FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 9

[PS Docket No. 07–114; FR ID 290080]

Wireless E911 Location Accuracy Requirements

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Federal Communications Commission (the FCC or Commission) proposes rules to strengthen wireless 911 location accuracy rules and to put more actionable location information in the hands of Public Safety Answering Points (PSAPs) and first responders.

DATES: Comments are due on or before June 6, 2025, and reply comments are due on or before July 7, 2025.

ADDRESSES: You may submit comments, identified by PS Docket No. 07–114, by any of the following methods:

- *Electronic Filers:* Comments may be filed electronically using the internet by accessing the ECFS: *https://www.fcc.gov/ecfs.*
- *Paper Filers:* Parties who choose to file by paper must file an original and one copy of each filing.
- Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. Postal Service. All filings must be addressed to the Secretary, Federal Communications Commission.
- Hand-delivered or messenger-delivered paper filings for the Commission's Secretary are accepted between 8 a.m. and 4 p.m. by the FCC's mailing contractor at 9050 Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express must be sent to 45 L Street NE, Washington, DC 20554.

People with Disabilities. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an email to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at 202–418–0530.

FOR FURTHER INFORMATION CONTACT: Thomas Eng, Engineer, Policy and Licensing Division, Public Safety and Homeland Security Bureau, (202) 418–0019, *Thomas.Eng@fcc.gov,* or Brenda Boykin, Deputy Chief, Policy and Licensing Division, Public Safety and Homeland Security Bureau, (202) 418–2062, *Brenda.Boykin@fcc.gov.*

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Sixth Further Notice of Proposed Rulemaking (*FNPRM*), FCC 25–22, in PS Docket No. 07–114, adopted on March 27, 2025, and released on March 28, 2025. The full text of this document is available at *https://www.fcc.gov/document/fcc-proposes-improvements-wireless-e911-location-accuracy-rules.*

Pursuant to §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998), *https://www.govinfo.gov/content/pkg/FR-1998-05-01/pdf/98-10310.pdf.*

The Commission will treat this proceeding as a ''permit-but-disclose'' proceeding in accordance with the Commission's *ex parte* rules. Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule § 1.1206(b). In proceedings governed by rule § 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.,* .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

Synopsis

Background

In the *FNPRM,* we propose to strengthen our wireless 911 location accuracy rules to put more actionable location information in the hands of Public Safety Answering Points (PSAPs) and first responders. In the *FNPRM,* we propose to focus our approach on making the information available to PSAPs more valuable and directly applicable to incident response. Better location information from the outset of a 911 call translates to time saved during a response, and that time saved translates to lives saved. From the handsets in consumers' hands, to the provider networks and technologies used to derive and deliver location data to the PSAPs, to the equipment and systems used by the PSAPs, our goal is to encourage cooperation and collaboration among all parties involved to achieve the ultimate goal of better location accuracy, delivered as quickly and reliably as possible, to every PSAP nationwide.

In 2015, the Commission adopted comprehensive location accuracy rules requiring CMRS (Commercial Mobile Radio Service) providers to provide either (1) coordinate-based (horizontal and vertical) location information or (2) dispatchable location information, with wireless 911 calls.[1] In the *Fourth Report and Order* and subsequent orders in this proceeding, the Commission established minimum horizontal and vertical accuracy requirements and a timetable for their implementation, and required that technologies used to meet minimum accuracy thresholds be validated by testing in an independent test bed. Since 2015, these requirements have led to significant improvements in the accuracy and actionability of caller location information delivered to PSAPs with wireless 911 calls. However, progress has fallen short in some areas. First, while CMRS providers have tested

[1] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Fourth Report and Order, 30 FCC Rcd 1259 (2015), 80 FR 11806 (Mar. 4, 2015) (*Fourth Report and Order*), *corrected by* Erratum (PSHSB Mar. 3, 2015).

z-axis technologies in the test bed and are now using these technologies to deliver z-axis information to PSAPs, experience to date indicates that the z-axis information PSAPs are receiving with individual calls is frequently not actionable due to lack of precision and/or the information being delivered in a format that is not easily usable.[2] Second, issues have arisen about the transparency of the industry test bed process and whether current testing methodologies used to validate z-axis technologies adequately model real-world conditions. Third, while the Commission's rules require CMRS providers to deliver dispatchable location—public safety's preferred solution—whenever technically feasible, the number of wireless 911 calls currently being delivered with dispatchable location is very small compared to the number of calls delivered with coordinate-based location information.[3] While coordinate-based location information remains acceptable when providing dispatchable location is not technically feasible, we seek comment on how industry, handset manufacturers, carriers, and public safety can work collaboratively toward improvement, and how we can continue to increase the amount of dispatchable location being derived and delivered to PSAPs.

To advance the goal of putting more actionable information in the hands of PSAPs and first responders, we seek comment on a number of different proposals. Specifically, in the *FNPRM,* we propose to strengthen our vertical location (z-axis) accuracy requirements and to require CMRS providers to deliver z-axis information to PSAPs in more actionable formats. In addition, we seek comment on mechanisms to increase the number of wireless 911 calls for which the CMRS provider delivers dispatchable location information (*i.e.,* street address plus in-building identification of the caller's office, apartment, or room number), rather than coordinate-based information, to the PSAP.[4] We also seek comment on some additional proposals that we believe would improve location accuracy, such as strengthening the existing testing and compliance framework, revising live call reporting requirements, developing a centralized online complaint portal for location accuracy problems, and improving horizontal (x,y) location accuracy for wireless calls and location accuracy for text-to-911. Finally, we seek comment on whether certain of our legacy wireless location accuracy rules have become outdated and should be eliminated, and we also propose to eliminate certain obsolete information collection requirements associated with our 911 location accuracy rules. We believe the measures proposed in the *FNPRM* will improve the performance of vertical and dispatchable location technologies, provide more actionable information to PSAPs, and reduce emergency response times.[5]

- *Vertical Location.* We propose to strengthen the existing rules with respect to z-axis location by requiring CMRS providers that deploy z-axis technology to deliver z-axis information to PSAPs measured in Height Above Ground Level (AGL), which is likely to be more actionable than the currently required Height Above Ellipsoid (HAE). In addition, we seek comment on requiring CMRS providers to provide floor level estimates.
- *Testing and Compliance Framework.* We propose to strengthen the test bed validation process and require greater transparency and accountability with respect to test results. Specifically, we propose that testing and validation meet the following requirements in order for test results to be considered valid for compliance purposes:
  - We propose to require that validation of a vertical location technology in the industry test bed must demonstrate compliance of that technology with accuracy standards in each morphology. Thus, CMRS providers would not be allowed to base compliance certifications on aggregating or averaging test bed results across morphologies based on live call data or other factors.
  - We propose to provide non-nationwide CMRS providers and major public safety organizations (National Emergency Number Association (NENA), Association of Public-Safety Communications Officials International, Inc. (APCO), and National Association of State 911 Administrators (NASNA)) with expanded access to test bed data and results on request. We further propose to allow NENA, APCO, and NASNA to challenge the validation of particular technologies in the test bed.
- *Dispatchable Location.* We seek comment on mechanisms to increase the number of wireless 911 calls that convey dispatchable location and to ensure that CMRS providers use dispatchable location technologies to their maximum potential as they become available. In that connection, we seek to refresh the record on the current state of dispatchable location solutions and initiatives to develop new and enhanced solutions.
- *Live Call Reports.* We propose to require CMRS providers' live call data reports to include information on the specific technologies used to provide dispatchable location and on the morphologies for live calls providing dispatchable location.
- *Complaint Portal.* We seek comment on requiring CMRS providers to develop a centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement.
- *Horizontal Location Accuracy.* We seek comment on improving horizontal (x,y) location accuracy for wireless 911 calls.

[2] Letter from Jeffrey S. Cohen, Chief Counsel, Association of Public-Safety Communications Officials International, Inc. (APCO), to Marlene Dortch, Secretary, FCC, PS Docket No. 07–114 et al., at 2 (filed Jan. 31, 2024) (APCO Jan. 31, 2024 *Ex Parte*) (''The Commission's rules require wireless carriers to provide a height estimate for 9–1–1 callers expressed as a 'height above ellipsoid' . . . . Few 9–1–1 emergency communications centers (ECCs) have the resources to even explore how to make use of HAE-based vertical information . . . .''); *see also* Letter from Jeffrey S. Cohen, Chief Counsel, APCO, to Marlene Dortch, Secretary, FCC, PS Docket No. 07–114 and WC Docket No. 18–336, at 1 (filed Sept. 6, 2022) (APCO Sept. 6, 2022 *Ex Parte*) (''APCO reiterated that ECCs need actionable location information in the form of dispatchable location as compared to z-axis information provided as a height above ellipsoid.''); Letter from Jeffrey S. Cohen, Chief Counsel, Mark S. Reddish, Senior Counsel, and Alison P. Venable, Government Relations Counsel, APCO, to Marlene Dortch, Secretary, FCC, PS Docket No. 07–114 et al., at 2 (filed May 20, 2024) (APCO May 20, 2024 *Ex Parte*).

[3] APCO Jan. 31, 2024 *Ex Parte* at 2; Letter from Jeffrey S. Cohen, Chief Counsel, APCO, to Marlene Dortch, Secretary, FCC, PS Docket Nos. 07–114, 21–479, and 18–64, at 1 (filed Sept. 22, 2023) (''[T]he Commission [should] explore additional avenues for ensuring that emergency communications centers receive actionable location information in the form of dispatchable location.''); APCO Sept. 6, 2022 *Ex Parte* at 1.

[4] We note that, while seeking comment exploring how dispatchable location can be provided more often, we are not proposing to phase out x/y/z location as a location accuracy option.

[5] APCO states that ''further Commission action is needed to explore ways to (1) improve the transparency and reliability of testing to verify that HAE-based z-axis estimates meet the Commission's +/− 3 meter metric and ensure testing is conducted of currently in use and potential dispatchable location solutions available through carriers' own products and services as well as by third party location solutions providers, (2) make carrier reports more uniform and informative to better understand and compare dispatchable location methods in use, (3) explore the role of mobile device manufacturers and mobile operating system developers in contributing to dispatchable location solutions, and (4) provide more robust and accountable requirements for carriers to deploy methods, several of which are likely feasible today, to provide dispatchable location as soon and as frequently as possible.'' Letter from Jeffrey S. Cohen, Chief Counsel, and Alison P. Venable, Government Relations Counsel, APCO, to Marlene Dortch, Secretary, FCC, PS Docket No. 07–114 et al., at 2 (filed Nov. 1, 2024).

• *Mobile Text.* We seek comment on improving location accuracy for text-to-911 (mobile text).

• *Eliminating Certain Existing Regulations.* We seek comment on whether to eliminate existing E911 Phase II rules, and we also propose to eliminate certain other obsolete or superseded 911 location accuracy rules in 47 CFR 9.10.

In the *Fourth Report and Order,* the Commission adopted comprehensive 911 location accuracy rules that for the first time required CMRS providers to provide vertical as well as horizontal location information with wireless 911 calls. The primary purpose of these rules was to enable PSAPs and first responders to use the information to pinpoint the location of wireless 911 callers inside multi-story buildings, including floor level and, ideally, apartment, office, or room number.[6] In order to focus provision of vertical location in areas with the highest concentration of multi-story buildings, the Commission required nationwide CMRS providers to deploy vertical location capability in each of the top 25 Cellular Market Areas (CMAs) by April 3, 2021, and in each of the top 50 CMAs by April 3, 2023.[7]

The Commission established two alternative ways for CMRS providers to provide this information to PSAPs. The first was to deploy technology that would provide ''dispatchable location'' with wireless 911 calls, which the Commission defined as ''[a] location delivered to the PSAP by the CMRS provider with a 911 call that consists of the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party.'' [8] The Commission envisioned that CMRS providers would develop dispatchable location capability by building a national location database of in-building beacons and hotspots known as the National Emergency Address Database (NEAD).[9]

The second alternative was to deploy z-axis technology that met a Commission-approved accuracy metric. However, the Commission deferred adoption of a z-axis metric pending further testing, directing the nationwide CMRS providers to conduct testing in the industry test bed and submit a proposed z-axis accuracy metric to the Commission for approval by August 2018.[10] Following testing of z-axis technologies in the test bed (Stage Z), in August 2018, CTIA submitted the Stage Z test report and proposed a z-axis accuracy metric to the Commission of plus or minus 5 meters relative to the handset for 80% of calls. Following public comment on the industry proposal,[11] the Commission proposed [12] and in the *Fifth Report and Order* adopted a more stringent metric of plus or minus 3 meters for 80% of calls made from ''z-axis capable'' devices.[13] The Commission also required CMRS providers to deliver z-axis information to PSAPs measured in HAE and to provide floor level information if the CMRS provider had such information available.[14] Finally, the Commission reaffirmed the April 2021 and April 2023 deadlines for meeting these requirements in the top 25 and top 50 CMAs, respectively, as previously established in the *Fourth Report and Order.*[15]

In the companion *Fifth FNPRM,* the Commission sought comment on whether to establish a long-term timeline for migrating to a more stringent z-axis metric than 3 meters, and ultimately whether to require CMRS providers to deliver floor level information in conjunction with wireless indoor 911 calls.[16] The Commission also proposed to expand the options for demonstrating deployment of z-axis or dispatchable location capability.[17] With respect to dispatchable location, the Commission sought comment on alternatives to the NEAD, noting reports that the nationwide CMRS providers were facing challenges in establishing the NEAD.[18] Shortly after release of the *Fifth Report and Order,* the nationwide CMRS providers announced that they had ceased work on the NEAD due to challenges with testing and lack of third-party participation, and that the NEAD would not be available to support dispatchable location.[19]

In the July 2020 *Sixth Report and Order,* the Commission rejected proposals by T-Mobile, Verizon, and AT&T to weaken the 3-meter vertical location accuracy standard or to extend the previously established deadlines for implementing it.[20] The Commission also afforded nationwide CMRS providers the option of meeting the April 2021 and April 2023 deadlines by deploying handset-based z-axis technology that could be used throughout the provider's nationwide footprint.[21] With respect to choosing between coordinate-based and dispatchable location, which had previously been left to the provider's discretion, the Commission adopted a binding preference for dispatchable location by requiring CMRS providers to

[6] *Fourth Report and Order,* 30 FCC Rcd at 1319, paragraph 162 (stating that ''by providing a z-axis metric as a backstop to dispatchable location for identifying floor level of 911 calls from multi-story buildings, we ensure that vertical location accuracy is achieved within the timeframe laid out by the Roadmap'').

[7] *Id.* at 1261–62, paragraph 6; *see also* 47 CFR 9.10(i)(2)(ii)(C), (D). The Commission afforded non-nationwide CMRS providers an additional year to comply with these requirements. *See* 47 CFR 9.10(i)(2)(ii)(F).

[8] *Fourth Report and Order,* 30 FCC Rcd at 1360, Appx. D; *accord* 47 CFR 9.10(i)(1)(i).

[9] *Fourth Report and Order,* 30 FCC Rcd at 1279, paragraph 55. A commitment to build the NEAD was a component of the ''Roadmap'' agreement between the major wireless providers and national public safety organizations that preceded the *Fourth Report and Order. See* Letter from John Wright, APCO, Charles W. McKee, Sprint, Joan Marsh, AT&T, Kathleen O'Brien Ham, T-Mobile, Christy Williams, NENA, and Kathleen Grillo, Verizon, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07–114 (filed Nov. 18, 2014), Attach. A, ''Roadmap for Improving E911 Location Accuracy,'' *https://www.fcc.gov/ecfs/document/60000983188/1.*

[10] *Fourth Report and Order,* 30 FCC Rcd at 1302–04, paragraphs 112 through 114, 116.

[11] *Public Safety and Homeland Security Bureau Seeks Comment on Vertical (Z-Axis) Accuracy Metric Proposed by the Nationwide Wireless Carriers,* PS Docket No. 07–114, Public Notice, 33 FCC Rcd 8616, 8617 (PSHSB 2018), *https://www.fcc.gov/ecfs/document/0910993124543/1.*

[12] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Fourth Further Notice of Proposed Rulemaking, 34 FCC Rcd 1650, 1654, paragraph 11 (2019), 84 FR 13211 (Apr. 4, 2019) (*Fourth FNPRM*).

[13] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Fifth Report and Order and Fifth Further Notice of Proposed Rulemaking, 34 FCC Rcd 11592, 11593, 11604–05, paragraphs 2, 24 through 25 (2019), 85 FR 2660 (Jan. 16, 2020) (*Fifth Report and Order*), 85 FR 2683 (Jan. 16, 2020) (*Fifth FNPRM*); *see also* 47 CFR 9.10(i)(2)(ii)(H).

[14] *Fifth Report and Order,* 34 FCC Rcd at 11608, 11610–11, paragraphs 32, 37; *see also* 47 CFR 9.10(i)(2)(ii)(H). HAE is a global standard for vertical location that measures altitude between the wireless device that makes the 911 call and a globally defined (WGS–84) reference ellipsoid. *Fifth Report and Order,* 34 FCC Rcd at 11608, paragraph 32 n.134.

[15] *Fifth Report and Order,* 34 FCC Rcd at 11596, paragraph 9.

[16] *Id.* at 11619, paragraph 61. To continue to improve the z-axis metric, the Commission sought comment on whether enhancements are needed to the vertical location accuracy testing process. *Id.* at 11620, paragraph 65.

[17] *Id.* at 11619, 11622–25, 11632–33, paragraphs 61, 71 through 78, Appx. B.

[18] *Id.* at 11625–26, paragraph 80.

[19] *See* Letter from Thomas C. Power, Secretary, and Thomas K. Sawanobori, Vice President, NEAD, LLC, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07–114, at 1 (Feb. 14, 2020) (*NEAD Feb. 14 2020 Termination Letter*) (informing the Commission that the NEAD Platform ''has ceased operation and is no longer available to support wireless providers' provision of dispatchable location information'').

[20] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Sixth Report and Order and Order on Reconsideration, 35 FCC Rcd 7752 (2020), 85 FR 53234 (Aug. 28, 2020) (*Sixth Report and Order*), *corrected by* Erratum (PSHSB Aug. 28, 2020) and Second Erratum (PSHSB Oct. 29, 2020).

[21] *Sixth Report and Order,* 35 FCC Rcd at 7759, paragraph 18; *see also* 47 CFR 9.10(i)(2)(ii)(I)(*2*).

provide dispatchable location with wireless E911 calls if it is technically feasible and cost effective for them to do so.[22] Finally, the Commission added a requirement for nationwide CMRS providers to deploy z-axis location technology or dispatchable location nationwide by April 2025.[23]

CTIA and APCO filed petitions for reconsideration of the *Sixth Report and Order*.[24] CTIA argued that the COVID–19 pandemic had impeded any ability to validate whether z-axis location solutions could meet the Commission's vertical location accuracy requirements. APCO urged the Commission to require CMRS providers to deliver dispatchable location for a minimum percentage of 911 calls—an alternative that the Commission had previously rejected—rather than tie the Commission's dispatchable location benchmark to the number of address reference points in a location database.[25] In January 2021, the Commission dismissed the petitions as procedurally defective and, as an alternative and independent ground for resolving the issues raised, denied the petitions on the merits.[26] Regarding dispatchable location requirements, the Commission upheld the existing rules but stated that it would monitor progress towards deployable dispatchable location technologies and exercise future oversight if necessary.[27]

Following release of the *Sixth Report and Order,* CTIA informed the Commission that the next round of testing of z-axis location technologies (Stage Zb), originally scheduled to start in September 2020, was being postponed due to the impact of COVID–19 and that testing would not resume until it could be ''safely and effectively accomplished within buildings in the test cities.'' [28] In February 2021, AT&T, T-Mobile, and Verizon sought a waiver of the April 2021 compliance deadline, ''based in part on challenges with testing z-axis solutions due to the COVID–19 pandemic.'' [29] The Enforcement Bureau conducted an inquiry into these providers' compliance with the Commission's vertical location benchmarks. After the investigation was concluded, the Enforcement Bureau entered into consent decrees with all three providers requiring each company to immediately start providing wireless 911 callers' z-axis location information to PSAPs nationwide, to implement a compliance plan that included specific testing, to report periodically on dispatchable location and floor level information technologies, and to pay a $100,000 settlement amount. In addition, the consent decrees gave each company until April 3, 2022, to meet the z-axis requirements that would have been applicable on April 3, 2021.[30] From December 2021 through May 2022, the test bed conducted testing of z-axis technologies in Stage Zb, after which CTIA submitted a summary to the Commission.[31] On June 2, 2022, the three providers certified that they had met the 3-meter metric requirements as of April 3, 2022, as required by the consent decrees.

On November 21, 2024, the Commission's Enforcement Bureau entered into a consent decree with DISH Wireless L.L.C. (DISH) with respect to its obligation to deploy vertical location technology for wireless 911 calls in each of the top 25 CMAs where it launched 5G Voice over New Radio (VoNR) service.[32] In the consent decree, DISH admitted that on January 24, 2023, it launched VoNR service in two top 25 CMAs without deploying vertical location technology and that it subsequently ''continued to launch VoNR service in top 25 CMAs and top 50 CMAs without deploying vertical location technology.'' [33] Under the terms of the consent decree, DISH agreed to pay a civil penalty of $100,000, and the Enforcement Bureau agreed to terminate the investigation of this matter.[34]

Discussion

In the *FNPRM,* we propose to build on recent technological developments and standardization efforts that will enable CMRS providers to convey more actionable vertical location information with wireless 911 calls. Specifically, we propose to require CMRS providers to convey z-axis coordinates in AGL in addition to HAE. We also seek comment on requiring CMRS providers to provide floor level estimates. In addition, we seek comment on potential mechanisms to increase the number of wireless 911 calls that convey dispatchable location (street address, plus additional information to locate the 911 caller) and on collaborative approaches among all parties in the call and location delivery process that might be explored to facilitate an increase in dispatchable location usage. We also propose to strengthen our wireless location accuracy testing, compliance, and reporting requirements. We seek comment on improving location accuracy for mobile texts and on the benefits and costs associated with our

[22] *Sixth Report and Order,* 35 FCC Rcd at 7775–76, paragraphs 51 through 53; *see also* 47 CFR 9.10(i)(2)(ii)(G) (''By January 6, 2022: All CMRS providers shall provide dispatchable location with wireless E911 calls if it is technically feasible for them to do so.'').

[23] *Sixth Report and Order,* 35 FCC Rcd at 7763, paragraph 25.

