Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196
	)	

REPLY COMMENTS OF AT&T INC.

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February 18, 2011

EXECUTIVE SUMMARY

Commenters overwhelmingly support the Commission's efforts to enhance E911 service and, specifically, the rigorous, location accuracy rules recently adopted in the *Second Report and Order* ("*R&O*"). They also highlight, however, the significant investment and operational challenges that wireless providers will face in satisfying these new requirements, and therefore urge the Commission to refrain from further modification of the 911 and E911 rules.

The modifications to the E911 rules proposed in the *Further Notice of Proposed Rulemaking* ("*FNPRM*") are roundly criticized by commenters. First, commenters strongly oppose modifying the rules to mandate a specific technology or standard because it would prevent carriers from implementing E911 solutions that fully leverage their unique network characteristics and would stunt future competition between E911 solution vendors. Moreover, the use of a single accuracy standard or the new technologies described in the *FNPRM* is not technically or economically feasible at this time. Second, the record contains significant opposition to making mandatory the location accuracy testing guidelines of OET Bulletin 71. In particular, commenters explain that converting the OET Bulletin into a mandate would not provide the flexibility necessary to address differences in technology, topology, and terrain. Third, commenters recognize that with respect to roaming, at least in the case of GSM carriers, there is no clear problem in locating roamers that requires a regulatory solution. Fourth, commenters explain that the FCC proposals for new, forward-looking requirements—such as enhancing location accuracy in challenging environments, 4G location accuracy requirements, and vertical location accuracy requirements—are also premature and would be better addressed by an E911 Technical Advisory Group.

Commenters also largely agree that the proposals to modify the E911 rules for interconnected VoIP services and emerging network devices are premature and raise serious concerns. Specifically, commenters urge the Commission not to impose ALI requirements on interconnected VoIP providers at this time. Interconnected VoIP providers already are subject to significant E911 obligations, and there is no evidence in the record of an existing technology that supports ALI functionality for VoIP. Commenters also oppose modifying the E911 rules to regulate the use of emerging network technologies such as femtocells and picocells. These devices are in their infancy, and cannot be relied on as a principal component of the 911 infrastructure.

With respect to outbound services, the record suggests that consumers expect that residential VoIP services that provide local calling capability will support E911. Consistent with these expectations, some commenters note the need to expand E911 obligations to these services, which do not presently fit within the Commission's definition of "interconnected VoIP." While such services may have been relatively nascent when the Commission initially adopted its VoIP 911 rules, they have proliferated extensively since that time, and the Commission should take this opportunity to reevaluate if E911 obligations need to be extended to these services.

Finally, the record does not support the additional E911 requirements proposed by self-interested E911 vendors. Four proposals are particularly defective and should be rejected by the Commission, including: (1) YMax's proposal to require interconnected VoIP providers to provide ALI; (2) Intrado's proposal to require that CMRS carriers provide indoor, Z-axis information to PSAPs within two years; (3) Wilson's incorrect claim that the increased use of signal boosters would actually *enhance* 911 and E911 service and its request that the FCC encourage the use of boosters; and (4) TruePosition's proposal for the FCC to intervene in

ongoing 4G standards development. As AT&T and other commenters emphasize, the standards adopted in the *Second R&O* reflect the current state-of-the-art in technology, and the adoption of additional E911 requirements proposed by certain commenters—including self-interested vendors—would be inappropriate at this time.

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REPLY COMMENTS OF AT&T INC.

I. INTRODUCTION

AT&T Inc., on behalf of itself and its affiliates ("AT&T"), hereby submits reply comments in response to the Federal Communications Commission's ("FCC" or "Commission") Further Notice of Proposed Rulemaking ("*FNPRM*") and Notice of Inquiry ("*NOI*") (together, "*Notice*") in the above-referenced proceeding.[1] The *Notice*—released with the companion *Second Report and Order* ("*Second R&O*")[2]—explores how to further improve the location capability of 911 and E911 services for existing and new voice communications technologies, including new broadband technologies. As detailed below, commenters overwhelmingly support the Commission's drive to enhance E911 service—and specifically, the rigorous, new requirements adopted in the *Second R&O*.[3] Commenters also emphasize their intent to continue

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[1] *Wireless E911 Location Accuracy Requirements; E911 Requirements for IP-Enabled Service Providers*, Further Notice of Proposed Rulemaking and Notice of Inquiry, PS Docket No. 07-114, WC Docket No. 05-196, FCC 10-177 (2010) ("*Notice*").

[2] *Wireless E911 Location Accuracy Requirements*, Second Report and Order, PS Docket No. 07-114, FCC 10-176 (2010) ("*Location Accuracy Second Report and Order*" or "*Second R&O*").

[3] As the Commission has previously stated, 911 service is critical to our nation's ability to respond to a host of crises, and AT&T firmly believes that the *Second R&O's* requirements will

to work with the Commission to strengthen 911 and E911 services going forward. Carriers are now engaged in the early stages of implementing the rigorous requirements of the *Second R&O* over an eight-year implementation period. At this time, the record reflects that the Commission should refrain from significantly modifying the 911 and E911 rules—including by rejecting modifications proposed by certain E911 vendors—and afford communications providers time to meet the demanding location accuracy requirements it just adopted.[4]

II. THE MAJORITY OF COMMENTERS AGREE THAT THE COMMISSION SHOULD AFFORD WIRELESS PROVIDERS TIME TO IMPLEMENT THE RIGOROUS, NEW REQUIREMENTS OF THE *SECOND R&O* BEFORE CONSIDERING FURTHER REGULATION.

Commenters strongly support the public interest objective of providing first responders with fast and accurate information regarding the location of wireless subscribers making emergency calls. Commenters also support the rigorous, new E911 requirements adopted in the *Second R&O*.[5] While the new requirements in the *Second R&O* will necessitate significant

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help "ensure that Americans have access to the most forward-thinking technologically advanced emergency response systems in the world." *Notice* at ¶ 1.

