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

In the Matter of	)	
	)	
Wireless E9-1-1 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
	)	

TEXAS 9-1-1 ENTITIES' REPLY COMMENTS ON THE THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

July 14, 2014

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

In the Matter of	)	
	)	
Wireless E9-1-1 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
	)	

TEXAS 9-1-1 ENTITIES' REPLY COMMENTS ON THE THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

Table of Contents

Page No.

I. Summary of Reply Comments 2

II. For "non-mobile" devices such as Wireless Home Phones and femtocells, the Texas 9-1-1 Entities urge the Commission to adopt immediate improvements to 9-1-1 location information and 9-1-1 routing that are, without question, technically feasible today. 4

III. For "truly mobile" devices, the Texas 9-1-1 Entities urge the Commission to: (i) immediately adopt improvements to Phase I and Phase II 9-1-1 location information and 9-1-1 routing that are technically feasible today; (ii) adopt a specific interim timetable for reaching an indoor wireless location accuracy standard of "within 50 meters," while announcing an intent to aggressively pursue "within 25 meters" indoors as the long-term goal; and (iii) begin prompt evaluation of additional Phase II improvements that may be shown to be technically feasible in the future. 6

IV. The Texas 9-1-1 Entities propose specific additional Part 20.18 language addressing issues discussed in Sections II and III. 11

V. Standardizing the confidence level measurement at 90% (or 95% for Next Generation 9-1-1) is necessary, especially as uncertainty information becomes more important for wireless 9-1-1 service. 13

VI. The Commission should continue to balance public safety and privacy concerns in a responsible manner. 14

VII. NENA's recommendations on independent indoor test beds are reasonable, and publicly available per wireless carrier test bed summary information enables consumers to be better informed. 15

VIII. The Commission should re-evaluate the "up to 15%" automatic exclusion for elimination or limitation. 16

IX. Conclusion 17

Appendix A……....19

Appendix B……23

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

In the Matter of	)	
	)	
Wireless E9-1-1 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
	)	

TEXAS 9-1-1 ENTITIES' REPLY COMMENTS ON THE THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

The Texas 9-1-1 Alliance,[1] the Texas Commission on State Emergency Communications,[2] and the Municipal Emergency Communication Districts Association[3] (collectively, the "Texas 9-1-1 Entities") respectfully submit the following reply comments in the above-referenced proceeding on the Federal Communication Commission's (the "Commission's") Third Further Notice of Proposed Rulemaking on wireless 9-1-1 location accuracy.[4]

---

[1] The Texas 9-1-1 Alliance is an interlocal cooperation entity composed of 25 Texas emergency communication districts with E9-1-1 service and related public safety responsibility for more than approximately 60% of the population of Texas. These emergency communication districts were created pursuant to Texas Health and Safety Code Chapter 772 and are defined under Texas Health and Safety Code Section 771.001(3)(B).

[2] The Texas Commission on State Emergency Communications ("CSEC") is a state agency created pursuant to Texas Health and Safety Code Chapter 771, and by statute is the State of Texas' authority on emergency communications. CSEC oversees and administers the Texas state 9-1-1 program under which 9-1-1 service is provided in 214 of Texas' 254 counties, covering approximately two-thirds of the geography and one-fourth of the state's population.

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

[4] *In the Matter of Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Third Further Notice of Proposed Rulemaking, FCC 14-6 (rel. Feb. 21, 2014) ("Third FNPRM").

I. Summary of Reply Comments

The current "gold standard" for 9-1-1 Automatic Location Information ("ALI") is a validated "dispatchable address" of the caller's location that is displayed to the call-taker and used to route the 9-1-1 call to the appropriate Public Safety Answering Point ("PSAP")[5] designated for that address. Because of the mobile nature of the service, wireless 9-1-1 calls route on Phase I information, *i.e.*, the address of the receiving cell tower/base station and the displayed location information is in the form of latitude and longitude ("x/y"). The Texas 9-1-1 Entities urge the Commission to immediately require, where it is technically feasible, that wireless carriers provide a "dispatchable address" for both ALI display and routing with respect to a 9-1-1 call placed from a wireless landline replacement phone (referred to in these reply comments as "Wireless Home Phones"). Commission action is necessary to avoid degradation of 9-1-1 service for users who either elect to, or are compelled to, "cut the cord" in the future. The same is also the case for femtocells (or an equivalent sized limited area "small cell").[6]

