

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

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

REPLY COMMENTS OF VERIZON

Kathleen M. Grillo
Of Counsel

Gregory M. Romano
Robert G. Morse
1300 I Street, N.W.
Suite 400 West
Washington, DC 20005
(202) 515-2400

Attorneys for Verizon

December 24, 2014

TABLE OF CONTENTS

I. THE ROADMAP WILL ACHIEVE CONSUMERS’ AND FIRST RESPONDERS’ PUBLIC SAFETY NEEDS MORE EFFECTIVELY THAN THE PROPOSED RULES.....2

A. The Roadmap Establishes Enforceable Milestones to Improve 911 Location Accuracy3

1. *The Roadmap Will Prompt Deployment of Dispatchable Address Technology*.....3

2. *Outdoor 911 Calls and A-GPS Performance Will Not Skew Position Source Results..*.....6

3. *The Roadmap Properly Focuses on VoLTE Over Time.*8

4. *The Roadmap’s Commitments for VoLTE-Capable Handsets Will Improve Wireless 911 Location In the Near Term.*.....9

B. The Commission Can Implement the Roadmap in a Technology-Neutral Manner.11

C. Rules Beyond Those Proposed in the Roadmap are Unnecessary.....11

D. Service Providers and Public Safety Organizations Will Account for Privacy Concerns in Implementing the Roadmap.....13

E. The *NPRM’s* Proposed Rules Are Not Technically Feasible.14

1. *A Tale of Two Markets*15

2. *Commenters Comparing the Roadmap to the NPRM Fail to Acknowledge the Rulemaking Record*18

II. ADDITIONAL NOTICE AND COMMENT WILL UNNECESSARILY DELAY ROADMAP IMPLEMENTATION.....24

III. THE COMMISSION’S RULES CAN ACCOMMODATE SMALLER WIRELESS SERVICE PROVIDERS.....25

SUMMARY

The rulemaking record conclusively demonstrates that the Roadmap will achieve consumers' and First Responders' public safety needs more effectively than the unworkable rules proposed in the *NPRM*. The Roadmap will implement measurable, short and long term improvements in wireless 911 location information, including dispatchable location information, through specific commitments and milestones codified in enforceable and technology-neutral Commission rules. The record also reveals widespread misunderstanding and misrepresentation of the Roadmap and how it compares to the alternative technologies that will actually be available to service providers and First Responders. Any Commission rules should implement the Roadmap as an alternative – not a supplement – to the *NPRM*'s technically infeasible standards.

The Roadmap will use established Wi-Fi and other technologies to overcome the limits of today's wireless E911 solutions. Providing dispatchable location information would be more than a commitment; enforceable Commission rules would require new reliable dispatchable location capabilities for handsets and networks within four years. And the "position source" milestones in the Roadmap are technology neutral and will allow service providers flexibility to use a combination of technologies, including satellite-, network-, and small cell-based technology, to the extent that they reliably provide 50 meter accuracy. These milestones reflect that the Commission should promote location accuracy, not particular vendors.

The position source milestones will not delay indoor location accuracy improvements by enabling service providers to avoid implementing dispatchable location and other new heightened accuracy technologies. While the milestones will, of course, be easier for some providers to meet, the Commission should reward those providers that have diligently improved their E911 location capabilities. In any case, the milestones will challenge all service providers and provide added incentive to deploy new location technologies due to the use of designated geographic regions representative of indoor and outdoor calling environments, indoor 911 calling trends, and other factors.

The position source milestones are appropriately VoLTE-focused, consistent with established Commission policy of facilitating wireless network transitions, and track consumer trends and technology innovations. And the milestones will work in tandem with service providers' incentives to migrate customers to handsets that utilize heightened location accuracy technologies, while preserving existing E911 capabilities for legacy networks. Finally, the Roadmap will improve short term 911 location accuracy through enforceable A-GNSS handset commitments and position source metrics that reward deployment of improved O-TDOA and shorter-term dispatchable location products.

The Commission can implement the Roadmap's milestones through technology-neutral rules. The position source milestones already are technology-neutral. Roadmap commitments to offer VoLTE-enabled handset models with A-GNSS and dispatchable location capability can be incorporated into the rules in a technology-neutral manner as well.

Rules beyond those proposed in the Roadmap are unnecessary. The Roadmap is an integrated combination of enforceable milestones that balances multiple public interest

objectives, and supplementing or modifying it will undermine that careful balance. Like the current E911 rules, the Roadmap's recommended rules are result-oriented. Many Roadmap details, such as development of the NEAD and privacy-related concerns raised by some commenters, are designed and more appropriate for standards bodies and stakeholder collaboration. And the commitment for consumer home products should remain as developed with public safety, as it is technically feasible, accounts for service providers' existing products, and provides appropriate flexibility in the design and marketing of those products.

Many Roadmap opponents erroneously presume that the *NPRM's* proposed rules are technically feasible, contrary to the rulemaking record, and object to the Roadmap simply on the basis that it departs from the *NPRM*. The comments filed by two state agencies in support of the rules (Nebraska and Hawaii) illustrate how compliance with the rules using alternative vendors' technologies is not technically feasible. In both states, NextNav's spectrum or buildout coverage is limited and would require PSAP upgrades to utilize vertical data, and TruePosition's U-TDOA has already been unable to meet even the less stringent outdoor rules for network-based solutions in many counties in both states. By comparison, the Roadmap will favorably impact indoor location accuracy due to expedited and expansive coverage of A-GNSS and O-TDOA, the expansive use of Wi-Fi hotspots even today, and the compatibility of dispatchable location with existing PSAP systems.

Other comments comparing the Roadmap to the *NPRM's* proposed rules do not acknowledge significant aspects of the rulemaking record. Alternative technologies to the Roadmap also depend on new LTE-enabled handsets and networks, as well as A-GNSS capabilities. All solution providers will depend in varying degrees on the actions of third parties such as standards bodies, building owners, manufacturers, and zoning boards, to name a few. Alternative solutions have been subject to less marketplace scrutiny and use than Wi-Fi- and Bluetooth-based location technologies, so Roadmap critics' arguments that dispatchable location technology is not adequately developed ring hollow. And no alternative solution has demonstrated it could meet the geographic scope of the *NPRM's* location standards within the timetables proposed.

Some Roadmap critics incorrectly characterize the *NPRM's* proposed requirements for location estimates as preferable to the "gold standard" of dispatchable location. Yet dispatchable location, by definition, provides PSAPs with both horizontal and vertical information in a format they can already use. And these criticisms disregard the limitations of barometric pressure-based vertical solutions offered by other vendors. Roadmap critics also disregard that, unlike dispatchable location, vertical location will require upgrades to PSAP systems and equipment. Nor does the rulemaking record indicate if or when PSAPs will have that capability.