[4] Several commenters concluded that there is a need for certain non-interconnected VoIP services to offer E911 capabilities. AT&T does not address the merits of this conclusion, but does offer initial thoughts on how regulations should be crafted, in the event the FCC is determined to regulate in this area.

[5] *See, e.g.*, Comments of CTIA – the Wireless Association, PS Docket No. 07-114, WC Docket No. 05-196 at 3 (filed Jan. 19, 2011) ("CTIA Comments"); Comments of Motorola Mobility Inc. and Motorola Solutions, Inc., PS Docket No. 07-114, WC Docket No. 05-196 at i (filed Jan. 19, 2011) ("Motorola Comments"); Comments of Sprint Nextel, PS Docket No. 07-114, WC Docket No. 05-196 at 1 (filed Jan. 19, 2011) ("Sprint Comments"); Comments of T-Mobile USA, Inc., PS Docket No. 07-114, WC Docket No. 05-196 at 2 (filed Jan. 19, 2011) ("T-Mobile Comments"); Comments of the Telecommunications Industry Association, PS Docket No. 07-114, WC Docket No. 05-196 at 5 (filed Jan. 19, 2011) ("TIA Comments"). As AT&T detailed in its initial comments, these requirements represent the culmination of a long and contentious proceeding—spanning close to three years and involving a court appeal and voluntary remand. The new, consensus-based wireless E911 rules are based on the consensus proposals of NENA, APCO, AT&T, Verizon Wireless, and Sprint Nextel. *See* Comments of AT&T, PS Docket No. 07-114, WC Docket No. 05-196 at 2-3 (filed Jan. 19, 2011) ("AT&T Comments") (citing to relevant ex partes from these organizations to the Commission).

investment, they promise the highest degree of location accuracy ever available. To fulfill these unprecedented requirements, however, most commenters agree that wireless carriers will need to dedicate significant time and resources to the enterprise. The record is clear that additional tightening of the location accuracy requirements would be counterproductive at this time and "will chill the development of location accuracy industry standards and best practices just as these processes are gaining momentum."[6]

If the Commission nevertheless believes that additional E911 requirements warrant consideration, it should establish an E911 Technical Advisory Group ("ETAG")—or a similar group of interested stakeholders—to address potential modifications to E911.[7] As detailed below, commenters highlight several forward-looking 911 and E911 issues that would benefit from ETAG review.

A. Commenters Widely Agree that the Commission Should Not Mandate Specific Location Accuracy Technologies or a Single Location Accuracy Standard.

The record reflects widespread opposition to the FCC mandating specific location accuracy technologies or a single location accuracy standard. As commenters explain, mandating a specific technology or standard would prevent carriers from implementing E911 solutions that fully leverage their unique network characteristics and would stunt future

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[6] Comments of Telecommunication Systems, Inc., PS Docket No. 07-114, WC Docket No. 05-196 at 2 (filed Jan. 19, 2011) ("Telecommunication Systems Comments"). *See also* CTIA Comments at 3-4; Motorola Comments at 4-5.

[7] As AT&T explained in its comments, the "ETAG concept—which interested stakeholders have championed for several years—offers the best and most constructive path towards improved E911 accuracy. The ETAG—which would include representatives from all sectors of the industry, including public safety, carriers, industry standards organizations, and technology vendors—would work cooperatively and expeditiously to define industry direction to enhance location accuracy and to improve the manner in which location accuracy is measured." AT&T Comments at 4-5.

competition between E911 solution vendors. The Telecommunications Industry Association ("TIA"), for example, points out that implementing a single location accuracy standard would disregard that "increas[ing] technological diversity and choice, driven by market decisions, [is] the most effective means to spur innovation."[8] Further, T-Mobile explains that in order to implement the standards in the *Second R&O* the "industry should be allowed to use the technologies that work best with their networks, equipment, and user base."[9] Differing environments may also require different technologies, as "there is no single location technology that provides consistently accurate caller location in all environments."[10]

Commenters also emphasize that the use of a single accuracy standard or the new technologies described in the *FNPRM* is not technically or economically feasible at this time. Before a single location accuracy standard could be established, "inherent limitations in wireless technology that would require significant investment in technology development and deployment" would need to be addressed.[11] For example, wireless carriers have deployed different air-interface technologies, and existing location accuracy solutions tend to be more compatible with one air-interface technology than another. The level of accuracy achievable will be determined by the capabilities of the location accuracy solution most compatible with each

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8 TIA Comments at 2.

9 T-Mobile Comments at 18. *See also* Comments of Andrew, a Commscope Company, PS Docket No. 07-114, WC Docket No. 05-196 at 3 (filed Jan. 18, 2011) ("Andrew Comments") ("Given the continuing need for flexibility to address the particular factors in a carrier's environment, the Commission should refrain from mandating a single location technology.").

10 Andrew Comments at 2. *See also* Motorola Comments at 6 (describing how "[e]ach technology has strengths and weaknesses, just as each service provider will face unique challenges in providing location information due to differences in geography, terrain and population across its service area.").

11 Comments of the Alliance for Telecommunications Industry Solutions, PS Docket No. 07-114, WC Docket No. 05-196 at 4 (filed Jan. 19, 2011) ("ATIS Comments").

carriers' air-interface technology. As Sprint notes, "[g]iven the current technologies in use by carriers and the varied nature of carriers' networks and technologies, it is reasonable to have different standards at this time."[12] Moreover, in the *Second R&O*, the Commission committed to an eight-year deployment schedule using multiple location accuracy solutions subject to different accuracy standards. Before the Commission could migrate to a single accuracy standard, it would need to review the technical logistics of how to migrate wireless carriers from the variety of different location technologies currently in use to technologies capable of meeting a uniform accuracy standard.[13] It is imperative that the Commission carefully investigate the technological feasibility and commercial reasonableness of imposing a single location accuracy standard before taking any action.[14]

Commenters highlight that despite these challenges, development work to improve location accuracy is ongoing, and includes efforts by AT&T and other carriers, national and global standards bodies, and manufacturers.[15] For example, the Alliance for Telecommunications Industry Solutions ("ATIS") has an Emergency Services Interconnection Forum ("ESIF") that continues to identify and resolve technical and operational interconnection issues related to E911 delivery.[16] In addition, Motorola "continue[s] to work internally and in conjunction with [its] service provider partners to improve the accuracy of automatic location

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12 Sprint Comments at 4.

