based on the timing of Voice over Long Term Evolution (VoLTE) deployment in the networks.

Vertical Location

- All CMRS providers must also meet the following requirements for provision of vertical location information with wireless 911 calls, within the following timeframes measured from the Effective Date:
 - Within 3 years: All CMRS providers must make uncompensated barometric data available to PSAPs from any handset that has the capability to deliver barometric sensor data.
 - Within 3 years: Nationwide CMRS providers must use an independently administered and transparent test bed process to develop a proposed z-axis accuracy metric, and must submit the proposed metric to the Commission for approval.
 - Within 6 years: Nationwide CMRS providers must deploy either (1) dispatchable location,

² See Letter, John Wright, APCO International (APCO); Charles W. McKee, Sprint Corporation (Sprint); Joan Marsh, AT&T Services, Inc. (AT&T); Kathleen O’Brien Ham, T-Mobile USA, Inc. (T-Mobile); Christy Williams, National Emergency Number Association (NENA); Kathleen Grillo, Verizon Wireless (Verizon), to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket No. 07-114 (filed Nov. 18, 2014) (Roadmap Cover Letter), Attachment A, “Roadmap for Improving E911 Location Accuracy” (Roadmap), *available at* <http://apps.fcc.gov/ecfs/document/view?id=60000986637> (last visited Jan. 13, 2015).

³ See Competitive Carrier Association *Ex Parte* Letter (filed Jan. 23, 2015) (Parallel Path Cover Letter), and Competitive Carrier Association *Ex Parte* Letter, Attachment “Parallel Path” (filed Jan. 16, 2015) (Parallel Path).

⁴ See *Ex Parte* Letter from APCO, AT&T, NENA, T-Mobile, Sprint, and Verizon (filed Jan. 23, 2015); CTIA *Ex Parte* Letter (filed Jan. 23, 2015).

⁵ See *infra* Section **Error! Reference source not found.** paras. **Error! Reference source not found.**-**Error! Reference source not found.**

or (2) z-axis technology that achieves the Commission-approved z-axis metric, in each of the top 25 Cellular Market Areas (CMAs)⁶:

- Where dispatchable location is used: the National Emergency Address Database (NEAD) must be populated with a total number of dispatchable location reference points in the CMA equal to 25 percent of the CMA population.
- Where z-axis technology is used: CMRS providers must deploy z-axis technology to cover 80 percent of the CMA population.
- Within 8 years: Nationwide CMRS providers must deploy dispatchable location or z-axis technology in accordance with the above benchmarks in each of the top 50 CMAs.
- Non-nationwide carriers that serve any of the top 25 or 50 CMAs will have an additional year to meet these benchmarks.

Reporting and Compliance Measures

- Compliance with the above metrics will be determined by reference to quarterly live 911 call data reported by CMRS providers in six cities (San Francisco, Chicago, Atlanta, Denver/Front Range, Philadelphia, and Manhattan Borough, New York City) and their surrounding areas that have been determined to be representative of dense urban, urban, suburban, and rural areas nationally. Quarterly reporting of this data will begin no later than 18 months from the Effective Date.
- Beginning no later than 18 months from the Effective Date, CMRS providers in the six cities will also provide quarterly live call data on a more granular basis that allows evaluation of the performance of individual location technologies within different morphologies (*e.g.*, dense urban, urban, suburban, rural). This more granular data will be used for evaluation and not for compliance purposes.
- PSAPs will be entitled to obtain live call data from CMRS providers and seek Commission enforcement of these requirements within their jurisdictions, but they may seek enforcement only so long as they have implemented policies that are designed to obtain all 911 location information made available by CMRS providers pursuant to our rules.
- In order to gauge progress on the development of improved indoor location accuracy solutions and the implementation of these rules, nationwide CMRS providers must submit reports on their initial plans for implementing improved indoor location accuracy and must submit subsequent reports on their progress.

The foregoing rules leverage many aspects of the Roadmap and the Parallel Path to improve indoor location accuracy in a commercially reasonable manner. They do not change, or seek to change, the voluntary commitment that both nationwide and non-nationwide CMRS providers voluntarily have entered into and have already made progress towards. The rules are intended to build confidence in the technical solutions outlined in the Roadmap and Parallel Path, and to establish clear milestones that gauge progress and ensure that there is clear accountability for all CMRS providers.

In addition, we revise our regulatory framework for all 911 calls, both indoor and outdoor, as follows:

- We adopt a 30-second limit on the time period allowed for a CMRS provider to generate a location fix in order for the 911 call to be counted towards compliance with existing Phase II location accuracy requirements that rely on outdoor testing, but we do not extend this provision to the new indoor-focused requirements adopted in this order.

⁶ Cellular Market Areas (CMAs) consist of both Metropolitan Statistical Areas (MSAs) and Rural Service Areas (RSAs). The commitments in the Roadmap Addendum were based on CMAs as defined by 2010 census data. For purposes of this *Report and Order*, CMAs will be delineated based on information from the 2010 Census. See *infra* Appendix B for a list of the top 50 CMAs.

- We require that confidence and uncertainty data for all wireless 911 calls – whether placed from indoors or outdoors – be delivered at the request of a PSAP, on a per-call basis, with a uniform confidence level of 90 percent.
- We require CMRS providers to provide 911 call data, including (1) the percentage of wireless 911 calls to the PSAP that include Phase II location information, and (2) per-call identification of the positioning source method or methods used to derive location coordinates and/or dispatchable location, to any requesting PSAP. Compliance with the 30-second time limit will also be measured from this data.

In establishing these requirements, our ultimate objective is that all Americans using mobile phones – whether they are calling from urban or rural areas, from indoors or outdoors – have technology that is functionally capable of providing accurate location information so that they receive the support they need in times of emergency. We also view these requirements as a floor, not a ceiling. We encourage CMRS providers to take advantage of the potential of rapidly-developing location technology to exceed the thresholds and timelines established by this order. In addition, we encourage CMRS providers to work with public safety organizations and consumer organizations, including disability organizations, to develop new and innovative solutions that will make all Americans safer.