Additional public notice and comment on the Roadmap is unnecessary. The Commission has provided interested parties with an adequate opportunity to evaluate and provide a record in support of or opposition to the Roadmap. Imposing another pleading cycle would needlessly delay action in this proceeding. The Commission should therefore promptly adopt rules that enable service providers and public safety stakeholders to implement the milestones and commitments of the Roadmap.

The Commission should not grant a blanket or long-term exemption for non-nationwide service providers. At most, different compliance milestones for those providers should be limited to 3-6 months after the milestones proposed in the Roadmap, with reasonable waiver relief opportunities thereafter.

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

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

REPLY COMMENTS OF VERIZON¹

The rulemaking record conclusively demonstrates that the Roadmap will achieve consumers’ and First Responders’ public safety needs more effectively than the unworkable rules proposed in the *NPRM*.² The comments include significant public safety, civic organization and vendor support for the Roadmap.³ These comments recognize that the Roadmap will improve location accuracy more effectively than the proposed rules because it will use innovations in commercial location-based services to deliver what PSAPs and First Responders need to best serve public safety: dispatchable addresses.

¹ In addition to Verizon Wireless, the Verizon companies participating in this filing are the regulated, wholly owned subsidiaries of Verizon Communications Inc.

² *Wireless E911 Location Accuracy Requirements*, Third Further Notice of Proposed Rulemaking, 29 FCC Rcd 2374 (2014) (“*NPRM*”).

³ *See* American Ass’n of People with Disabilities, et al. Comments at 1 (five accessibility organizations); Cisco Comments at 2; iPosi Comments at 4-5; Motorola Mobility Comments at 1; Pennsylvania Keystone Chapter of the National Emergency Number Ass’n, Letter at 1; NATOA Comments at 1-2; Nat’l Conf. of State Legislatures Comments at 1; Qualcomm Comments at 3; TCS Comments at 2; Stafford County Sheriff’s Office Comments at 1; Texas 9-1-1 Entities Comments at 3; *see also* iCERT Comments at 1-2; Garfield County Emergency Communications Authority Comments at 1; Mobile Future Comments at 1-2; Telecommunications Industry Ass’n Comments at 4-6.

However, the record also reveals widespread misunderstanding and misrepresentation of both the Roadmap and how it compares to the alternative technologies that will actually be available to service providers and First Responders. A number of commenters fail to acknowledge that the Roadmap is not aspirational, but rather an agreement by public safety organizations and service providers on specific commitments and milestones to be codified by enforceable and technology-neutral Commission rules. As a result, the Roadmap will implement measurable, short and long term improvements in wireless 911 location information.

The Roadmap's policy framework reflects an integrated and comprehensive approach resulting from time-consuming and difficult negotiations among public safety organizations and service providers. The Roadmap will not be sustainable if combined with the technically infeasible rules proposed in the *NPRM*. The Commission should adopt rules that enable service providers and public safety stakeholders to implement the Roadmap as an alternative – not a supplement – to the *NPRM*'s proposed horizontal and vertical standards.

DISCUSSION

I. THE ROADMAP WILL ACHIEVE CONSUMERS' AND FIRST RESPONDERS' PUBLIC SAFETY NEEDS MORE EFFECTIVELY THAN THE PROPOSED RULES.

The Roadmap is a technically feasible blueprint for improving wireless location accuracy that will overcome the inherent limits of today's wireless enhanced 911 ("E911") solutions. Consistent with long-standing Commission and public safety objectives, the Roadmap harnesses well-established Wi-Fi and other location technologies to achieve 911 caller location that comes as close to wireline-level accuracy as is possible in a wireless environment. As noted by some Roadmap critics, the wireless industry has previously been reluctant to embrace Wi-Fi-based and

other commercial LBS technologies for 911 purposes.⁴ The *NPRM* itself urged a reassessment of those concerns,⁵ however, and a number of marketplace and technology developments present stronger countervailing considerations that now outweigh the earlier hesitation. These include: consumers' increasing use of wireless service as their sole or principal means of voice communications; increasing evidence that more 911 calls originate from indoor environments; the explosion of Wi-Fi and Bluetooth technology nationwide to create tens of millions of new indoor-based access points; improvements in and experience with Wi-Fi location capabilities in the commercial arena; the widespread deployment of IP-enabled LTE networks and handsets that will enable service providers to efficiently utilize and manage 911 caller location information; and the limitations of alternative technologies. The Roadmap accounts for these developments and will improve indoor *and* outdoor location accuracy more effectively than the alternatives.

A. The Roadmap Establishes Enforceable Milestones to Improve 911 Location Accuracy.

1. *The Roadmap Will Prompt Deployment of Dispatchable Address Technology.*

Several commenters assert that that the Roadmap would not mandate the use or deployment of dispatchable location technology.⁶ That is incorrect. Sections 2.f, g, and h of the Roadmap, which the Roadmap signatories agree should be incorporated into Commission rules, will impose new enforceable handset- and network-level dispatchable location requirements, with full end-to-end functionality within four years.⁷ And service providers will transmit the

⁴ See NextNav Comments at 37-42; TruePosition Comments at 5-10.

⁵ *NPRM* ¶¶ 127-140.

⁶ See AARP Comments at 1 (“benchmarks do not deliver dispatchable address”); Polaris Wireless Comments at 3; TruePosition Comments at 18.

⁷ Roadmap, §§ 2.f, g, h.

information in a format that most existing PSAP systems can already receive and process. The Roadmap’s rigorous definition of dispatchable location, which expressly requires validation and corroboration where possible, is supported even by commenters that do not otherwise support the Roadmap.⁸ The requirement to validate and corroborate the address on a per-call basis to the extent possible is not “meaningless,”⁹ but an adaptation to account for the Wi-Fi and beacon access technologies that will be used under the Roadmap.

The most significant misunderstandings and misrepresentations of the Roadmap pertain to the “position source” milestones of Section 4.c of the Roadmap and their relation to dispatchable location. By design, the milestones are technology neutral and thus accommodate any technology or combination of technologies, but only insofar as a particular technology is demonstrated to achieve 50 meter accuracy. The flexibility this affords is a benefit, not a detriment. In that regard, NextNav’s criticism regarding the potential use of an Advanced Forward Link Trilateration (“AFLT”) location determination, which is generally less accurate than Assisted-Global Navigation Satellite System (“A-GNSS”) and LTE-based Observed Time Difference Of Arrival (“O-TDOA”) location, misses the point.¹⁰ The cited milestones reflect that the Commission’s objective in this proceeding is *not* to promote particular vendors’ technologies, but to improve indoor location accuracy, and that 50 meter accuracy has emerged

⁸ See Roadmap § 2.a; Fairfax County Comments at 2; Int’l Ass’n of Chiefs of Police, Int’l Ass’n of Fire Chiefs, Nat’l Ass’n of State Emergency Med. Services Officials, Nat’l Sheriffs’ Ass’n, Nat’l Volunteer Fire Council Comments at 2; *see also* NASNA Comments at 3.