[24] Petition of CTIA for Reconsideration, PS Docket No. 07–114 (filed Sept. 28, 2020), *https://www.fcc.gov/ecfs/search/search-filings/filing/1092835868478;* Petition of APCO International for Reconsideration, PS Docket No. 07–114 (filed Sept. 23, 2020), *https://www.fcc.gov/ecfs/search/search-filings/filing/109232735502601* (APCO Petition for Reconsideration).

[25] APCO Petition for Reconsideration at 3 (''Rather than basing compliance on the number of reference points in a database, the better approach would be to establish a specific minimum percentage of calls that must be delivered with a dispatchable location.'').

[26] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Order on Reconsideration, 36 FCC Rcd 570, 576, 579, paragraphs 16 through 17, 25 (2021), 86 FR 8714 (Feb. 9, 2021) (*Order on Reconsideration*).

[27] *Id.* at 592, paragraph 48; *see Sixth Report and Order,* 35 FCC Rcd at 7782–83, paragraph 71.

[28] Letter from Scott K. Bergmann, Senior Vice President, Regulatory Affairs, and Thomas K. Sawanobori, Senior Vice President & Chief Technology Officer, CTIA, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07–114, at 3 (filed Aug. 21, 2020); *accord id.* at 1; *see also* Letter from Paul Margie, Counsel for Apple Inc., to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07–114, at 2 (filed Nov. 3, 2020) (stating that due to the pandemic, the z-axis location capabilities of Apple's Hybridized Emergency Location (HELO) vertical location solution ''may not be suitable for external testing prior to the end of Q1 2021'').

[29] Petition of AT&T for Waiver, PS Docket No. 07–114 (filed Feb. 12, 2021), *https://www.fcc.gov/ecfs/document/10212237290677/1;* Petition of T-Mobile for Limited Waiver, PS Docket No. 07–114 (filed Feb. 12, 2021), *https://www.fcc.gov/ecfs/document/1021374367479/1;* Petition of Verizon for Waiver, PS Docket No. 07–114 (filed Feb. 12, 2021), *https://www.fcc.gov/ecfs/document/10213853309676/1* (Verizon Petition for Waiver).

[30] *T-Mobile USA, Inc.,* Order and Consent Decree, 36 FCC Rcd 9074, 9078–80, paragraph 11 (EB 2021), *https://www.fcc.gov/document/fcc-settles-t-mobile-over-911-vertical-location-accuracy-rules; Cellco Partnership d/b/a Verizon Wireless,* Order and Consent Decree, 36 FCC Rcd 9084, 9088–90, paragraph 11 (EB 2021), *https://www.fcc.gov/document/fcc-settles-verizon-over-911-vertical-location-accuracy-rules; AT&T Services, Inc.,* Order and Consent Decree, 36 FCC Rcd 9094, 9098–100, paragraph 11 (EB 2021), *https://www.fcc.gov/document/fcc-settles-att-over-911-vertical-location-accuracy-rules; see also* Press Release, FCC, FCC Secures Life-Saving Commitment from Wireless Carriers to Deliver 911 Vertical Location Information Nationwide within Seven Days (June 3, 2021), *https://www.fcc.gov/document/fcc-secures-911-vertical-location-commitments-wireless-carriers.*

[31] The providers submitted the Stage Zb summary under a request for confidentiality. *See* Letter from Scott K. Bergmann, Senior Vice President of Regulatory Affairs, CTIA et al., to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07–114, at 3, 5 (filed June 2, 2022), *https://www.fcc.gov/ecfs/search/search-filings/filing/10602197662551* (Stage Zb Cover Letter).

[32] *DISH Wireless L.L.C.,* Order and Consent Decree, DA 24–1139, 2024 WL 4880017, at * 1, paragraph 1 (EB Nov. 21, 2024), *https://www.fcc.gov/document/fcc-and-dish-settle-dispatchable-location-investigation-100000.*

[33] *Id.* at * 3, paragraph 4. The consent decree notes that on April 5, 2024, DISH certified that it was in compliance with the Commission's vertical location accuracy requirements in each of the top 50 CMAs where it provided VoNR wireless services. *Id.*

[34] *Id.* at * 4–6, paragraphs 10, 11, 13.

proposals. Finally, we seek comment on whether certain of our legacy wireless location accuracy rules have become outdated and should be eliminated, and we also propose to eliminate certain obsolete information collection requirements associated with our 911 location accuracy rules.

Since the Commission adopted the z-axis location accuracy standard in 2019, wireless location technologies continue to progress. The speed and accuracy of E911 location have improved significantly through integration of device-based hybrid (DBH) location technologies into most mobile handsets. DBH uses ''a combination of technologies and sensors—including satellite GPS [Global Positioning System] and crowd-sourced Wi-Fi measurements—that can supplement wireless providers' existing 9–1–1 network and device-assisted information to produce a higher-accuracy location, particularly indoors.'' Both Google and Apple have developed DBH applications optimized for emergency calls: Google's Android Emergency Location Service (ELS) supports 911 location in most Android devices,[35] and Apple's Hybridized Emergency Location (HELO) supports 911 location in most iOS devices.[36] According to live 911 call data reports submitted by CMRS providers, DBH technology has replaced assisted GPS (A–GPS) as the primary wireless 911 location technology and is used by CMRS providers for approximately 80% of wireless 911 calls.[37]

In another significant development, a NENA working group has drafted consensus requirements and guidelines for operationalizing z-axis information in the PSAP to support the display of 3D location data for E911 and Next Generation 911.[38] Although the NENA requirements document has not yet turned into a formal standard, it can help expedite standards development and provide guidelines for transmission of vertical location information by CMRS providers and other entities in the location information delivery chain. It can also help to provide practical guidance for intake, processing, and display of z-axis information in the PSAP. To illustrate, the NENA requirements document includes guidance on converting altitude to floor levels, generating 3D volumes for buildings at low or no cost, available enterprise services, and consensus standards for operationalizing z-axis information (*e.g.,* configuring Automatic Location Identification (ALI) and provisioning 3D geographic information system (GIS) datasets).[39] *Id.*

As part of our overarching 911 agenda, and in light of increasing standardization, we seek to strengthen our wireless location accuracy rules to provide PSAPs and first responders with actionable information in the live 911 call environment.

A. Improving Actionability of Z-Axis Information

Under the current rules, CMRS providers providing coordinate-based location information to PSAPs with wireless 911 calls must deliver the z-axis component in Height Above Ellipsoid (HAE).[40] In addition, CMRS providers must provide floor level information when it is available.[41] We propose to make the z-axis information delivered to PSAPs and first responders with 911 calls more understandable and actionable by requiring CMRS providers to convert HAE values to Height Above Ground Level (AGL) and to provide both the HAE and AGL values with each call. We seek comment on data sources that can be leveraged to generate floor level information and whether to require CMRS providers to provide a floor level estimate with all calls. We also seek comment on how PSAPs use the vertical location information that is being provided today. Have PSAPs found the information to be useful, and have they observed any limitations in the accuracy of such information? To what extent do PSAPs use NENA 3D location guidelines or other mechanisms to operationalize the information?

1. Converting HAE to AGL

When the Commission mandated use of HAE in the *Fifth Report and Order,* the record reflected general consensus around using HAE as the baseline for measuring vertical location.[42] The Commission also acknowledged that HAE values would need to be translated to other formats to be actionable, but declined to require CMRS providers to perform the translation, concluding that ''translation mechanisms can be developed using HAE as a baseline reference, and that for the time being we should afford industry and public safety flexibility to develop solutions that are cost-effective for both sides.''[43]

Since the *Fifth Report and Order,* there has been significant progress in the development of data sources and translation tools that CMRS providers could use to translate HAE to AGL for the z-axis location of individual wireless 911 calls. As noted above, NENA has developed guidelines for operationalizing z-axis information. NENA suggests that HAE to AGL conversion can be performed by subtracting the terrain height, also expressed with respect to the WGS84 ellipsoid, at the horizontal location corresponding to the HAE. RapidSOS and GeoComm have partnered to convert z-axis information into actionable data, including height above ground and floor level, and 3D visualization of a caller's location in a building. In 2021, FirstNet unveiled z-axis capability using NextNav's Pinnacle vertical positioning service as part of its FirstNet Enhanced Location Services (FirstNet ELS) and provides z-axis data in Height Above Terrain (HAT) to indicate the relative altitude or vertical location of first responders. Digital terrain height information is

[35] Android, *Emergency Location Service, https://www.android.com/safety/emergency-help/emergency-location-service/* (last visited Feb. 4, 2025) (describing ELS as ''a tool available on Android devices that allows first responders to locate emergency callers and texters faster and with greater accuracy, using a combination of GPS, cell, Wi-Fi and sensor data'').

[36] Press Release, Apple, Apple's iOS 12 securely and automatically shares emergency location with 911 (June 18, 2018), *https://www.apple.com/newsroom/2018/06/apple-ios-12-securely-and-automatically-shares-emergency-location-with-911/* (stating that ''Apple launched HELO (Hybridized Emergency Location) in 2015, which estimates a mobile 911 caller's location using cell towers and on-device data sources like GPS and Wi-Fi Access Points'').

[37] Pursuant to Commission rules, CMRS providers collect and report aggregate data on the location technologies used for live 911 calls in six representative test cities. 47 CFR 9.10(i)(3). While the live call data submitted by each provider are confidential, aggregated call data from the three nationwide carriers show that the percentage of 911 calls in which DBH is used has risen from 17% in 2017 to 80% in 2022.

[38] NENA, NENA Requirements for 3D Location Data for E9–1–1 and NG9–1–1 (June 10, 2022), *https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-req-003.1-2022_3d_gis_w.pdf* (NENA 3D Location Requirements).

[39] *Id.* at 3. NENA's 3D Location Requirements document references the following five objectives.

1. To provide a technical and regulatory background for 3D 9–1–1 locations.

2. To establish uniform language in reference to z-axis within the 9–1–1 community for terms ''altitude,'' ''height,'' and ''elevation'' (as they are currently used interchangeably across specifications).

3. To provide practical guidance for operationalizing 3D location, such as how the Automatic Location Identification (ALI) should be configured and provisioning of 3D GIS datasets (including Digital Elevation Models [DEM] and 3D structures).

4. To provide requirements for future standards development for 3D location, such as how uncertainty should be conveyed for certain civic address elements.

5. To provide baseline requirements for implementations and enhancements.

[40] 47 CFR 9.10(i)(2)(ii)(H).

[41] *Id.*

[42] *Fifth Report and Order,* 34 FCC Rcd at 11608, paragraph 33.

[43] *Id.* at 11611, paragraph 38 (footnote omitted).

typically available at various resolutions and costs. Currently, the U.S. Geological Survey (USGS) provides digital terrain maps at 10m by 10m resolution nationwide at no cost.[44]

Given the availability of HAE-to-AGL translation tools, we propose to require CMRS providers to convert HAE values for individual 911 calls to AGL and to deliver both the HAE and the AGL values to the PSAP. We also propose to require CMRS providers to provide floor level information in addition to z-axis location information, if floor level information is available to them. This proposal is consistent with the existing requirement for providing z-axis information in HAE, which also requires provision of floor level information ''[w]here available to the CMRS provider.'' [45] While we do not propose to require floor level information at this time, we continue to believe that such information will be helpful to PSAPs and that CMRS providers should deliver it to the PSAP if it is available. We seek comment on these proposals.

AGL may be obtained by subtracting the terrain height at any horizontal (x/y) location from the corresponding HAE value, provided that both terrain height and HAE are expressed with respect to the same reference frame.[46] Providing AGL means that PSAPs receive a vertical location measurement relative to ground level for the x/y location of the call, which we tentatively conclude would be more actionable than the raw HAE value alone.[47] Receiving both the HAE and AGL values would enable the PSAP to check the accuracy of the HAE-to-AGL translation. We seek comment on this proposal. Would receiving AGL z-axis information benefit PSAPs and first responders? How much more actionable would the information be than HAE alone? Would it facilitate the ability of first responders to estimate floor level or integrate vertical location information into 3D mapping tools? If AGL is indeed more actionable than HAE, are there any benefits or costs to continuing to provide HAE values as well?

We believe it is reasonable to require CMRS providers to provide AGL as part of the information delivered to PSAPs. In a 2020 *ex parte* filing in this proceeding, NENA noted that ''the future of public safety-grade 3D mapping is surprisingly close and surprisingly feasible.'' [48] At that time, NENA noted that ''[i]t is close enough, in fact, that the Commission could reasonably require CMRS providers to sponsor large-scale, 'entry-level' Above Ground Level (AGL) conversion solutions for public safety. These solutions (presented as supplemental data alongside elevation in Height Above Ellipsoid [HAE]) would be understood by public safety to be a reliable stepping stone to more local, highly accurate vertical data.'' Since then, the availability of terrain databases and HAE-to-AGL translation tools appears to provide a low-cost, scalable mechanism for CMRS providers to translate HAE to AGL. In addition, APCO contends that it is cost prohibitive for most PSAPs to perform the conversion to HAE on their own. We believe that requiring CMRS providers to deliver AGL to PSAPs would be a more efficient and cost-effective approach than placing the translation burden on thousands of individual PSAPs, as industry commenters have advocated. We seek comment on this view. Are the above-mentioned tools and computations viable for use in computing AGL data? To what degree are location technology vendors and GIS providers already performing these computations for 911 calls or capable of doing so? Where in the 911 call flow does conversion from HAE to AGL occur? How is the resulting AGL location information currently being used? What are the costs of such an approach?

We seek comment on the requisite level of Digital Terrain Model (DTM) resolution necessary to accurately convert from HAE to AGL, the means of achieving such resolution, and the associated costs. We also seek comment on how to ensure that AGL measurements provided to PSAPs meet the same or comparable confidence and uncertainty thresholds as the underlying HAE measurements from which they are derived. Because HAE conversion to AGL requires reliable terrain data and an accurate horizontal location fix, it may yield a different uncertainty value than HAE. Would conversion from HAE to AGL introduce any errors in the accuracy of the z-axis information that could impact emergency response and, if so, to what degree? [49] What technical standards are available for providers to determine the level of error, if any, introduced by the HAE to AGL conversion? Would technical standards need to be developed for this purpose? For purposes of determining AGL uncertainty, we propose to apply the Commission's prior determination that 90% is the appropriate confidence value.[50] Assuming a confidence value of at least 90%, how will uncertainty associated with the AGL value be calculated? For example, what uncertainty value will be generated by HAE conversion to AGL using the USGS 10m by 10m terrain data map, and by how much will the uncertainty value differ from the HAE uncertainty value? What uncertainty threshold needs to be achieved for PSAPs to consider an AGL measurement actionable?

With respect to timing, we propose to require nationwide CMRS providers that deploy z-axis technology to deliver z-axis information in AGL within 12 months after the effective date of final rules, and we propose to require non-nationwide CMRS providers to deliver AGL within 24 months. As noted in the discussion above, technical feasibility appears well established, and therefore it appears deployment of this feature within a year of the effective date of our final rules should be reasonable. Based on the available information, we believe that the ability to convert HAE to AGL exists today, that PSAPs can readily receive the data and, as noted by previous commenters, that it would be reasonable to require CMRS providers to

[44] The United States Geological Survey provides a free topological map of the United States at a ⅓ arc-second DEM on its website. United States Geological Survey, *The National Map (TNM) Datasets, https://apps.nationalmap.gov/datasets/* (last visited Feb. 4, 2025). One-third arc-second is equivalent to a resolution of ''approximately 10 meters north/south, but variable east/west due to convergence of meridians with latitude.'' United States Geological Survey, *About 3DEP Products & Services, https://www.usgs.gov/3d-elevation-program/about-3dep-products-services* (last visited Feb. 4, 2025).

[45] *See* 47 CFR 9.10(i)(2)(ii)(H).

[46] NENA 3D Location Requirements at 15, n.6 (''A reference frame, or geodetic datum, is 'an abstract coordinate system with a reference surface (such as sea level) that serves to provide known locations to begin surveys and create maps.' '').

[47] APCO Jan. 31, 2024 *Ex Parte* at 2 (''The Commission's rules require wireless carriers to provide a height estimate for 9–1–1 callers expressed as a 'height above ellipsoid' . . . . Few 9–1–1 emergency communications centers (ECCs) have the resources to even explore how to make use of HAE-based vertical information (assuming this information is indeed accurate), which would require at a minimum substantial costs and resources including detailed building plans.'').

[48] Letter from Daniel Henry, Regulatory Counsel and Director of Government Affairs, NENA, to Marlene Dortch, Secretary, FCC, PS Docket No. 07–114, at 3 (filed Apr. 16, 2020) (NENA Apr. 16, 2020 *Ex Parte*).

[49] *See, e.g.,* NENA 3D Location Requirements at 83–84 (noting also that ''transformations SHOULD only be used for internal processes and the results SHOULD NOT be passed to a downstream entity'').

[50] In the *Fifth Report and Order,* the Commission required CMRS providers to provide vertical confidence and uncertainty data on a per call basis to requesting PSAPs. As with horizontal confidence and uncertainty data, the Commission explained, CMRS providers must report vertical confidence and uncertainty data using a confidence level of 90%, *i.e.,* they must identify the range above and below the estimated z-axis position within which there is a 90% probability of finding the caller's true vertical location. 47 CFR 9.10(j)(1), (4).

provide AGL conversion services.[51] We seek comment on this proposed timeline. Does it provide sufficient time for CMRS providers to develop and deploy the tools they need to provide z-axis information in AGL? Is the timeline sufficient for PSAPs to develop the capability to receive and use information in AGL? If the proposed timeline is not sufficient for either CMRS providers or PSAPs, what would be the appropriate time period and why?

2. Providing Floor Level Estimates

In the *Fifth FNPRM,* the Commission sought comment on whether to require CMRS providers to provide floor level information to PSAPs, either by converting HAE to a precise floor level or determining floor level independently of HAE.[52] In the *Sixth Report and Order,* the Commission deferred action on this issue in light of continued disagreement over the feasibility, costs, and timeframes associated with converting HAE to floor level.[53] We seek to refresh the record on this issue. Has there been progress since the *Sixth Report and Order* in developing mechanisms for calculating floor level, either by converting HAE to floor level or by other means? If PSAPs receive AGL in addition to HAE, could AGL be used to provide a reliable floor level estimate, by either using digital building maps or assuming a uniform building structure and floor spacing (*e.g.,* 3m per floor)? We seek comment on the ability of PSAPs to access digital building maps, which have the potential to provide highly accurate floor level information, depending on resolution, availability, and cost. What is the current availability of digital building maps, what is the cost of obtaining such maps for 911 location purposes, and what mechanisms exist to keep building map information current? Alternatively, using uniform building structure and spacing models to estimate floor level would be considerably less costly than using digital building maps, but also would yield less accurate information. We seek comment on whether such an approach would be sufficient to meet public safety requirements for actionable information.

We also seek comment on the role that third-party vendors play in providing floor level information to PSAPs. As noted above, some third-party vendors are providing precise location information directly to PSAPs, with some claiming to provide AGL and floor level as well as HAE.[54] These vendors use a combination approach of multiple sensors already available in smart devices and the resultant data provided by the handset location vendors, along with crowd sourcing, via the increasing availability of ''mesh like'' networks of data points.[55] To what degree does the information provided to PSAPs by third-party vendors meet their needs for actionable location information, including floor level? Are floor level estimates validated against other information sources to ensure accuracy and, if so, what is the process for doing so? Are cloud services utilized for these capabilities and, if so, to what extent? What proportion of PSAPs currently relies on vendors to convert HAE to AGL or to generate floor level estimates? What is the cost to PSAPs to procure these services? If we required CMRS providers to provide floor level to PSAPs, would this reduce the cost burden on PSAPs?

B. Strengthening the Wireless 911 Location Accuracy Testing and Compliance Framework

In the *Fourth Report and Order,* the Commission required independent testing of all technologies used to meet indoor location accuracy requirements, and directed industry to establish an independently administered test bed for this purpose.[56] The Commission established baseline requirements in order for test results derived from the test bed to be considered valid for compliance purposes.[57] In particular, the Commission specified that the test bed should ''reflect a representative sampling of the different real-world environments in which CMRS providers will be required to deliver indoor location information,'' and required all technologies to be tested in four morphologies: dense urban, urban, suburban, and rural.[58] The Commission further required location technologies to be tested in the same manner that they are deployed on provider networks.[59] The Commission established that CMRS providers could rely on test bed results to create a presumption of compliance with the Commission's location accuracy requirements when tested technologies were used in live 911 calls on the provider's network.[60] However, the Commission did not require CMRS providers to make the details of test results public, relying on the test administrators' certification as sufficient notification that a technology ''meets our key performance indicators.'' [61]

Since the establishment of the test bed, it has been used to test the capabilities of horizontal and vertical location technologies used by CMRS providers. The first testing of vertical location technology in the test bed occurred in Stage Z, conducted in 2018, which provided information that contributed to the Commission's adoption of the ±3-meter accuracy metric.[62] Following adoption of the metric, the test bed conducted further vertical location testing in Stage Za from September 2019 to February 2020, and in Stage Zb from December 2021 to May 2022. Stage Za tested the z-axis performance of Google's Android ELS.[63] In Stage Zb, both ELS and Apple's HELO technologies were tested.[64]

The Stage Zb test results provided the basis for the June 2022 certifications by the three nationwide CMRS providers that as of April 3, 2022, they had achieved compliance with the ±3-meter location accuracy standard as required by the Commission's rules and the 2021

[51] *See, e.g.,* NENA Apr. 16, 2020 *Ex Parte* (indicating that such a requirement might have been feasible as far back as 2020).

[52] *Fifth Report and Order,* 34 FCC Rcd at 11621–22, paragraphs 66 through 69.

[53] *Sixth Report and Order,* 35 FCC Rcd at 7781–83, paragraphs 70 through 71.

[54] *See, e.g.,* GeoComm, *GeoComm and RapidSOS Empower Emergency Communications Centers to Convert Raw Z-axis Location Data into Dispatchable Locations* (Oct. 24, 2023), *https://www.geocomm.com/rapidsos-dispatchable-locations/*. GeoComm notes that this feature is ''[c]urrently available for 9–1–1 calls from Android-based devices.'' *Id.*

[55] *See, e.g.,* Tom Sawanobori, *The Wireless Industry's Commitment to 9–1–1 Location Accuracy* (March 31, 2021), *https://www.ctia.org/news/blog-the-wireless-industrys-commitment-to-9-1-1-location-accuracy* (''Device-based hybrid solutions use a combination of technologies and sensors—including satellite GPS and crowd-sourced Wi-Fi measurements—along with wireless providers' other 9–1–1 network and device information, to produce a higher-accuracy location.'').