The record in this proceeding overwhelmingly demonstrates four materially relevant and dispositive items regarding the Commission's general indoor wireless 9-1-1 location accuracy requirements:

- First, there are compelling public safety and consumer well-being justifications to mitigate the additional risk and potential dangers that will result if the Commission fails to adopt additional wireless 9-1-1 location accuracy rule requirements.
- Second, notwithstanding assertions to the contrary, there are improvements currently available for deployment today that would materially improve certain scenarios immediately, such as (i) using the "registered location" approach in the

[5] *See* 47 C.F.R. § 20.3 ("*Designated PSAP*. The Public Safety Answering Point (PSAP) designated by the local or state entity that has the authority and responsibility to designate the PSAP to receive wireless 911 calls.").

[6] The Commission's use of the term "small cell" is discussed in more detail in Section III herein.

Commission's Interconnected Voice over Internet Protocol ("VOIP") rule 9.5 and applying it to "non-mobile" wireless devices, such as Wireless Home Phones, and (ii) standardizing the "confidence level" at 90% (and 95% for Next Generation 9-1-1) in order to make uncertainty information more reliable for use by 9-1-1 call-takers.

- Third, the differing views about the technical feasibility of a minimum indoor location accuracy requirement of "within 50 meters" is somewhat of a "red herring" from a practical standpoint, because the proposed requirement of "within 50 meters" is not the final or ultimately sufficient solution. The "within 50 meters" standard will likely have be cut in half, to "within 25 meters," in order to result in a reasonably sufficient accuracy standard, as even 25 meters can cover an entire apartment building.[7]

- Fourth, in addition to the Commission's currently proposed rule modifications, it is critical for the Commission to adopt specific additional language for inclusion in 47 C.F.R. Part 20.18, such as shown in Section IV herein and also in Appendix B.

It also is critically important for the Commission to standardize the confidence level measurement at 90% (and 95% for Next Generation 9-1-1), especially as uncertainty information becomes even more important for wireless 9-1-1 service. The National Emergency Number Association ("NENA") recommendations on the indoor test beds are reasonable. In a competitive market, it is appropriate to have independent indoor wireless 9-1-1 Phase II test beds and to make wireless carrier summary information publicly available, in order to better inform consumers and enable them to make better choices. The Commission must continue to balance in a responsible way the safety of the public and privacy issues. Finally, the Commission's "up to 15%" automatic exclusion from wireless location accuracy requirements appears to disproportionally impact rural areas and limit the benefits of Phase II wireless. The Commission should re-evaluate whether to phase out, or further limit, the automatic exclusion.

---

[7] *See* Appendix A, example pictures showing circles of 100 meters and 50 meters for a residential area, a downtown area, and an urban area are shown in Figures 1, 2, and 3, respectively, and Figure 4 shows an apartment complex with several buildings within 50 meters but still a single building included within 25 meters for an apartment complex.

II. For "non-mobile" devices such as Wireless Home Phones and femtocells, the Texas 9-1-1 Entities urge the Commission to adopt immediate improvements to 9-1-1 location information and 9-1-1 routing that are, without question, technically feasible today.

For Wireless Home Phones and femtocells, the Commission must immediately adopt improvements to 9-1-1 location information and 9-1-1 routing that are unquestionably available for deployment today, by requiring wireless carriers to provide "9-1-1 dispatchable address caller location information" consistent with and comparable to Interconnected VoIP 9-1-1 requirements under rule 9.5. Wireless Home Phones are, by design, intended to be a "non-mobile" replacement for wireline service. ALI and 9-1-1 routing in any form other than a dispatchable address for Wireless Home Phones degrades 9-1-1 service, and may only complicate the already difficult job of 9-1-1 call-takers.

Verizon points out that "[e]ven in the best of circumstances, none of these techniques purports to enable a wireless provider to inform a PSAP of the actual address from which a 911 call originates, like a wireline ALI database lookup or a VoIP registered location."[8] Given this direct acknowledgement, Verizon (and other similarly situated wireless carriers) should be providing the actual address from which a 9-1-1 call originates for their Wireless Home Phones. The issue of location accuracy for non-mobile Wireless Home Phones is immediately addressable, particularly when the regulatory x/y requirement was adopted in the context of truly mobile wireless service.

