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Re: Notice of *Ex Parte*, PS Docket No. 07-114

The Commission should not adopt the draft Sixth Report and Order on wireless 9-1-1 location accuracy requirements.¹ The draft Order will add confusion, effectively creating major loopholes in an already unclear set of requirements. This will empower carriers to assert a watered-down interpretation of the rules and avoid the investments necessary to provide dispatchable location, floor labels, or z-axis information in the manner that emergency communications centers (ECCs) and first responders have been promised. The public safety community and Commission will eventually need to fix the problems through additional proceedings and further debates with the carriers.

April 3, 2021, is the first benchmark for which nationwide carriers must deploy either dispatchable location or z-axis technology.² If ECCs in the nation's largest cities conduct indoor test calls with new smartphones in April 2021, the calls should arrive with either dispatchable location or z-axis information that is accurate within 3 meters for 80% of the calls. However, unless the draft Order sets a different course, two unfortunate outcomes are possible: 1) a carrier elects to comply by deploying dispatchable location technology, but does not deliver any 9-1-1 calls with dispatchable location information; or 2) a carrier elects to comply by deploying z-axis technology, but delivers substantially less than 80% of z-axis estimates accurate within 3 meters HAE.

Here, APCO explains why the draft Order must be revised to eliminate loopholes regarding the provision of dispatchable location and z-axis information.

¹ Wireless E911 Location Accuracy Requirements, Sixth Report and Order and Order on Reconsideration, FCC-CIRC2007-04 (rel. June 26, 2020) (“Draft Order”).

² See 47 CFR § 9.10(i)(2)(ii)(C).

I. The Draft Order Undermines the Otherwise Commendable Designation of Dispatchable Location Information as the Preferred Approach

The draft Order would create significant loopholes that a) would allow carriers to comply with the vertical location information requirements simply by deploying dispatchable location technology, and b) render meaningless the specious 2022 target to provide dispatchable location.

a. The Draft Order Contains a Loophole that Would Allow Carriers to Meet the Vertical Location Information Requirements Simply by Deploying Dispatchable Location Technology

Currently, carriers electing to comply with the vertical accuracy requirements by deploying dispatchable location information would have to ensure the National Emergency Address Database (NEAD) is populated with a number of reference points equal to at least 25% of the CMA population.³ Given that the carriers abandoned the NEAD, this benchmark is no longer appropriate. In seeking to revise the rules to make compliance with the dispatchable location option technology-neutral (rather than dependent upon the NEAD), the draft Order makes a mistake. The draft Order would decline to adopt a minimum percentage of calls that would need to be delivered with dispatchable locations,⁴ opting instead to keep the rule phrased as a deployment requirement. However, the draft Order does not include a deployment benchmark to replace populating the NEAD. By a plain reading of the rules, carriers would need to go no further than deploying dispatchable location technology. Thus, Verizon, which indicated that it has already deployed dispatchable location technology for certain devices,⁵ would apparently be compliant with the vertical location requirements regardless of how many 9-1-1 calls are delivered with a dispatchable location, and regardless of whether Verizon takes further action to provide dispatchable location or z-axis information. This illustrates the danger of the rules' requiring *deployment* of technology rather than the *delivery* of location information. Even if the rules are construed to require the delivery of dispatchable location, not just deployment of dispatchable location technology, there is no minimum percentage of calls that would need to be delivered with dispatchable location. In other words, if the carriers elect to comply with the vertical location requirements by deploying dispatchable location technologies but do not deliver a dispatchable location for *any* 9-1-1 calls, there is no rule ECCs can cite to seek enforcement action from the Commission.

APCO's recommendation is to establish minimum percentage thresholds for dispatchable location.⁶ This is necessary to eliminate a significant loophole in the rules, and it would be consistent with the Commission's horizontal accuracy requirements (which are based on providing compliant location information for a certain percentage of calls).⁷

b. The Draft Order Renders Meaningless the 2022 Requirement to Provide Dispatchable Location

³ 47 CFR § 9.10(i)(2)(ii)(C)(1) ("In each CMA where dispatchable location is used: nationwide CMRS providers must ensure that the [National Emergency Address Database] is populated with a sufficient number of total dispatchable location reference points to equal 25 percent of the CMA population.").

⁴ Draft Order para. 47.

⁵ See *id.* para. 43 (citing Verizon Feb. 21, 2020 Comments at 8).

⁶ For example, a revised rule could read, "By April 3, 2021: In each of the top 25 cellular market areas (CMAs), nationwide CMRS providers shall ~~deploy~~ provide either dispatchable location for xx% of calls or ..." APCO previously provided recommendations on minimum percentage thresholds, based on an estimate of what would be technically feasible. Letter from Jeffrey S. Cohen, Chief Counsel, APCO International, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07-114 (filed Oct. 25, 2019) ("APCO Oct. 2019 ex parte") at 8.