13 Motorola Comments at 6.

14 ATIS Comments at 4.

15 In particular, hybrid solutions that run two or more location technologies simultaneously show promise and warrant further study. Such technologies do not merge the raw data from two or more technologies into an integrated location fix but rather select the most accurate location fix from multiple outputs.

16 ATIS Comments at 2.

information by developing new technologies and implementing effective solutions into all of [its] devices."[17] Working together, the wireless industry and the public safety community can enhance existing location accuracy approaches and develop new location accuracy methods, tools, and testing procedures.[18]

B. Commenters Urge the Commission Not to Convert the OET Bulletin No. 71 Guidelines into Requirements Or Impose A Mandatory Testing Schedule.

The record contains strong opposition to the NPRM's proposal to convert the OET Bulletin No. 71 guidelines into requirements.[19] Commenters state that the OET Bulletin methodology is not appropriate for all environments and situations, and converting the OET Bulletin into a mandate would not provide the flexibility necessary to address differences in technology, topology, and terrain.[20] If anything, commenters note that the OET Bulletin guidelines could be used as "guidance" by existing working groups that are creating accuracy testing guidelines.[21] Even then, the OET Bulletin would need to be revised and updated before being used as a starting point for any requirements.[22]

Commenters also oppose the *FNPRM's* proposal to increase the number of indoor test calls to 30%. The current location accuracy rules do not distinguish between indoor and outdoor

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17 Motorola Comments at 4-5.

18 Comments of Qualcomm Incorporated, PS Docket No. 07-114, WC Docket No. 05-196 at 14 (filed Jan. 19, 2011) ("Qualcomm Comments").

19 ATIS Comments at 6; Qualcomm Comments at 13.

20 AT&T Comments at 8-9.

21 Comments of Verizon and Verizon Wireless, PS Docket No. 07-114, WC Docket No. 05-196 at 12 (filed Jan. 19, 2011) ("Verizon Comments") ("CSRIC Group 4C should use the ESIF document and OET Bulletin 71 as baseline documents, and the Group should be allowed to craft an appropriate testing regime, including scheduling issues.").

22 Sprint Comments at 7; Telecommunication Systems Comments at 5.

calls, nor should testing standards. As Qualcomm points out, "the level of 911 wireless calls made indoors versus outdoors is not only presently unquantified, but it is effectively irrelevant to the Commission's ultimate goal of improving the location accuracy of calls made from inside of buildings."[23] Practically speaking, wireless carriers already find it difficult to conduct outdoor testing on private property; gaining indoor building access for testing purposes will be even more difficult. CTIA states that "[f]or wireless providers to even attempt in-building or z-axis coordinate location finding, access to site location technology equipment within privately owned buildings will need to be addressed."[24] Further, the technology for performing indoor testing is still in development.[25] These challenges counsel against an indoor testing requirement at this time.

The record evidence also counsels against a mandatory testing schedule or a requirement that carriers file compliance and maintenance testing data with specific parties. A mandatory testing schedule would add to the "numerous ongoing reporting requirements" already associated with FCC regulation without a clear addition of value.[26] Moreover, it is not clear that mandatory testing is even necessary. As T-Mobile states, "[o]nce initial data is collected indicating certain accuracy levels have been achieved, that data does not lose validity. In fact, performance generally tends to improve rather than degrade over time."[27] Establishing permanent testing

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23 Qualcomm Comments at 13.

24 CTIA Comments at 10. *See also* T-Mobile Comments at 22.

25 Sprint Comments at 7; T-Mobile Comments at 22 ("indoor testing on a large scale is not feasible").

26 Sprint Comments at 8.

27 T-Mobile Comments at 23.

requirements and schedules is also unwise, as requirements regarding specific testing timeframes, methods, and procedures may need to be altered over time as technology evolves.[28]

C. Several Commenters Highlight that Additional Requirements Regarding the Provision of E911 To Roamers Are Unnecessary and Unwarranted.

New regulatory requirements to address the provision of E911 service to roamers are unnecessary. As AT&T notes in its opening comments, "as a carrier utilizing a network-based solution, AT&T can support locating roaming handsets as long as the handsets support compatible spectrum."[29] Absent "record evidence that other carriers do not provide similar E911 services for roamers," AT&T cautions the Commission against adopting additional regulations in this area."[30] Given this, new location accuracy requirements addressing roaming are unnecessary at this time.

D. The Record Strongly Supports Addressing Forward-Looking Issues in an E911 Technical Advisory Group.

Commenters agree that three forward-looking issues stand out as particularly ripe for ETAG review: (1) location accuracy requirements for "challenging environments"; (2) location accuracy standards for 4G services; and (3) vertical location accuracy measurements. The

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28 Verizon Comments at 13.

29 AT&T Comments at 13.

30 *Id*. Some commenters highlight problems they encountered in trying to provide E911 service to roamers. Verizon, for example, explains that providing Phase II location capability to customers without location capable handsets or customers using other air technologies is not technologically feasible. Verizon Comments at 14. Specifically, Verizon states, "[t]he former is not feasible because of the absence of a GPS chipset in the phone. The latter is not feasible because just as customers cannot make non-emergency calls on an incompatible air interface network, they also cannot make 911 calls on an incompatible air interface network." *Id*. While CDMA carriers note potential problems locating roamers making emergency calls, this is not an issue for GSM carriers.