Since 2005, both nomadic Interconnected VoIP and non-nomadic cable provider Interconnected VoIP providers have been using pseudo-ANIs to deliver "9-1-1 dispatchable address caller location information" and to route 9-1-1 calls to the designated PSAP. Pseudo-ANIs are also the means by which wireless 9-1-1 call information is provided. In the context of

[8] Verizon Initial Comments at p. 9.

Interconnected VoIP, the pseudo-ANI is called an emergency services query key ("ESQK"), and in the context of wireless 9-1-1, the pseudo-ANI is called an emergency services routing key ("ESRK"). Interconnected VoIP providers are using ESQKs to deliver 9-1-1 dispatchable address caller location information and to route 9-1-1 calls to the designated PSAP.

The Commission should also require femtocells to provide dispatchable address caller location information. Intrado appropriately points out that there are other "non-mobile" wireless devices where similar immediate improvements are technically feasible:

> Some carriers provide the dispatchable address of the femtocell along with the X,Y of the mobile device when a 9-1-1 call is placed using the femtocell. By providing the pre-provisioned dispatchable address of the femtocell cross referenced with the GPS location of the femtocell or handset to verify that the femtocell has not moved, a wireline equivalent level of 9-1-1 service could be provided to every mobile device served by that femtocell.[9]

Moreover, TeleCommunication Systems, Inc. ("TCS") notes on its website that for its femtocell solution, "TCS' integrated cellular and VoIP call routing infrastructure will enable routing via ESRKs (emergency services route keys) or ESQKs (emergency services query keys)."[10] As such, in the case of both Wireless Home Phones and femtocells, technical feasibility is not an impediment to Phase I and Phase II improvements. To the contrary, Phase I and Phase II improvements clearly currently exist – but most of the wireless industry are not deploying these improvements.[11]

It is critical for the Commission to provide clarification that indoor 9-1-1 dispatchable address caller location information requirements for "non-mobile" Wireless Home Phones and

---

[9] Intrado Initial Comments at p. 5.

[10] *Available* at: http://www.telecomsys.com/products/public-safety/e911-femtocell.aspx

[11] As pointed out in the Texas 9-1-1 Entities Initial Comments at pp.7-8, AT&T has indicated in another docket that the company is working on a 9-1-1 dispatchable address location enhancement for Wireless Home Phone.

femtocells must be comparable to wireline and Interconnected VoIP, and meet the Commission's Interconnected VoIP rule 9.5 requirements. The Commission must also clarify that wireless carriers are required by rules 20.3, 20.18, and 64.3002 to route "non-mobile" Wireless Home Phones and femtocells to the designated PSAP, based on the caller's location, and not based on the less precise Phase I cell tower location information.

III. For "truly mobile" devices, the Texas 9-1-1 Entities urge the Commission to: (i) immediately adopt improvements to Phase I and Phase II 9-1-1 location information and 9-1-1 routing that are technically feasible today; (ii) adopt a specific interim timetable for reaching an indoor wireless location accuracy standard of "within 50 meters," while announcing an intent to aggressively pursue "within 25 meters" indoors as the long-term goal; and (iii) begin prompt evaluation of additional Phase II improvements that may be shown to be technically feasible in the future.

In the initial comments, there are differing technical views about when a minimum indoor location accuracy requirement of "within 50 meters" based on latitude and longitude will be technically feasible, and the disagreement often revolves around what was shown, or not shown by the CSRIC test-bed.[12] However, from a practical and operational standpoint, this technical debate is somewhat of a "red herring" and a moot point.

In order to reach a reasonably sufficient minimum standard to protect public safety, the currently proposed indoor wireless location accuracy requirements for latitude and longitude

[12] *Cf.*, AT&T Initial Comments at pp. 8-9 ("Test Bed Report makes it clear that, while the systems tested produced "relatively high yield" [meaning the systems produced a high percentage of calls with delivered location in comparison to the overall number of call attempts], they also generated "various levels of accuracy in indoor environments." Pointedly, the Test Bed Report notes that "*even the best location technologies tested have not proven the ability to consistently identify the specific building and floor, which represents the required performance to meet Public Safety's expressed needs*."; Verizon Initial Comments at p. 17 ("In addition, the proposed two-year deadline is infeasible based on technologies available today that serve as the factual basis for the *FNPRM*'s feasibility determination. Future improvements in location accuracy that the *FNPRM* envisions are premised on deployment of a different underlying LTE network and location solution architecture (e.g. A-GNSS/O-TDOA, or MBS), and the integration of those solutions into that network and end-to-end testing. The technology changes necessary to achieve these levels of accuracy require not just a software release update or refinement of existing technology, but the whole cloth implementation of new network-level technology nationwide.") (footnotes in original omitted).