⁹ Polaris Wireless Comments at 3.

¹⁰ See NextNav Comments at 20-21.

as a desired baseline among many public safety stakeholders for that purpose.¹¹ Moreover, the AFLT example actually highlights one of the merits of the Roadmap’s approach. AFLT is a CDMA-based technology, and after year three, AFLT and other methods tied to legacy networks would not count toward compliance at all, so a service provider would thus need to rely on another technology.¹² NextNav’s criticism that a service provider could attribute a portion of calls with a “Phase I cell site default” to its compliance is similarly flawed.¹³ The E911 standards *should* credit service providers that use small cells and similar access points with coverage of less than 50-meter radius as the *NPRM* itself suggests.¹⁴

Also, neither NextNav nor any other commenter offers a rational explanation as to why a service provider would invest in the handset and network capabilities needed for A-GNSS, O-TDOA and dispatchable location, as well as third party costs of the Roadmap’s National Emergency Address Database (“NEAD”),¹⁵ while also relying extensively on AFLT and other less accurate technologies that would make it more difficult to comply with the milestones as 911 calls increasingly originate indoor. Finally, public safety stakeholders will be aware of such a strategy due to the Roadmap’s transparent test bed process and data reporting.¹⁶ Thus, efforts to circumvent the milestones’ intent would risk public safety scrutiny.

¹¹ *NPRM* ¶ 45 (describing significance of 50-meter accuracy); *id.* ¶ 63 (“a technology-neutral indoor accuracy requirement should allow CMRS providers flexibility to adopt an indoor location accuracy solution that best fits with their long-term business and technology plans.”).

¹² Roadmap § 4.c.iii.

¹³ NextNav Comments at 20.

¹⁴ *See NPRM* ¶¶ 119-122.

¹⁵ *See* Roadmap § 2.e. The NEAD will correlate an access point’s MAC address with a dispatchable location.

¹⁶ *See* Roadmap §§ 1.a, 4.a.

2. Outdoor 911 Calls and A-GPS Performance Will Not Skew Position Source Results.

Position source milestones based on both indoor and outdoor calls will not delay indoor location accuracy improvements.¹⁷ Indeed, several prominent public safety organizations critical of the Roadmap have embraced the use of position source milestones, and recommend rules similar to the Roadmap's in many important respects.¹⁸ Suggestions that service providers will somehow be able to game the milestones "by boosting outdoor performance"¹⁹ or gaming the percentages²⁰ are not credible. It is true that using improved location technologies will benefit both indoor and outdoor 911 calls. But because consumers are increasingly dialing 911 from indoors, heightened location accuracy technologies must particularly improve location information for indoor calls for a provider to comply with the Roadmap's increasingly challenging milestones.²¹

As a practical matter, a service provider will need to take a variety of steps well in advance of those milestones to ensure compliance. These steps will include deploying and

¹⁷ See AARP Comments at 1; Hawaii E911 Board Comments at 2; NARUC Comments at 6; Nebraska PSC Comments at 2.

¹⁸ Int'l Ass'n of Chiefs of Police, Int'l Ass'n of Fire Chiefs, Nat'l Ass'n of State Emergency Med. Services Officials, Nat'l Sheriffs' Ass'n *Ex Parte* Letter, at 3 (Nov. 14 2014); IMSA Comments at 6 (supporting IACP et al. proposal).

¹⁹ See AARP Comments at 1; Nebraska PSC Comments 2; *see also* NASNA Comments at 6.

²⁰ See NextNav Comments at 17-19, 23-24; Polaris Wireless Comments at 5; TruePosition Comments at 18-19; FindMe911 Comments, Attachment.

²¹ For this reason as well the Nebraska PSC's assertion that "if outdoor performance was [sic] at or above 80%, indoor location accuracy could potentially be zero" is incorrect. Nebraska PSC Comments at 2. The final milestone requires that 80 percent of all VoLTE wireless 911 calls originate from heightened location accuracy technologies; if (as many commenters have asserted in this proceeding) half of a provider's 911 calls originate indoors, and none of those indoor calls originate from a heightened location accuracy technology, it would not be able to meet the 80 percent milestone.

promoting A-GNSS- and dispatchable location-capable handsets in its customer base, working with vendors to deploy and improve O-TDOA performance, and increasing the number of Wi-Fi and Bluetooth access points in the NEAD. Otherwise, the percentage of calls from less accurate sources like AFLT, Phase I cell sector, and cell ID will jeopardize the service provider's ability to meet the milestones. This significant effort by providers will result in substantial improvements for indoor location information.

For similar reasons, NextNav and Polaris Wireless suggest that the use of outdoor 911 calls in the position source milestones will make them easier for some providers to meet.²² Verizon's well-documented efforts to improve its E911 capabilities over the years may help it comply with the Roadmap milestones, but the Commission should reward such efforts, not discourage them.²³ Nonetheless, the milestones will challenge all providers, and create meaningful incentives to deploy heightened location accuracy technologies that go beyond satellite technologies. For example, the six representative geographic regions in which live call data will be reported to measure milestone compliance will contain a broad range of indoor and outdoor environments. They also will cover indoor and outdoor environments where otherwise accurate satellite-based location methods will face significant challenges. Thus, to ensure the milestones are met, providers will likely need to ensure that alternative heightened location accuracy technologies to A-GNSS, including dispatchable location, are widely deployed. And consumer demand for new handsets may fall short of projections, which would further challenge a provider's ability to meet the milestones.

²² See NextNav Comments at 23-24; Polaris Wireless Comments at 5.

²³ See Comments of Verizon and Verizon Wireless, PS Docket No. 07-114, at 6 (Sept. 25, 2013) ("Verizon September 2013 Comments").