ETAG offers the best and most constructive path towards improved E911 accuracy, and is the best forum in which to address these forward-looking issues.[31]

Several commenters support using an ETAG to study how to improve location accuracy in "challenging environments," which the *FNPRM* describes as "indoor settings, urban canyons, buildings including high-rises, rural environments characteristic of heavy forestation, mountainous terrain, or sparsely located wireless towers."[32] CTIA asserts that "[a] stakeholder group would prove useful when evaluating and making recommendations" on topics like challenging environments.[33] Sprint similarly states that when investigating challenging environments, the Commission "should be cautious when evaluating proposed technologies and should consider the impact on carriers that will ultimately need to deploy these new technologies"[34]—considerations that could be informed through the involvement of a stakeholder group like the ETAG.[35]

Commenters also favor tasking an ETAG or the existing 4G working groups with evaluating, and ultimately establishing, distinct location accuracy standards for 4G services. AT&T highlights that the "4G standards groups have been working with AGPS and Observed

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31 The ETAG—which would include representatives from all sectors of the industry, including public safety, carriers, industry standards organizations, and technology vendors—would work cooperatively and expeditiously to define industry direction to enhance location accuracy and to improve the manner in which location accuracy is measured. AT&T Comments at 4-5.

32 *Notice* at ¶ 22.

33 CTIA Comments at 7.

34 Sprint Comments at 8-9.

35 This type of approach is proving successful, as the CSRIC Working Group continues to add substantive findings and recommendations to the ongoing dialogue on challenging environments. *See* Motorola Comments at 7.

Time Difference of Arrival ("OTDOA")"[36] and that "because these efforts are still in their early stages and show promise, regulatory intervention is unnecessary."[37] ATIS also "cautions the Commission to avoid imposing mandates that could stifle innovation and timely deployment of 4G technologies."[38] To prevent this harm, ATIS suggests that the effort to develop 4G specifications remain industry-driven, so that a "consensus-based, standards-driven solution can effectively promote continued evolution of specifications . . . and allow truly global specifications to emerge that incorporate a wide variety of location enhancement technologies."[39]

Finally, the record supports using an ETAG to determine the most effective method for capturing elevation for location measurements. At the moment, AT&T "is not aware of a practical solution that captures elevation location information."[40] But given the importance of elevation information, AT&T "would propose the creation of a distinct ETAG subcommittee to drive additional research and development in this area."[41] CTIA also believes that a stakeholder group should inform the development of elevation standards, as no technology currently exists with elevation capabilities and "[t]he stakeholder group could monitor technological

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36 AT&T Comments at 12. OTDOA is a downlink trilateration technique that requires the User Equipment (UE) to detect at least two neighbor eNodeBs (evolved Node B or base station) in addition to the serving eNodeB.

37 *Id*.

38 ATIS Comments at 5.

39 *Id*.

40 AT&T Comments at 12.

41 *Id*.

developments and proceed in a considered and informed manner to build consensus on E911 recommendations."[42]

III. COMMENTERS WIDELY AGREE THAT THE COMMISSION SHOULD NOT IMPOSE ADDITIONAL E911 REQUIREMENTS ON INTERCONNECTED VOIP PROVIDERS OR EMERGING NETWORK DEVICES.

Many commenters urge the Commission to refrain from imposing ALI requirements on interconnected VoIP providers at this time. As the record shows, no ALI solution for interconnected VoIP technology currently exists and a number of logistical hurdles stand in the way of developing such a solution in the near-term. Commenters also urge the Commission not to modify the E911 rules to regulate the use of emerging network devices—such as femtocells and picocells—that some CMRS providers use to improve network coverage. These devices are in their infancy, and cannot be relied on as a principal component of the 911 infrastructure. Further, the Commission explicitly provided communications providers flexibility in how they satisfy the rigorous, new requirements of the *Second R&O*. Regulating these devices unnecessarily constrains this needed flexibility.

A. Commenters Widely Agree that the Commission Should Not Require that Providers of Portable Interconnected VoIP Service Automatically Provide Location Information to PSAPs.

Many commenters urge the Commission to refrain from requiring providers of portable interconnected VoIP service to provide automatic location information to PSAPs.[43] The Commission previously has recognized that no solutions currently exist that allow a provider of

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42 CTIA Comments at 7.

43 Verizon Comments at 15; Motorola Comments at 11; Comments of Qwest Communications International Inc., PS Docket No. 07-114, WC Docket No. 05-196 at 3-4 (filed Jan. 19, 2011) ("Qwest Comments"); TIA Comments at 8; Comments of Vonage Holdings Corp., PS Docket No. 07-114, WC Docket No. 05-196 at 1-2 (filed Jan. 19, 2011) ("Vonage Comments"); AT&T Comments at 17-18.

portable interconnected VoIP services to determine the location of an end user without the end user's active participation.[44] No information gathered in this proceeding alters that conclusion.

Numerous commenters highlight that there is "no way" to automatically determine the location of subscribers when they make calls over interconnected VoIP.[45] Such functionality "would require substantial standards development, investment, and infrastructure upgrades by both VoIP services providers and PSAPs,"[46] all of which make the challenge of providing ALI "formidable."[47] Further, commenters explain that "the most promising technologies are far from providing reliable and ubiquitous autolocation capability, much less capabilities that would improve on the Commission's current subscriber-reported information requirement."[48] Given the difficulty of enabling ALI for portable interconnected VoIP and the effectiveness of current regulations, commenters agree that the Commission should not require provision of ALI for portable interconnected VoIP services at this time.

Commenters also stress that developing technology to provide ALI for portable interconnected VoIP is complicated by the variety of portable VoIP services on the market and

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44 *IP-Enabled Services; E911 Requirements for IP-Enabled Service Providers,* First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 10245, n. 81 (2005) ("*VoIP E911 Order*").

45 Vonage Comments at 3. *See also* Verizon Comments at 17 (noting "there are no technologies or commercial available or viable means to support ALI for interconnected VoIP today that do not rely upon subscriber input."); Vonage Comments at 1-2, 4, 11-15 ("Over three years after the Commission's last examination of these issues, there is still no evidence that autolocation technologies exist that will get public safety to interconnected VoIP subscribers more quickly or reliably than the customer-supplied location information the Commission requires today."); Qwest Comments at 4 (noting the absence of ALI technologies for portable interconnected VoIP).