solutions of "within 50 meters" would likely have to be cut in half, to at least "within 25 meters." One need only look at a picture of the number of residential houses potentially included within a 50 meter radius to conclude that "within 50 meters" should not be the ultimate standard on wireless 9-1-1 indoor location information. Moreover, looking at a picture of a downtown area leads to the same conclusion, although an urban area may look somewhat better. For an apartment complex, however, even 25 meters is lacking in sufficiency. In Appendix A, example pictures showing circles of 100 meters and 50 meters for a residential area, a downtown area, and an urban area are shown in Figures 1, 2, and 3, respectively, and Figure 4 shows an apartment complex with several buildings within 50 meters and with a single building still included within 25 meters.

The Commission's technology experts can weigh the merits and resolve the differing technical views on the timing of technical feasibility of latitude and longitude solutions based on the record in this proceeding. The record in this proceeding overwhelmingly demonstrates that currently available improvements can be deployed today to make indoor wireless location accuracy better. However, the wireless industry has not moved forward to mitigate the current problem, even where technically feasible solutions exist today.

Intrado's suggestion to improve location accuracy for non-mobile femtocells was noted in Section II above as something that is being done today by certain wireless carriers. Intrado also made suggestions to improve location accuracy for "truly mobile" wireless devices that may be technically feasible with regard to the issues of customer name, small cells,[13] and address of association. Intrado stated in relevant part as follows:

---

[13] *See, In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN-Docket No. 12-354, NPRM at pp. 12-13 (rel. Dec. 12, 2012) ("31. The definition of what constitutes a "small cell" device is fluid and includes, from the lowest to highest

Caller Name

The caller's name is not often consider a form of location, but as with wireline phones, the caller's name is often used as a very valuable form of location. There are many real world examples where calls are made from large office or apartment buildings where the first responders may have to search floor-by-floor for someone in need. Having the caller's name can help identify the possible unit number of an apartment or the office or cubicle location of someone calling from an office building.

Small Cells

Indoor small cell deployments can also be utilized to provide dispatchable addresses. Carriers are expected to deploy hundreds of thousands, if not millions, of small cell devices in the near future. These are effectively enterprise-level femtocells that are deployed and managed by the carriers, not end users. They are primarily being deployed to boost network capacity and coverage. Because small cells are being provisioned in the carriers' 9-1-1 systems in a manner similar to macro cells, systems are already in place today to provision addresses. There would need to be procedural or ALI format changes made at the PSAP so that the PSAP would know that these are dispatchable addresses originating from small indoor cells versus Phase I macro cell addresses.

Address of Association

"Address of Association" is a third solution that can contribute to production of a dispatchable address. When individuals call 9-1-1 outside of femtocells and small cells, and the cellular network determines that an associated address such as their cellular billing address or home or work address falls within the 9-1-1 determined location area (Phase 1 or Phase 2 location), the carrier could provide this associated address to the PSAP. The association of the address could be through the carrier or user provided data or through public record searches. Sources such

---

maximum power levels, femtocells, picocells, microcells, and metrocells. These devices can cover areas ranging from 10 meters to several kilometers. Femtocells are typically low powered units deployed in residences and small businesses. Picocells are typically used in larger public indoor spaces. Microcells and metrocells are generally used for wider area outdoor deployments. Small cell technology can be utilized in the whole range of licensed and unlicensed mobile technologies, such as those standardized by the Third Generation Partnership Projects (3GPP and 3GPP2) and the Institute of Electrical and Electronics Engineers (IEEE). 32. Unlike macrocells, small cells can be deployed relatively easily and inexpensively for capacity and coverage purposes. By adding one or more small cells, consumers, enterprises, and service providers can benefit from improved coverage, better service quality, increased capacity, higher data throughput, and longer battery life. Indeed, as consumer demand for wireless data has skyrocketed, network operators and others have increasingly recognized the benefits of small cell deployments and have significantly expanded the integration of these technologies into existing networks. Small cells that are available today can support voice and data communications. Depending on the technology, small cells may be deployed by end users, network operators, or third-party service providers.") (footnotes omitted).