[56] *Fourth Report and Order,* 30 FCC Rcd at 1307–09, paragraphs 126 through 132; *see also* 47 CFR 9.10(i)(3)(i).

[57] *Fourth Report and Order,* 30 FCC Rcd at 1307, paragraph 127. Specifically, the Commission stated that ''the test bed must (1) include testing in representative indoor environments; (2) test for certain performance attributes (known as key performance indicators, or KPIs); and (3) require CMRS providers to show that the indoor location technology used for purposes of its compliance testing is the same technology (or technologies) that it is deploying in its network, and is being tested as it will actually be deployed in the network.'' *Id.*

[58] *Id.* at 1307, paragraph 128.

[59] *Id.* at 1308, paragraph 130.

[60] *Id.* at 1313, paragraph 147.

[61] *Id.* at 1308, paragraph 131.

[62] *Fourth FNPRM,* 34 FCC Rcd at 1651–52, 1654, paragraphs 4, 11.

[63] *Sixth Report and Order,* 35 FCC Rcd at 7755–56, paragraph 9; 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 Apr. 29, 2020).

[64] Stage Zb Cover Letter at 1 (reporting that Stage Zb testing validated that DBH z-axis location technology solutions, Google's ELS and Apple's HELO, together achieve ±3-meter accuracy for at least 80% of wireless 911 calls).

consent decrees. However, the underlying test reports and test data were not made public because they were submitted to the Commission subject to a request for confidential treatment to protect proprietary and commercially sensitive information.[65] This is consistent with prior test bed reports, which have similarly been submitted subject to requests for confidentiality.

The purpose of the test bed program is to provide a reliable mechanism for validating the performance of indoor location technologies without the need for each provider to conduct indoor testing in all locations where a technology is actually deployed, which would be impractical and highly burdensome.[66] In establishing the test bed approach, the Commission found it to be ''the most practical and cost-effective method for testing compliance with indoor location accuracy requirements.'' [67] Following the 2015 *Fourth Report and Order,* CTIA and the nationwide CMRS providers worked with APCO, NENA, and other stakeholders to establish the test bed, based on the framework recommended in 2014 by the Communications Security, Reliability, and Interoperability Council (CSRIC), with testing following guidelines developed in 2017 by the Alliance for Telecommunications Industry Solutions' (ATIS) Emergency Services Interconnection Forum (ESIF) and input from other stakeholders.[68] However, in the multiple years since the test bed was established, some public safety organizations have raised questions about whether the test bed and compliance certification process for validating vertical location technologies provides adequate assurance of real-world performance. In addition, parties have advocated for greater transparency in the test bed process and have sought expanded access to test results and underlying test data. As discussed below, we propose to make certain modifications to the wireless location accuracy testing and compliance framework to address these issues.

1. Requiring Validation on a Per-Morphology Basis

As noted above, the nationwide CMRS providers based their compliance certifications on the Stage Zb test results submitted by CTIA. These test results were derived from ''aggregated and anonymized'' data ''to generate z-axis performance metrics for the DBH technology solutions deployed in each of the nationwide wireless providers' networks, consistent with ATIS standards and reporting under the Commission's live 9–1–1 call data rules.'' According to CTIA, ''[t]he results of Stage Zb validate that ELS's and HELO's DBH z-axis location technology solutions together achieve the FCC's ±3-meter accuracy metric for at least 80 percent of wireless 9–1–1 calls.''

In relying on the Stage Zb test data to support their compliance certifications, the nationwide carriers, following the ATIS standards, averaged test results across morphologies based on the percentage of live calls that originated in each morphology.[69] Because live call data show that the preponderance of 911 calls originate from suburban areas, this methodology effectively discounted Stage Zb results for urban and dense urban morphologies, where vertical location technology is most useful. While such aggregation may be allowable under our current rules, it raises questions about whether such aggregated test data accurately reflect the real-world performance of the technologies being tested. Testing of z-axis technologies in the test bed identifies the percentage of test calls in each morphology that generated a location fix of ±3 meters.[70] Live call data, on the other hand, identifies the relative number of live 911 calls in each morphology for which a given z-axis technology was used to provide vertical location.[71] Thus, live call data provides no information regarding the actual performance of z-axis technologies in the live environment, either across morphologies or within any individual morphology.[72]

To address these issues, we propose to modify our rules to require that validation of a technology in the industry test bed must demonstrate compliance of that technology with the 3-meter metric in each morphology. Thus, we would no longer allow CMRS providers to base compliance certifications on aggregating or averaging test bed results across morphologies. By eliminating averaging across morphologies, we would provide greater certainty that vertical location technologies that have been tested in the test bed will provide the requisite accuracy level when used with 911 calls in each of the four morphologies. We also propose to exclude the use of live call data in the validation of vertical location technologies. Live call data does not demonstrate performance, either on a per-technology or a per-morphology basis. In addition, live call data does not distinguish between indoor and outdoor calls, and thus does not provide a basis for determining compliance with indoor vertical location requirements.[73]

[65] Stage Zb Cover Letter at 6 (Attachment redacted). CTIA submitted two Stage Zb reports, one on testing of ELS (Google) and one on testing of HELO (Apple). CTIA requested confidential treatment of both reports to protect information submitted by Google and Apple regarding the ''specifics of ELS's and HELO's respective performance, that is not publicly available and is protected against disclosure in the normal course of business.'' *Id.* In addition, CTIA requested confidentiality for the Stage Zb Test Summary, noting that it contained ''morphology-based 9–1–1 call data information from the nationwide wireless providers (AT&T Mobility, T-Mobile USA, and Verizon) that is proprietary and commercially sensitive and not publicly available.'' *Id.*

[66] *Fifth Report and Order,* 34 FCC Rcd at 11613, paragraph 45.

[67] *Fourth Report and Order,* 30 FCC Rcd at 1305, paragraph 121.

[68] *See, e.g., Fifth Report and Order,* 34 FCC Rcd at 11602–03, paragraph 19 & nn.83–85; CSRIC IV Working Group 1, Final Report: Specification for Indoor Location Accuracy Test Bed (June 2014), *https://transition.fcc.gov/pshs/advisory/csric4/CSRIC_IV_WG-1_Subgroup3_061814.pdf;* Report on Stage Z, 911 Location Technologies Test Bed, LLC, at 3–4, 12–14 (2018), *https://api.ctia.org/wp-content/uploads/2018/08/911-Location-Test-Bed-Stage-Z-Report-Final.pdf;* ATIS, Test Bed and Monitoring Regions Definition and Methodology, ATIS–0500031.v002 (approved Feb. 13, 2017) (*ATIS–0500031.v002*).

[69] CTIA notes that ''[t]he Test Bed performed the Stage Zb testing in accordance with ATIS standards and Commission rules.'' Stage Zb Cover Letter at 4 & n.4 (citing ATIS, Unified X/Y and Z Indoor Test Methodology, ATIS 0500040 (approved Jan. 13, 2020) and 47 CFR 9.10(i)(3)(i)(A) through (D)). ATIS 0500040 states that ''the critical statistics are those obtained for each morphology, aggregated across the various test regions. These per-morphology metrics are subsequently entered into the live call weighting process, as defined in ATIS–0500031.v002 [Ref 1], Clause 8, for regulatory compliance purposes.''

[70] The rules require CMRS providers to ''measure yield separately for each individual indoor location morphology (dense urban, urban, suburban, and rural) in the test bed, and based upon the specific type of location technology that the provider intends to deploy in real-world areas represented by that particular morphology.'' 47 CFR 9.10(i)(3)(i)(D).

[71] *Public Safety and Homeland Security Bureau Provides Guidance to CMRS Providers Regarding Upcoming E911 Indoor Location Accuracy Reporting Requirements,* PS Docket No. 07–114, Public Notice, 32 FCC Rcd 5584–85 (PSHSB 2017) (revising the instruction for entering ''yield'' in live call reports).

[72] We note that in 2000, the Commission's Office of Engineering and Technology and, subsequently in 2012, the third CSRIC (CSRIC III) recognized the possible use of weighting based on 911 call densities as a valid testing input to demonstrate compliance with the overall performance metrics required under the Commission's 911 location accuracy rules. FCC Office of Engineering and Technology, OET Bulletin No. 71, Guidelines for Testing and Verifying the Accuracy of Wireless E911 Location Systems, at 6–7 (Apr. 12, 2000), *https://transition.fcc.gov/oet/info/documents/bulletins/oet71/oet71.pdf;* CSRIC III, Working Group 3, E9–1–1 Location Accuracy, Final Report—Outdoor Location Accuracy, at 12 (Mar. 14, 2012), *https://transition.fcc.gov/bureaus/pshs/advisory/csric3/CSRIC-III-WG3-Final-Report.pdf.*

[73] The 2015 *Fourth Report and Order* stated that live call data, when coupled with test bed performance data for each positioning source

Continued

We seek comment on these proposals. Should the number or percentage of total 911 test calls required for validation of a technology be the same for each morphology? For example, should the number or percentage be lower for a morphology that has fewer tall buildings, such as rural or suburban, while maintaining the same level of confidence (*e.g.,* 90%) in the test results? Are there circumstances where it would be appropriate to allow CMRS providers to average test data across morphologies for compliance purposes? Similarly, are there circumstances where we should allow consideration of live call data or other factors in determining compliance on a per-morphology basis? How should we define a technology for purposes of these requirements? For example, should ELS and HELO be defined as separate technologies? Should CMRS providers be allowed to average or combine the performance of different technologies within a morphology (*e.g.,* ELS and HELO) in support of a compliance showing?[74] Should we allow weighted averaging based on the percentage of handsets equipped with each technology in the provider's subscriber base? Should CMRS providers be allowed to certify their compliance based on an average of the handset distribution of multiple providers? How should non-nationwide CMRS providers that do not conduct their own testing in the test bed use the test bed data to certify their compliance with the proposed testing and validation requirements?[75] Should non-nationwide CMRS providers be allowed to use performance data from the test bed in a different manner from nationwide CMRS providers to certify their compliance with our proposed testing and validation requirements?

We propose to apply these requirements for testing and validation of technologies in the test bed to all testing of new technologies in the test bed once the rules become effective. In addition, we propose that by 24 months after the effective date of the final rules, nationwide CMRS providers must deploy on a nationwide basis either dispatchable location or z-axis technology that has been validated in accordance with the new test bed and validation requirements. We propose that non-nationwide CMRS providers would have an additional 12 months to meet these requirements by deploying either dispatchable location or z-axis technology throughout their network footprint. If we modify testing and validation procedures as proposed, we anticipate that some z-axis technologies that were previously validated in the test bed may have to be re-tested under the new requirements, including the requirement that validation of a technology in the test bed must demonstrate compliance of that technology with the 3-meter metric in each morphology. CMRS providers may also need time to determine how to deploy technologies or combinations of technologies in a way that complies with the revised rules. Are the timeframes we propose for this appropriate? If not, what would be appropriate timeframes to allow for re-testing, certification, and deployment? Is additional testing and standardization necessary to determine whether any revisions to our accuracy benchmarks are required due to these new requirements? If so, how much time is needed to complete such additional testing or modifications to standards? We seek comment on the potential costs of any re-testing. Do most deployed and validated z-axis technologies already meet this proposed per-morphology standard? Should we establish interim milestones as well as final compliance deadlines?

In the *Fourth Report and Order,* the Commission required the test bed administrator to ''make available to [non-nationwide CMRS providers] the same data available to participating CMRS providers and under the same confidentiality requirements.''[76] The Commission noted that the purpose of this requirement was to ''enable such CMRS providers to determine whether to deploy that technology in their own networks'' and to ''obviate[ ] the need for individual testing by those providers.''[77] The test bed administrator has defined procedures and established a fee structure for non-nationwide CMRS providers to follow to obtain access to test results. However, there are no deadlines for providing non-nationwide CMRS providers with access to test data and no explanation of the costs that the fees are intended to recover. In addition, location accuracy test data and the reports generated by the industry test bed are currently subject to confidentiality protections, and we require only summary information to be provided to most third parties.[78] We recognize that some confidentiality protection of test data and reports is appropriate to enable vendors who submit to testing to protect proprietary and competitively sensitive information. However, the restrictions applicable to test bed information have resulted in virtually no information being available to PSAPs or the public.[79] In addition, while APCO and NENA have access to some test bed information as members of the Test Bed's Technical Advisory Committee, and some test reports have been disclosed to APCO, NENA, and NASNA, disclosure is subject to highly restrictive non-disclosure agreements that limit the ability of these organizations to disseminate or take action based on the information.

We seek to promote greater transparency and accountability in the test process by creating a standard process for sharing test bed data and procedures with stakeholders. Specifically, we propose that upon request from a non-nationwide CMRS provider, NENA, APCO, or NASNA, the test bed administrator must provide the requesting party the same data available

method, ''will then determine the degree to which that method can be counted towards the required location accuracy thresholds each time that positioning source method is used.'' *Fourth Report and Order,* 30 FCC Rcd at 1311, paragraph 139. In 2017, ATIS published guidance that enables wireless providers to demonstrate compliance with the Commission's rules and suggests weighting test results based on ''the proportion of live indoor wireless 911 calls in each corresponding morphology'' to come up with a single number for compliance purposes. *ATIS–0500031.v002* at 5.

[74] As noted, CTIA states that ''Stage Zb[ ] test results from the two DBH location technology solutions [HELO and ELS] were aggregated and anonymized to generate z-axis performance metrics for the DBH technology solutions deployed in each of the nationwide wireless providers' networks, consistent with ATIS standards and reporting under the Commission's live 9–1–1 call data rules.'' Stage Zb Cover Letter at 5 (citing ATIS Test Bed Monitoring Regions Definition and Methodology, ATIS 00500031v.002 (Feb. 2017) and 47 CFR 9.10(i)(3)(ii)(C)).

[75] *See infra* for discussion of proposals to increase the transparency of the test bed process for non-nationwide CMRS providers and other stakeholders.

[76] *Fourth Report and Order,* 30 FCC Rcd at 1309, paragraph 132; *see also Wireless E911 Location Accuracy Requirements; The 911 Location Technologies Test Bed, LLC Request for Confidential Treatment,* PS Docket No. 07–114, Order, 35 FCC Rcd 6486, 6488–89, paragraphs 5 through 6 (2020) (*Stage Za Report Confidentiality Order*) (granting confidential treatment of the Stage Za Report, in part because the test results are ''indisputably commercial information'').

[77] *Id.*

[78] *Fourth Report and Order,* 30 FCC Rcd at 1308, paragraph 131 (''[R]aw test results would be made available only to the vendors whose technology was to be tested, to the participating CMRS providers, and to the third-party testing house. In order to protect vendors' proprietary information, only summary data was made available to all other parties. At this time, we will not require CMRS providers to make public the details of test results for technologies that have been certified by the independent test bed administrator.''); *see also Stage Za Report Confidentiality Order,* 35 FCC Rcd at 6486–87, paragraphs 1 through 2.

[79] *See, e.g.,* APCO May 20, 2024 *Ex Parte* at 2 (stating that ''[f]urther Commission action is needed to improve the transparency and reliability of testing to evaluate location technologies and to provide stronger requirements for carriers to deploy methods, several of which are feasible today, to derive dispatchable location'').

to CMRS providers participating in the test bed, including unaggregated test bed results by wireless location technology provider, morphology, and technology, as well as other relevant information sought by the requesting party (such as information on the test bed process, including any significant changes to the test bed process). We propose that this obligation would include providing the requesting party with test bed data, as well as the full report on the test bed results. In addition, we propose that the test bed administrator must make this information available to the requesting party on a timely basis not to exceed 30 days, at no cost, and subject to the same confidentiality requirements as those for the nationwide CMRS providers.

We seek comment on these proposals. Should these entities be required to pay fees to obtain access to test data and, if so, are guidelines or conditions needed to eliminate unnecessary costs? Is 30 days an appropriate limit on the time for responding to a request? We also seek comment on whether the test bed administrator should be required to negotiate a standardized agreement with requesting non-nationwide CMRS providers and public safety entities that would provide for access to test bed information on a timely basis and on reasonable terms. In that connection, we seek comment on what would constitute reasonable terms for such an agreement. We also seek comment on narrowing the scope of confidentiality over the test bed validation process and the extent to which the test bed administrator, CMRS providers, technology providers, or others should be able to claim confidentiality with respect to test results or test bed procedures. Given the critical public importance of providing accurate location with 911 calls, should we create a presumption that test bed reports are to be made public? How can the Commission's rules help the test bed strike a balance between protecting and safeguarding non-public information (*e.g.,* proprietary business information) in ways that promote vendor participation in the test bed, while also promoting greater transparency and accountability for non-nationwide CMRS providers and public safety stakeholders in the test process?

3. Location Testing Challenge Process

The current rules provide a means for PSAPs to resolve real-world performance issues after a tested location technology has been deployed by a CMRS provider. However, our rules do not provide a mechanism for stakeholders to challenge the validation of a technology in the test bed before it is deployed. We propose to amend the rules to provide for greater transparency in the test bed, including a process for challenging the validation of location technologies in the test bed. Specifically, we propose that APCO, NENA, or NASNA may submit to the Commission a challenge to the validation of a particular technology under the test bed provisions in the rules.[80] We also propose that such challenges must be limited to whether the process for validating a particular technology has met the requirements of the rules and that such challenges must be made prior to 60 days after the CMRS provider's certification. Is 60 days after a CMRS provider's certification an appropriate final deadline for submitting such a challenge? Should we require particular information to support a challenge? We seek comment on when to allow such challenges, *e.g.,* while testing is underway, after the test bed administrator has validated a particular technology, after a CMRS provider certifies compliance with the rules, and the proposed scope of such challenges. We also seek comment on whether to allow additional parties besides APCO, NENA, and NASNA (*e.g.,* individual PSAPs) to bring such challenges. In addition, we seek comment on whether the Public Safety and Homeland Security Bureau should address challenges to the test bed validation process to ensure compliance with our rules if the parties cannot resolve the matter, including seeking public comment on contested technology validation. To what extent would Public Safety and Homeland Security Bureau involvement, or the challenge process as a whole, unreasonably delay technology deployments necessary to advance our public safety objectives in this proceeding? Should there be limits, such as time frames, on such a challenge process to expedite it and ease the burden on the parties involved? If so, what should those limits be? Would the existence of a challenge process discourage parties from participating in the test bed process?

C. Increasing the Provision of Dispatchable Location With Wireless 911 Calls

Throughout this proceeding, the Commission has recognized the importance of dispatchable location to public safety, and has sought to encourage the development of dispatchable location solutions that would reliably identify the precise location of in-building wireless 911 callers. In the *Fourth Report and Order,* the Commission noted that as part of the ''Roadmap'' agreement between public safety and the major wireless providers, the wireless industry had committed to build the NEAD, a national database of in-building access points that would be leveraged to support dispatchable location. Although the Commission did not require wireless providers to build or use the NEAD, it modeled its rules so that wireless providers could use the NEAD as a mechanism for complying with wireless location accuracy requirements.[81]

In the *Sixth Report and Order,* following the discontinuance of the NEAD, the Commission modified its rules to encourage the development of alternatives to the NEAD to support dispatchable location. The Commission noted that the record reflected a diverse array of technological approaches that could be used to provide dispatchable location, including reverse geocoding, device contextual information, indoor mapping, 5G home voice products, 911 calls using Voice over Wi-Fi, and DBH.[82] Given the early development of these solutions, however, the Commission declined to adopt minimum percentage thresholds for dispatchable location for 911 calls, finding that such particularized requirements went beyond what was technically feasible and cost-effective at the time.[83] In addition, the Commission declined to specify confidence and uncertainty values when conveying dispatchable location, citing the need for standards work in this area.[84] However, the Commission adopted the requirement that ''[a]ll CMRS providers shall provide dispatchable location with wireless E911 calls if it is technically feasible for them to do so.'' [85] This rule mirrors the dispatchable location requirement that the Commission adopted in the 2019 *Kari's Law/RAY BAUM'S Act Report and Order* for 911 calls originated on non-CMRS platforms, including multi-line telephone systems (MLTS),

[80] *See* 47 CFR 9.10(i)(3)(i) (requirements for ''Indoor location accuracy test bed'').

[81] The Commission's 2015 rules specified that ''[i]n 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.'' 47 CFR 20.18(i)(2)(ii)(C)(*1*) (2015 version; also later renumbered to § 9.10); *see Fourth Report and Order,* 30 FCC Rcd at 1361, Appx. A (containing 2015 version of rule).

[82] *Sixth Report and Order,* 35 FCC Rcd at 7773, paragraph 49 & n.139.

[83] *Id.* at 7776, paragraph 53.

[84] *Id.* at 7778, paragraph 61.

[85] 47 CFR 9.10(i)(2)(ii)(G); *Sixth Report and Order,* 35 FCC Rcd at 7792, Appx. A.

interconnected VoIP, Telecommunications Relay Services (TRS), and fixed telephony.[86]

We seek comment on the degree to which the current dispatchable location requirements for CMRS providers have, or have not, been effective in facilitating the development of dispatchable location solutions. According to live call data reported by the nationwide CMRS providers for 2023 and part of 2024, CMRS providers are delivering some live wireless 911 calls with dispatchable location.[87] We seek comment on specific technologies that CMRS providers are using to deliver dispatchable location with these calls. How do CMRS providers validate the street address and other in-building location information delivered with such calls? Do the CMRS providers apply confidence and uncertainty thresholds to ensure against inaccuracies or errors in the validation process? When conveying dispatchable location with wireless 911 calls, do CMRS providers also convey coordinate-based (x/y/z) information and, if so, do they use the geodetic information and confidence and uncertainty data to validate the accuracy of the dispatchable location? When dispatchable location information is available, how often do PSAPs use this information to support emergency response, and how do they use it?

We also seek comment on how to increase the availability and use of dispatchable location for wireless 911 calls. The live call data reported by the nationwide CMRS providers indicate that dispatchable location calls represent only about 0.9%; of total wireless 911 calls.[88] To what extent are these percentages attributable to factors beyond the carriers' control? Given this very low percentage, what steps, if any, are CMRS providers taking to increase their use of dispatchable location? Are there technically feasible solutions that could support provision of dispatchable location for a larger percentage of calls than current levels? Should we require CMRS providers to develop plans and timelines for expanding the use of dispatchable location when 911 calls on their networks originate in indoor environments provisioned with Wi-Fi access points, femtocells, or Internet of Things (IoT) devices, the location of which can be identified and mapped for geolocation purposes? Should we establish benchmarks or timelines for providing dispatchable location with wireless 911 calls? Should we establish benchmarks or timelines only for providing dispatchable location in particular environments that are likely to have such infrastructure that can be identified and mapped for geolocation purposes, *e.g.,* individual residences, multi-story office buildings, apartment buildings, hotels, conference centers, or other environments? If we establish timelines or benchmarks, should we provide additional time for non-nationwide CMRS providers?