3. *The Roadmap Properly Focuses on VoLTE.*

The Roadmap appropriately reflects the reality that service providers and their customers are transitioning from one wireless technology to another, the type of development that the Commission has consistently sought to encourage in its rules.²⁴ As such, it makes sense to limit the later milestones to VoLTE-originated 911 calls. At Verizon, as of 3Q2014 smartphone penetration was at 77 percent of its customers, up from 67 percent the year before. Over 70 percent of those smartphones were LTE-enabled and approximately 79 percent of total data traffic was on Verizon's LTE network. Verizon anticipates it will begin introducing LTE-only smartphones as early as the first half of 2016. Given these developments, handset manufacturers will continue to migrate their resources away from legacy CDMA and GSM technologies toward LTE. And as consumers themselves frequently upgrade their handsets, application of the later deadlines to VoLTE handsets is appropriate. As NASNA accurately states, "[t]he Roadmap synchronizes improvements in 911 location accuracy with the carriers' commercial technology migration plans."²⁵

Some Roadmap critics suggest that a service provider might route 911 calls to its underlying CDMA or GSM network to circumvent the later milestones.²⁶ This is incorrect. Utilizing an underlying digital voice network for 911 calls during an interim period after VoLTE

²⁴ See, e.g., *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Third Report and Order, 14 FCC Rcd 17388, ¶¶ 55-58 (1999) (adopting best practice obligation to provide location information for analog handsets without location capability); 47 C.F.R. § 20.19(c) (2006) (exempting devices with TDMA air interface protocol from hearing aid compatibility rules).

²⁵ NASNA Comments at 4.

²⁶ See NextNav Comments at 24; Polaris Wireless Comments at 6; see also Texas 9-1-1 Entities Comments at 17.

is launched facilitates a smooth transition of customers and traffic to the new network. The interim use of the digital network for this purpose enables a service provider to optimize VoLTE's quality and reliability before initiating E911 calls on those same networks – to the benefit of 911 and non-911 calls alike. But Verizon has every incentive to utilize VoLTE for 911 calls as soon as possible because of the significant financial and personnel investment it has made in the VoLTE 911 solution.

Moreover, those milestones will work in tandem with service providers' incentives to quickly migrate customers away from legacy devices to handsets that utilize heightened location accuracy technologies.²⁷ These milestones coincide with service providers' aggressive efforts to transition customers, services and devices to LTE-enabled devices that include Wi-Fi connectivity as a standard feature.²⁸ Finally, limiting the later benchmarks to VoLTE-originated 911 calls does not leave 911 callers on legacy networks any worse off, as they will continue to use very accurate GPS-based location for the substantial majority of 911 calls from those networks.²⁹

4. *The Roadmap's Commitments for VoLTE-Capable Handsets Will Improve Wireless 911 Location In the Near Term.*

The Roadmap will also improve 911 location accuracy in the short term. Parties that assert otherwise are wrong. Polaris Wireless, for example, asserts that “even three years out, fully 50% of wireless 911 calls will see absolutely no improvement in location performance.”³⁰ Under the Roadmap, however, after three years at least 75 percent of all new VoLTE handset

²⁷ See Roadmap § 4.c.

²⁸ See AT&T Comments at 7, n.25; T-Mobile Comments at 11.

²⁹ See Verizon September 2013 Comments at 4.

³⁰ Polaris Wireless Comments at 4 (emphasis in original) and 5.

models would have A-GNSS capability (both Global Positioning System (GPS) *and* Global Navigation Satellite System (GLONASS) or another constellation)³¹ which, by near-universal admission, will improve E911 location accuracy both indoors and outdoors.³² When combined with O-TDOA (which will significantly improve indoor performance as compared to legacy technologies such as AFLT and cell ID), and the Roadmap’s application of the 50 percent/3-year position source metric to both outdoor *and* indoor 911 calls (where 50 meter accuracy is more challenging), the Roadmap will improve 911 location accuracy in its early years.

In a similar vein, AARP states that the Roadmap “specifies handset technologies for its benchmarks, effectively excluding any network based technologies” in the near term.³³ That is wrong, as AARP also acknowledges that service providers will use O-TDOA – a network-based technology.³⁴ Finally, the Roadmap does not affect or amend the Commission’s existing E911 location accuracy requirements for outdoor 911 calls,³⁵ much less “dismantl[e]” them as one commenter suggests.³⁶

³¹ Roadmap § 3.c; Polaris Wireless Comments at 4-5 (alleging “A-GNSS itself is not actually defined”).

³² See NASNA Comments at 5; NextNav May 2014 Comments at 8-11; Technocom *Ex Parte* Presentation, Att. at 79 (June 23, 2014) (TruePosition’s testing used a handset “which supports GLONASS in addition to GPS, which likely contributed to the better deep indoor availability”).

³³ AARP Comments at 2.

³⁴ *Id.*

³⁵ See Texas 9-1-1 Entities Comments at 15 (asserting the Roadmap does not “fully explain how ... [it] impact[s] the Commission’s existing county/PSAP level outdoor measurement requirements”).

³⁶ Polaris Wireless Comments at 3.

B. The Commission Can Implement the Roadmap in a Technology-Neutral Manner.

Several comments assert that the Roadmap is not technology neutral.³⁷ That is also wrong. The Roadmap's position source milestones are already technology-neutral: they accommodate *all* technologies to the extent they have been determined in an independent, transparent test bed to meet 50 meter accuracy.³⁸ Even components of the Roadmap that focus on VoLTE-based O-TDOA and A-GNSS location solutions can be incorporated into Commission rules in a technology-neutral manner. To that end, Verizon would support rules that enable service providers to select a different technology as an alternative – not a supplement – to the Roadmap, that utilize the same timelines for any relevant handset- and network-level capabilities.

C. Rules Beyond Those Proposed in the Roadmap are Unnecessary.

As Verizon and other commenters explained, the Roadmap is an alternative – not a supplement – to the *NPRM*'s proposed location accuracy standards and timetables. The reason is simple: vertical location technologies are duplicative of, not complementary to, dispatchable location solutions. A dispatchable location that provides room, suite or floor number in a multi-story building is effectively providing even more precise vertical information than what the *NPRM* has proposed.³⁹ As discussed above, Verizon supports giving service providers the option to choose between dispatchable location and vertical location solutions as alternatives to

³⁷ See AARP Comments at 1-2; Hawaii E911 Board Comments at 3.

³⁸ See APCO Comments at 4.

³⁹ See NASNA Comments at 7; TCS Comments at 5.

one another. But the Commission cannot compel service providers to deploy both,⁴⁰ and nothing in the rulemaking record warrants an alternative approach.

The Roadmap is the outcome of seven months of substantive and serious negotiations by stakeholders to develop a new comprehensive policy framework for 911 location accuracy that the Commission can apply to all service providers. It is a carefully integrated combination of enforceable milestones that accounts for public safety's demand for improved indoor location accuracy and transparency in E911 performance, while also facilitating the industry's need to migrate consumers, devices, and networks to LTE and VoLTE in order to meet consumers' demands.