> as subscriber home, work or utility billing addresses could be cross referenced to help provide intelligence on the location of the caller.[14]

In the case of treating small cells similar to macro cells for 9-1-1 purposes, some of the densely populated metropolitan areas (where "within 100 meters, 50 meters, and 25 meters" can still cover many different indoor locations and where non-network latitude and longitude solutions have been identified to have potentially more indoor location accuracy problems) may be many of the same areas where small cells are being deployed currently.[15] But, as Intrado pointed out, there may be a potential need for "procedural or ALI format changes made at the PSAP so that the PSAP would know that these are dispatchable addresses originating from small indoor cells versus Phase I macro cell addresses."[16]

Cisco also made suggestions that may be technically feasible in the near future to improve location accuracy for "truly mobile" wireless devices. Cisco stated in relevant part as follows:

> Information regarding the location of a wireless caller is currently available from a wide variety of non-carrier sources, such as Wi-Fi devices and mobile apps. In many cases, these sources can provide the information public safety desires – a dispatch-able address – rather than coordinates that must be reverse geo-coded into an address.
>
> Tapping into these location resources would satisfy the Commission's proposed indoor accuracy rules for 911 calls more quickly than a mandate requiring CMRS carriers to purchase and deploy new location technologies. The use of location information generated via Wi-Fi and other sources also may expedite PSAP access to NG911 information, such as a caller's location on a floor plan.
>
> The Commission should task the CSRIC with evaluating the capabilities and timetables associated with incorporating existing location information from various sources into a comprehensive solution to the indoor accuracy issue for wireless 911 calls. A test bed should evaluate the best methods for combining the

---

[14] Intrado Initial Comments at pp. 8-10.

[15] *See*, AT&T *Ex Parte*, GN Docket No. 12-354 (June 25, 2014).

[16] Intrado Initial Comments at p. 9.

> various sources of location information and assess the accuracy of the location information that results from utilizing multiple sources to generate a location fix.[17]

Similar to both Intrado and Cisco, TCS made further suggestions regarding possible improvements in location accuracy, stating in relevant part as follows:

> TCS believes that the introduction of an Indoor Location Accuracy requirement prompts the need to create a twofold set of goals that lead to the desired result of providing Dispatchable Locations for each wireless emergency call. First, a series of Location Accuracy goals can be created for various morphologies and demonstrated in a test bed to show that one or more location technologies can be used to achieve the desired Location Accuracy goal; and second, a single Measured Location goal can be created, defined by horizontal and vertical uncertainty components, which would be measured through the analysis of the aggregation of actual emergency calls generated within the Geographic Compliance Area over regular time intervals.
>
> Location analytics can be used to show goal compliance within each Geographic Compliance Area. Because uncertainty values on each call will be correlated with Location Accuracy, it will be possible to use information gathered from actual emergency calls to determine how well the wireless location technology is achieving compliance goals within each Geographic Compliance Area. Geospatial location analytics can identify areas of high location uncertainty, thereby identifying the need for new location technologies to be deployed in the particular Geographic Compliance Area. Perhaps most important, the PSAP telecommunicator will have a greater trust of the location data being presented and will be able to ascertain whether a Dispatchable Location has been achieved. By focusing more on the location analytics from a given Geographic Compliance Area, we can consistently and systematically improve the wireless location accuracy within each Geographic Compliance Area.[18]

To achieve immediate improvements with regard to certain of the issues mentioned by Intrado, TCS, and Cisco, the Texas 9-1-1 Entities submit specific rule language as set forth in Section IV of these reply comments. However, for the remaining issues mentioned by Intrado, Cisco, and TCS (*e.g.*, address of association, Wi-Fi, and location analytics), the Texas 9-1-1 Entities urge the Commission to promptly evaluate these alternative improvements for technical feasibility and potential deployment.

---

[17] Cisco Initial Comments at p. i.

[18] TCS Initial Comments at pp. ii, iv.

IV. The Texas 9-1-1 Entities propose specific additional Part 20.18 language addressing issues discussed in Sections II and III.