We invite commenters to identify incentives for CMRS providers to expedite their efforts to find solutions for generating and conveying dispatchable location for higher percentages of wireless 911 calls. What is the current state of deployment of in-building infrastructure that is or could be programmed with street address and floor level information? Regarding access points, we seek comment on the accuracy of programming access points with street address and floor level. What percentage of wireless traffic is offloaded from CMRS networks to indoor infrastructure, such as Wi-Fi and femtocells, and what percentage of wireless 911 calls on CMRS networks present as Wi-Fi calls? Are there circumstances where the Wi-Fi network could provide dispatchable location information that is more precise and reliable than the location information provided for the call over the cellular network? Do CMRS providers currently use or plan to use location information from indoor infrastructure in combination with geodetic (x/y/z) coordinates? What are the timelines for planned use of in-building infrastructure to provide dispatchable location? In that connection, we seek comment on how combining location technologies and device sensors can supplement CMRS providers' existing 911 network and device-assisted information for generating dispatchable location.

We also seek to refresh the record on the current and future feasibility of leveraging the specific technologies that the *Sixth Report and Order* and other sources have identified as having the potential to support dispatchable location, *e.g.,* reverse geocoding, commercial location-based services (cLBS), Voice over Wi-Fi, and small cells.[89] In the *Sixth Report and Order,* the Commission concluded that it was premature to adopt dispatchable location benchmarks or timelines based on these technologies.[90] Is that still the case? We seek comment on the potential for each of these technologies, individually and in combination with others, to support dispatchable location.

Reverse Geocoding. Reverse geocoding refers to the process of using geodetic information to generate a civic address and other location information such as floor level and room number.[91] We seek comment on whether reverse geocoding represents a technically feasible solution for generating dispatchable location and floor level estimates. Is accurate reverse geocoding widely available and reliable? What data sources are required for reverse geocoding, and how readily available are they? How accurate are these data sources? Has horizontal (x/y) location accuracy achieved sufficient granularity and confidence/uncertainty levels to support reliable reverse geocoding of civic addresses with minimal risk of error? As between the CMRS provider and the PSAP, who should perform these conversions, and why? What are the costs associated with this process for CMRS providers and PSAPs? Who should incur these costs?

Commercial Location-Based Services. As a general matter, commercial location-based services (cLBS) use a variety of techniques to find a wireless 911 caller's location. For example, new technologies based on the IEEE 802.11mc (Wi-Fi Round Trip Time or

[86] *Implementing Kari's Law and Section 506 of RAY BAUM'S Act; Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems; Amending the Definition of Interconnected VoIP Service in Section 9.3 of the Commission's Rules,* PS Docket Nos. 18–261 and 17–239, GN Docket No. 11–117, Report and Order, 34 FCC Rcd 6607, 6733–34, Appx. A (2019), 84 FR 66716 (Dec. 5, 2019) (*Kari's Law/RAY BAUM'S Act Report and Order*), *corrected by* Erratum, 34 FCC Rcd 11073 (PSHSB 2019), *also corrected by* Second Erratum, 37 FCC Rcd 10274 (PSHSB 2022); 47 CFR 9.16.

[87] Total aggregated dispatchable location call totals from the 2023 and 2024 (partial) quarterly reports submitted by the nationwide CMRS providers amount to 310,542. We note that the individual carrier data are confidential.

[88] The total percentage of live 911 calls with dispatchable location relative to z-axis information from the 2023 and 2024 (partial) quarterly reports submitted by the nationwide CMRS providers is 0.89%.

[89] *See, e.g., Sixth Report and Order,* 35 FCC Rcd at 7773, paragraph 49 & n.139.

[90] *See, e.g., id.* at 7757, 7776, paragraphs 12, 53.

[91] *See, e.g.,* NENA 3D Location Requirements at 12–17. As described by NENA, reverse geocoding matches horizontal (x/y) coordinates to an address database to obtain a civic address, then uses z-axis information (in HAE) to estimate AGL, and then uses AGL to estimate the caller's floor level (FL). NENA explains, ''Geodetic location is fundamental to location in 9–1–1 because it provides a means for representing a position estimate. Devices, often with the cooperation of network elements, can estimate their position. This position estimate is expressed using a standard geodetic reference, as coordinates within the reference. For emergency services to correctly identify the appropriate responding agency and for responders to locate the caller, a high-quality location estimated in 3D space is essential. Geodetic location expressed as standardized coordinates allows 9–1–1 networks and elements inside and outside those networks to exchange and process location information without conversion.'' NENA 3D Location Requirements at 16.

Wi-Fi RTT) standard may enable smartphones to measure the distance to nearby Wi-Fi access points and determine their indoor location without having to connect to the access point. Have CMRS providers been successful at leveraging commercial location-based services for 911 use? Could CMRS providers use such technologies to generate and convey dispatchable location for wireless 911 calls and, if so, under what conditions? Are there commercial benefits from deploying such technologies that would support improved indoor location accuracy?

Voice over Wi-Fi (Wi-Fi Calling). The potential to deliver 911 calls over Wi-Fi has been the subject of continued study since the *Sixth Report and Order.* In 2021, the Public Safety and Homeland Security Bureau submitted a report to Congress on the technical feasibility of using Wi-Fi access points to support 911 calling.[92] In March 2023, CSRIC issued a report on 911 service over Wi-Fi that included discussion of location determination for Wi-Fi 911 calls.[93] The report noted that Wi-Fi caller location continues to be heavily reliant on the user's registered location, which may not identify the caller's actual location at the time of the call. CSRIC noted, however, that ''[t]he broad availability of DBH location technologies combined with the deployment of location-based routing has led to improvements in location information for 911 over Wi-Fi over supporting networks, reducing the reliance upon a user-inputted Registered Location and associated challenges.'' [94]

In light of these developments, we seek comment on the current technical feasibility of CMRS providers using Voice over Wi-Fi (also referred to as VoWi-Fi or Wi-Fi calling) to deliver wireless 911 calls with accurate and reliable dispatchable location. What Wi-Fi 911 calls, if any, do CMRS providers currently deliver to PSAPs with dispatchable location? How is the caller's location validated at the time of the call, particularly if it is not the same as the caller's registered location? Do CMRS providers corroborate Voice over Wi-Fi calls with geodetic information before transmitting to PSAPs? Do CMRS providers transmit geodetic information with such wireless 911 calls and, if so, do they convey confidence and uncertainty data?

Small Cells. CMRS providers already deploy various indoor coverage and network capacity expansion solutions, such as residential femtocells, enterprise microcells, and distributed antenna systems, that can be sources for generating dispatchable location.[95] Because these devices typically are deployed at known locations and have a relatively small coverage footprint, we seek comment on whether associating a caller to a small cell could be used in some environments to derive a dispatchable location for the caller. How widely are small cell [96] solutions available today? Are they used to generate dispatchable location or other location information in support of wireless 911 calls? How is location information provided by the small cell verified? What are the main issues for using these types of solutions to generate dispatchable location? For instance, if a femtocell is moved from its initial location, would the network detect this and require an update to the femtocell location and prompt the end user?

Location Databases. While CMRS providers are no longer pursuing the NEAD, the potential remains for providers to create or rely on other address or location databases to obtain or generate dispatchable location information. We seek comment on whether CMRS providers have created in-house address databases or have access to third-party databases that support 911 caller location. How reliable and accurate are these databases? If the databases contain access point information, how are access point locations verified, both initially and if the access point location changes? Are there any existing standards for creating such databases and validating addresses? Are CMRS providers sharing, or do they intend to share, the information in these databases with each other?

Smart Building/In-building Technologies. We seek comment on whether the evolution and deployment of ''smart building'' technology could lead to dispatchable location information being more readily available. To what degree are buildings equipped with IoT sensors and data-capable devices capable of collecting, storing, and transmitting location-specific data that could be used to support dispatchable location for wireless calls from within the building? Could cloud computing and indoor mapping applications be leveraged to support expansion of smart building capabilities into the public safety realm? Can smart building sensors, devices, and networks be configured in such a way that a mobile device originating a 911 call could interact with them and derive relevant location information? Are there infrastructure requirements to make this a viable approach? What would anticipated incremental costs be? Would hardware or software modification be required to handsets, or would the fact that most wireless sensors are already configured to communicate via Bluetooth and Wi-Fi be a mitigating factor?

5G Networks. We seek comment on whether 5G networks have the potential to deliver more precise location information that could support dispatchable location. Do technology providers envision the ability to leverage on-device capabilities and analytics with 5G capabilities to create a more precise location determination environment? [97] Do these 5G-based

[92] FCC, Report to Congress: Study on Emergency 911 Access to Wi-Fi Access Points and Spectrum for Unlicensed Devices When Mobile Service Is Unavailable (PSHSB Mar. 23, 2021), *https://www.fcc.gov/document/report-congress-911-over-wi-fi* (Report to Congress on Emergency 911 Access to Wi-Fi).

[93] Communications Security, Reliability, and Interoperability Council (CSRIC) VIII, Report on 911 Service Over Wi-Fi at 48–49 (2023), *https://www.fcc.gov/CSRICReports.*

[94] *Id.* at 49.

[95] *See Fourth Report and Order,* 30 FCC Rcd at 1275–76, paragraph 46 (stating that ''the feasibility of dispatchable location is linked to the proliferation of indoor, infrastructure-based technologies, including small cell technology, distributed antenna systems (DAS), Wi-Fi access points, beacons, commercial location-based services (cLBS), institutional and enterprise location systems, and smart building technology''). *See, e.g.,* Verizon Petition for Waiver at 9 (stating that Verizon has begun delivering dispatchable location to PSAPs for 911 calls from certain devices when the information can be determined reliably, including certain 911 calls using Voice over Wi-Fi and indoor Distributed Antenna System (DAS) configurations); AT&T, *AT&T Microcell ® Terms of Service https://www.att.com/legal/terms.microcellterms.html* (last visited Feb. 4, 2025) (''911 calls placed over your MicroCell will be routed to the emergency response center responsible for sending first responders (*i.e.,* police, medical assistance or fire) to your location based on the address you provide in your online registration.'').

[96] The Small Cell Forum has defined a small cell as ''a low-cost radio access point with low radio frequency (RF) power output, footprint and range. It can be deployed indoors or outdoors, and in licensed, shared or unlicensed spectrum.'' Small Cell Forum, *About small cells, https://www.smallcellforum.org/small-cells/* (last visited Feb. 4, 2025). Types of small cells include femtocells, picocells, and microcells—broadly increasing in size from femtocells (the smallest) to microcells (the largest). *See, e.g.,* FCC, Small Wireless Facilities: An Introduction to 5G Infrastructure and the Streamlined Section 106 Review of Small Wireless Facilities at 11 (Sept. 13, 2022), *https://www.fcc.gov/sites/default/files/workshop-09132022-session-3.pdf* (FCC Environmental Compliance Workshop presentation); Press Release, Small Cell Forum, Femto Forum Becomes Small Cell Forum as Femtocell Technology Extends Beyond the Home (Feb. 15, 2012), *https://www.smallcellforum.org/press-releases/femto-forum-becomes-small-cell-forum-femtocell-technology-extends-beyond-home/.*

[97] *See, e.g.,* Letter from Jeffrey S. Cohen, Chief Counsel, APCO International, to Marlene H. Dortch, Continued

improvements include positioning accuracy by combining 5G measurements, Global Navigation Satellite Systems (GNSS), multi-path profiles, sensor inputs, and Artificial Intelligence-assisted RF sensing using Wi-Fi as it currently exists today? We understand that this is heavily dependent on the broader deployment of 5G and on the implementation of updated and advanced capabilities as defined by 3GPP. However, since public statements continue to be made touting these benefits,[98] we believe there is value in discussing what specific capabilities are either already deployed, or anticipated to become available in the near future that support achieving dispatchable location. What is the current state of 5G capabilities on this front? What is the roadmap for the implementation of these advanced capabilities? Even absent the use of Artificial Intelligence, will the deployment of 5G networks result in greater location accuracy, including vertical location?

Other Stakeholders. As noted, we understand that it is critical to foster cooperation and collaboration among multiple stakeholders in the process of generating and delivering 911 calls and actionable location information. Those parties include not only the CMRS providers and PSAPs, but also third parties, including cable and internet service providers (ISPs), original equipment manufacturers (OEMs), and vendors. We seek comment on the role and responsibilities of these third parties in facilitating CMRS providers' compliance with any standards that we may adopt for conveying dispatchable location. In this proceeding, commenters have noted that CMRS providers, cable companies, ISPs, device manufacturers, and operating system providers have a role to play in improving location information for 911 but that challenges to achieving industry coordination remain.[99] What companies own or control these capabilities or systems (*e.g.,* database vendors, equipment manufacturers, Wi-Fi access point aggregators, indoor small cells owners or managers, IoT sensor and data-capable device owners or managers)? To what extent do wireless providers have access or visibility to information sources owned, controlled, or managed by these entities? How would access to such information sources enable CMRS providers to obtain or generate dispatchable location? We seek comment on the extent to which applying standards or requirements to parties other than CMRS providers would increase the availability and use of dispatchable location solutions. Do databases or other information sources owned, maintained, or controlled by service providers and other entities have the capability to support location validation with sufficient reliability to meet public safety requirements for accurately identifying the caller's location? How should we engage or require cable companies, ISPs, OEMs, vendors, or other entities in finding solutions to providing validated street address and floor level information for wireless 911 calls? Do these parties have concerns over authentication protocols, privacy, and security that would need to be addressed? What measures would be needed to help ensure that location data generated by or with the assistance of third parties are transmitted and configured to enable compatibility and interoperability with CMRS providers and the 911 system?

We invite CMRS providers, Apple, and Google to provide a status update on their efforts to improve wireless 911 location accuracy using DBH. As noted above, live call data reports in the six ATIS test cities reflect that DBH is used for 80% of wireless 911 calls. We seek comment on whether there have been developments in DBH since 2022 that might impact the regulatory proposals in the *FNPRM.* Specifically, we seek comment on the status of DBH solutions (*i.e.,* ELS and HELO), whether individually or combined, and whether these technologies are improving dispatchable location. In addition, we seek comment on plans for using DBH and other technologies (*e.g.,* barometric pressure sensors) to help first responders and PSAPs find 911 callers in multi-story buildings.

Confidence and Uncertainty. We seek updated comment on establishing confidence and uncertainty values associated with dispatchable location. In the *Fifth FNPRM,* the Commission sought input on how to account for uncertainty in dispatchable location data for a broad range of emerging solutions, whether we should extend confidence and uncertainty requirements to alternative dispatchable location mechanisms and, if so, what the required confidence and uncertainty percentage should be.[100] In the *Sixth Report and Order,* the Commission deferred consideration of this issue to a future proceeding but encouraged carriers, public safety organizations, and other interested parties to create standards for conveying uncertainty for dispatchable location in a manner that is more useful for first responders.[101] As an interim measure, the Commission revised § 9.10(j)(4) of the rules ''to make explicit that when CMRS providers provide dispatchable location or floor level information in addition to z-axis information, they must provide confidence and uncertainty data for the z-axis location.'' [102] Accordingly, we seek to refresh the record on the state of standards work for conveying confidence and uncertainty values associated with dispatchable location.

D. Live Call Reporting and Enforcement

1. Live Call Data Reports

We propose to modify our live call data reporting rules to require CMRS providers to report the specific technologies they use to provide dispatchable location with live 911 wireless calls and to report these data for each morphology. The reporting template for live call data currently requires providers to identify whether they provide dispatchable location with live 911 calls, but it does not require them to identify the specific technology (or combination of technologies) used to

Secretary, FCC, PS Docket No. 07–114, at 2 (filed July 10, 2020) (''With increasing news of carriers deploying in-home and in-office 5G-based fixed wireless products, the carriers could similarly provide dispatchable location associated with these technologies.'').

[98] *See, e.g.,* Verizon Comments, PS Docket No. 07–114, at 8 (rec. Feb. 21, 2020) (Verizon Comments) (''Verizon already plans to incorporate dispatchable location capabilities into 5G home voice products.'').

[99] *See, e.g.,* Verizon Comments at 2 (''Third party providers of those services and products all have their own business and policy priorities that may not always coincide with one another, or with service providers' E911 compliance demands.''); NCTA Reply, PS Docket No. 07–114, at 10–13 (filed June 18, 2019) (stating that ''customer Wi-Fi access point data is commercially sensitive information, and NCTA's members are troubled by the potential for disclosure or other misuse of their customers' Wi-Fi access point information for competitive purposes''). *See also* Report to Congress on Emergency 911 Access to Wi-Fi at 15, paragraph 35 (noting that ''[t]he record reflects that the complex and competitive nature of today's communications ecosystem impacts 911 service over Wi-Fi access points and spectrum for unlicensed devices,'' and noting that NCTA had stated that '' '[a]ll providers likely would need to agree to support every transmission and compression protocol, or all providers would need to agree on one standard' '').

[100] *Fifth Report and Order,* 34 FCC Rcd at 11625, paragraph 79.

[101] *Sixth Report and Order,* 35 FCC Rcd at 7778, paragraph 61 (''Although several commenters suggest that confidence and uncertainty values could be developed for dispatchable location, the record indicates that no standard currently exists, and additional work is needed to develop a standardized approach. We therefore defer consideration of this issue to a future proceeding. We also encourage carriers, public safety organizations, and other interested parties to create standards for conveying uncertainty for dispatchable location in a manner that is more useful for first responders.'').

[102] *Id.* at 7778, paragraph 62.

provide dispatchable location.[103] We believe that additional information would be helpful in evaluating the deployment of dispatchable location solutions. We propose to revise the rules to require information on the location technology or technologies used for each 911 call providing dispatchable location, such as Wi-Fi calling or femtocells.[104] This would make the reporting for live calls providing dispatchable location consistent with the reporting for live calls conveying geodetic z-axis information.[105] We additionally seek comment on whether we should require CMRS providers to provide data not only for each category of location technology used in live call reports (*e.g.,* DBH) but also for specific technologies within a category (*e.g.,* HELO, ELS). Would such requirements be more burdensome than beneficial? Would the annual reporting requirement discussed below be a more appropriate means of collecting this information? We seek comment on all of these issues.

2. Complaint Portal

Our current rules provide that PSAPs may seek Commission enforcement of location accuracy requirements within their geographic service area, ''but only so long as they have implemented policies that are designed to obtain all location information made available by CMRS providers when initiating and delivering 911 calls to the PSAP.'' [106] In addition, prior to seeking Commission enforcement, ''a PSAP must provide the CMRS provider with [30] days written notice, and the CMRS provider shall have an opportunity to address the issue informally. If the issue has not been addressed to the PSAP's satisfaction within 90 days, the PSAP may seek enforcement relief.'' [107]

While the existing rules provide a mechanism for PSAPs and CMRS providers to resolve 911 location performance issues at the local level, we believe transparency and accountability would be enhanced by establishing a centralized clearinghouse for PSAPs to notify CMRS providers of complaints. The Commission established such a mechanism in the 800 MHz rebanding proceeding, requiring CMRS providers to establish and maintain an online portal for public safety to provide notice of interference complaints.[108] Notification in the 800 MHz portal also initiated the timeline for CMRS providers to address complaints before Commission enforcement action could be initiated.[109] We seek comment on whether we should require CMRS providers to establish a similar centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement. How should such a complaint portal function? For example, upon receipt of a complaint in the portal, should CMRS providers have a time limit for attempting to resolve it (*e.g.,* 90 days, as provided by existing rules)? What would be the costs associated with such a complaint mechanism?

E. Improving Accuracy of Horizontal Location Information

We seek to refresh the record on improving the accuracy of horizontal location accuracy information for wireless 911 calls. In January 2015, the Commission adopted horizontal location accuracy standards for 911 as part of the *Fourth Report and Order.*[110] In particular, the Commission required all CMRS providers to provide (1) dispatchable location, 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 the rules adopted in the *Fourth Report and Order:*

- 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.[111]

The rules allow non-nationwide CMRS providers (regional, small, and rural carriers) to extend the five- and six-year deadlines based on the timing of Voice over Long Term Evolution (VoLTE) deployment in their networks.[112]

The record in this proceeding underscores the importance of accurate and reliable horizontal location information for first responders and in particular the effect that inaccurate horizontal location can have on the accuracy of vertical location information. NENA has commented that vertical location accuracy and floor level estimations would benefit greatly from increased accuracy in the horizontal plane and that the Commission's existing rules for horizontal uncertainty ''could easily place the caller on the right floor but in a building across the street.'' Similarly, the International Association of Fire Chiefs (IAFC) has pointed out that ''[w]hile a ± 50-meter horizontal metric may provide enough information for a PSAP to provide a dispatchable address, it can also lead to responders arriving at an incorrect building location.'' And the Texas 9–1–1 Entities have stated that ''the horizontal and vertical information must work together in order for public safety entities to be able to convert x-, y-, and z-axis information to the floor level of the correct building.'' [113]

It has been a decade since the Commission's horizontal location accuracy rules were adopted, and location technologies have advanced considerably since 2015. We seek comment on what progress has been made since 2015 to develop and deploy

[103] *See Public Safety and Homeland Security Bureau Provides Updated Guidance to CMRS Providers Regarding Reporting of 911 Live Call Data: Revised Template Provides for Reporting of Vertical Location Technology Used in Live 911 Calls,* PS Docket No. 07–114, Public Notice, 36 FCC Rcd 9193, 9195, Appx. (PSHSB 2021) (*Template Public Notice*), *https://www.fcc.gov/document/pshsb-provides-updated-template-911-live-call-data-reports.*

[104] Wi-Fi calling is a voice service that allows users to place and receive calls over a wireless internet connection, as opposed to using a cellular signal. *See* Apple, *Make a call with Wi-Fi Calling* (Dec. 8, 2023), *https://support.apple.com/en-us/HT203032.* A femtocell is a small, low-power cellular base station designed for use in a residence or small business. It connects to an internet service provider's network through broadband and, unlike Wi-Fi calling, operates on licensed frequency bands. In most cases, consumers must purchase a femtocell from their mobile network operator. *See* Hussain Kanchwala, *What Is a Femtocell and What Does It Do?* (Oct. 19, 2023, *https://www.scienceabc.com/innovation/what-are-femtocells.html.*

[105] For example, for live calls delivering z-axis information, the reporting template requires providers to ''enter each position technology or combination of technologies used to determine z-axis coordinates (*e.g.,* DBH, barometric sensor-based technology, etc.).'' *Template Public Notice,* 36 FCC Rcd at 9195, Appx. (setting similar requirement for live calls delivering x/y-axis information).