⁷ See 47 CFR § 9.10(i)(2)(i)(A).

Under the draft Order, by January 6, 2022, all CMRS providers will be required to provide dispatchable location for individual 9-1-1 calls if it is technically feasible and cost-effective for them to do so.⁸ APCO appreciates and fully supports the Commission’s decision to designate dispatchable location as the preferred approach for any indoor wireless 9-1-1 call.⁹ However, the draft Order should foreclose carriers from exploiting ambiguity regarding technical feasibility and cost-effectiveness.

Providing dispatchable location has already been shown to be technically feasible and cost-effective. Verizon is providing dispatchable location information for some 9-1-1 calls today, despite having no obligation under the rules to do so.¹⁰ While it’s fair for the rules to take into account the reality that dispatchable location will not be possible for all indoor wireless calls, limiting the requirement to when it is technically feasible and cost-effective is the wrong approach.

APCO’s recommendation is to eliminate the qualifying language, “technically feasible and cost-effective,” and establish minimum percentage thresholds for dispatchable location. With the addition of minimum percentage thresholds, providers would have a benchmark to work toward that takes into account the reality that dispatchable location will not be feasible for all indoor wireless calls, but still establishes a clear dispatchable location requirement.

II. The Draft Order Creates Loopholes That Carriers Will Use to Avoid Providing the Z-Axis Information Public Safety Has Been Promised

Under the draft Order, by April 3, 2021, carriers electing to comply with the vertical location information requirements by deploying z-axis technology have the option to: 1) in each CMA where z-axis technology is used, deploy the technology to cover 80% of the population or 80% of the buildings that exceed three stories, or 2) deploy z-axis capable handsets enabled with z-axis technology on a nationwide basis (or throughout the CMRS provider’s network footprint, as applicable).¹¹ The draft Order refers to these as the CMA-based option and the nationwide handset-based alternative, respectively,¹² and does not resolve confusion over the existing requirement that carriers provide floor level information where available in addition to z-axis information.¹³

The Commission must address substantial confusion over a) the new “handset-based” alternative, b) other unaddressed issues regarding how the rules ensure the z-axis metric is achieved in the real world, and c) the requirement to provide floor level information in addition to z-axis information.

a. The “Handset-Based” Alternative Approach Is Based on False Distinctions and Will Create Confusion

The draft Order creates a false distinction between a CMA-based approach and handset-based approach. The difference seems to be that the former requires the deployment of z-axis technology while the latter requires the deployment of z-axis capable handsets. This distinction doesn’t make sense.¹⁴ The only real difference seems to

⁸ Draft Order para. 46.

⁹ See *id.* paras. 44-45.

¹⁰ See *id.* para. 43.

¹¹ *Id.* Appendix A Final Rules § 9.10(i)(2)(ii)(I).

¹² See *e.g. id.* para. 31.

¹³ 47 CFR § 9.10(i)(2)(ii)(C).

¹⁴ Similarly, APCO pointed out that the Commission’s inconsistent use of the terms “handset-based” and “network-based” z-axis solutions introduced substantial confusion. APCO International Petition for Clarification, PS Docket No. 07-114 (filed Feb. 7, 2020) (“APCO Petition”) 6-7.

be that the CMA-based approach has a geographic limitation for the 2021 and 2023 benchmarks. For both the CMA-based and handset-based options, achieving the z-axis metric requires deploying handsets and non-handset (“infrastructure”) elements.¹⁵ For both options, carriers must achieve the z-axis metric of +/-3 meters for 80% of calls.¹⁶ Thus, the purpose of creating the handset-based compliance option is unclear.

The Commission’s intent is likely to create an alternative option based on the assumption that a CMA-based approach means the carriers will have to purchase NextNav’s or Polaris’s solution and that a handset-based alternative would allow the carriers to use the location information available from Apple and Google devices without supplemental location technology. However, the issue is not whether carriers are allowed to deploy “handset-based” technologies for vertical location information; the issue is whether these technologies achieve the z-axis metric. The draft Order’s alternative option for compliance only creates additional confusion.