46 Motorola Comments at 11.

47 Qwest Comments at 4.

48 Vonage Comments at 12, 14-15.

by the variety of ways VoIP users access the Internet. Commenters point out the rapid proliferation of exciting new products and services in the VoIP market,[49] which invariably will make it difficult to arrive at a single technological solution. Further, these new products and services raise additional challenges because "customers have the ability to make VoIP calls on these devices over wireless broadband connections wherever they find them."[50] And each combination of a particular device and type of network access may have unique technical and logistical challenges, making it difficult to craft a single set of requirements.[51] As Motorola explains, "[f]or each of these different types of devices, different solutions would be available to the VoIP service provider and a different accuracy standard might be justified."[52]

In addition to technical and logistical hurdles, commenters are concerned that "deployment of a VoIP automatic location functionality could be enormously expensive."[53] Aside from the investments providers would need to make, consumers may also incur costs by having to replace or upgrade hardware and software.[54] In addition, Vonage "is concerned that

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[49] Verizon Comments at 16 (noting the proliferation of exciting new products and services in the VoIP market); Motorola Comments at 11 (explaining that interconnected VoIP "describes a broad family of services not necessarily bound by a single technology, type of device, or usage model"); Vonage Comments at 3 (stating that Vonage offers the ability to make telephone calls over broadband Internet access service, a softphone product that allows consumers to use a computer as a full-functioning telephone, and smartphone applications, among other services).

[50] Verizon Comments at 16. *See also* Qwest Comments at 8 ("Technical manipulations—and associated costs—would be associated with essentially *all access points* into the Internet.").

[51] Vonage Comments at 3.

[52] Motorola Comments at 11. *See also* Qwest Comments at 7-8 (urging the Commission to take into account the different architectures and service designs of VoIP service providers, as well as the fact that different types of devices manufactured by different companies are used).

[53] Qwest Comments at 9. *See also* AT&T Comments at 20-21 (explaining that "substantial up-front investment" would be required before any appreciable ALI results would be seen).

[54] Vonage Comments at 13.

expanding current E911 rules may delay or drain the limited resources available to facilitate the long-awaited transition to Next Generation 911."[55]

At this time, technological, logistical, and economic hurdles stand in the way of requiring portable interconnected VoIP providers to provide ALI. Despite these challanges, commenters agree that the ETAG or some other advisory group should review the feasibility of portable interconnected VoIP services providing ALI and provide recommendations to the Commission or the industry as a whole.[56] As Verizon notes, "[t]he Commission can best facilitate the industry's efforts by continuing to work with industry forums and remaining fully informed of developments."[57] Through the ETAG or a similar multi-party forum, industry and technology experts will examine these complex issues in a careful and considered manner.

B. The Record Shows that the Commission Should Not Impose E911 Obligations on Emerging Network Devices at this Time.

The record does not support E911 rules that require or regulate the use of emerging network devices such as femtocells, picocells, microcells, and distributed antenna systems to facilitate location of emergency callers.[58] Commenters highlight that the value of these devices for improving location accuracy is unclear and that communications providers require flexibility to satisfy the rigorous, new location accuracy requirements of the *Second R&O*.

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55 *Id*. at 5.

56 TIA Comments at 10; Vonage Comments at 11; Qwest Comments at 6-7 (noting "[t]he Commission should not underestimate the legitimate and important role of industry and public safety forums, advisory committees and standards bodies as it develops the record on both technology and policy considerations" and supporting creation of an advisory committee).

57 Verizon Comments at 20.

58 CTIA Comments at 7; Verizon Comments at 18-19; AT&T Comments at 21-22.

Deployment of emerging network devices is just beginning, and carriers are unsure how or whether they will contribute to improving location accuracy, which is not the principal reason for their deployment. These devices are first and foremost intended to improve network coverage. Technological issues may exist regarding the use of emerging network devices to improve location accuracy. Moreover, while experience is limited, some wireless carriers have seen little benefit from using emerging network devices to enhance location accuracy.[59] Motorola notes that "[w]hile these new technologies might eventually lead to improvements in location determination, at this point these benefits are still speculative."[60] Looking forward, however, the use of emerging network devices merits further study. An ETAG is best-situated to review the evolving capabilities of these devices.[61]

IV. IF THE FCC EXTENDS E911 REQUIREMENTS TO VOIP SERVICES NOT PRESENTLY COVERED BY ITS RULES, THE RULES SHOULD ONLY APPLY TO THOSE SERVICES THAT CONSUMERS EXPECT TO HAVE EMERGENCY CALLING CAPABILITY.

AT&T and the wireless industry have long supported the goal of enhancing the emergency calling capabilities available to consumers. As commenters note, "[o]ver the past 15 years, the industry has endeavored to improve and enhance consumers' ability to reach Public Safety and to ensure that location data is provided with 911 calls."[62] As new devices and services are developed, the challenge facing the Commission and the industry is how to ensure that consumers continue to have emergency calling capability available consistent with their

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59 Verizon Comments at 19 ("Verizon Wireless has not found that these network components provide enhanced location accuracy.").

60 Motorola Comments at 15.

61 CTIA Comments at 7; AT&T Comments at 22; TIA Comments at 10; Verizon Comments at 7.

62 CTIA Comments at 2 (citations omitted).

expectations. As detailed below, the record suggests that consumers expect that outbound, residential VoIP services that provide local calling capability will support E911. And, consistent with these expectations, some commenters note the need to expand E911 obligations to certain VoIP services not covered by the Commission's rules today.