[106] *See* 47 CFR 9.10(i)(2)(iv).

[107] *See id.*

[108] *See* 800 MHz Interference Notification, *Public Safety 800MHz Interference Notification Site, https://prod.publicsafety800mhzinterference.com/sign-in* (last visited Feb. 4, 2025).

[109] *See* 47 CFR 90.674.

[110] *Fourth Report and Order,* 30 FCC Rcd 1259; 47 CFR 9.10(i)(2)(i).

[111] *Fourth Report and Order,* 30 FCC Rcd at 1261, 1287, 1361, paragraphs 6, 74, Appx. D; 47 CFR 9.10(i)(2)(i).

[112] *Fourth Report and Order,* 30 FCC Rcd at 1261, 1287, 1361, paragraphs 6, 74, Appx. D; 47 CFR 9.10(i)(2)(i).

[113] Texas 9–1–1 Entities Comments, PS Docket No. 07–114, at 6 (rec. Feb. 21, 2020) (emphasis omitted); *see also* NextNav, LLC (NextNav) Comments, PS Docket No. 07–114, at 23 (rec. Feb. 21, 2020) (stating that ''the preexisting requirement for 50 meter horizontal accuracy cannot guarantee that the information provided will always identify the correct building''); Environmental Systems Research Institute, Inc. (Esri) Reply, PS Docket No. 07–114, at 3 (rec. Mar. 20, 2020) (Esri Reply) (discussing the current limits of horizontal accuracy of 50 meters and stating that ''[l]imited horizontal accuracy could not only result in improperly identifying the horizontal location of a caller, but—when coupled with less-than-accurate vertical information—could result in first responders reporting to the wrong building'').

technological solutions that provide more accurate horizontal location information for wireless calls to 911. What percentage of wireless 911 calls provide horizontal location information that is more accurate than the Commission's requirement, and how accurate is the information provided?

What specific technologies are available to provide improved horizontal location accuracy? T-Mobile has noted the potential of DBH technology for providing more accurate horizontal location information. CTIA similarly has noted that device-based solutions such as Google's ELS and Apple's HELO ''continue to emerge, and . . . earlier achieved more granular horizontal location for wireless 9–1–1 calls, particularly indoors.'' What are the capabilities of DBH solutions such as ELS and HELO for improving horizontal location accuracy, and how widely available are these technologies? Are there other technologies besides DBH that could be used for improving horizontal location accuracy, either alone or in combination with DBH? Does the use of non-U.S. satellite signals (*e.g.,* signals from the European Union's Global Navigation Satellite System (GNSS), known as Galileo), in conjunction with the existing 911 system, improve indoor horizontal location accuracy? [114] Does the transition to Next Generation 911 have an impact on indoor horizontal location accuracy and, if so, what is that impact? [115]

If it is technically feasible to strengthen the horizontal location accuracy requirements, what changes do commenters recommend? Is a smaller radius than 50 meters feasible and, if so, what specific radius do commenters support? What percentage of wireless calls should be required to meet this level of accuracy and within what time frame? What testing and validation in the test bed should be required to demonstrate compliance with any new horizontal location accuracy requirements? Would the current testing and validation processes in the test bed need to be modified accordingly and, if so, how? Should there be separate requirements for non-nationwide providers and, if so, what should these requirements be? We also seek comment on the costs and benefits of any suggested changes to the existing horizontal location accuracy requirements. In addition, we seek comment on whether there are any other engineering or other issues that the Commission should consider with regard to improving horizontal location accuracy.

F. Mobile Text Location Accuracy

We seek to refresh the record on improving location accuracy for mobile texts. The Commission's 2014 *Second Report and Order* on text-to-911 required covered text providers, which include CMRS providers, to obtain location information sufficient to route text messages to the appropriate PSAP.[116] However, the Commission did not require text providers to convey additional location information to PSAPs at that time. The Commission also noted the possibility that Short Message Service (SMS) text-to-911 would be an interim solution and that CMRS providers might eventually seek to migrate customers away from SMS.[117]

In the 2019 *Report and Order* implementing Kari's Law and RAY BAUM'S Act, the Commission noted that covered text providers, including CMRS providers, were starting to transition mobile wireless text services from SMS to more robust IP-enabled platforms, such as real-time text (RTT).[118] The Commission noted that these IP-enabled platforms were capable of providing location information with 911 texts using some of the same location methodologies that were used to support IP-based voice services.[119] In addition, the Commission noted the potential to use the DBH location capabilities of mobile handsets (*e.g.,* HELO and ELS) to generate location information, which could then be sent via text to the PSAP.[120]

In the 2019 order, the Commission reasoned that ''as a practical matter, covered text providers are unlikely to be capable of providing dispatchable location for most 911 texts, and . . . the quality of 'best-available' location information provided with 911 texts may vary.'' [121] The Commission concluded that it was premature to adopt dispatchable location requirements for text-to-911 comparable to the requirements applicable to other services covered by the order and, instead, adopted a flexible approach to text-to-911 location.[122] Specifically, the Commission required covered text providers, within two years of the effective date of the rules (*i.e.,* by January 6, 2022), to provide automated dispatchable location if technically feasible and otherwise to provide either end-user manual provision of dispatchable location or enhanced location information, which could be coordinate-based, consisting of the best available location that can be obtained from any available existing technology or combination of technologies at reasonable cost.[123] The Commission noted that this rule did not require covered text providers to retrofit SMS-based text networks or to upgrade legacy mobile handsets that are only SMS-capable.[124]

We seek comment on what progress has been made since 2019 to develop and deploy technological solutions for delivering location with texts to 911. What percentage of 911 texts currently include location information? Does the percentage vary between SMS texts and IP-based texts such as real-time text (RTT)? What specific types of location information are covered text providers delivering to comply with the Commission's rules (*i.e.,* automated

[114] *See, e.g., Wireless E911 Location Accuracy Requirements; AT&T Services, Inc. Request for Authorization and Waiver,* PS Docket No. 07–114, Order, 35 FCC Rcd 8805 (2020).

[115] *See, e.g.,* 47 CFR part 9, subpart J; *Facilitating Implementation of Next Generation 911 Services (NG911); Location-Based Routing for Wireless 911 Calls,* PS Docket Nos. 21–479 and 18–64, Report and Order, FCC 24–78, 2024 WL 3507091 (July 19, 2024), 89 FR 78066 (Oct. 17, 2024), *corrected by* Erratum, 2024 WL 3507091 (Sept. 5, 2024) and Second Erratum, 2024 WL 3507091 (Oct. 1, 2024).

[116] *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications; Framework for Next Generation 911 Deployment,* PS Docket Nos. 11–153 and 10–255, Second Report and Order and Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 9851, paragraph 10 (2014), 79 FR 55367 (Sept. 16, 2014) (*Text-to-911 Second Report and Order*), 79 FR 55413 (Sept. 16, 2014) (*Text-to-911 Third NPRM*), *corrected by* Erratum (PSHSB Aug. 22, 2014); *see also* 47 CFR 9.10(q)(10)(v).

[117] *Text-to-911 Second Report and Order,* 29 FCC Rcd at 9867–68, paragraph 44; *see also* FCC, *Interim Text to 9–1–1 Working Group: Co-chairs: Brian Daly, AT&T and Gregg Vanderheiden, TRACE* (Sept. 14, 2012), *https://docs.fcc.gov/public/attachments/DOC-316315A1.pdf* (selecting SMS as the default texting solution because it was a standard-based solution and could be rapidly deployed to provide nationwide access to 911 during the transition to NG911).

[118] *Kari's Law/RAY BAUM'S Act Report and Order,* 34 FCC Rcd at 6690, paragraphs 217 through 218.

[119] *Id.* at 6690, paragraph 218; *see also* AT&T Comments, PS Docket Nos. 18–261 and 17–239, at 11 (rec. Dec. 10, 2018) (AT&T KL/RBA Comments) (stating that because real-time text includes a voice component, it can access specific caller location updates—and deliver them to the PSAP); Verizon Comments, PS Docket Nos. 18–261 and 17–239, at 7 (rec. Dec. 10, 2018) (Verizon KL/RBA Comments) (''The transition to IP-enabled LTE networks, and global text telephony (GTT) (*i.e.,* real-time text or RTT) solutions, that leverage VoLTE's E911 capabilities, will most effectively improve location accuracy for text-based communications to PSAPs.'').

[120] *Kari's Law/RAY BAUM'S Act Report and Order,* 34 FCC Rcd at 6690, paragraph 218 (citing Comtech Comments at 6–7; West Safety Comments at 12).

[121] *Kari's Law/RAY BAUM'S Act Report and Order,* 34 FCC Rcd at 6691, paragraph 220.

[122] *Id.* at 6691, paragraph 220.

[123] *Id.* at 6691, paragraph 220; *see also* 47 CFR 9.10(q)(10)(v).

[124] *Kari's Law/RAY BAUM'S Act Report and Order,* 34 FCC Rcd at 6691, paragraph 220.

dispatchable location, end-user manual provision of dispatchable location, or enhanced location information), and what percentage of total texts to 911 do these types of location information represent? How accurate is the location information provided? What are the capabilities of current 4G/5G networks and user devices to provide high-quality location information for text-to-911? Has progress been made since 2019 with respect to using DBH to provide location for 911 texts? Are ELS and HELO providing location information for text-to-911? Does the information provided include z-axis data? Does it include confidence and uncertainty data? Are there technologies other than DBH that could be leveraged for providing location with texts to 911? Are any 911 texts delivered to PSAPs with dispatchable location information as opposed to coordinate-based information?

We seek comment on whether location technology for text-to-911 has progressed to the point that the Commission could reasonably require either dispatchable location or coordinate-based location for 911 texts at accuracy levels comparable to the accuracy required for 911 voice calls. If we determine that such a requirement would be appropriate, when should carriers be required to comply and how should the requirement be enforced? We also seek comment on whether we should continue to distinguish between SMS texts and more advanced IP-based text services. As noted above, CMRS providers argued in the Kari's Law and RAY BAUM'S Act proceeding that requiring dispatchable location capabilities for SMS would require major retrofitting of legacy SMS networks.[125] Is that still the case? Would adopting stronger requirements for location accuracy help to encourage the transition from SMS to next generation texting solutions?

G. Eliminating Outdated Wireless Location Accuracy Rules

As part of our focus on ensuring that our wireless location accuracy rules keep pace with technology, we seek comment on whether certain of our legacy wireless location accuracy rules have become outdated and should be eliminated. Specifically, we believe that many of our original E911 Phase II location rules are no longer necessary because they have been superseded by the comprehensive location accuracy rules that the Commission adopted in 2015. We also propose to eliminate certain obsolete information collection requirements associated with our wireless location accuracy rules, and we invite commenters to identify any other requirements in § 9.10 of the rules that could be eliminated.[126]

The E911 Phase II rules were adopted and revised in a series of Commission orders dating from 1996 to 2010.[127] These rules required CMRS providers to provide horizontal location information for wireless 911 calls in accordance with accuracy thresholds that were tailored to then-current handset- and network-based location technologies optimized for location of outdoor wireless calls. The Commission established an eight-year period for implementing Phase II, ending in 2019, with interim benchmarks.[128] In addition, CMRS providers were only required to provide Phase II location information to PSAPs that requested the information, were capable of receiving and using it, and had a mechanism for recovering the costs associated with it.[129]

In 2014, the Commission initiated a comprehensive overhaul of its wireless location accuracy rules. The Commission noted that consumers were ''increasingly replacing traditional landline telephony with wireless phones, and a majority of wireless calls are now made indoors,'' making it imperative for PSAPs ''to have the ability to accurately identify the location of wireless 911 callers regardless of whether the caller is located indoors or outdoors.'' [130] The Commission also for the first time identified the need for 911 location to include a vertical as well as a horizontal component.[131] In 2015, the Commission adopted the comprehensive rules that remain in effect today, which require both horizontal (x- and y-axis) and vertical (z-axis) location accuracy for wireless 911 calls.[132] These rules make no distinction based on the technology used to provide 911 location, and they apply to both indoor and outdoor calls.[133]

In the *Fourth Report and Order,* the Commission discussed whether the E911 Phase II rules were still needed, noting that the newly adopted location accuracy requirements ''may ultimately moot the issue of whether to replace the current outdoor-based accuracy requirements for [E911] Phase II.'' [134] However, the Commission declined to eliminate the Phase II rules at that time, observing that the last Phase II benchmark would occur in January 2019. Instead, the Commission stated that ''once the last Phase II benchmark has passed, we may revisit the issue of when to sunset date the current Phase II requirements and establish a unitary accuracy standard.'' [135]

Discussion. We believe the location accuracy rules adopted in the *Fourth Report and Order* and refined in subsequent orders have now fully superseded the E911 Phase II rules. The location accuracy thresholds now in

[125] *See id.* at 6690–91, paragraph 219; *see also, e.g.,* AT&T KL/RBA Comments at 11; T-Mobile Reply, PS Docket Nos. 18–261 and 17–239, at 4 (rec. Feb. 8, 2019); Verizon KL/RBA Comments at 7.

[126] *See* 47 CFR 9.10.

[127] *See, e.g., Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems,* CC Docket No. 94–102, RM–8143, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676, 18682–84, paragraph 10 (1996), 61 FR 40348 (Aug. 2, 1996) (*First E911 Report and Order*), 61 FR 40374 (Aug. 2, 1996) (*First E911 FNPRM*); *Wireless E911 Location Accuracy Requirements; E911 Requirements for IP-Enabled Service Providers,* PS Docket No. 07–114, WC Docket No. 05–196, Further Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 18957 (2010), 75 FR 67321 (Nov. 2, 2010).

[128] *See Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Second Report and Order, 25 FCC Rcd 18909, 18947, Appx. C (2010), 75 FR 70604 (Nov. 18, 2010); *see also* 47 CFR 20.18(h)(1)(ii)(C) (2010 version; later renumbered to 47 CFR 9.10) (setting forth benchmark location accuracy standards to be met ''[e]ight years from January 18, 2011''); FCC, Wireless E911 Location Accuracy Requirements, 75 FR 70604 (Nov. 18, 2010) (establishing the January 18, 2011 effective date). Compliance will be measured on a per-county or per-PSAP basis using, at the carrier's election, either (1) network-based accuracy data, (2) blended reporting as provided in 47 CFR 20.18(h)(1)(iv), or (3) handset-based accuracy data as provided in 47 CFR 20.18(h)(1)(v). *See* 47 CFR 20.18(h)(1)(ii)(C)(*1*) through (*3*) (all referenced § 20.18 provisions later renumbered to 47 CFR 9.10); *see also, e.g., Public Safety and Homeland Security Bureau Reminds CMRS Providers Using Network-Based and Handset-Based Location Technologies of the January 18, 2019 Phase II Deadline for Improved Outdoor E911 Location Accuracy,* PS Docket 07–114, Public Notice, 34 FCC Rcd 524 (PSHSB 2019).

[129] *First E911 Report and Order,* 11 FCC Rcd at 18684, paragraph 11; 47 CFR 9.10(m)(1).

[130] *Wireless E911 Location Accuracy Requirements,* PS Docket No. 07–114, Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 2374, 2375, paragraph 1 (2014), 79 FR 17819 (Mar. 28, 2014) (*Third FNPRM*).

[131] *Third FNPRM,* 29 FCC Rcd at 2375–76, paragraph 2.

[132] *See Fourth Report and Order,* 30 FCC Rcd at 1360, Appx. D (codified at former 47 CFR 20.18(i), later renumbered to 47 CFR 9.10(i)).

[133] *See Fourth Report and Order,* 30 FCC Rcd at 1325–26, paragraphs 179 through 181.

[134] *Fourth Report and Order,* 30 FCC Rcd at 1326, paragraph 181. The Commission explained that the E911 Phase II rules provided a set of outdoor-focused location accuracy benchmarks for CMRS providers using either network-based or handset-based location technologies and allowed the network-based CMRS providers to switch to handset-based technologies. *Id.* at 1326, paragraph 180. The Commission also noted that the Phase II rules would serve to maintain regulatory certainty for CMRS providers that were providing service on their legacy systems while they were planning to migrate to VoLTE networks. *Id.* at 1326, paragraph 180.

[135] *Fourth Report and Order,* 30 FCC Rcd at 1326, paragraph 181.

effect are more stringent than the legacy Phase II requirements, and they apply to both indoor and outdoor calls. The new rules also do not distinguish between network-based and handset-based technologies, and they are not conditioned on requests from PSAPs to receive location information. We therefore seek comment on eliminating the E911 Phase II rules specified below.

The Phase II rules are primarily codified in § 9.10(h) of the Commission's rules.[136] We seek comment on whether to delete this subsection in its entirety, or whether there are any portions that should be retained. We also seek comment on whether to streamline or eliminate additional subsections that reference Phase II compliance requirements, including the following:

- Section 9.10(e) of the rules requires licensees to ''provide to the designated Public Safety Answering Point Phase II enhanced 911 service, *i.e.,* the location of all 911 calls by longitude and latitude in conformance with Phase II accuracy requirements'' as defined in paragraph (h).[137]
- Section 9.10(f) provides that licensees who employ a network-based location technology shall provide Phase II 911 enhanced service over a phased timeline subject to certain coverage area or population requirements or PSAP request.[138]
- Section 9.10(g) provides that licensees who employ a handset-based location technology may phase in deployment of Phase II enhanced 911 service subject to certain requirements.[139]
- Section 9.10(l) requires licensees to ''report to the Commission their plans for implementing Phase II enhanced 911 service'' by November 9, 2000, and to ''update these plans within thirty days of the adoption of any change.'' [140]

Would eliminating any of these rules create regulatory gaps? Are there any aspects of the Phase II rules that we should retain, or retain with modifications? For example, should we retain the latency (time to first fix) requirements? [141] Has technology advanced to the point that it significantly reduces latency to less than 30 seconds, as the Commission predicted in 2015? [142] Similarly, should we retain the Phase II requirements for resellers and, if not, should we update the obligations of resellers to provide accurate location information under 47 CFR 9.10(p)(1) and (2)? [143] In addition, if we eliminate the Phase II rules, how would roaming be impacted? We invite commenters to identify any roaming problems that exist today or that may surface if we eliminate the Phase II requirements.[144] Finally, if we eliminate the Phase II rules, what time frame would be appropriate? Is there any reason to phase out these rules over time rather than eliminating them immediately?

We seek comment on whether deletion of the Phase II rules would have any adverse effects on PSAPs or other 911 authorities or cause these entities to incur any costs. We do not believe that eliminating the Phase II rules would require any additional action on the part of PSAPs or require PSAPs to incur any additional costs. We note that most 911 systems continue to use Phase I and Phase II classifications in their processing of calls, and that the vast majority of wireless calls to PSAPs arrive as either WPH1 or WPH2 classes of service.[145] In proposing to eliminate the Phase II rules, we do not intend for these service classifications to become obsolete or for PSAPs to have to purchase updated systems for call routing or handling.[146] Similarly, we do not intend for the elimination of these rules to impose any obligation on a PSAP that is not currently capable of receiving Phase II information to modify or upgrade its call-handling or location capabilities. In this regard, we note that the location accuracy rules adopted in the *Fourth Report and Order* apply regardless of a PSAP's readiness to receive such information or any request from the PSAP. We therefore seek comment on whether to retain or eliminate 47 CFR 9.10(m), which provides a procedure for PSAPs to request Phase I or Phase II E911 service. While the number is small, there are still Phase 0 and Phase I PSAPs in the United States. Do commenters believe that maintaining the conditions for these PSAPs to request E911 service from CMRS providers is still useful? What effect, if any, would eliminating the PSAP request process have on PSAP costs?

In conjunction with the above proposals, we propose to modify the section heading for the location accuracy rules adopted in the *Fourth Report and Order,* codified at 47 CFR 9.10(i).[147] That section is titled ''Indoor location accuracy for 911 and testing requirements,'' although the rules apply to both indoor and outdoor calls to 911. To help clarify the scope of these rules, we propose to remove the word ''indoor'' from the title of this section and headings in § 9.10(i), such as the § 9.10(i)(2) heading. We seek comment on this proposal.

Finally, we propose to eliminate certain obsolete information collection requirements from 47 CFR 9.10(i). Specifically, we propose to delete § 9.10(i)(4)(i) and (ii), which required CMRS providers to submit initial implementation plans and two progress reports regarding their implementation of the 2015 location accuracy rules.[148] Because CMRS providers have completed their fulfillment of these reporting obligations, these requirements are no longer necessary. In addition, we propose to delete information collection requirements pertaining to the National Emergency Address Database (NEAD), which discontinued operation in 2020.[149] Specifically, we propose to delete the NEAD definition in § 9.10(i)(1)(iii) and requirements to submit a privacy and security plan for the NEAD under § 9.10(i)(4)(iii).[150] We seek comment on these proposals.

We tentatively conclude that the regulatory revisions proposed above would make our rules easier ''for the average person or business to understand'' and reduce ''the risk of costs of non-compliance.'' [151] We seek comment on whether any additional provisions in § 9.10 of the Commission's rules should be eliminated, consolidated, or streamlined consistent with the public interest.

[136] 47 CFR 9.10(h).

[137] 47 CFR 9.10(e).

[138] 47 CFR 9.10(f).

[139] 47 CFR 9.10(g).

[140] 47 CFR 9.10(l).

[141] 47 CFR 9.10(h)(3).

[142] *Fourth Report and Order,* 30 FCC Rcd at 1324–25, paragraph 176.

[143] 47 CFR 9.10(p)(1), (2).

[144] *Fourth Report and Order,* 30 FCC Rcd at 1334, paragraph 200 (''We reserve the right to take action in the future, if necessary, to ensure that accurate location information is provided for wireless calls to 911 while roaming.'').

[145] ''WPH1'' refers to wireless Phase I calls, while ''WPH2'' refers to wireless Phase II calls.

[146] For example, we emphasize that we do not anticipate that the elimination or streamlining of Phase II rules and other § 9.10 rules would require any PSAP to purchase, modify, or upgrade technology, software, or equipment, or to make any other changes or expenditures.

[147] These rules were originally codified at 47 CFR 20.18(i) and later renumbered to 47 CFR 9.10(i).