For the reasons set forth above in Sections II and III of these reply comments, the Commission should amend Part 20.18 to add new paragraphs (r), (s), and (t) as set forth below to require currently available location accuracy improvements that can begin immediately. For convenience and ease of reference, these proposed amendments adding new paragraphs (r), (s), and (t) to 20.18 are also set forth separately as Appendix B of the reply comments.

Proposed paragraph (r) is intended to immediately improve paragraph (d) Phase I location information and routing for indoor femtocells and for indoor and outdoor small cells. One could argue that this is not a new substantive requirement but rather is a current requirement of paragraph (d); however, given the public safety importance of this issue and the rate of growth of wireless carrier small cell deployments, clarifying that the paragraph (d) requirements also apply to small cells is in the public interest.

Paragraph (s) is intended to (1) immediately improve paragraph (e) Phase II location information from a non-mobile or portable wireless device sold as functionally equivalent to a fixed or nomadic indoor local exchange or Interconnected VoIP or from a femtocell (*e.g.*, landline replacement type services), and (2) ensure these 9-1-1 calls are routed to the same designated PSAP as 9-1-1 calls from Interconnected VoIP under rule 9.5, unless specifically requested to do otherwise by the authority for the designated PSAP.

Paragraph (t) is intended to immediately improve all outdoor and indoor wireless 9-1-1 calls from non-mobile and truly mobile devices by adding customer name similar to local exchange service and Interconnected VoIP today, and make billing address account information available as supplemental information when a dispatchable address is not being provided —

because such information may help narrow down the caller's location within the area surrounding the x,y latitude and longitude information.

The proposed amendments (r), (s), and (t) to 20.18 are as follows:

(r) Indoor location information address requirements under paragraph (d) of this section from a femtocell or small cell. CMRS providers subject to this section must identify an indoor femtocell or a small cell that they provisioned as an addition to their network to be the cell site or base station for purposes of the location requirements of paragraph (d) of this section and transmit the information to the PSAP as an address in accordance with the requirements of paragraph (d).

(s) Indoor location information dispatchable address requirements under paragraph (e) of this section from a non-mobile or portable wireless device sold as functionally equivalent to a fixed or nomadic indoor local exchange service or interconnected voice over internet protocol service or from a femtocell. In addition to, providing the location of all 911 calls by longitude and latitude, CMRS providers subject to this section must provide the location information dispatchable address identifying an indoor femtocell that they provisioned as an addition to their network or identifying a non-mobile or portable wireless device sold as functionally equivalent to a fixed or nomadic indoor local exchange service or interconnected voice over internet protocol service (*e.g.* wireless home phone service) consistent with and meeting the requirements of rule 9.5 applicable to Interconnected VoIP 9-1-1 in order to comply with and satisfy the location requirements of paragraph (e) of this section and transmit such to the PSAP as the location information dispatchable address in accordance with the requirements of paragraph (e), and notwithstanding paragraph (e) or (r), route 9-1-1 calls to the same designated PSAP as 9-1-1 calls from Interconnected VoIP under rule 9.5 unless specifically requested to do otherwise by the authority for the designated PSAP.

(t) Supplemental outdoor and indoor location information requirements under paragraphs (d) and (e) of this section. CMRS providers subject to this section must provide the following supplemental information comparable to a local exchange service or interconnected voice over internet protocol service and transmit such to the PSAP as part of complying with and satisfying the location information requirements of paragraphs (d) or (e) of this section:

(1) Customer name information associated with the account or telephone number;
(2) Billing address information associated with the account or telephone number, except in cases subject to the requirements of paragraph (s) for dispatchable location address information or in other cases where dispatchable location address information is voluntarily provided.

For the reasons set forth and explained above in Sections II, III and IV of these reply comments, it is critical to improving the public's safety and well-being in the context of wireless 9-1-1 location accuracy for the Commission's Order from this Third FNPRM to include the adoption of amendments adding new paragraphs (r), (s), and (t) to 20.18.

V. Standardizing the confidence level measurement at 90% (or 95% for Next Generation 9-1-1) is necessary, especially as uncertainty information becomes more important for wireless 9-1-1 service.

Most commenting parties support a standardized confidence level,[19] which will enable uncertainty information to become more user friendly, understandable, usable, and used by 9-1-1 call-takers. Verizon, Sprint, and the Rural Wireless Association provided arguments against the Commission standardizing the confidence level; the arguments of these three parties lack merit.