Supplementing or modifying the Roadmap in substantial ways, as several commenters recommend, will undermine that careful balance.⁴¹ As a threshold matter, it is unnecessary to codify all Roadmap components in order to achieve the Roadmap's objectives. Many details of Roadmap implementation are designed to be addressed through collaborative standards bodies and stakeholder working groups. The Commission's E911 rules have always been outcome-oriented, focusing on the type and quality of the information provided to PSAPs, without micromanaging how service providers implement those rules, or dictating the technology choices they make.⁴² The Roadmap takes the same time-tested flexible approach by delegating certain

⁴⁰ See Fairfax County Comments at 1; IMSA Comments at 2-3; Polaris Wireless Comments at 6-7; TDI et al. Comments at 2; TruePosition Comments at 19; see also NASNA Comments at 7; NextNav Comments at 25-27, 42.

⁴¹ See NASNA Comments at 3 (supporting codification of the NEAD commitments); Texas 9-1-1 Entities Comments at 17-18 (suggesting the Commission consider VoLTE "call quality and clarity" and dispatchable location compatibility with E911 as part of its evaluation of the Roadmap's VoLTE-related provisions); see also Fairfax County Comments at 2-3.

⁴² See *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676 ¶¶ 124, 131 (1996); *Revision of the Commission's Rules To Ensure*

technical details to stakeholder and standards venues outside the regulatory process. These include: aspects of dispatchable location technology like the NEAD; the technical details of dispatchable location validation and delivery; implementation of O-TDOA and A-GNSS into LTE networks and handsets; integration of dispatchable location with PSAP systems and operations;⁴³ and the logistics of data reporting.

Verizon has already begun offering dispatchable location capability for some products, and initiated the development of more products that will include the capability consistent with the Roadmap.⁴⁴ But the Commission should not adopt the Texas 9-1-1 Entities' request that the Commission require dispatchable location for all existing and new consumer home phone products within 6-12 months.⁴⁵ Applying this requirement to existing products and services or those nearing retail distribution is not feasible. Moreover, service providers need flexibility to determine which of their products include dispatchable location capability, which may not be appropriate for devices or services that are designed and marketed for nomadic use.

D. Service Providers and Public Safety Organizations Will Account for Privacy Concerns in Implementing the Roadmap.

Public Knowledge and other organizations assert that privacy-related concerns “are not adequately addressed in the roadmap itself” and that additional rules are necessary to protect mobile 911 location information and data in the NEAD.⁴⁶ In fact, the Roadmap signatories are

Compatibility with Enhanced 911 Emergency Calling Systems, Second Memorandum Opinion and Order, 14 FCC Rcd 20850 (1999), *aff'd sub. nom. United States Cellular Corp. v. FCC*, 254 F.3d 78 (D.C. Cir. 2001).

⁴³ See Texas 9-1-1 Entities Comments at 11-13; Fairfax County Comments at 1.

⁴⁴ See Roadmap § 2.b.

⁴⁵ See Texas 9-1-1 Entities Comments at 3, 6-9.

⁴⁶ Public Knowledge et al. Comments at 2.

committed to addressing the security and privacy of customers' information as part of the NEAD's development, *which will be used exclusively for 911 purposes*.⁴⁷ Service providers already are subject to statutory and Commission regulations in this area that draw a balance between consumer privacy and First Responders' need to know caller location information during emergencies.⁴⁸ And providing location information "specific to the level of apartment number" for 911 calling purposes is not a detriment in emergency situations – the purpose of dialing 911 is to be found, after all – and mimics the registered location information that the Commission *already* requires for interconnected VoIP services.⁴⁹ The additional regulations that Public Knowledge and others recommend are unnecessary.⁵⁰

These are important issues that can and will be addressed in the standards and governance processes underlying development of the NEAD. Privacy concerns therefore *will* be addressed at the outset, consistent with commenters' objectives, without the need for additional regulations that could unnecessarily delay the deployment and availability of new life-saving technologies.⁵¹

E. The *NPRM*'s Proposed Rules Are Not Technically Feasible.

Many Roadmap opponents erroneously suggest that service providers using technologies other than dispatchable address could achieve the *NPRM*'s proposed standards in all markets, for

⁴⁷ See Roadmap § 2.e.iii; Public Knowledge et al. Comments at 5-6 (expressing concern that the data or architecture may be used for commercial services).

⁴⁸ See 47 U.S.C. § 222(d)(4); *see also* Transmission by a Wireless Carrier of Information Regarding a Cellular Phone User's Physical Location to Public Safety Organizations, Memorandum Opinion for the Acting Assistant Attorney General, Criminal Division (1996), available at <http://www.justice.gov/sites/default/files/olc/opinions/1996/09/31/op-olc-v020-p0315.pdf> (noting that wireless callers impliedly consent to disclosure of their location when dialing 911) (last visited Dec. 23, 2014).

⁴⁹ Public Knowledge et al. Comments at 6; *see* 47 C.F.R. §§ 9.5(b)-(d).

⁵⁰ See Public Knowledge et al. Comments at 12-13.

⁵¹ See *id.* at 7-14.

all individual consumers, across all technologies, within the timeframes proposed in the *NPRM*.⁵² This viewpoint ignores not only the rulemaking record itself, but the Roadmap’s merits as compared to alternative technologies.⁵³ They also ignore that compliance with the proposed rules in the *NPRM* would be impossible using *any* technology, including those offered by Roadmap opponents NextNav, TruePosition, and Polaris Wireless. As APCO explains, the Roadmap “reflects the reality that short-term gains will be hard to achieve under any proposal.”⁵⁴ Two State agency commenters that oppose the Roadmap and support the *NPRM*’s proposed rule illustrate the critical need for an objective, record-based assessment of the Roadmap. The jurisdictions served by these commenters – Nebraska and Hawaii – are examples of how the rulemaking record demonstrates that alternative technologies would be unable to achieve the *NPRM*’s proposed rules.

1. A Tale of Two Markets.

The Nebraska PSC opposes the Roadmap and supports the *NPRM*’s rules as proposed.⁵⁵ Yet the record illustrates how technology vendors cannot hope to meet the *NPRM*’s proposed rule in that State. NextNav, one of the principal vendors on whom many Roadmap opponents have pinned their hopes, offers a terrestrial beacon system solution that depends on the service area and coverage of its 900 MHz spectrum licenses. NextNav, however, holds only limited licensed spectrum in Nebraska, with none in Lincoln (the state capital and home to the University of Nebraska) or the other Basic Economic Areas covering nearly all of the state

⁵² See AARP Comments at 1; Hawaii E911 Board Comments at 1; NARUC Comments at 3, 5; TDI et al. Comments at 1, 3.

⁵³ See Verizon Comments at 4; T-Mobile Comments at 12-13; see also Verizon *Ex Parte*, PS Docket No. 07-114, Attachment (Nov. 10, 2014) (“Verizon November 10 *Ex Parte*”).

⁵⁴ APCO Comments at 2.

⁵⁵ See Nebraska PSC Comments at 2-3.