[148] 47 CFR 9.10(i)(4)(i) (initial implementation plan) and (ii) (progress reports).

[149] The Commission has recognized that the NEAD was formally terminated in 2020. *See Sixth Report and Order,* 35 FCC Rcd at 7773, paragraph 49 & n.136 (2020) (citing *NEAD Feb. 14 2020 Termination Letter* at 1).

[150] 47 CFR 9.10(i)(1)(iii) (NEAD definition), (i)(4)(iii) (NEAD privacy and security plan).

[151] *See* Executive Order 14192 of January 31, 2025, *Unleashing Prosperity Through Deregulation,* 90 FR 9065 (Feb. 6, 2025), *https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-prosperity-through-deregulation/* (E.O. 14192).

H. Summary of Benefits and Costs

Analysis. As discussed above, we are proposing or seeking comment on several measures to strengthen our wireless 911 location accuracy rules and seek comment on the cost and feasibility of those measures. The strengthening and enhancing of our existing rules would lead to improved emergency response times through the provision of: (1) more reliable, accurate, and actionable vertical location information for PSAPs; (2) a higher percentage of wireless 911 calls conveying dispatchable location; and (3) increased transparency into the test bed process for the stakeholder community and a stronger 911 location accuracy compliance framework.

Any solution for strengthening wireless 911 location accuracy for voice calls and texts, no matter how effective, must withstand the test of feasibility and functionality relative to cost. We therefore seek comment on whether the implementation of our proposals for calls and texts can improve upon the speeds at which emergency personnel and services relying on the 911 system can reach the caller, with a resulting improvement in the health and safety of the caller and preservation of property, and the magnitude of this presumed benefit.

In the *Fourth Report and Order* in this proceeding, the Commission concluded that the location accuracy rules, including the z-axis and dispatchable location requirements, would improve emergency response times, which, in turn, would improve patient outcomes and save lives.[152] The Commission found that the location accuracy improvements that it adopted had the potential to save approximately 10,120 lives annually and estimated an annual benefit of approximately $92 billion or $291 per wireless subscriber.[153] The Commission characterized this $92 billion as an annual benefit floor value because it expected substantial benefits from the reduction of loss of life and property.[154] The Commission further found that the costs of implementing the available solutions to achieve the indoor wireless location accuracy standards were far less than the $92 billion benefit floor, with the costs further declining as demand grew.[155]

When assessing the benefits of adopting a 3-meter metric, in the *Fifth Report and Order,* the Commission began with the analysis from this proceeding's *Fourth Report and Order.*[156] In the *Fifth Report and Order,* the Commission agreed with comments that the Commission made a conservative assumption in factoring a one-minute reduction in emergency response time and that the Commission underestimated the benefits of providing emergency responders with z-axis information.[157] In addition, the Commission reiterated that the addition of vertical location information—like the further refinement of horizontal location information—plays a major role in achieving the $92 billion benefit floor for improving wireless location accuracy.[158] Due to U.S. Department of Transportation updates for reducing the likelihood of mortality, the Commission estimated this annual benefit floor at $97 billion.[159]

In the *Sixth Report and Order,* the Commission concluded that its previous cost benefit assessment remained valid as applied to CMRS providers continuing their efforts to provide increasingly accurate location information.[160] The Commission received comments indicating that one of its proposals—''the flexibility to cover 80% of tall buildings'' in an area as an alternative for meeting the handset location-accuracy benchmark of 80% of the population of an area—would ''achieve significant public benefits.'' [161] The Commission adopted this flexible deployment option as a part of its rules, and concluded that the ''costs associated with a nationwide handset deployment'' would be minimal and that the Commission did not ''anticipate any changes in our [prior] cost/benefit analysis for nationwide CMRS providers opting for handset-based deployment.'' [162]

We seek information on how the proposed measures would increase this benefit established from the *Sixth Report and Order* and previous items in this proceeding. If predicted benefits have not been realized, do the proposed measures help attain those unrealized benefits? We anticipate improved location information would further reduce first responders' delays associated with locating emergency victims. For example, first responders or dispatchers would have to manually convert an HAE to an AGL in any practical application, so we expect that pre-calculating this number would save time. We also anticipate that strengthening the compliance framework would ensure that CMRS providers comply with the measures in a timely fashion and would help realize these benefits. We seek comment on these judgments. In particular, quantitative information on improvements in emergency response times, adverse health outcomes, or mortality due to additional z-axis information would be especially valuable.

Providing Actionable Information to PSAPs. By having stronger z-axis location rules, we anticipate that actionable information such as floor level reporting would be provided to the PSAPs on a more consistent and reliable basis than it is currently. One way to achieve accurate floor level information may be to have CMRS providers that deploy z-axis technology deliver z-axis information using AGL in addition to HAE as previously discussed. We seek comment on the level of effort and the costs for CMRS providers—both nationwide and non-nationwide—to convert HAE values for individual 911 calls to AGL. We seek comment and information on the costs associated with other data sources and best means available that can be leveraged to generate floor level information.

Strengthening the Wireless 911 Location Accuracy Testing and Compliance Framework. We propose that having a stronger location accuracy testing and compliance framework would increase transparency into the process and accountability for CMRS

[152] *Fourth Report and Order,* 30 FCC Rcd at 1319, paragraph 162.

[153] *Id.* at 1320, paragraph 166. These values are based on a study examining emergency incidents during 2001 in the Salt Lake City area, which found that a decrease in ambulance response times reduced the likelihood of mortality. *Id.* at 1317, paragraph 160. The $9.1 million value referenced in the *Fourth Report and Order* was based on the United States Department of Transportation's (DoT) 2013 memorandum on the value of a statistical life (VSL). *Id.* at 1319, paragraph 163 n.402. DoT presently estimates the VSL at $9.6 million. *See* Memorandum from Molly J. Moran, Acting General Counsel, and Carlos Monje, Assistant Secretary for Transportation Policy, to Secretarial Officers and Modal Administrators, U.S. Department of Transportation, ''Guidance on Treatment of the Economic Value of a Statistical Life (VSL) in U.S. Department of Transportation Analyses'' (Aug. 8, 2016), *https://www.transportation.gov/sites/dot.gov/files/docs/2016%20Revised%20Value%20of%20a%20Statistical%20Life%20Guidance.pdf.* We do not update our benefits calculation for the 2022 VSL increase to $12.5 million because the estimated benefits of today's item are already over fifty times higher than the estimated costs. *See* U.S. Department of Transportation, *Departmental Guidance on Valuation of a Statistical Life in Economic Analysis* (March 23, 2021), *https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-on-valuation-of-a-statistical-life-in-economic-analysis.*

[154] *Fourth Report and Order,* 30 FCC Rcd at 1319–20, paragraphs 162, 166.

[155] *Id.* at 1322, paragraph 170.

[156] *Fifth Report and Order,* 34 FCC Rcd at 11617, paragraph 55.

[157] *Id.* at 11617–18, paragraph 56.

[158] *Id.* at 11618, paragraph 57.

[159] *Id.*

[160] *Sixth Report and Order,* 35 FCC Rcd at 7783–84, paragraph 72.

[161] *Id.* at 7784, paragraph 73.

[162] *Id.* at 7785, paragraph 74.

providers, leading to increased public confidence, identification of weaknesses and strengths of various approaches, and improved public safety. As discussed herein, we seek comment on the costs associated with the proposed rules to increase transparency in the test bed and providing confidence in the real-world performance of the technologies tested. These proposals include validating performance in the test bed, requiring test bed data access for non-nationwide CMRS providers and NENA, APCO, and NASNA, and increasing transparency into test bed validation procedures. Specifically, we propose:

- Validation of a vertical location technology in the industry test bed must demonstrate compliance of that technology in each morphology and may not be based on CMRS provider live call data. Thus, CMRS providers may not rely on test bed results that have been aggregated or averaged across morphologies or that have been weighted on the basis of live call data;
- Upon receipt of a request from a non-nationwide CMRS provider or certain public safety associations (*i.e.,* APCO, NENA, and NASNA), the test bed must share the following information at no cost and on a timely basis:
  - test bed data and results by wireless location technology provider, morphology, and technology, as well as other relevant information (such as information on the test bed process, including any significant changes to the test bed process);[163] and
- NENA, APCO, or NASNA may file with the Commission a challenge to the validation of a particular technology in the test bed.

We seek comment on the costs associated with provider compliance under this strengthened framework of rules. In particular, we seek comment on the costs associated with CMRS provider compliance as discussed previously.

Increasing Percentage of Wireless 911 Calls with Dispatchable Location. At this stage of refreshing the record without a specific rule proposal, we lack sufficient information to speculate on the costs of any new dispatchable location requirements. Accordingly, the total cost estimates of today's item do not include potential costs of a new dispatchable location requirement. However, we do seek comment on the costs of any potential rules for increased dispatchable location technology deployment on a more certain timeline, should the Commission consider or adopt such a rule in a subsequent proceeding. By increasing the percentage of wireless 911 calls that convey dispatchable location, we anticipate that first responders can achieve faster emergency response times, which would lead to more lives saved.[164] As discussed earlier, we seek comment on the costs associated with reverse geocoding and the costs of implementing that process. In that connection, we seek to refresh the record on dispatchable location technology solutions in light of technological developments and broader standardization in IP-based delivery of 911 traffic. We seek comment on the costs associated with providers increasing the number of wireless 911 calls with dispatchable location from the levels currently being reported. Also, what updated dispatchable location solutions are available to achieve this goal and what are their associated costs? What will be the breakdown of these solutions across providers, and will certain kinds of providers be likely to favor particular implementations? Do the implementations differ in how much and what kinds of labor or materials would be required? Will certain solutions be combined in practice?

Improvements to Horizontal Location Information and Mobile Text Location Accuracy. The total cost estimates in this item do not include potential costs of any new requirements for improving horizontal location accuracy or location accuracy for mobile texts. However, we do seek comment on the costs of any potential rules pertaining to improving horizontal location accuracy or location accuracy for mobile texts should the Commission consider or adopt such a rule or rules in a subsequent proceeding.

Strengthening Reporting Requirements. As reflected in the history of this proceeding, there is ample precedent for the Commission to revive and strengthen the reporting requirements in an effort to increase public trust and provide transparency.[165] We seek comment on the associated costs and level of effort needed by both nationwide and non-nationwide CMRS providers to comply with our proposed requirements, as well as the requirements the Commission seeks comment on but has not proposed. For instance, we seek comment on the costs associated with requiring CMRS providers to establish a centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement.

In addition, we seek comment on the costs associated with requiring CMRS providers to provide more detailed information on dispatchable location technologies in their live call data reports. We also seek comment on whether we should require CMRS providers to provide data not only for each category of location technology used in live call reports (*e.g.,* DBH) but also for specific technologies within a category (*e.g.,* HELO, ELS). What additional costs would be incurred from requiring more detailed and granular information with live call reports? We tentatively conclude the benefits of these changes would be significant. Transparency into what specific dispatchable location technologies are being used by providers will help PSAPs better understand the source of the data being delivered and the confidence they should have in it. We believe this would encourage providers to continue improving their dispatchable location technology solutions, which would lead to higher PSAP confidence in the information and the facilitation of faster emergency response times.

Eliminating Certain Existing Regulations. We seek comment on whether to eliminate existing Phase II rules, and we propose to eliminate certain other obsolete or superseded 911 location accuracy rules in 47 CFR 9.10. Would eliminating these rules make our regulations easier to understand and help simplify compliance issues? Would having fewer obsolete or superseded rules in existence reduce the burden on stakeholders, for example, by making our rules easier for the average person or business to understand and by reducing the risk of costs of non-compliance?[166] Would any additional, unexpected costs be created by the elimination of these rules?

Cost of Implementation. With respect to costs not exceeding their benefits, we seek comment on whether implementation of our proposed measures would result in significant hardware, software, services, GIS,

[163] The Commission already requires CMRS providers to submit aggregate live call data on a quarterly basis to the Commission as well as to NENA, APCO, and NASNA. 47 CFR 9.10(i)(3)(ii)(B); *Fourth Report and Order,* 30 FCC Rcd at 1310, paragraph 135.

[164] *Fifth Report and Order,* 34 FCC Rcd at 11625, paragraph 80 (''We recognize the importance to public safety of obtaining dispatchable location information regarding which 'door to kick in.' ''); *id.* at 11625, paragraph 80 n.275 (stating that APCO refers to dispatchable location as the ''gold standard'').

[165] We look to the already approved assessment of burden hours and costs associated with the reporting requirements for CMRS providers in this proceeding. *See* 47 CFR 9.10(i)(4).

[166] *See* E.O. 14192.

testing, or other costs to nationwide and non-nationwide CMRS and covered text providers, NG911 services providers, or state and local 911 authorities. We seek comment on the amount of those costs and ask commenters to provide sufficiently detailed information to allow accurate cost calculations.

In the absence of a detailed record on costs for the proposed revisions to our rules, we provide estimates below based on previous estimate calculations in the record, and ask commenters to provide information to improve these estimates as necessary. To be conservative in our approach, we seek to provide upper-bound estimates, so that actual costs will be at or below these levels. The December 2023 Voice Telephone Services Report lists 53 ''mobile telephony'' providers in total, so we assume that 53 providers will incur the cost.[167]

We estimate that all of the cost of an HAE to AGL conversion will be labor. To the best of our understanding, the conversion under all methodologies is a purely mathematical procedure with proper elevation data. We believe that free or open-source elevation data are available, so a provider would not need to incur significant costs to acquire the data.[168] New or upgraded equipment or software would not be required. Service providers would incur a labor cost associated with the labor needed to incorporate these data into existing systems, a cost to develop the conversion software, and a cost to deploy the software on the network. In the Supporting Statement of Study Area Boundary Data Reporting in Esri Shapefile Format, the Commission estimated that it takes an average of 26 hours for a data scientist to modify a shapefile.[169] We therefore use a conservative upper bound of the time required for a party to incorporate the new elevation data of twice that amount, or 52 hours. Given that the average wage rate is $56.24/hour for data scientists in the telecommunications industry,[170] with a 45% markup for benefits,[171] we arrive at $81.55 as the hourly compensation rate for a data scientist. As such, we estimate an upper bound for the cost of updating elevation maps to be approximately $0.2 million (≈ $81.55 per hour × 52 hours × 53 providers = $224,751.80). In addition, we understand that the HAE to AGL conversion is relatively simple from a mathematical perspective and so the associated programming will not require a large team. We therefore assume that approximately a month (four forty-hour workweeks) would be an upper bound of the time that a single software developer and a single engineer would need to update software so as to implement the conversion and apply it to service providers' networks. Assuming the average wage of a software developer is $63.75/hour,[172] with a 45% markup for benefits, we arrive at $92.44/hour as the compensation rate for software developers. We estimate the upper bound for the cost of software development would be approximately $0.8 million (≈ $92.44/hour × 4 weeks × 40 hours × 53 providers = $783,891.20). Assuming the average wage of network engineers is $54.95/hour,[173] with a 45% markup for benefits, we arrive at $79.68/hour as the compensation rate for network engineers. We estimate the upper bound for the cost of network engineering would be approximately $0.7 million (≈ $79.68/hour × 4 weeks × 40 hours × 53 providers = $675,686.40). Altogether, we estimate a total cost of the HAE to AGL conversion to be approximately $1.7 million (≈ $0.2 million + $0.8 million + $0.7 million). We seek comment on these cost estimates. In particular, to what extent has progress in the development of data sources and translation tools that CMRS providers could use to translate HAE to AGL decreased the costs of HAE to AGL conversion?

For our proposals strengthening the testing and compliance framework and improving live call reporting and enforcement, we anticipate costs to be primarily labor. These measures would involve changes to the procedures and new releases of associated data, but not substantial changes to the equipment involved. Instead, attorneys and engineers would have to work to adhere to the new compliance framework, and web designers would have to create the location accuracy complaint portal. We anticipate three forty-hour workweeks will be an upper bound to the time to implement required changes based on the Commission's prior estimates for similar requirements.[174] Without a further record, we do not know how many workers are necessary for all tasks, but we think that three teams of five people is sufficient for the necessary legal, engineering, and web design work. Assuming the average wage of an attorney is $104.66/hour,[175] with a 45% markup for benefits, we arrive at $151.76/hour as the compensation rate for attorneys. We estimate the upper bound for the cost of associated legal work would be approximately $4.8 million (≈ $151.76/hour × 5 workers × 40 hours × 3 weeks × 53 providers = $4,825,968.00). Assuming the average wage of industrial

[167] FCC Office of Economics and Analytics, Industry Analysis Division, Voice Telephone Services: Status as of December 31, 2023 at 10, Table 2 (Nov. 8, 2024), *https://www.fcc.gov/voice-telephone-services-report.*

[168] For example, as noted, the United States Geological Survey provides a free topological map of the United States at a ⅓ arc-second DEM on its website. United States Geological Survey, *The National Map (TNM) Datasets, https://apps.nationalmap.gov/datasets/* (last visited Feb. 4, 2025). One-third arc-second is equivalent to a resolution of ''approximately 10 meters north/south, but variable east/west due to convergence of meridians with latitude.'' United States Geological Survey, *About 3DEP Products & Services, https://www.usgs.gov/3d-elevation-program/about-3dep-products-services* (last visited Feb. 4, 2025).

[169] *See* Federal Communications Commission, ''Study Area Boundary Data Reporting in Esri Shapefile Format, DA 12–1777 and DA 13–282,'' Information Collection Request (ICR) Supporting Statement, Office of Management and Budget Control No. 3060–1181, at 5, paragraph 12 (Feb. 15, 2022), *https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202202-3060-009.*

[170] The mean hourly wage for data scientists in the telecommunications industry in May 2023 is $56.24. Bureau of Labor Statistics, *May 2023 National Industry-Specific Occupational Employment and Wage Estimates NAICS 517000—Telecommunications* (April 3, 2024), *https://www.bls.gov/oes/current/naics4_517000.htm* (*BLS Telecommunications Wages*).

[171] According to the Bureau of Labor Statistics, as of September 2023, civilian wages and salaries $32.25/hour and benefits averaged $14.59/hour. Total compensation therefore averaged $32.25 + $14.59, rounded to $46.84. *See* Press Release, Bureau of Labor Statistics, *Employer Costs for Employee Compensation—September 2024* (Dec. 17, 2024), *https://www.bls.gov/news.release/pdf/ecec.pdf.* Using these figures, benefits constitute a markup of $14.59/$32.25~ 45%. We therefore mark up wages by 45% to account for benefits, which results in total hourly compensation of $56.24 × 145% = $81.55.

[172] The mean hourly wage for software developers in the telecommunications industry in May 2023 is $63.75. *See BLS Telecommunications Wages.*

[173] The mean hourly wage for computer network architects in the telecommunications industry in May 2023 is $54.95. *See BLS Telecommunications Wages.* The Bureau of Labor Statistics considers the title ''computer network architect'' to be synonymous with ''network engineer.'' Bureau of Labor Statistics, *Computer Network Architects: What Computer Network Architects Do* (Sept. 12, 2023), *https://www.bls.gov/ooh/computer-and-information-technology/computer-network-architects.htm#tab-2.*

[174] *See* Federal Communications Commission, ''Improving 911 Reliability; Reliability and Continuity of Communications Including Networks, Broadband Technologies,'' Information Collection Request (ICR) Supporting Statement, Office of Management and Budget Control No. 3060–1202, at 10 (Oct. 2023), *https://www.reginfo.gov/public/do/PRAViewDocument?ref_nbr=202309-3060-007* (estimating 562 total employee compliance hours per regulated provider for similar reporting and data collection compliance costs as today's item, compared to today's estimate of 600 total employee compliance hours per regulated provider—three forty-hour weeks, or 120 hours, times five employees per provider).

[175] The mean hourly wage for lawyers in the telecommunications industry in May 2023 is $104.66.

engineers is $52.63/hour,[176] with a 45% markup for benefits, we arrive at $76.31/hour as the compensation rate for industrial engineers. We estimate the upper bound for the cost of associated engineering work would be approximately $2.4 million (≈ $76.31/hour × 5 workers × 40 hours × 3 weeks × 53 providers = $2,426,658.00). Assuming the average wage of web designers is $43.80/hour,[177] with a 45% markup for benefits, we arrive at $63.51/hour as the compensation rate for web designers. We estimate the upper bound for the cost of website development would be approximately $2.0 million (≈ $63.51/hour × 5 workers × 40 hours × 3 weeks × 53 providers = $2,019,618.00). Altogether, we estimate a total cost of strengthening the compliance framework to be approximately $9.2 million (≈ $4.8 million + $2.4 million + $2.0 million).

First-year costs of this item's proposals total to approximately $10.9 million from the initial conversion from HAE to AGL and changing the compliance framework ($1.7 million + $9.2 million). We do not anticipate additional ongoing costs from the HAE to AGL conversion once it is implemented because regular maintenance to a provider's z-axis systems is expected regardless of whether AGL is implemented or not. There may also be additional annual costs with respect to the new compliance framework, live call reporting, and enforcement, but they are also likely to be less than the initial year as work shifts to maintenance of the new framework. Thus, we find treating the first-year costs as an upper bound for all subsequent annual costs to be reasonable. That said, we judge that both the initial and ongoing cost upper bounds will be lower than the billions of dollars of annual benefits from improved emergency response, but seek comment on the reasonableness of these judgments and the associated estimates.

I. Timelines and Minimizing Burdens on CMRS Providers

We seek comment on timelines and minimizing burdens on CMRS providers. The rules we propose to adopt include steps that we believe will help minimize the impact on CMRS providers, including non-nationwide CMRS providers.

Vertical Location. We propose to require nationwide CMRS providers that deploy z-axis technology to make AGL available to PSAPs from any z-axis capable handset within 12 months after the effective date of the final rule. We propose to afford non-nationwide CMRS providers an additional 12 months, *i.e.,* 24 months after the effective date of the final rule, to comply with this requirement. In addition, we seek comment on requiring all CMRS providers to convert AGL to floor level estimates and appropriate timelines for CMRS providers, including non-nationwide CMRS providers.

Test Bed Requirements. We propose to require the test bed to validate location technology on a per-morphology basis and to prohibit test bed reliance on CMRS provider live call data. We also propose that nationwide CMRS providers must deploy on a nationwide basis either dispatchable location or z-axis technology that has been validated in accordance with these proposed requirements within 24 months after the effective date of the final rule. In addition, we propose that non-nationwide CMRS providers would have an additional 12 months to deploy dispatchable location or z-axis technology in compliance with this requirement. Would the proposed deadlines for these requirements have any impact on the existing indoor location accuracy requirements, including upcoming benchmark dates for compliance? [178] If so, should we harmonize these requirements and, if so, how? To increase transparency and minimize burdens on non-nationwide CMRS providers, we propose to require the test bed to provide data to non-nationwide CMRS providers and public safety organizations NENA, APCO, and NASNA at no cost and on a timely basis. We also propose to create an FCC adjudication process for those three public safety organizations to challenge test bed validation of location technology.

