

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

In the Matter of	§	
	§	
Wireless E911 Location Accuracy	§	WC Docket No. 07-114
Requirements	§	
	§	
	§	

INITIAL COMMENTS OF THE TEXAS 9-1-1 ENTITIES

The Texas 9-1-1 Alliance,¹ the Texas Commission on State Emergency Communications (“CSEC”),² and the Municipal Emergency Communication Districts Association³ (collectively, the “Texas 9-1-1 Entities”) respectfully submit the following initial comments regarding the Fourth Further Notice of Proposed Rulemaking (“Fourth FNPRM”) issued by the Federal Communications Commission (the “Commission”) in the above-referenced proceeding. The Fourth FNPRM (1) proposes a vertical, or z-axis, metric of plus or minus 3 meters relative to the handset (the “3-meter z-axis metric”) to meet the 2021 and 2023 vertical location accuracy benchmarks for Commercial Mobile Radio Service (“CMRS”) providers and (2) seeks comment on the 3-meter z-axis metric and on related questions.⁴

¹ The Texas 9-1-1 Alliance is an interlocal cooperation entity composed of 27 Texas emergency communication districts with E9-1-1 service and related public safety responsibility for more than 70% of the population of Texas. These emergency communication districts were created pursuant to Texas Health and Safety Code Chapter 772 and are defined under Texas Health and Safety Code Section 771.001(3)(B).

² The Texas Commission on State Emergency Communications (“CSEC”) is a state agency created pursuant to Texas Health and Safety Code Chapter 771, and by statute is the state’s authority on emergency communications. CSEC’s membership includes representatives of the Texas 9-1-1 Entities and the general public, and CSEC directly oversees and administers the Texas state 9-1-1 program under which 9-1-1 service is provided in 192 of Texas’ 254 counties, covering at least 55% of the state’s geography and 18.5% of the state’s population.

³ The Municipal Emergency Communication Districts Association (“MECDA”) is an association of 26 municipal emergency communication districts, as defined under Texas Health and Safety Code Section 771.001(3)(A), that are located primarily in the Dallas-Fort Worth area.

⁴ See, *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Further Notice of Proposed Rulemaking, FCC 19-20 (rel. March 15, 2019).

I. Summary of Initial Comments

The Commission should proceed with adoption of the proposed 3-meter z-axis metric for 80% of wireless calls to help advance the development process. The Commission should also take reasonable next steps to further advance the process by reducing the number of variables for 9-1-1 system and public safety answering point (“PSAP”) implementation purposes, including (a) adopting a common z-axis standardized reference point, (b) carefully considering, especially during the early transition period, what additional requirements may be reasonable and feasible in order to locate 9-1-1 callers more quickly and accurately with regard to their vertical location, and (c) clarifying early in the process matters related to the National Emergency Address Database (“NEAD”) or alternative dispatchable location solutions.

II. The Commission should adopt the proposed 3-meter z-axis metric without requiring additional testing.

The Texas 9-1-1 Entities support the Commission’s fair and reasonable assessment that the existing record supports adoption of the proposed 3-meter z-axis metric for 80% of CMRS calls.⁵ As urged in the Texas 9-1-1 Entities’ prior comments on the z-axis metric, to do otherwise and allow a metric greater than 3 meters “would not satisfy the critical requirements of public safety.”⁶ While the Texas 9-1-1 Entities strongly support Commissioner Rosenworcel’s position that the z-axis metric must ultimately evolve to being within plus or minus 1 meter to mitigate “floor level” issues, we respectfully also submit that “the ‘perfect’ should not be the enemy of the ‘good’.”

The level of work needed to include z-axis data into Geographic Information Systems (“GIS”) and the transition from existing two-dimensional (“2D”) GIS towards three-dimensional

⁵ Fourth FNPRM at ¶ 21 (“We also tentatively conclude based on our own assessment of the Report that the limitations on testing described therein do not preclude us from adopting a 3-meter metric without requiring additional testing.”).

⁶ Fourth FNPRM at ¶ 12 (“The Texas 911 Entities assert that a metric greater than 3 meters for 80% of calls ‘would not satisfy the critical requirements of public safety.’”) [Footnote in original omitted].