(North Platte and Grand Island).⁵⁶ While it has spectrum for the Omaha area, NextNav’s preliminary build-out efforts have excluded that market, and it has requested two extensions for *all* of its build-out deadlines there, including a request for a three-year extension in July 2014.⁵⁷ Network-based solutions like TruePosition’s Uplink Time Difference of Arrival (“U-TDOA”) do not fare much better, if at all. Wireless service providers using network-based solutions like U-TDOA have excluded many Nebraska counties from their compliance with the less stringent location accuracy standards for network-based solutions.⁵⁸

The Hawaii 911 Board also opposes the Roadmap and asserts that the *NPRM*’s proposed rules “can be made with existing and proven technologies and within the timeframe allotted.”⁵⁹ Yet the rulemaking record and Hawaii’s own experience and circumstances indicate that is not the case. Similar to Nebraska, carriers using network-based solutions like U-TDOA have had to exempt entire islands or communities in Hawaii from compliance under network-based location technology due to terrain or cell site density.⁶⁰ NextNav holds licensed spectrum for Hawaii, but

⁵⁶ See Reply Comments of Verizon and Verizon Wireless, PS Docket No. 07-114, at 10 n.34 (July 10, 2014) (“Verizon July 2014 Reply Comments”).

⁵⁷ See Progeny LMS, LLC, Request for Waiver and Extension of Time, ULS File Nos. 0006383377, 0006383378, 0006383430, and 0006383431, at 4, Att. at 3 (July 17, 2014) (for call signs WPQQ206 and WPQQ207).

⁵⁸ See T-Mobile, Letter in PS Docket No. 07-114, E911 County Exclusions List Exhibit, at 4 (Dec. 18, 2013) (“T-Mobile Exclusion List”) (excluding all or parts of Lancaster, Otoe, and Sarpy Counties); NE Colorado Cellular, Inc. d/b/a Viaero Wireless Letter to James Arden Barnett, Jr., Exclusion Report, PS Docket No. 07-114, Report, Att. at 1-3 (Jan. 17, 2012) (excluding all or parts of over fifty Nebraska counties); AT&T Mobility, Letter in PS Docket No. 07-114, E911 County Exclusions List, at 5 (July 28, 2011) (“AT&T Exclusion List”) (excluding Cheyenne, Dodge, and Scotts Bluff Counties).

⁵⁹ Hawaii E911 Board Comments at 1.

⁶⁰ See AT&T Exclusion List at 2 (excluding Hawaii, Kauai, and Maui counties); T-Mobile Exclusion List at 2 (excluding Hawaii County except limited segments).

has stated it will focus its deployments on major metropolitan areas.⁶¹ And even in the major Honolulu area, as with Omaha, its preliminary buildout efforts have excluded that market, and it has requested two extensions for all of its buildout deadlines there.⁶²

These two examples underscore that the relevant comparison for evaluating the Roadmap's merits is not the *NPRM's* proposed rules. Instead, the relevant comparison is the extent to which a vendor could enable service providers to improve indoor location accuracy across broad population and geographic areas through a technically feasible solution. When viewed in that light, the Roadmap's relative merits are clear in comparison to the two examples above. All three solutions will rely on A-GNSS-capable handsets for horizontal location in those markets, so the Roadmap will be as effective in that regard. Verizon is already deploying A-GNSS and O-TDOA capability across its coverage area in accordance with its Roadmap commitment in both states. As a result, the coverage that will be available through Verizon's LTE network dramatically exceeds the near-term coverage for improved horizontal location accuracy that NextNav and TruePosition might provide. With respect to vertical location, TruePosition has no vertical solution (except a vague promise to provide one, as stated in a recent *ex parte* presentation).⁶³ Additionally, unlike NextNav's terrestrial beacon system, which will not be commercially available for several years, and then only to capable PSAPs,⁶⁴

⁶¹ See NextNav May 2014 Comments at 8-11.

⁶² See Progeny LMS, LLC, Request for Waiver and Extension of Time, ULS File Nos. 0006383393, 0006383394, 0006383446, and 0006383447, at 4, Att. at 3 (July 17, 2014) (for call signs WPQQ265 and WPQQ266).

⁶³ See TruePosition *Ex Parte* Letter, PS Docket No. 07-114, at 3 (Nov. 14, 2014) (asserting that "TruePosition will offer a server solution to provide pressure based vertical location in support of the FCC's three year 'z-axis' milestone.") ("TruePosition Nov. 2014 *Ex Parte*").

⁶⁴ See Verizon *Ex Parte* Presentation, Attachment (Nov. 10, 2014) ("Verizon November 10 *Ex Parte*").

dispatchable location technology is an improvement over both horizontal and vertical estimates that is not limited to a vendor's spectrum license areas and buildout, and will be usable for most existing PSAP systems.

2. Commenters Comparing the Roadmap to the NPRM Fail to Acknowledge the Rulemaking Record.

Legacy Handsets and Networks. Several commenters express concern that the Roadmap will only apply to LTE-enabled handsets and networks.⁶⁵ The Roadmap is not alone in that regard, however, as all alternative solutions are dependent on new LTE-enabled handset capabilities for either or both horizontal or vertical accuracy.⁶⁶ In particular, all alternative solutions rely in large part on A-GNSS to improve horizontal accuracy for millions of consumers across much of our nation's geography.⁶⁷ TruePosition's criticism of A-GNSS's use of the Russian GLONASS system is particularly curious given its own reliance on the GLONASS system.⁶⁸ Specifically, TruePosition's own "hybrid" solution relies in part on improvements to indoor location that A-GNSS capability provides – and it expects service providers themselves to rely on satellite-based services outside of areas where U-TDOA has adequate site density.⁶⁹

⁶⁵ See Hawaii E911 Board Comments at 2; NASNA Comments at 4-5; TruePosition Comments at 12-13.

⁶⁶ See Qualcomm Comments at 8-9; Verizon July 2014 Reply Comments at 6-11.

⁶⁷ See NextNav May 2014 Comments at 8-11; Technocom *Ex Parte* Presentation, Att. at 79 (June 23, 2014) (TruePosition's testing used a handset "which supports GLONASS in addition to GPS, which likely contributed to the better deep indoor availability").

⁶⁸ TruePosition Comments at 27-31; *see also* Fairfax County Comments at 2.

⁶⁹ Technocom *Ex Parte* Presentation, Att. at 79 ; TruePosition Nov. 2014 *Ex Parte* at 1 (asserting that Assisted-GPS suffices in rural areas).