APCO’s recommendation is to replace the deployment requirements with a minimum percentage threshold that requires carriers to provide a z-axis estimate that is accurate within 3 meters for 80% of calls made indoors from z-axis capable devices.¹⁷ With such an approach, if the location technology provided by Apple and Google can achieve 3-meter accuracy for 80% of calls in certain morphologies the rules would allow carriers to use those solutions where they work and procure additional solutions to meet the z-axis metric in other morphologies. This would be logical, given that, according to CTIA’s description of the test bed evaluation, Google’s solution was able to achieve the z-axis metric in at least one morphology.¹⁸ Further, because carriers are already able to provide the z-axis information generated by Apple’s and Google’s solutions (as this data is part of the device-based hybrid location information being used to comply with the horizontal accuracy requirements), this approach would allow carriers to expend resources in a more targeted fashion toward achieving the z-axis metric.

b. The Draft Order Fails to Resolve Confusion Regarding How the Rules Ensure the Z-Axis Metric Will Be Achieved in the Real World

In providing z-axis information, carriers must “certify that the indoor location technology (or technologies) used in their networks are deployed consistently with the manner in which they have been tested in the test bed.”¹⁹ As APCO explained in a Petition for Clarification of the z-axis order, the Commission should clarify what it means to deploy z-axis technology consistent with the manner in which it was tested.²⁰ The draft Order references several aspects of APCO’s Petition but does not provide the clarification requested.²¹ For example,

¹⁵ Any z-axis solution will require both handsets and technology deployed (whether beacons, weather stations, crowd-sourced Wi-Fi databases, network-level computations, or a combination of these “infrastructure” elements) to provide an accurate z-axis estimate. The Commission recognized as much in specifying that, under either option, carriers “must deploy and activate all network infrastructure necessary to support z-axis location by z-axis capable handsets throughout the deployment area.” Draft Order para. 33.

¹⁶ See *id.* para. 29 (reiterating that “z-axis capable” handsets are handsets that can measure and report vertical location without a hardware upgrade), para. 37 (explaining comparable scope requirements for both CMA-based and handset-based deployment options), and para. 18 (explaining that a handset-based technology would only meet deployment requirements if it meets the 3-meter accuracy standard for 80% of calls).

¹⁷ For example, a revised rule could read, “By April 3, 2021: In each of the top 25 cellular market areas (CMAs), nationwide CMRS providers shall ~~deploy~~ provide ... z-axis ~~technology information consistent with the z-axis accuracy metric described in this section.~~”

¹⁸ Letter from Thomas K. Sawanobori, Senior Vice President & Chief Technology Officer, CTIA, and Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07-114 (filed April 29, 2020) at 2.

¹⁹ 47 CFR § 9.10(i)(2)(iii)(A).

²⁰ APCO Petition at 2.

²¹ The draft Order reflects a misunderstanding of several of the issues that were raised in APCO’s Petition. The draft Order notes that PSAPs may seek enforcement when the location accuracy rules are not being complied with. Draft Order n. 162. This overlooks APCO’s concern that the z-axis rules – by focusing on deployment of technology rather than the accuracy of information delivered

APCO pointed out that it's unclear how the rules prevent carriers from deploying z-axis technology that only complies with the z-axis metric for a single device or cherry-picked subset of devices.²² The draft Order fails to resolve this concern, and instead asserts that compliance testing under the rules already requires carriers to test a representative sample of handsets.²³ APCO does not believe this is true.

Rather than provide the clarifications APCO requested, the draft Order would introduce additional confusion and opportunities for carriers to game the system. To give the carriers additional flexibility, the draft Order would permit carriers to comply with the deployment requirement by offering over-the-top apps that consumers could use to enable z-axis technology.²⁴ Carriers would be deemed compliant regardless of whether offering the apps results in improvements to location accuracy or whether the apps are even accessed by consumers.²⁵ This seems contradictory to the Commission's goals. These rules are intended to save lives and should not absolve carriers of their responsibility to ensure accurate location information is provided with 9-1-1 calls or place such responsibility on individual consumers. APCO is concerned that the draft Order creates a 9-1-1 location regime that depends on the awareness and willingness of consumers to download apps and allows carriers to meet the requirements without actually providing adequate location information in the real world.

Again, APCO's recommendation is to replace the deployment requirements with a minimum percentage threshold that requires carriers to provide a z-axis estimate that is accurate within 3 meters for 80% of calls made indoors from z-axis capable devices. This approach would largely resolve APCO's concern that ECCs and the Commission will encounter difficulty ensuring that the z-axis rules will translate to the expected benefits in the real world. It would also avoid the Commission's concern that it would be too burdensome for the carriers to take into account the variables that affect z-axis technology performance when certifying that they have complied with the deployment requirements.²⁶

c. The Draft Order Fails to Clarify When Carriers Must Provide Floor Level Information in Addition to Z-Axis Information