(“3D”) GIS for 9-1-1 systems and at PSAPs is not an insignificant project. For example, Light Detection and Ranging (LIDAR) data may be sufficient for purposes of utilizing z-axis information and relatable floor level for locating emergency callers in a building, but a recurring challenge, as it is with data in general, is keeping information current and accurate. In addition, downstream software applications need to be developed, deployed, or modified for a production environment, and that may take longer in some areas or situations than others. To add value to the ingress of z-axis data (derived from LIDAR or otherwise), at least one area of Texas is currently looking into some pre-deployment testing once they have good 3D data with elevation/altitude data points to reference. As 9-1-1 systems and PSAPs nationwide transition from existing 2D GIS towards 3D GIS, it is critically important to the development process to reduce the number of potential unforeseen variables that must be addressed as soon as reasonably feasible. Accordingly, the Commission should adopt the proposed 3-meter z-axis metric to initiate the implementation process.

III. Responses to Related Questions Raised by the Commission.

In the Fourth FNPRM, in addition to seeking comment on the proposed 3-meter z-axis metric, the Commission asked several other implementation questions that we view as interrelated, because they each relate to the ability of 9-1-1 systems and PSAPs to prepare for and plan for their part of the transition. These questions are:

(1) Whether the Commission should require all CMRS providers to provide the same type of z-axis information to avoid potential confusion at the PSAP, or whether the Commission should decline to specify this level of detail so that entities developing solutions have more flexibility;⁷

(2) Should the Commission require CMRS providers to identify the floor level when reporting z-axis information as suggested by the Association of Public Safety Communications Officials International, Inc. (“APCO”);⁸ and

⁷ Fourth FNPRM at ¶ 14.

⁸ *Id.*

(3) Whether there are issues associated with implementing solutions into systems and production, or scaling them for widespread use.⁹

The following comments on these questions come with the caveat that our final views on these issues might change, based on future testing and deployment efforts to help meet the Commission’s indoor wireless location accuracy objectives.

A. The Commission should adopt a standard reference point for delivery of z-axis information.

As 9-1-1 systems and PSAPs nationwide transition from existing 2D GIS towards 3D GIS, a standardized methodology for conveyance of z-axis information appears critical. If 9-1-1 systems and PSAPs are to be expected to prepare for 3D transition by having to address as minimum vertical reference points for 9-1-1 GIS and PSAP mapping for z-axis in multiple ways (*i.e.*, (i) meters above the ellipsoid, (ii) meters above mean sea level (“MSL”), (iii) height above ground level (“AGL”), and (iv) floor level, to name a few of the possibilities), then interoperability, development, deployment, and accuracy issues may unnecessarily increase in complexity without any corresponding location accuracy benefits. In the context of GPS, WGS 84 vertical datum in meters above the ellipsoid (essentially average of MSL) appears to be the current standardized approach.¹⁰ If the WGS 84 standard is the current standardized approach for GPS, then perhaps the same standardized vertical reference point for determining a 9-1-1 caller’s altitude may be the appropriate vertical reference point. Regardless of which standard is chosen, a common z-axis

⁹ Fourth FNPRM at ¶ 27.

¹⁰ *Cf.*, GPS receivers cannot produce orthometric heights directly. Instead, GPS produces heights relative to the WGS 84 ellipsoid (available at <https://www.e-education.psu.edu/natureofgeoinfo/book/export/html/1791>); GPS uses an ellipsoid coordinate system for both its horizontal and vertical datums (available at <https://www.esri.com/news/arcuser/0703/geoid1of3.html>); see also, “What is GRAV-D?” (“GRAV-D measures and monitors Earth’s gravity field to support the geoid—a model of roughly global mean sea level used to measure precise surface elevations—so that it may serve as the “zero reference surface” for all heights in the nation. ... When the project is completed in 2022, the geoid will be applied to satellite position measurements like GPS to obtain extremely accurate heights (to within 2 cm where possible).”) (available at <https://oceanservice.noaa.gov/facts/grav-d.html>.”

standardized reference point appears appropriate and essential to advancing the 3D GIS implementation process.

B. Requiring CMRS providers to identify the floor level when reporting z-axis information.

With regard to having CMRS providers identify floor level as part of the z-axis information, there is no disagreement that z-axis information needs to be usable and actionable by telecommunicators and first responders. As noted above, including z-axis into GIS and the transition from existing 2D GIS towards 3D GIS for 9-1-1 systems and at PSAPs will require substantial work. If there are situations where the CMRS provider has only GPS z-axis vertical datum in meters above the ellipsoid and no other reliable information on floor level, then sending the GPS z-axis vertical datum in meters above the ellipsoid for display in meters in the elevation field in an existing ALI screen format is consistent with the basic approach in current standards.¹¹ But in situations where the CMRS provider has other reliable and corroborated information about the specific floor level beyond the GPS z-axis vertical datum in meters above the ellipsoid (*e.g.*, a 5G access point in the building, a prior Wi-Fi Calling validated civic address with building, floor, suite/unit information), then, to the extent feasible, it would be a reasonable expectation for the CMRS provider to also provide such corroborated additional floor level information, perhaps in the location field of an existing ALI screen format. The Commission has noted that no single technological solution will solve the indoor location challenge.¹² As such, it is appropriate to carefully consider, especially during the early transition period, what additional data requirements