Location vendor Polaris Wireless also purports to be concerned that the Roadmap’s utilization of LTE-based technology will not benefit users of legacy handsets,⁷⁰ even as the proposed technology solutions Polaris Wireless previously touted earlier in the proceeding would rely in part on LTE device-dependent O-TDOA, A-GNSS handsets, and Wi-Fi access point information. Indeed, Polaris Wireless acknowledged that its solutions depend on LTE-enabled handsets and networks, noting that barometric pressure sensors on which its proposed vertical solution would depend “are common today on *higher-end smartphones* ... and that they are likely to penetrate *to lower-cost handsets in the years ahead.*”⁷¹

Reliance on Third Parties. Several commenters express concern that the Roadmap necessitates actions by third parties such as standards bodies, technology vendors, manufacturers, and building owners.⁷² All alternative solutions, however, will entail new standards or technology development and service providers will depend on third parties or require cooperation with vendors in order to comply with *any* standards the Commission may adopt.⁷³ The need for engagement with other stakeholders merely reflects the diversity of the wireless communications ecosystem consisting of service providers, solution vendors, manufacturers, and others and already exists today. Indeed, NextNav, TruePosition, Polaris, and other competing technology vendors are “third parties” exempt from the Commission’s E-911 rules, just as a NEAD vendor will be. Critically, service providers *will* be accountable for meeting any new

⁷⁰ Polaris Wireless Comments at 2-3 (the “Roadmap severely disadvantages the less-fortunate among us”).

⁷¹ Polaris Wireless, *Ex Parte* Letter in PS Docket No. 07-114, at 2 (Sept. 26, 2014) (emphasis added) (“Polaris Wireless September 26 *Ex Parte*”); *see also* Comments of Polaris Wireless, PS Docket No. 07-114, at 6-7 (May 12, 2014).

⁷² *See* NARUC Comments at 6 n.13; NextNav Comments at 14-16, 33-35; TruePosition Comments at 20-23.

⁷³ *See* Polaris Wireless Comments at 6.

standards the Commission adopts, so they must work diligently to prod standards and NEAD development efforts. Furthermore, these critics' ability to offer their own location solutions to service providers will be dependent on yet other third parties – like standards bodies, zoning boards, construction contractors, chipset and handset vendors, among others. Their concern is not service providers' "dependence" *per se*, but on *whom* service providers should depend.⁷⁴

Nascent Technologies. Several commenters assert that Wi-Fi-based solutions have not been adequately tested or assessed for 911 purposes. Wi-Fi- and Bluetooth-based location technologies and capabilities, however, are already widely used today in live networks by millions of consumers.⁷⁵ And as TCS and others explain in their comments, important testing and development of Wi-Fi-based 911 solutions is already under way.⁷⁶ In some respects, technologies touted by certain vendors in this proceeding have been subjected to less scrutiny than those that will be used for dispatchable location. NextNav's solution is not commercially available and, as Verizon and other commenters have explained, it requires many steps before it can be commercially deployed and launched.⁷⁷ TruePosition's vertical location solution appears to be little more than a vague one-sentence promise in an *ex parte* letter. And Polaris this fall confirmed that its own vertical solution is nascent.⁷⁸

⁷⁴ See AT&T Comments at 3 n.13.

⁷⁵ See *id.* at 2-3; T-Mobile Comments at 4-6.

⁷⁶ See TCS Comments at 3-4.

⁷⁷ See Verizon July 2014 Reply Comments at 4-11; Verizon November 10 *Ex Parte*, at Attachment.

⁷⁸ See Polaris Wireless September 26 *Ex Parte*, at 2 ("Polaris explained [to Commission staff] that its demonstration system serves as a proxy for" how its solution "might look at some point in the future.").

Scalability and Timeliness. Verizon and other commenters have previously demonstrated that no alternative solution purports to provide universal geographic coverage within the *NPRM*'s proposed timetables.⁷⁹ TruePosition now asserts, however, that “a mere 400 U-TDOA receivers at [providers’] own cellsite locations ... would have blanket E911 coverage throughout essentially all of Manhattan” providing 50 meter accuracy.⁸⁰ The limitations of U-TDOA have already been roundly addressed in the rulemaking record,⁸¹ but even if that statement were accurate, it is not a basis for the *NPRM*'s proposed rules or a good reason to reject the Roadmap. Service providers must provide E911 location throughout their entire wireless coverage areas, many of which will have considerably less cell site density than Manhattan’s urban canyons. U-TDOA is ineffective in those areas and TruePosition would be far more dependent on LTE-enabled A-GNSS handsets there. Wireless service providers *already* are (or will be) deploying their own LTE-based network-based triangulation system – O-TDOA – throughout their VoLTE coverage areas. Service providers also have enormous incentives, independent of the E911 rules, to migrate their customers to IP-enabled LTE networks and devices. Finally, many wireless base stations may not have the space necessary to accommodate TruePosition’s location monitoring unit equipment.

⁷⁹ See Verizon July 2014 Reply Comments at 4-11; Verizon November 10 *Ex Parte* at Attachment.

⁸⁰ TruePosition Comments at 14.

⁸¹ See Verizon July 2014 Reply Comments at 6-7; T-Mobile Comments, PS Docket No. 07-114 at 17-18 (May 12, 2014); AT&T *Ex Parte* Letter, PS Docket No. 07-114, Attachment B at 1-2 (Sept. 9, 2013); T-Mobile *Ex Parte* Letter, PS Docket No. 07-114, at 2 (Nov. 16, 2013) (“T-Mobile estimates that U-TDOA is capable of performing within the 100 meter / 300 meter requirement in fewer than half the counties in which T-Mobile provides service.”); Verizon November 10 *Ex Parte* at Attachment.

With respect to vertical location, as T-Mobile explained, “there are over 124 million WiFi access points distributed throughout the US, with urban and suburban areas being particularly covered” and Bluetooth beacons are increasingly ubiquitous.⁸² Cisco also described the wide presence of Wi-Fi access points in both enterprise and residential settings.⁸³ Cable operators’ substantial presence in urban and suburban areas with reportedly just over one half million Wi-Fi access points illustrates the extensive coverage that the NEAD will facilitate.⁸⁴

Dispatchable Location v. Location Estimates. The record is clear and undisputed that dispatchable location is the “gold standard” of 911 location information.⁸⁵ The Roadmap will effect a monumental leap for wireless 911 callers, including individuals with disabilities, by enabling the dispatcher to “immediately know where the call came from and be able to send police, fire, or paramedics to the scene of the emergency.”⁸⁶ Some question the accuracy and reliability of the dispatchable solution described in the Roadmap.⁸⁷ Yet such a solution is clearly preferable to an *estimate* of the caller’s location for a given percentage of calls, which is what vendors opposing the Roadmap would offer. Roadmap opponents that support the *NPRM*’s proposed vertical location rules⁸⁸ also disregard critical facts that would limit the availability of

⁸² T-Mobile Comments at 8-9.

⁸³ See Cisco Comments at 7-9.