In particular, several parties call on the Commission to expand E911 requirements to certain "one-way" VoIP services that do not presently fit within the Commission's definition of "interconnected VoIP."[63] While such services may have been relatively nascent when the Commission initially adopted its VoIP 911 rules, they have proliferated extensively since that time.[64] Skype, for example, recently reported to the Securities and Exchange Commission that it has *20 million* users in the United States – which is nearly *6 million more* users than Verizon currently has for its residential telephone service.[65] As Sprint notes, "[c]onsumers have come to expect that location information will be passed through to the PSAP when they call 911, and they

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63 *See e.g.*, Comments of Adams County E-911 Emergency Telephone Service Authority, Araphoe County E-911 Emergency Communications Service Authority, Jefferson County E-911 Emergency Communications Service Authority Colorado, PS Docket No. 07-114, WC Docket No. 05-196, at 2 (filed Jan. 3, 2011); ATIS Comments at 9-10; Telecommunication Services Comments at 6-7; Sprint Comments at 10-11 ("when a service closely approximates regular mobile phone service and a subscriber relies on similar features and capabilities, including access to 911, the provider of such service should be responsible for delivering 911 location information.").

64 Notwithstanding the nascency of such services at that time, the Commission tentatively concluded that "a provider of a VoIP service offering that permits users generally to receive calls that originate on the PSTN and separately makes available a different offering that permits users generally to terminate calls to the PSTN should be subject to the [VoIP E911 rules] if a user can combine those separate offerings or can use them simultaneously or in immediate succession." *VoIP E911 Order* at ¶ 58.

65 Skype S.à.r.l., Registration Statement (Form S-1), at 138 (Aug. 9, 2010), *available at* http://www.sec.gov/Archives/edgar/data/1498209/000119312510182561/ds1.htm; Verizon, Verizon Communications Investor Quarterly 4Q 2010, at 6 (Jan. 25, 2011), *available at* http://news.vzw.com/investor/4Q%20financial.pdf. Absent modification of the VoIP 911 rules, the Commission should not be surprised to see these types of "one-way" services continue to proliferate in the market without 911 capabilities.

do not always understand the distinctions that exist due to the underlying technology."[66] Telecommunication Systems observes that the definition of "interconnected VoIP" creates a loophole for "one-way" services to avoid regulation, a loophole that should be closed in the interest of good public policy and public safety.[67] NENA similarly recommends that the Commission extend E911 requirements "to all VoIP providers that enable users to terminate calls to the PSTN."[68] In sum, the comments echo the Commission's historical approach to applying E911 requirements to those services that consumers expect will have traditional telephone service capabilities, including E911 capabilities.[69]

If the Commission acts consistent with this historical approach to ensuring consumers have appropriate access to E911 and extends E911 regulations to certain VoIP services not presently covered by its rules, it should extend those requirements only to outbound, residential VoIP services with local calling capability. In contrast to outbound services, users of *inbound-only* VoIP services would not have the same expectation of being able to make outbound calls to

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66 Sprint Comments at 10-11.

67 Telecommunication Systems Comments at 6-7. Interconnected VoIP services are defined as services that: (1) enable real-time, two-way voice communications; (2) require a broadband connection from the user's location; (3) require Internet protocol-compatible customer premises equipment (CPE); and (4) permit users generally to receive calls that originate on the PSTN and to terminate calls to the PSTN. *VoIP E911 Order* at ¶ 23 (2005).

68 Comments of the National Emergency Number Association, PS Docket No. 07-114, WC Docket No. 05-196 at 13 (corrected comments filed Jan. 20, 2011).

69 For example, in adopting the initial VoIP 911 rules for interconnected VoIP providers in 2005, the Commission explained that "consumers expect that VoIP services that are interconnected with the PSTN will function in some ways like a 'regular telephone' service," at "least regarding the ability to provide access to emergency services by dialing 911." *VoIP E911 Order* at 10256-7. The Commission further explained that a "service that enables a customer to do everything (or nearly everything) the customer could do using an analog telephone, and more, can at least reasonably be expected and required to route 911 calls to the appropriate destination." *Id*.

any number on the PSTN, including 911. Similarly, users of outbound-only *business* VoIP services (*e.g.*, outbound VoIP services provided to businesses operating outbound call centers) would not have the same expectation of being able to make outbound calls to 911 because they are procuring the outbound VoIP service for a special purpose suited to their particular business needs (*e.g.*, initiating computer-controlled, automatically-dialed calls) and they would likely procure other communications services with 911 calling capability (*e.g.*, a traditional POTS line for administrative use in the call center). And, of course, customers of services that offer only long distance calling capability would not have any expectation of being able to make local calls, including 911 calls to their local PSAP.[70] Thus, it would be inappropriate to extend 911 requirements to any of these types of services, none of which are outbound, residential VoIP services with local calling capability.

V. ADDITIONAL 911 AND E911 REQUIREMENTS PROPOSED BY SEVERAL SELF-INTERESTED VENDORS SHOULD BE REJECTED AS UNFEASIBLE AND UNNECESSARY.

AT&T strongly opposes the additional E911 requirements proposed by self-interested E911 vendors. As AT&T and other commenters explained, the standards adopted in the *Second R&O* reflect the current state-of-the-art in technology.[71] Given this reality, the adoption of additional 911 and E911 requirements proposed by certain commenters—including self-interested vendors—would be inappropriate at this time. Four proposals are particularly defective and should be rejected by the Commission, including: (1) YMax's proposal to require interconnected VoIP providers to provide ALI; (2) Intrado's proposal to require that CMRS carriers provide indoor, Z-axis information to PSAPs within two years; (3) Wilson's incorrect

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70 Indeed, 911 obligations do not apply to traditional long distance telephone services today.

71 Sprint Comments at 3 (noting that "there is certainly no evidence that an increase in these [recently adopted] standards is technically or economically feasible.").

claim that the increased use of signal boosters would actually *enhance* 911 and E911 service and its request that the FCC encourage the use of boosters; and (4) TruePosition's proposal for the FCC to intervene in ongoing 4G standards development.