¹¹ See, *NENA Standard Data Formats for E9-1-1 Data Exchange & GIS Mapping*, NENA-STA-015.10-2018 (Originally 02-010) (August 12, 2018), at p. 33 of 119 (“Z Coordinate,” “Structure elevation (This is not intended to include floor level or uncompensated barometric pressure.)” (available at <https://www.nena.org/page/DataFormats>.)

¹² Fourth FNPRM at ¶ 27.

may be reasonable to locate the 9-1-1 callers more quickly and precisely with regard to their vertical location.

C. Issues associated with implementing solutions into systems and production, or scaling them for widespread use.

The status of location solutions, such as Apple’s Hybridized Emergency Location (“HELO”), Google’s Android Emergency Location Service (“ELS”), West Public Safety’s proximity check, and the NEAD appear to be evolving or changing dynamically. In 2015, it may have been contemplated by PSAPs and others that z-axis might be mostly a fallback where dispatchable location was not available via the NEAD. More recent filings with the Commission appear to indicate that approach may no longer be a reasonable 9-1-1 system and PSAP planning assumption.¹³ On the other hand, CMRS providers have previously indicated that there may also be dispatchable location solutions independent of the NEAD for certain indoor at home products.¹⁴ To the extent additional issues regarding the NEAD or alternative dispatchable location solutions can be further clarified early in the development process, any such clarifications may enhance the development process. Accordingly, in addition to adopting the proposed 3-meter z-axis metric,

¹³ See, Ex Parte by the Internet & Television Association (“NCTA”), Charter, and Comcast, PS Docket No. 07-114 (May 13, 2019) (“We also discussed significant practical considerations related to collecting and formatting Wi-Fi access point data. We then described our concern that transmission of misleading location information could result in damage to customers’ premises or possible harm to customers. Finally, we shared our concern that a focus on NEAD-based systems could detract from the widespread implementation of device-based hybrid (DBH) 911 solutions that rely on handset sensors, GPS, and other dynamic location detection technologies to identify a caller’s actual location, which were developed after the NEAD framework was proposed and are likely to result in more accurate and reliable location information being available for more calls.” (available at <https://ecfsapi.fcc.gov/file/10513138760404/2019-05-13%20AS%20FILED%20NCTA%20NEAD%20ex%20parte.pdf>.)

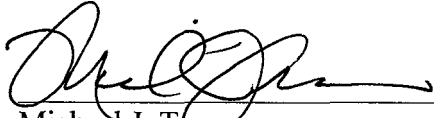
¹⁴ Cf., Verizon – Indoor 911 Location Accuracy Second Progress Report, PS Docket No. 07-114 (August 3, 2018) (“Verizon is also working to enhance the location capabilities for certain VoLTE and voice over Wi-Fi 911 calls so that dispatchable location information can be delivered to PSAPs independent of the NEAD. In these cases, a user’s registered location associated with a consumer home product would be corroborated with dynamically calculated location from the device to send a reliable MSAG address to the PSAP, rather than an x/y coordinate or an uncorroborated registered location. Subject to the outcome of testing and provided that reliability can be assured, we hope to include this capability with certain consumer home products and other devices offered as early as 4Q2018.”) ([https://ecfsapi.fcc.gov/file/10804269805332/Verizon%20Supplemental%20Indoor%20911%20Location%20Plan%20and%20Status%20Report%20\(As%20Filed\).pdf](https://ecfsapi.fcc.gov/file/10804269805332/Verizon%20Supplemental%20Indoor%20911%20Location%20Plan%20and%20Status%20Report%20(As%20Filed).pdf)).

reasonable next steps to further advance the development process and implement solutions into systems and production, or scaling them for widespread use, would be to reduce the number of variables to the extent possible for 9-1-1 system and PSAP preparation and planning purposes.

IV. Conclusion

The Texas 9-1-1 Entities appreciate the opportunity to provide the foregoing initial comments on these matters, and respectfully requests that the Commission take action in this proceeding in a manner consistent with these initial comments.

Respectfully submitted,



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