Dispatchable Location. We seek comment on mechanisms to increase the number of wireless 911 calls that convey dispatchable location and to ensure that CMRS providers, including non-nationwide CMRS providers, use dispatchable location technologies to their maximum potential as they become available. Consistent with the Commission's approach in this proceeding to existing location accuracy requirements, we seek comment on extending any deadlines with respect to dispatchable location for non-nationwide CMRS providers.[179] For instance, should non-nationwide CMRS providers have additional time based on the timing of their location technology deployments?

Live Call Reports. We propose to require all CMRS providers to report the specific technologies they use to provide dispatchable location with live 911 wireless calls and to report these data for each morphology. We also propose to maintain the current filing timelines, *i.e.,* nationwide CMRS providers must aggregate live 911 call data on a quarterly basis and report that data to APCO, NENA, and NASNA; and non-nationwide CMRS providers must do so on a biannual basis.

Enforcement. We seek comment on requiring all CMRS providers to establish a centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement. In that connection, we seek to reduce burdens on PSAPs in reporting issues with location accuracy. In addition, requiring industry to develop a single interface could lead to standard processes and protocols for response, including initial meetings, testing, and documentation. We seek comment on a reasonable timeline for implementing such a measure.

Eliminating Certain Existing Regulations. We seek comment on whether the existing E911 Phase II wireless location accuracy rules have become outdated and should be eliminated, and we propose to eliminate certain obsolete information collection requirements associated with the wireless location accuracy rules in 47 CFR 9.10. We believe eliminating these particular rules would make our 911 location accuracy regulations easier to understand and would help reduce the risk of costs of noncompliance, thereby helping to reduce the burden on CMRS providers. We seek comment on whether each of these rules should be eliminated immediately or phased out over time, and why.

Procedural Matters

Regulatory Flexibility Act. The Regulatory Flexibility Act of 1980, as amended (RFA),[180] requires that an

[176] The mean hourly wage for industrial engineers (including those in health and safety) in the telecommunications industry in May 2023 is $52.63. *See BLS Telecommunications Wages.*

[177] The mean hourly wage for web developers in the telecommunications industry in May 2023 is $43.80. *See BLS Telecommunications Wages.*

[178] *See, e.g.,* 47 CFR 9.10(i)(2)(ii)(E), (F) (requiring that by April 3, 2025, nationwide CMRS providers must deploy on a nationwide basis either dispatchable location or z-axis technology; non-nationwide CMRS providers have an additional year to comply with this requirement).

[179] *See* 47 CFR 9.10(i)(2)(i)(B), (i)(2)(ii)(F) (providing additional time for non-nationwide CMRS providers to meet certain horizontal and vertical location accuracy benchmarks).

[180] 5 U.S.C. 603. The RFA, 5 U.S.C. 601–612, was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Public Law 104–121, Title II, 110 Stat. 857 (1996).

agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that ''the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.'' [181] Accordingly, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning potential rule and policy changes contained in the *FNPRM.* The IRFA is set forth in this document. The Commission invites the general public, in particular small businesses, to comment on the IRFA. Comments must be filed by the deadlines for comments on the *FNPRM* indicated in the **DATES** section of this document and must have a separate and distinct heading designating them as responses to the IRFA.

Paperwork Reduction Act of 1995 Analysis. The *FNPRM* contains proposed new or modified information collection requirements. Specifically, the proposed requirements in paragraphs (i)(2)(ii)(H) and (N), (i)(3)(i)(F) and (G), and (i)(3)(ii)(A) and (C) of § 9.10 of the Commission's rules contain new or modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, we seek specific comment on how we might ''further reduce the information collection burden for small business concerns with fewer than 25 employees.'' [182]

Providing Accountability Through Transparency Act. Consistent with the Providing Accountability Through Transparency Act, Public Law 118–9, a summary of this document will be available on *https://www.fcc.gov/proposed-rulemakings.*

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Federal Communications Commission (Commission) has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *FNPRM.* Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines in the *FNPRM.* The Commission will send a copy of the *FNPRM,* including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA). In addition, the *FNPRM* and IRFA (or summaries thereof) will be published in the **Federal Register**.

A. Need for, and Objectives of, the Proposed Rules

The goal of this proceeding is to strengthen the Commission's wireless location accuracy rules to put more actionable 911 call location information in the hands of Public Safety Answering Points (PSAPs) and first responders. This will help ensure that all Americans using mobile phones—whether calling from urban or rural areas, from indoors or outdoors—have technology that is functionally capable of providing accurate location information to allow users to receive the necessary assistance in times of an emergency. In the *Fourth Report and Order,* released on February 3, 2015, in PS Docket No. 07–114, the Commission adopted requirements for all Commercial Mobile Radio Service (CMRS) providers to improve the accuracy of 911 location information from wireless devices delivered to PSAPs, with benchmark dates for CMRS providers to achieve horizontal or x/y location accuracy milestones. The *Fourth Report and Order* recognized current trends in mobile wireless usage, particularly that more American households are now ''wireless only'' than ever before. The need to expeditiously provide accurate 911 location information is made more pressing with the proliferation of commercial location-based services, and consumer expectations that 911 location will be as accurate or more accurate than commercial applications, and because of the crucial role it can play in protecting life and property.

Commission action in the *Fifth Report and Order,* released on November 25, 2019, adopted a vertical or z-axis location accuracy metric, and required CMRS providers to deliver z-axis information in Height Above Ellipsoid (HAE). In the *Sixth Report and Order,* released on July 17, 2020, the Commission expanded the options for CMRS providers choosing to deploy z-axis technology to meet the April 2021 and April 2023 compliance benchmarks. The Commission also required nationwide CMRS providers to deploy z-axis technology nationwide by April 2025, and required non-nationwide CMRS providers, which are typically small, regional, and rural providers, to do the same throughout their service areas by April 2026. In addition, to make the wireless dispatchable location rules consistent with the Commission's dispatchable location rules for other services adopted pursuant to section 506 of RAY BAUM'S Act, the *Sixth Report and Order* required CMRS providers by January 6, 2022, to provide dispatchable location for wireless 911 calls when it is technically feasible and cost-effective for them to do so. Non-nationwide CMRS providers were given an additional year to meet this benchmark. The *Sixth Report and Order* also included measures allowing CMRS providers flexibility to develop dispatchable location solutions that do not depend on the National Emergency Address Database (NEAD), which had been discontinued. Additionally, the *Sixth Report and Order* addressed implementation issues for dispatchable location solutions that are not based on the NEAD, including (1) privacy and security, and (2) confidence and uncertainty data requirements.

In the *FNPRM,* the Commission proposes to build on recent technological developments and standardization efforts that CMRS providers, and other stakeholders could leverage to convey more actionable information with wireless 911 calls. Specifically, we propose to make z-axis location information more actionable by including requirements for CMRS providers to provide PSAPs z-axis information in Height Above Ground Level (AGL), and we seek comment on requiring CMRS providers to convert AGL to floor level estimates. In addition, the Commission seeks comment on ways to increase the percentage of wireless 911 calls that convey dispatchable location (street address, plus additional information to locate the 911 caller) and requests to refresh the record on the state of technology capable of providing dispatchable location. As part of this goal, we seek comment on how to foster cooperation and collaboration among multiple stakeholders in the process of generating and delivering 911 calls and actionable information—not only the CMRS providers and PSAPs, but also third parties, including cable and internet service providers (ISPs), original equipment manufacturers (OEMs), and vendors.

We also propose to strengthen our wireless location accuracy testing process with proposed rules to improve the test bed validation process and to require more transparency with respect to test bed results. Specifically, we propose to modify our rules to require that testing and validation of vertical location technologies in the industry

[181] 5 U.S.C. 605(b).

[182] 44 U.S.C. 3506(c)(4).

test bed demonstrate compliance of each technology with the 3-meter metric in each morphology, and that validation of a technology in the test bed may not be based on CMRS provider live call data. Thus, we would no longer allow CMRS providers to base compliance certifications on aggregating or averaging test bed results across morphologies, or on live call data. In addition, we propose to provide non-nationwide CMRS providers and certain major public safety organizations (National Emergency Number Association (NENA), Association of Public-Safety Communications Officials International, Inc. (APCO), and National Association of State 911 Administrators (NASNA)) with expanded access to test bed data and results on request. We further propose to allow NENA, APCO, and NASNA to challenge the validation of particular technologies in the test bed.

Improvements to live call data reporting include a proposal to require live call data reports to include information on the specific technologies CMRS providers used to provide dispatchable location. To strengthen the Commission's enforcement of its wireless location accuracy rules, we seek comment on requiring CMRS providers to develop a centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement. In addition, the Commission seeks comment on improving horizontal (x,y) location accuracy for wireless 911 calls. The Commission also seeks to refresh the record on improving location accuracy for mobile texts to 911, and requests comment on the current status of technology solutions for the delivery of location information for texts to 911. Finally, we seek comment on whether our existing Phase II location accuracy rules have become outdated and should be eliminated, and we propose to eliminate certain other obsolete or superseded 911 location accuracy rules in 47 CFR 9.10. We also request comment on the benefits and costs associated with our proposals.

B. Legal Basis

The proposed action is authorized pursuant to sections 1, 2, 4(i), 201, 214, 222, 225, 251(e), 301, 303, 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. 151, 152, 154(i), 201, 214, 222, 225, 251(e), 301, 303, 316, 332; the Wireless Communications and Public Safety Act of 1999, Public Law 106–81, as amended, 47 U.S.C. 615 note, 615, 615a, 615b; and section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Public Law 111–260, 47 U.S.C. 615c.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted. The RFA generally defines the term ''small entity'' as having the same meaning as the terms ''small business,'' ''small organization,'' and ''small governmental jurisdiction.'' In addition, the term ''small business'' has the same meaning as the term ''small business concern'' under the Small Business Act. A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.

Small Businesses, Small Organizations, Small Governmental Jurisdictions. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe, at the outset, three broad groups of small entities that could be directly affected herein. First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the Small Business Administration's (SBA) Office of Advocacy, in general a small business is an independent business having fewer than 500 employees. These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.

Next, the type of small entity described as a ''small organization'' is generally ''any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.'' The Internal Revenue Service (IRS) uses a revenue benchmark of $50,000 or less to delineate its annual electronic filing requirements for small exempt organizations. Nationwide, for tax year 2022, there were approximately 530,109 small exempt organizations in the U.S. reporting revenues of $50,000 or less according to the registration and tax data for exempt organizations available from the IRS.

Finally, the small entity described as a ''small governmental jurisdiction'' is defined generally as ''governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.'' U.S. Census Bureau data from the 2022 Census of Governments indicate there were 90,837 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States. Of this number, there were 36,845 general purpose governments (county, municipal, and town or township) with populations of less than 50,000 and 11,879 special purpose governments (independent school districts) with enrollment populations of less than 50,000. Accordingly, based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 entities fall into the category of ''small governmental jurisdictions.''

All Other Telecommunications. This industry is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Providers of internet services (*e.g.,* dial-up ISPs) or Voice over Internet Protocol (VoIP) services, via client-supplied telecommunications connections are also included in this industry. The SBA small business size standard for this industry classifies firms with annual receipts of $40 million or less as small. U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year. Of those firms, 1,039 had revenue of less than $25 million. Based on this data, the Commission estimates that the majority of ''All Other Telecommunications'' firms can be considered small.

Advanced Wireless Services (AWS)— (1710–1755 MHz and 2110–2155 MHz bands (AWS–1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS–2); 2155–2175 MHz band (AWS–3); 2000–2020 MHz and 2180–2200 MHz (AWS–4)). Spectrum is made available and licensed in these bands for the provision of various wireless communications services. Wireless Telecommunications Carriers (except Satellite) is the closest industry with an SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees.

Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

According to Commission data as December 2021, there were approximately 4,472 active AWS licenses. The Commission's small business size standards with respect to AWS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of AWS licenses, the Commission defined a ''small business'' as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a ''very small business'' as an entity with average annual gross revenues for the preceding three years not exceeding $15 million. Pursuant to these definitions, 57 winning bidders claiming status as small or very small businesses won 215 of 1,087 licenses. In the most recent auction of AWS licenses 15 of 37 bidders qualifying for status as small or very small businesses won licenses.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Wired Telecommunications Carriers. The U.S. Census Bureau defines this industry as establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired communications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution, and wired broadband internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry. Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers.

The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year. Of this number, 2,964 firms operated with fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 4,590 providers that reported they were engaged in the provision of fixed local services. Of these providers, the Commission estimates that 4,146 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

Local Exchange Carriers (LECs). Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include both incumbent and competitive local exchange service providers. Wired Telecommunications Carriers is the closest industry with an SBA small business size standard. Wired Telecommunications Carriers are also referred to as wireline carriers or fixed local service providers. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year. Of this number, 2,964 firms operated with fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 4,590 providers that reported they were fixed local exchange service providers. Of these providers, the Commission estimates that 4,146 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

Competitive Local Exchange Carriers (LECs). Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. Providers of these services include several types of competitive local exchange service providers. Wired Telecommunications Carriers is the closest industry with an SBA small business size standard. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year. Of this number, 2,964 firms operated with fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 3,378 providers that reported they were competitive local exchange service providers. Of these providers, the Commission estimates that 3,230 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

Incumbent Local Exchange Carriers (Incumbent LECs). Neither the Commission nor the SBA have developed a small business size standard specifically for incumbent local exchange carriers. Wired Telecommunications Carriers is the closest industry with an SBA small business size standard. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 3,054 firms in this industry that operated for the entire year. Of this number, 2,964 firms operated with fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 1,212 providers that reported they were incumbent local exchange service providers. Of these providers, the Commission estimates that 916 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, the Commission estimates that the majority of incumbent local exchange carriers can be considered small entities.

Interexchange Carriers (IXCs). Neither the Commission nor the SBA have developed a small business size standard specifically for Interexchange Carriers. Wired Telecommunications Carriers is the closest industry with an SBA small business size standard. The SBA small business size standard for Wired Telecommunications Carriers classifies firms having 1,500 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 3,054 firms that operated in this industry for the entire year. Of this number, 2,964 firms operated with fewer than 250 employees. Additionally, based on

Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 127 providers that reported they were engaged in the provision of interexchange services. Of these providers, the Commission estimates that 109 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, the Commission estimates that the majority of providers in this industry can be considered small entities.

Local Resellers. Neither the Commission nor the SBA have developed a small business size standard specifically for Local Resellers. Telecommunications Resellers is the closest industry with an SBA small business size standard. The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households. Establishments in this industry resell telecommunications; they do not operate transmission facilities and infrastructure. Mobile virtual network operators (MVNOs) are included in this industry. The SBA small business size standard for Telecommunications Resellers classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that 1,386 firms in this industry provided resale services for the entire year. Of that number, 1,375 firms operated with fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 207 providers that reported they were engaged in the provision of local resale services. Of these providers, the Commission estimates that 202 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

Broadband Personal Communications Service. The broadband personal communications services (PCS) spectrum encompasses services in the 1850–1910 and 1930–1990 MHz bands. The closest industry with an SBA small business size standard applicable to these services is Wireless Telecommunications Carriers (except Satellite). The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

Based on Commission data as of November 2021, there were approximately 5,060 active licenses in the Broadband PCS service. The Commission's small business size standards with respect to Broadband PCS involve eligibility for bidding credits and installment payments in the auction of licenses for these services. In auctions for these licenses, the Commission defined ''small business'' as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $40 million for the preceding three years, and a ''very small business'' as an entity that, together with its affiliates and controlling interests, has had average annual gross revenues not exceeding $15 million for the preceding three years. Winning bidders claiming small business credits won Broadband PCS licenses in C, D, E, and F Blocks.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Narrowband Personal Communications Services. Narrowband Personal Communications Services *(Narrowband PCS)* are PCS services operating in the 901–902 MHz, 930–931 MHz, and 940–941 MHz bands. PCS services are radio communications that encompass mobile and ancillary fixed communication that provide services to individuals and businesses and can be integrated with a variety of competing networks. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

According to Commission data as of December 2021, there were approximately 4,211 active *Narrowband PCS* licenses. The Commission's small business size standards with respect to *Narrowband PCS* involve eligibility for bidding credits and installment payments in the auction of licenses for these services. For the auction of these licenses, the Commission defined a ''small business'' as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $40 million. A ''very small business'' is defined as an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $15 million. Pursuant to these definitions, 7 winning bidders claiming small and very small bidding credits won approximately 359 licenses. One of the winning bidders claiming a small business status classification in these *Narrowband PCS* license auctions had an active license as of December 2021.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Offshore Radiotelephone Service. This service operates on several UHF television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the Gulf of America,[183] and is governed by subpart I of part 22 of the Commission's Rules. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to this service.

[183] E.O. 14172, 90 FR 8630 (Jan. 31, 2025). The Gulf of America, formerly known as the Gulf of Mexico.

The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small. Additionally, based on Commission data, as of December 2021, there was one licensee with an active license in this service. However, since the Commission does not collect data on the number of employees for this service, at this time we are not able to estimate the number of licensees that would qualify as small under the SBA's small business size standard.

Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment. The SBA small business size standard for this industry classifies businesses having 1,250 employees or less as small. U.S. Census Bureau data for 2017 show that there were 656 firms in this industry that operated for the entire year. Of this number, 624 firms had fewer than 250 employees. Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

Rural Radiotelephone Service. Neither the Commission nor the SBA have developed a small business size standard specifically for small businesses providing Rural Radiotelephone Service. Rural Radiotelephone Service is radio service in which licensees are authorized to offer and provide radio telecommunication services for hire to subscribers in areas where it is not feasible to provide communication services by wire or other means. A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (BETRS). Wireless Telecommunications Carriers (*except* Satellite), is the closest applicable industry with an SBA small business size standard. The SBA small business size standard for Wireless Telecommunications Carriers (*except* Satellite) classifies firms having 1,500 or fewer employees as small. For this industry, U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated for the entire year. Of this total, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that the majority of Rural Radiotelephone Services firm are small entities. Based on Commission data as of December 27, 2021, there were approximately 119 active licenses in the Rural Radiotelephone Service. The Commission does not collect employment data from these entities holding these licenses and therefore we cannot estimate how many of these entities meet the SBA small business size standard.

Wireless Communications Services. Wireless Communications Services (WCS) can be used for a variety of fixed, mobile, radiolocation, and digital audio broadcasting satellite services. Wireless spectrum is made available and licensed for the provision of wireless communications services in several frequency bands subject to part 27 of the Commission's rules. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to these services. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

The Commission's small business size standards with respect to WCS involve eligibility for bidding credits and installment payments in the auction of licenses for the various frequency bands included in WCS. When bidding credits are adopted for the auction of licenses in WCS frequency bands, such credits may be available to several types of small businesses based average gross revenues (small, very small and entrepreneur) pursuant to the competitive bidding rules adopted in conjunction with the requirements for the auction and/or as identified in the designated entities section in part 27 of the Commission's rules for the specific WCS frequency bands.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Wireless Telecommunications Carriers (except Satellite). This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services. The SBA size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms in this industry that operated for the entire year. Of that number, 2,837 firms employed fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 594 providers that reported they were engaged in the provision of wireless services. Of these providers, the Commission estimates that 511 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

Wireless Telephony. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable industry with an SBA small business size standard is Wireless Telecommunications Carriers (except Satellite). The size standard for this industry under SBA rules is that a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Additionally, based on Commission data in the 2022 Universal Service Monitoring Report, as of December 31, 2021, there were 331 providers that reported they were engaged in the provision of cellular, personal communications services, and specialized mobile radio services. Of these providers, the Commission

estimates that 255 providers have 1,500 or fewer employees. Consequently, using the SBA's small business size standard, most of these providers can be considered small entities.

700 MHz Guard Band Licensees. The 700 MHz Guard Band encompasses spectrum in 746–747/776–777 MHz and 762–764/792–794 MHz frequency bands. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

According to Commission data as of December 2021, there were approximately 224 active 700 MHz Guard Band licenses. The Commission's small business size standards with respect to 700 MHz Guard Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a ''small business'' as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years, and a ''very small business'' an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years. Pursuant to these definitions, five winning bidders claiming one of the small business status classifications won 26 licenses, and one winning bidder claiming small business won two licenses. None of the winning bidders claiming a small business status classification in these 700 MHz Guard Band license auctions had an active license as of December 2021.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Lower 700 MHz Band Licenses. The lower 700 MHz band encompasses spectrum in the 698–746 MHz frequency bands. Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile wireless commercial services (including frequency division duplex (FDD)- and time division duplex (TDD)-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of this number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

According to Commission data as of December 2021, there were approximately 2,824 active Lower 700 MHz Band licenses. The Commission's small business size standards with respect to Lower 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For auctions of Lower 700 MHz Band licenses the Commission adopted criteria for three groups of small businesses. A very small business was defined as an entity that, together with its affiliates and controlling interests, has average annual gross revenues not exceeding $15 million for the preceding three years, a small business was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $40 million for the preceding three years, and an entrepreneur was defined as an entity that, together with its affiliates and controlling interests, has average gross revenues not exceeding $3 million for the preceding three years. In auctions for Lower 700 MHz Band licenses seventy-two winning bidders claiming a small business classification won 329 licenses, twenty-six winning bidders claiming a small business classification won 214 licenses, and three winning bidders claiming a small business classification won all five auctioned licenses.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Upper 700 MHz Band Licenses. The upper 700 MHz band encompasses spectrum in the 746–806 MHz bands. Upper 700 MHz D Block licenses are nationwide licenses associated with the 758–763 MHz and 788–793 MHz bands. Permissible operations in these bands include flexible fixed, mobile, and broadcast uses, including mobile and other digital new broadcast operation; fixed and mobile wireless commercial services (including FDD- and TDD-based services); as well as fixed and mobile wireless uses for private, internal radio needs, two-way interactive, cellular, and mobile television broadcasting services. Wireless Telecommunications Carriers (*except* Satellite) is the closest industry with an SBA small business size standard applicable to licenses providing services in these bands. The SBA small business size standard for this industry classifies a business as small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that there were 2,893 firms that operated in this industry for the entire year. Of that number, 2,837 firms employed fewer than 250 employees. Thus, under the SBA size standard, the Commission estimates that a majority of licensees in this industry can be considered small.