A. The Commission Should Reject YMax's Unproven and Self-Interested ALI "Solution" for Nomadic VoIP.

AT&T strongly opposes YMax's proposal to require interconnected VoIP providers to provide ALI. As detailed below, YMax—the vendor of the magicJack VoIP product[72]—claims to have a prototype magicJack device that enables providers of portable VoIP service to automatically provide location information to PSAPs and therefore asks the FCC to require all interconnected VoIP providers to use its product to provide ALI.[73] YMax's proposal is a transparent attempt to have the FCC adopt a proprietary technology as a regulatory standard—an

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[72] YMax sells the magicJack® device, which plugs into the USB port of a desktop or laptop computer. With licensed software, customers can then subscribe to various VoIP services. Using the Internet, customers are able to call other magicJack devices wherever located, any PSTN connected telephone as well as customers of other VoIP services. The magicJack device also enables customers to receive calls from any other magicJack device, PSTN-connected telephone and other VoIP services.

[73] Allegedly, YMax has "incorporate[d] a GSM cellular transceiver into the device, which is triggered when a customer dials 911." Comments of YMax Corporation, PS Docket No, 07-114, WC Docket No. 05-196, at 3 (filed Jan. 19, 2011) ("YMax Comments"). In the event a 911 call is placed, the "magicJack can perform location calculations and network comparisons in order to determine whether it is more effective to transmit the emergency call over a broadband connection or a GSM network." *Id*. If the "calculated location" of the call is near the customer's registered location, the call would be sent to the PSAP via the customer's broadband connection. *Id*. If not, the call will be sent via the GSM cellular transceiver. *Id*. at 4. The local CMRS system that receives the GSM transmission will identify it as a 911 call from a non-registered device, determine the location of the call, and route the call and the location information to the appropriate PSAP. *Id*. The call will be displayed to the local PSAP as a non-service initialized call with network-based location data.

approach the FCC has rejected elsewhere.[74] The Commission should reject the proposal not only because it is self-interested, but also because it will not work.

YMax's proposal is irretrievably flawed for a variety of additional reasons. First, YMax's solution would place millions of non-service initialized ("NSI") devices on GSM networks and, in doing so, inequitably transfer the burden for servicing the E911 calls of VoIP users from VoIP providers to CMRS providers.[75] Such a transfer would impose significant burdens on wireless networks without compensation to wireless operators. Second, YMax's plan does not address the fact that the millions of NSI devices that it would introduce on to wireless networks would lack E911 Phase I callback capability. The inability to call back NSI phones has been a chronic problem for PSAPs.[76] Third, in order to provide E911 capabilities to nomadic VoIP users nationwide, YMax's solution requires ubiquitous GSM coverage—a level of GSM coverage that does not exist in the United States, in part because not all wireless carriers have built their networks using GSM technology. Fourth, YMax's solution depends on the continued

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74 *See*, *e.g.*, *Applications for License and Authority to Operate in the 2155-2175 MHz Band*, Order, 22 FCC Rcd 16563 (2007).

75 The FCC has explained that "[n]on-initialized wireless telephones are phones that are not registered for service with any CMRS carrier. Because carriers generally assign a dialable number to a handset only when a customer enters into a service contract, a non-initialized phone lacks a dialable telephone number." News Release, Federal Communications Commission, FCC Takes Steps to Improve the Ability of Public Safety Agencies to Assist Wireless Callers Using Non-Service Initialized Phones, http://www.fcc.gov/Bureaus/Wireline_Competition/News_Releases/2002/nrwc0202.html. The device proposed by YMax would not be registered for service with CMRS carriers, and would not provide a PSAP with a dialable callback number.

76 The Commission has explained that "in the event that a nonemergency 911 call is placed using a NSI phone, particularly for fraudulent purposes, it is very difficult for public safety authorities to determine who is responsible for placing such 911 calls." *Petition for a Notice of Inquiry Regarding 911 Call-Forwarding Requirements and Carriers' Blocking Options for Non-Initialized Phones*, Notice of Inquiry, FCC 08-95, ¶ 2 (2008). In 2008, the Commission released a Notice of Inquiry that sought comments on a petition that "offers evidence that nuisance 911 calls from NSI devices are a significant challenge for PSAPs." *Id*. at 11.

provision of GSM service.[77] But GSM service will likely be replaced by 3G and 4G services. Indeed, the transition is already underway. GSM carriers should not be forced to maintain their GSM networks indefinitely to support the business interests of a single vendor. Accordingly, YMax's proposal should be rejected.

B. The Commission Also Should Reject Intrado's Proposal to Require that CMRS Carriers Provide Indoor, Z-Axis Location Information Within Two Years.

The Commission should not require that CMRS carriers provide indoor, Z-axis information to PSAPs, especially not within two years as proposed by Intrado. As explained in Section II, the record is clear that enabling CMRS carriers to provide indoor, Z-axis location information to PSAPs requires further study and is not technically or financially feasible in the short-term. Despite these facts, Intrado proposes to require that CMRS carriers provide indoor, Z-axis location information within two years. Specifically, Intrado states that "with current and foreseeable advances in network and handset technology, [its proposal] is realistically achievable using a combination of cell tower address, A-GPS capable handsets, access point information, femtocell location information, capture of addresses of importance (X/Y/Z matched to customer-provided address), and mechanisms that provide more accurate Z location information."[78] Other than this sentence, Intrado does not explain how providers could overcome the substantial hurdles to determining Z-axis location information.[79] Nor does Intrado discuss specific

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[77] Notably, before YMax's device could transmit on exclusive-use spectrum, every GSM provider in the United States would need to consent to the use of the device because the device could be operated anywhere at any time.

[78] Comments of Intrado Inc. and Intrado Communications Inc., PS Docket No. 07-114, WC Docket No. 05-196, at 4 (filed Jan. 19, 2011) ("Intrado Comments").

[79] Intrado's only other support for its proposal is its conclusion that the "potential to identify accurate street addresses by existing technology is illustrated by the current use of femtocells. A femotocell is a device an end user obtains through its wireless provider that extends the

technological solutions that have proven effective in determining Z-axis information. Given the importance of E911 service, the Commission should limit its consideration of prospective regulatory requirements to existing, proven, and field-tested technology. Ultimately, vertical location information issues should be addressed by a stakeholder group like ETAG.