Rather than provide the clarification APCO requested, the draft Order perpetuates confusion over the requirement for carriers to provide the floor level of a caller when it is available.²⁷ As explained in APCO's Petition, the Commission should clarify that floor level information can be derived without first obtaining an

with 9-1-1 calls – are unclear and that the Commission should offer a clear statement that PSAPs may file a complaint that a carrier is falling short of the requirements when less than 80% of 9-1-1 calls from indoor locations are being delivered with z-axis information accurate within 3 meters. APCO Petition at 8. Elsewhere, the draft Order oversimplifies one of APCO's requests, stating that APCO requested confirmation that the rules require not just deployment of z-axis capable handsets, but also deployment of any network infrastructure that is necessary to support delivery of location information by the handset. See Draft Order para. 31. APCO's request was not for the Commission to confirm that it is necessary to deploy network infrastructure to support delivery of location information by the handset. The issue is whether elements of z-axis solution such as beacons, weather stations, crowd-sourced Wi-Fi databases, and other relevant information must be taken into account to ensure performance in the real world will be consistent with performance in the test bed.

²² See APCO Petition at 3-5.

²³ Draft Order para. 57.

²⁴ See *id.* paras. 33, 34.

²⁵ See *id.* para. 34.

²⁶ See *id.* para. 58 (recognizing that the performance of location technology may be affected by characteristics of handsets and the environment where the call is made, but finding that incorporating additional variables into testing and certification requirements would be neither practical nor cost-effective). This explanation stands in stark contrast to the recognition in the draft Order that factors such as the concentration of weather stations impacts the performance of barometric-sensor-based location technology. *Id.* n. 190.

²⁷ See *id.* para. 63 (describing the process of deriving a floor level as requiring conversion of HAE).

estimated HAE and then using a 3D map or other resource to convert the HAE to a floor level.²⁸ Floor level information can be derived separately, without converting HAE.²⁹ Confusion over how floor level information can or must be derived will complicate the question of when such information is available to carriers.

It remains important for the Commission to clarify that floor level information is considered to be available to carriers if it is technically feasible to obtain the information from a z-axis technology being used by the device, carrier-provisioned WiFi and in-home products,³⁰ new 5G technologies, or other sources.³¹ For example, if floor level information is available on Android devices via Google ELS, a carrier's failure to make technical changes necessary to receive the information and deliver it to ECCs cannot constitute a lack of availability. The Commission should clarify that carriers are expected to make business arrangements and technical changes where necessary to be able to receive floor level information and deliver it to ECCs.

Wireless carriers, cable companies, and other entities offer products and services that have (or with slight modification could have) associated floor level information (if not dispatchable location) that any carrier could access through reasonable business arrangements. The Commission has recognized that carriers "are capable of negotiating requirements with [handset manufacturers and operating system providers] and establishing contractual timelines that will enable timely deployment of z-axis solutions in time to meet the deadlines in the rules."³² APCO would therefore expect that the Commission would find that floor level information is "available" to carriers if the caller is using a product or service offered by another carrier, cable company, or similar entity that has this information.³³

III. Conclusion

If the draft Order is adopted, the Commission's z-axis and dispatchable location requirements will not result in the benefits expected for public safety. APCO urges the Commission to revise the draft Order consistent with the recommendations described above.

Respectfully submitted,

APCO INTERNATIONAL

²⁸ See APCO Petition at 9-10.

²⁹ See Letter from Megan Anne Stull, Counsel to Google LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket 07-114, p. 2 (Nov. 18, 2019) ("For Android Emergency Location Services, for example, floor labeling information provided to public safety would be calculated separately, not simply converted from HAE."). See also, E911 Location Test Bed Dispatchable Location Summary Report, ATIS Test Bed Program Management, p. 10 (Apr. 2019) (demonstrating that even a limited NEAD-based approach to vertical location is capable of identifying the correct floor level (+/- 1 floor) for nearly 40% of calls).

³⁰ As the Commission noted in the 2015 Order, there are a growing number of residential products that could easily be used as a source of location in a comprehensive dispatchable location solution. Wireless E911 Location Accuracy Requirements, Fourth Report and Order, 30 FCC Rcd 1259 (2015), corrected by, Erratum (rel. Mar. 3, 2015) para. 47. As APCO pointed out, carriers can make use of technologies and services they offer today, such as in-home Wi-Fi, to identify the floor level (if not a dispatchable location). See APCO Oct. 2019 ex parte.

³¹ See APCO Petition at 9-10.

³² Wireless E911 Location Accuracy Requirements, Fifth Report and Order and Fifth Further Notice of Proposed Rulemaking, FCC 19-124 (rel. Nov. 25, 2019) corrected by Erratum (rel. Jan 15, 2020) para. 30.

³³ APCO Petition at 10, n.27.

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