According to Commission data as of December 2021, there were approximately 152 active Upper 700 MHz Band licenses. The Commission's small business size standards with respect to Upper 700 MHz Band licensees involve eligibility for bidding credits and installment payments in the auction of licenses. For the auction of these licenses, the Commission defined a ''small business'' as an entity that, together with its affiliates and

controlling principals, has average gross revenues not exceeding $40 million for the preceding three years, and a ''very small business'' an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years. Pursuant to these definitions, three winning bidders claiming very small business status won five of the twelve available licenses.

In frequency bands where licenses were subject to auction, the Commission notes that as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Further, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated. Additionally, since the Commission does not collect data on the number of employees for licensees providing these services, at this time we are not able to estimate the number of licensees with active licenses that would qualify as small under the SBA's small business size standard.

Wireless Resellers. Neither the Commission nor the SBA have developed a small business size standard specifically for Wireless Resellers. The closest industry with an SBA small business size standard is Telecommunications Resellers. The Telecommunications Resellers industry comprises establishments engaged in purchasing access and network capacity from owners and operators of telecommunications networks and reselling wired and wireless telecommunications services (except satellite) to businesses and households. Establishments in this industry resell telecommunications and they do not operate transmission facilities and infrastructure. Mobile virtual network operators (MVNOs) are included in this industry. Under the SBA size standard for this industry, a business is small if it has 1,500 or fewer employees. U.S. Census Bureau data for 2017 show that 1,386 firms in this industry provided resale services during that year. Of that number, 1,375 firms operated with fewer than 250 employees. Thus, for this industry under the SBA small business size standard, the majority of providers can be considered small entities.

Semiconductor and Related Device Manufacturing. This industry comprises establishments primarily engaged in manufacturing semiconductors and related solid state devices. Examples of products made by these establishments are integrated circuits, memory chips, microprocessors, diodes, transistors, solar cells and other optoelectronic devices. The SBA small business size standard for this industry classifies entities having 1,250 or fewer employees as small. U.S. Census Bureau data for 2017 show that there were 729 firms in this industry that operated for the entire year. Of this total, 673 firms operated with fewer than 250 employees. Thus, under the SBA size standard, the majority of firms in this industry can be considered small.

Telecommunications Relay Service (TRS) Providers. Telecommunications relay services enable individuals who are deaf, hard of hearing, deafblind, or who have a speech disability to communicate by telephone in a manner that is functionally equivalent to using voice communication services. Internet-based TRS connects an individual with a hearing or a speech disability to a TRS communications assistant using an Internet Protocol-enabled device via the internet, rather than the public switched telephone network. Video Relay Service (VRS) one form of internet-based TRS, enables people with hearing or speech disabilities who use sign language to communicate with voice telephone users over a broadband connection using a video communication device. Internet Protocol Captioned Telephone Service (IP CTS) another form of internet-based TRS, permits a person with hearing loss to have a telephone conversation while reading captions of what the other party is saying on an internet-connected device. A third form of internet-based TRS, Internet Protocol Relay Service (IP Relay), permits an individual with a hearing or a speech disability to communicate in text using an Internet Protocol-enabled device via the internet, rather than using a text telephone (TTY) and the public switched telephone network. Providers must be certified by the Commission to provide VRS and IP CTS and to receive compensation from the TRS Fund for TRS provided in accordance with applicable rules. Analog forms of TRS, text telephone (TTY), Speech-to-Speech Relay Service, and Captioned Telephone Service, are provided through state TRS programs, which also must be certified by the Commission.

Neither the Commission nor the SBA have developed a small business size standard specifically for TRS Providers. All Other Telecommunications is the closest industry with an SBA small business size standard. Internet Service Providers (ISPs) and Voice over Internet Protocol (VoIP) services, via client-supplied telecommunications connections are included in this industry. The SBA small business size standard for this industry classifies firms with annual receipts of $35 million or less as small. U.S. Census Bureau data for 2017 show that there were 1,079 firms in this industry that operated for the entire year. Of those firms, 1,039 had revenue of less than $25 million. Based on Commission data there are 14 certified internet-based TRS providers and two analog forms of TRS providers. The Commission however does not compile financial information for these providers. Nevertheless, based on available information, the Commission estimates that most providers in this industry are small entities.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

The proposed rules in the *FNPRM* will impose new or additional reporting, recordkeeping, and other compliance requirements on small and other CMRS providers, if adopted. The changes contained in the proposed rules are necessary and vital to the effective implementation of improved wireless location accuracy, which will reduce emergency response times, improve PSAP dispatch to emergencies, and improve the ability of first responders to respond to emergencies. Based on the continuing public safety need for the Commission and other relevant entities to have information on CMRS provider implementation of wireless location accuracy, the Commission has proposed certain modifications in the *FNPRM.* For example, we propose to revise our live call data reporting rules by requiring CMRS providers to report on the specific technologies they use to provide dispatchable location, such as Wi-Fi calling or femtocells. The *FNPRM* proposals build on recent technological developments and standardization efforts that we believe CMRS providers can leverage to convey to PSAPs more actionable information with wireless 911 calls.

Next we turn to our discussion of compliance costs for reporting and other proposals in the *FNPRM.* As an initial matter the Commission notes that there is an absence of detail in the record on the costs of the proposed rule changes and other matters upon which the Commission seeks comment in the *FNPRM.* Therefore, the Commission used previous estimates and calculations in the record to formulate compliance cost estimates for the proposals in the *FNPRM.* The Commission used the upper bound of these prior estimates to produce an outcome where the actual costs of our

proposals should be at or less than the previous estimates that were used. We estimated that 53 CMRS providers would be subject to the requirements of the *FNPRM* and would incur costs if the proposed rules were adopted, based on the December 2023 Voice Telephone Services Report, which lists a total of 53 ''mobile telephony'' providers. The first year costs for the 53 CMRS providers to implement the proposals we discuss are estimated to be approximately $10.9 million, which we disaggregate and discuss based on the following two categories: HAE to AGL conversion, and strengthening the testing and compliance framework. The Commission does not anticipate that there will be any substantial ongoing costs following the initial implementation, and therefore finds it reasonable to treat the first-year implementation costs as an upper bound for all subsequent annual costs.

The $10.9 million total cost to the 53 CMRS providers as a group consists of the estimated breakout that follows. The HAE to AGL conversion is estimated to be approximately $1.7 million, which includes the approximate costs of labor for data scientists ($224,752), software engineers ($783,891), and network engineers ($675,686). To strengthen the compliance framework the estimated total cost of approximately $9.2 million by all CMRS providers encompasses labor costs for attorneys ($4,825,968), industrial engineers ($2,426,658), and web designers ($2,019,618). The Commission seeks comment on costs including but not limited to our estimates, assumptions, calculations, and costs we did not consider and/or include that are relevant to the costs for small and other CMRS providers to implement the proposals in this proceeding. The Commission anticipates that the initial and ongoing cost upper bounds that we have estimated will be less than the $97 billion annual benefit of the improved emergency response we cite in the *Fifth Report and Order* for improving wireless location accuracy, and we seek comment in the *FNPRM* on whether it is reasonable for us to hypothesize that the benefit of the proposals in the *FNPRM* will be a certain increased percentage of the $97 billion annual benefit.

E. Steps Taken To Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for such small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.

Applying the proposed requirements will promote 911 service and emergency response to the benefit of all small or other governmental jurisdictions, businesses, equipment manufacturers, and business associations by providing greater confidence in 911 location accuracy and providing more actionable information to PSAPs. To accommodate the unique circumstances facing small entities, including non-nationwide CMRS providers, the rules we propose to adopt include the steps and alterative discussed below that we believe will help minimize the impact on such entities.

Vertical Location. The Commission proposes to require non-nationwide CMRS providers to make AGL available to PSAPs from any z-axis capable handset within 24 months after the effective date of the final rule. This would afford non-nationwide CMRS providers an additional 12 months beyond the 12 months for nationwide CMRS providers to comply with this proposed requirement. In addition, we seek comment on requiring all CMRS providers to convert AGL to floor level estimates, and appropriate compliance timelines for non-nationwide CMRS providers. Once AGL information is available, floor level estimation can be accomplished using digital building maps or assuming a uniform building structure and floor spacing. If the Commission were to use a structure and spacing approach, we inquire whether this approach would meet the needs of public safety, and whether there would be any critical concerns to public safety or industry. Alternatively, in our consideration of using digital building maps which could provide more accurate floor information, we inquire about the associated costs for this approach since building maps vary in resolution, availability, and cost.

Test Bed and Compliance Requirements. The proposed rule modifications to the test bed requirements in the *FNPRM* are intended to increase transparency, promote competitive neutrality, and engender greater public confidence that test bed performance results reflect real-world location accuracy performance. Specifically, we propose to modify our rules to require that validation of a vertical location technology in the industry test bed must demonstrate compliance of that technology in each morphology, and may not be based on CMRS provider live call data. Thus, CMRS providers would not be allowed to base compliance certifications on aggregating or averaging test bed results across morphologies. In connection with this requirement, we seek comment on how small or non-nationwide CMRS providers that do not participate in the test bed should use the existing performance data to certify their compliance with the FCC requirements. We also propose to require nationwide CMRS providers to comply with this requirement within 24 months after the effective date of the final rule, and we propose to afford non-nationwide CMRS providers an additional 12 months (for a total of 36 months after the effective date of the final rule) to comply. In addition, we propose to provide non-nationwide CMRS providers, and major public safety organizations (NENA, APCO, and NASNA) expanded access to test bed data and results on request. We further propose to allow NENA, APCO, and NASNA to challenge the validation of particular technologies in the test bed. We seek comment on these proposals. In addition, we seek comment on making test bed data presumptively public information, and expressly requiring test bed test procedures and reports to be made public, which we believe will further reduce burdens for non-nationwide CMRS providers.

Dispatchable Location. The Commission seeks comment on how to increase the availability and use of dispatchable location for wireless 911 calls by small and other CMRS providers. The *FNPRM* asks what steps, if any, CMRS providers are taking to increase their use of dispatchable location, and whether there are technically feasible solutions that could support provision of dispatchable location for a larger percentage of calls than current levels. In addition, the *FNPRM* seeks comment on collaborative approaches among all parties in the call and location delivery process (*e.g.,* CMRS providers, PSAPs, cable companies, ISPs, OEMs, and vendors) that might be explored to facilitate an increase in dispatchable location usage. Further, the *FNPRM* considers and asks whether we should require CMRS providers to develop plans and timelines for expanding the use of

dispatchable location when 911 calls on their networks originate in indoor environments provisioned with Wi-Fi access points, femtocells, or IoT devices, the location of which can be identified and mapped for geolocation purposes. The *FNPRM* also considers and asks whether the Commission should establish benchmarks and timelines for providing dispatchable location with wireless 911 calls originating in particular environments that are likely to have such infrastructure in place, *e.g.,* individual residences, multi-story office buildings, apartment buildings, hotels, conference centers, or other environments. Consistent with the Commission's approach in this proceeding relative to horizontal location accuracy requirements, we seek comment on allowing non-nationwide CMRS providers to extend the deadlines based on the timing of their location technology deployments.

The Commission also considers and seeks comment on whether we should establish benchmarks or timelines for providing dispatchable location with wireless 911 calls. In addition, we seek comment on the current technical feasibility of CMRS providers using Voice over Wi-Fi (also referred to as VoWi-Fi or Wi-Fi calling) to deliver wireless 911 calls with accurate and reliable dispatchable location. We considered alternatives involving location database information, and seek comment on whether and to what extent CMRS providers and parties other than wireless carriers that are involved in the 911 call flow should support the provision of dispatchable location.

Live Call Reports. To realize more robust live call data reporting, the Commission proposes to require small and other CMRS providers to report more granular data on position methods. Expanding on our discussion in section D above, CMRS providers would be required to provide specific information on dispatchable location technologies they use to obtain, generate, and deliver dispatchable location with live 911 wireless calls. This proposed requirement is consistent with the information small and other CMRS providers are currently required to submit to the Commission for live calls transmitting geodetic information, and therefore the Commission does not expect this rule change to impose a significant burden for small entities. We also propose to maintain the biannual reporting structure for non-nationwide CMRS providers for live call data, and therefore we do not impose any additional burdens since we do not propose to modify reporting intervals.

Enforcement. Similar to the 800 MHz interference complaint portal, the Commission is considering establishing a centralized, online complaint portal that PSAPs could use to report location accuracy problems to CMRS providers before seeking FCC enforcement. We seek comment on requiring small and other CMRS providers to establish such a portal. The Commission believes that using such a portal could reduce burdens on PSAPs and CMRS providers associated with reporting, and resolving issues with location accuracy. In addition, requiring the industry to collaboratively develop a single reporting interface should lead to standard processes and protocols for response, including initial meetings, testing, and documentation, which should further reduce the administrative burdens for small and other CMRS providers when dealing with location accuracy complaints.

Mobile Text Location Accuracy. In the *FNPRM,* the Commission seeks to refresh the record on how location accuracy for mobile texts can be improved, and on the current status of technical solutions for the delivery of location information with text messages to 911. While we inquire about ways to improve location quality and availability of SMS texts to 911, at this time the Commission does not propose any requirements for location-based routing for SMS texts to 911. Instead, we consider alternatives and raise for discussion issues such as whether dispatchable location or enhanced location accuracy comparable to the level of accuracy required for voice services should be required given the current state of the technology for text-to-911, and whether the transition to next generation texting solutions can be encouraged by adopting stronger location accuracy requirements.

Horizontal Location Information Accuracy. In the *FNPRM,* the Commission seeks to refresh the record on whether the requirements pertaining to the accuracy of 911 horizontal location information should be revised, and on the current status of horizontal location technology. While we inquire about horizontal location, at this time the Commission does not propose any new requirements for the accuracy of 911 horizontal location information.

Eliminating Certain Existing Regulations. The Commission seeks comment on whether the existing E911 Phase II wireless location accuracy rules in § 9.10 of the Commission's rules have become outdated and should be eliminated, and also proposes to eliminate certain obsolete information collection requirements associated with the wireless location accuracy rules. We believe eliminating these particular rules would make our 911 location accuracy regulations easier to understand, and reduce the risk of costs of noncompliance, thereby reducing administrative and economic burdens for small and other CMRS providers. We seek comment on whether each of these rules should be eliminated immediately or, alternatively, phased out over time. The Commission does not anticipate that elimination of these rules should add any costs or additional burdens for small and other CMRS providers. We seek comment on whether there are any additional provisions in § 9.10 of the Commission's rules for which streamlining, consolidating, or eliminating would serve the public interest.

F. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules

None.

Ordering Clauses

Accordingly, *it is ordered,* pursuant to sections 1, 2, 4(i), 201, 214, 222, 225, 251(e), 301, 303, 316, and 332 of the Communications Act of 1934, as amended, 47 U.S.C. 151, 152, 154(i), 201, 214, 222, 225, 251(e), 301, 303, 316, 332; the Wireless Communications and Public Safety Act of 1999, Public Law 106–81, as amended, 47 U.S.C. 615 note, 615, 615a, 615b; and section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Public Law 111–260, 47 U.S.C. 615c, that the *Sixth Further Notice of Proposed Rulemaking* is adopted.

It is further ordered that, pursuant to applicable procedures set forth in §§ 1.415 and 1.419 of the Commission's rules, 47 CFR 1.415, 1.419, interested parties may file comments on the *Sixth Further Notice of Proposed Rulemaking* on or before 30 days after publication in the **Federal Register**, and reply comments on or before 60 days after publication in the **Federal Register**.

It is further ordered that the Commission's Office of the Secretary *shall send* a copy of the *Sixth Further Notice of Proposed Rulemaking,* including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Part 9

Communications, Communications common carriers, Communications equipment, Internet, Radio, Reporting and recordkeeping requirements, Satellites, Security measures, Telecommunications, Telephone.

Federal Communications Commission

Katura Jackson,

Federal Register Liaison Officer.

Proposed Rules

For the reasons discussed in this document, the Federal Communications Commission proposes to amend 47 CFR part 9 as follows:

PART 9—911 REQUIREMENTS

■ 1. The authority citation for part 9 continues to read as follows:

Authority: 47 U.S.C. 151–154, 152(a), 155(c), 157, 160, 201, 202, 208, 210, 214, 218, 219, 222, 225, 251(e), 255, 301, 302, 303, 307, 308, 309, 310, 316, 319, 332, 403, 405, 605, 610, 615, 615 note, 615a, 615b, 615c, 615a–1, 616, 620, 621, 623, 623 note, 721, and 1471, and Section 902 of Title IX, Division FF, Pub. L. 116–260, 134 Stat. 1182, unless otherwise noted.

■ 2. Amend § 9.10 by:
■ a. Revising the heading of paragraph (i);
■ b. Removing and reserving paragraph (i)(1)(iii);
■ c. Revising the introductory text of paragraph (i)(2) and paragraph (i)(2)(ii)(H);
■ d. Adding paragraphs (i)(2)(ii)(N), (i)(2)(iii)(D), and (i)(3)(i)(E) through (G);
■ e. Revising paragraphs (i)(3)(ii)(A) and (C);
■ f. Removing and reserving paragraphs (i)(4)(i) through (iii); and
■ g. Adding paragraph (i)(5).

The revisions and additions read as follows:

§ 9.10 911 Service.

* * * * *

(i) *Location accuracy for 911 and testing requirements*—

* * * * *

(2) *Location accuracy standards.* CMRS providers subject to this section shall meet the following requirements:

* * * * *

(ii) * * *

(H) CMRS providers that deploy z-axis technology must do so consistent with the following z-axis accuracy metric: Within 3 meters above or below (plus or minus 3 meters) the handset for 80% of wireless E911 calls made from the z-axis capable device. CMRS providers must deliver z-axis information in Height Above Ellipsoid (HAE). Where available to the CMRS provider, floor level information must be provided in addition to z-axis location information. CMRS providers also must deliver z-axis information in the format identified in paragraph (i)(2)(ii)(H)(*1*) or (*2*) of this section, as applicable.

(*1*) Beginning on [DATE TWELVE MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE], nationwide CMRS providers that deploy z-axis technology must do so consistent with the z-axis accuracy metric in this paragraph (i)(2)(ii)(H) and must deliver z-axis information for individual 911 calls in Height Above Ground Level (AGL), as well as in Height Above Ellipsoid (HAE), to the PSAP. AGL may be obtained by subtracting the terrain height at any horizontal (x/y) location from the corresponding HAE value, provided that both terrain height and HAE are expressed with respect to the same reference frame.

(*2*) Beginning on [DATE TWENTY-FOUR MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE], non-nationwide CMRS providers that deploy z-axis technology must do so consistent with the z-axis accuracy metric in this paragraph (i)(2)(ii)(H) and must deliver z-axis information for individual 911 calls in Height Above Ground Level (AGL), as well as in Height Above Ellipsoid (HAE), to the PSAP. AGL may be obtained by subtracting the terrain height at any horizontal (x/y) location from the corresponding HAE value, provided that both terrain height and HAE are expressed with respect to the same reference frame.

* * * * *

(N) By [DATE TWENTY-FOUR MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE], nationwide CMRS providers shall deploy on a nationwide basis either dispatchable location or z-axis technology that has been validated in accordance with the requirements of paragraph (i)(3)(i)(E) of this section. By [DATE THIRTY-SIX MONTHS AFTER THE EFFECTIVE DATE OF THE FINAL RULE], non-nationwide CMRS providers shall deploy throughout their network footprint either dispatchable location or z-axis technology that has been validated in accordance with the requirements of paragraph (i)(3)(i)(E) of this section.

(iii) * * *

(D) A CMRS provider certifying its compliance with the benchmark dates specified in paragraph (i)(2)(ii)(N) of this section may not rely on test bed results that have been aggregated or averaged across morphologies or that have been weighted on the basis of live call data.

* * * * *

(3) * * *

(i) * * *

(E) For purposes of complying with the benchmark dates specified in paragraph (i)(2)(ii)(N) of this section, validation of a technology in the test bed must demonstrate compliance of that technology in each morphology and may not be based on CMRS provider live call data.

(F) Upon request from a non-nationwide CMRS provider, the National Emergency Number Association, the Association of Public-Safety Communications Officials International, Inc., or the National Association of State 911 Administrators, the test bed administrator shall:

(*1*) Provide any requesting party the same data available to CMRS providers participating in the test bed, including unaggregated test bed results by wireless location technology provider, morphology, and technology, as well as other relevant information (such as information on the test bed process, including any significant changes to the test bed process) sought by the requesting party. This obligation includes providing the requesting party the test bed data, as well as the full report on the test bed results; and

(*2*) Make this information available to any requesting party on a timely basis not to exceed 30 days, at no cost, and subject to the same confidentiality requirements as those for the nationwide CMRS providers.

(G) The National Emergency Number Association, the Association of Public-Safety Communications Officials International, Inc., or the National Association of State 911 Administrators may submit to the Commission a challenge to the validation of a particular technology under the test bed provisions described in this paragraph (i)(3)(i). Challenges must be limited to whether the process for validating a particular technology has met the requirements of this paragraph (i)(3)(i) and must be made prior to sixty (60) days after the CMRS provider's certification of compliance pursuant to paragraph (i)(2)(iii) of this section.

(ii) * * *

(A) CMRS providers subject to this section shall identify and collect information regarding the location technology or technologies used for each 911 call in the reporting area during the calling period, including the location technology or technologies used for each 911 call providing dispatchable location with the call (*e.g.,* Wi-Fi calling or femtocells).

* * * * *

(C) CMRS providers subject to this section shall also provide quarterly live call data on a more granular basis that allows evaluation of the performance of individual location technologies, including dispatchable location technologies, within different

morphologies (*e.g.,* dense urban, urban, suburban, rural). To the extent available, live call data for all CMRS providers shall delineate based on a per technology basis accumulated and so identified for:

(*1*) Each of the ATIS ESIF morphologies;

(*2*) On a reasonable community level basis; or

(*3*) By census block. This more granular data will be used for evaluation and not for compliance purposes.

* * * * *

(5) *Compliance dates.* Paragraphs (i)(2)(ii)(H) and (N), (i)(3)(i)(F) and (G), and (i)(3)(ii)(A) and (C) of this section may contain information collection and recordkeeping requirements. Compliance with paragraphs (i)(2)(ii)(H) and (N), (i)(3)(i)(F) and (G), and (i)(3)(ii)(A) and (C) will not be required until this paragraph (i)(5) is removed or contains a compliance date.

* * * * *

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