C. Because Signal Boosters Disrupt 911 and E911 Service, Wilson's Proposal to Increase the Use of Such Devices Should Be Rejected.

The Commission should reject Wilson's incorrect claim that the increased use of signal boosters would actually *enhance* 911 and E911 service.[80] Nothing could be further from the truth. AT&T has developed an overwhelming and unrebutted record that signal boosters *degrade and block 911 calls*.[81] That record is corroborated by public safety and other carriers.[82]

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provider's wireless coverage indoors through a broadband connection to the network. At the time of sale, providers can require end-users to register the device. By obtaining and maintaining accurate and up-to-date registration information, the provider can use the femotocell information to transmit street address information to the PSAP when a 911 wireless call is made within the home." *Id*. But this discussion of femtocells is a red herring. Femtocells would be completely useless when wireless users make calls outside the range of their femtocells.

[80] Comments of Wilson Electronics Inc., PS Docket No, 07-114, WC Docket No. 05-196, at 6 (filed Jan. 20, 2011) ("Wilson Comments"). To this end, Wilson argues that "cellular subscribers should be afforded a *Carterfone* right to maximize the beneficial use of wireless E911 emergency calling systems by employing signal boosters that expand E911 coverage and improve location accuracy without causing interference with cellular networks." Wilson Comments at 9. Put another way, "the subscriber deserves the private right to select the best life-saving cellular device … *that will not cause public harm*." *Id*. Setting aside that *Carterfone* does not apply to this situation or wireless issues generally, Wilson's rationale actually cuts against the use of signal boosters. As shown in AT&T's initial comments, signal boosters do "cause public harm" and have been responsible for many problems with E911 service. As such, their use would not even be permitted under the principles underlying *Carterfone*.

[81] *See*, *e.g.*, Comments of AT&T Inc., WT Docket 10-4, at 30 (filed Feb. 5, 2010) ("AT&T Signal Booster Comments").

[82] *See*, *e.g.*, Comments of the National Emergency Numbering Association, WT Docket 10-4, at 1, 3 (filed Feb. 5, 2010); *see also* AT&T Signal Booster Comments at n. 29 (quoting commenters that explain that the severe network and service disruptions caused by boosters—which invariably impact 911 and public safety service—are well documented).

The network disruptions and dropped calls caused by a single signal booster can prevent wireless subscribers throughout an entire geographic area from completing 911 calls.[83] Moreover, signal boosters often decrease—rather than enhance—the effectiveness of E911 location accuracy for the person being directly or inadvertently served by the booster.[84] As it has elsewhere, Wilson offers nothing to rebut the overwhelming record of signal booster interference other than technical arguments that its boosters—according to Wilson's flawed modeling—*should* not interfere. Rather than degrading location accuracy by adopting Wilson's proposal, the Commission instead should: (1) declare that the use, sale, and marketing of signal boosters without a license or licensee consent is unlawful and a direct threat to E911 communications; and (2) issue a Consumer Advisory that explains the requirements for use of a booster, the potential for harmful interference from such devices, and their potential impact on E911 communications.[85]

D. The Commission Should Reject TruePosition's Call for FCC Intervention in the 4G Standards Setting Process.

Despite TruePosition's claim to the contrary, the 4G standards bodies have developed standards that will effectively support E911, making Commission intervention in future

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83 AT&T Signal Booster Comments at 13-15.

84 *Id*. AT&T and other carriers employ U-TDOA as their network-based E911 positioning technology. U-TDOA is completely network-based and determines a mobile phone's location by comparing the difference in time at which a cell signal reaches multiple Location Measurement Units ("LMUs") installed at the operator's base stations. In discussions with AT&T's E911 technology vendor, AT&T has determined that handsets operating with signal boosters transmit inaccurate timing information to LMUs relative to the original handset signal. *See* "U-TDOA – Uplink Time Difference of Arrival," TruePosition, http://www.trueposition.com/web/guest/u-tdoa.

85 These issues are part of the active signal boosters proceeding. *See Petitions Regarding the Use of Signal Boosters and Other Signal Amplification Techniques Used with Wireless* Services, Public Notice, DA 10-14, WT Docket No. 10-4 (Jan. 6, 2010).

standards setting unnecessary. In its comments, TruePosition claims that the 3rd Generation Partnership Project ("3GPP") "has selected only a subset of location technologies available for older (2G and 3G) technologies, and these selected technologies have fallen short of meeting current location accuracy requirements."[86] Further, it asserts that the standards "process has not been driven by the values of location information to emergency response, but by the business interests of a few participating manufacturers."[87] This is patently false.

The need for 4G services to support and improve E911 location accuracy is well-known to the 4G standards bodies and has received significant attention throughout the 4G standards setting process. For example, as demonstrated by the 3GPP Release 9, state-of-the-art location technologies are built into the 4G standards, including Observed Time Difference of Arrival and A-GPS.[88] Accordingly, the Commission should ignore TruePosition's unfounded concern that location accuracy and public safety are not being considered in the standards process. TruePosition's negative characterization of the 4G standard setting process likely stems from the fact that its preferred location accuracy solution—U-TDOA—has not been incorporated in the standards.

VI. CONCLUSION

Commenters overwhelmingly support the rigorous, new requirements adopted by the Commission in the *Second R&O* and intend to continue to assist the Commission as it strengthens E911 services. As they move forward with satisfying these requirements, AT&T and other commenters urge the Commission to refrain from significantly modifying the 911 and

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86 Comments of TruePosition Inc., PS Docket No. 07-114, WC Docket No. 05-196 at 28 (filed Jan. 19, 2011).

87 *Id*.

88 *See* 3GPP, Release 9, *available at* http://www.3gpp.org/Release-9.

E911 rules. Instead, the Commission should afford carriers the flexibility necessary to meet the aggressive benchmarks of the eight-year E911 deployment schedule adopted in the *Second R&O*.

Respectfully submitted,

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February 18, 2011