⁸⁴ See http://www.comcast.com/wifi/default.htm?SCRedirect=true&CMP=KNC-IQ_ID_73015487-VQ2-g-VQ3--VQ6-56419678169-VQ16-c-pkw-comcast%20wifi%20hotspot%20map-pmt-e&iq_id=73015487 (last visited Dec. 24, 2014).

⁸⁵ See APCO Comments at 6; IACP et al. Comments at 2; National Ass’n of Emergency Medical Services Physicians et al. Comments at 2; NASNA Comments at 7; TCS Comments at 3; IMSA Comments at 3-4; T-Mobile Comments at 11-12.

⁸⁶ TDI et al. Comments at 2.

⁸⁷ See Polaris Wireless Comments at 7.

⁸⁸ See Hawaii E911 Board Comments at 2.

barometric pressure sensor-based solutions like NextNav's and Polaris Wireless's to consumers in even the best of circumstances. They ignore vendors' dependence on spectrum licenses; their ability and willingness to deploy their solution throughout its licensed area; and a PSAP's need to update its own system and equipment to handle the vertical information.

NextNav does not oppose the dispatchable location concept but asserts that contrary to public safety's reasonable expectations, the Roadmap "provid[es] whatever address is within range of any registered access point (normally a different floor, apartment, or building)."⁸⁹ Cisco, however, which has considerable experience with these technologies, disagrees with NextNav's characterization, and other vendors with lengthy experience with E911 location technologies and operations support the Roadmap.⁹⁰ By that standard, moreover, NextNav's own technology – with tested accuracy of 45-47 meters (up to approximately 150 feet) for 67 percent of calls (i.e., *over* 150 feet for 33 percent of 911 calls) in urban and dense urban areas, and limited to communities where NextNav has opted to deploy its own antenna structures⁹¹ – would fail to meet public safety expectations as well. As T-Mobile noted, the CSRIC III Test Bed report found that NextNav's technology placed the caller in the correct building only about one third of the time.⁹² Finally, one critic asserts that the Roadmap's focus on the accuracy of the location information delivered to the PSAP – the *raison d'être* of the Commission's E911 rules – does not in itself advance directing First Responders to those locations.⁹³ This is an

⁸⁹ NextNav Comments at 3-4, 13.

⁹⁰ See Cisco Comments at 10-12; Intrado Comments at 2-3; TCS Comments at 3-4; Qualcomm Comments at 6-7.

⁹¹ NextNav *Ex Parte* Letter, PS Docket No. 07-114, at 3, 8 (Aug. 14, 2013).

⁹² See T-Mobile Comments at 11 (citing CSRIC III WG3 Indoor Test Bed Report at 39).

⁹³ IMSA Comments at 3-4.

important issue but focuses on the capabilities of dispatchers' equipment and the CPE used by First Responders in the field, to which the *NPRM's* proposed standards – like the current E911 rules – would not apply.

PSAP Readiness. Finally, vertical location requires upgrades to PSAP systems and equipment.⁹⁴ This, in turn, will further limit the geography and consumers that could eventually benefit from it. Service providers and other parties, including public safety, have pointed out that critical fact, but Roadmap critics provide no indication or commitment in the rulemaking record if or when PSAPs will be able to handle vertical location information from barometric sensor technologies like those of NextNav and Polaris Wireless. Dispatchable location, in contrast, will be compatible with most existing PSAP systems, as it does not require the PSAP-level reverse geo-coding that is already problematic for horizontal location⁹⁵ and that would be even more complex with a vertical location estimate.

II. ADDITIONAL NOTICE AND COMMENT WILL UNNECESSARILY DELAY ROADMAP IMPLEMENTATION.

Several commenters suggest that the Commission should seek yet additional public comment on the Roadmap or otherwise delay consideration of dispatchable location technology.⁹⁶ That is unnecessary, as the Commission has provided interested parties with an adequate opportunity to evaluate and provide a record in support of or opposition to the

⁹⁴ APCO Comments, PS Docket No. 07-114 at 6 (May 12, 2014); Int'l Ass'n of Fire Fighters Comments, PS Docket No. 07-114 at 6 (“the initial seamless use of the information its members communicate may need to be assisted in some manner until supplementary services are fully developed and implemented” including “the additional need to build and populate geo-location databases that translate locations within buildings into dispatchable addresses”) (May 9, 2014); NextNav May 2014 Comments at 22 (conceding “there are no databases currently implemented to convert measured height to floor level for individual buildings.”).

⁹⁵ See Intrado Comments, PS Docket No. 07-114 at 5-8 (May 12, 2014).

⁹⁶ AARP Comments at 2; Polaris Wireless Comments at 7.

Roadmap. Indeed, those parties have used the notice and comment period to submit a plethora of comments on the Roadmap. Thus, imposing yet another pleading cycle would only unnecessarily delay action in this proceeding. The Commission should therefore promptly adopt rules that enable service providers and public safety stakeholders to implement the milestones and commitments of the Roadmap with regulatory certainty.

III. THE COMMISSION'S RULES CAN ACCOMMODATE SMALLER WIRELESS SERVICE PROVIDERS.

Some commenters representing non-nationwide wireless service providers are generally supportive of the Roadmap's approach but contend that the Commission should not impose new Roadmap-based accuracy requirements on them at this time.⁹⁷ Given changes in consumers' calling trends and the public safety benefits of the Roadmap, however, the Commission should not grant non-nationwide providers a blanket or long-term exemption from any new rules. VoLTE-enabled handsets and O-TDOA technology are already widely available, and the handset and network standardization efforts in support of dispatchable location technology will help ensure that service providers of all sizes are able to meet the Roadmap milestones.

Should the Commission determine that separate compliance milestones are warranted for non-signatory wireless service providers, however, the Commission should consider limiting any such period to 3-6 months after the deadlines proposed in the Roadmap, and afford reasonable waiver relief opportunities thereafter. This approach is similar to the Commission's application of its hearing aid compatible handset requirements, which have not proven overly burdensome to either large or small service providers.⁹⁸

⁹⁷ See CCA Comments at 4-6; NTCA Comments at 5-6.

⁹⁸ See 47 C.F.R. § 20.19.

CONCLUSION

For the reasons discussed above and in Verizon's comments, the Roadmap will achieve consumers' and First Responders' public safety interests more effectively than the horizontal and vertical standards proposed in the *NPRM*. The Commission should therefore promptly adopt rules that enable service providers and public safety stakeholders to implement the milestones and commitments of the Roadmap.

Respectfully submitted,

/s/ Robert G. Morse

Kathleen M. Grillo
Of Counsel

Gregory M. Romano
Robert G. Morse
1300 I Street, N.W.
Suite 400 West
Washington, DC 20005
(202) 515-2400

December 24, 2014

Attorneys for Verizon