Verizon wants to leave to the confidence level issue to standards or best practices, asserting that PSAPs need to determine what makes sense from their perspective.[20] However, this ignores that **the PSAP community strongly supports action by the Commission to have a single confidence level for all wireless carriers** in order that such may become more user friendly and understandable by call-takers.[21] Sprint urges that the issue should be further studied,[22] notwithstanding the extended time period that this issue has remained unresolved. The

[19] *Cf.*, AT&T Initial Comments at p. 35.

[20] Verizon Initial Comments at pp. 30-31 ("[C]onfidence/uncertainty data are appropriately left to standards or best practices at this point, as the PSAP community itself needs to determine what approach makes sense from its perspective.").

[21] APCO Initial Comments at p. 8; NENA Initial Comments at p. 8; Texas 9-1-1 Entities at pp. 11-12. *See* also NASNA Initial Comments at p. 13 ("Lack of a consistent standard for confidence level when calculating C/U would render the information meaningless.").

[22] Sprint Initial Comments at p. 20 ("[T]he Commission should seek input and conduct further study so that it is aware of the possible methodologies for delivering this data and so that it can recommend the best possible methodology that should be used by all carriers.").

Rural Wireless Association asserts that "[a] confidence level of 90% is too high for rural carriers to meet without the expensive construction of additional cell sites."[23]

Standardizing confidence level has nothing to do with whether a wireless carrier is meeting the Commission's location accuracy requirements (and it is the Commission's location accuracy requirements, and not standardizing confidence level, that could potentially involve construction of additional cell sites for network solutions).

The Commission should summarily reject these arguments. The Texas 9-1-1 Entities urge the Commission to adopt the standardized confidence level of 90% (or 95% for Next Generation 9-1-1).

VI. The Commission should continue to balance public safety and privacy concerns in a responsible manner.

Privacy issues are legitimate, as wireless 9-1-1 location information becomes more granular, accurate, and identifiable. As pointed out by TCS, some technical solutions may involve additional privacy issues to consider.[24] While these privacy issues are legitimate, they

---

[23] Rural Wireless Association Initial Comments at p. 8.

[24] *See*, TCS Initial Comments at p. 32 ("Privacy issues also create a unique problem for 9-1-1 scenarios in which there is a desire to use commercial LBS solutions. In emergency-based location systems, any privacy settings are overridden and location technology (such as GPS) in the handset can be turned on, even if the user has disabled location techniques for commercial applications. Ultimately, emergency services tacitly assume that the user has "opted in" when dialing 9-1-1 and wants the emergency response team to locate the user.… At the current time, this particular override challenge has not been solved for emergency services that use commercial LBS infrastructure. For example, text-to-911 currently uses commercial LBS infrastructure to deliver the texter's location, and the location information cannot be delivered if the user has enabled certain privacy settings or turned off the location capabilities of the device. In this scenario, in order to provide a Dispatchable Location to the PSAP, there is a need to override the user's privacy settings. Given that this is currently being done for emergency voice calls, TCS believes it should be possible to override commercial privacy settings for 9-1-1 use. However, it will likely require cooperation from handset and device manufacturers. In this commercial LBS scenario, it can be reasonably argued that requesting a 9-1-1 interface for the purpose of reporting an emergency also creates a tacit agreement that the user has "opted in" to revealing his location for the purpose of allowing an emergency response. The user, however, has a reasonable expectation that neither his location information nor any details of the nature of the call (e.g., the type of emergency, the extent of injuries, etc.) would be divulged to third parties other than those being asked to render assistance.").

should not be a valid basis in an emergency for denying callers and call-takers more accurate wireless 9-1-1 location information, as appears to be urged by Motorola unless PSAPs ignore potentially applicable retention laws or policies.[25] Moreover, nationwide in-progress Computer Aided Dispatch ("CAD") information associated with 9-1-1 calls is often generally available on the internet (but usually with simple cross street data).[26] However, because privacy issues are important, it is reasonable, as wireless 9-1-1 location information becomes more granular, to reconsider modifications as may be appropriate.

VII. NENA's recommendations on independent indoor test beds are reasonable, and publicly available per wireless carrier test bed summary information enables consumers to be better informed.

NENA's recommendation in support of appropriate, controlled, and sufficiently independent third-party test beds (as opposed to a county-by-county indoor wireless 9-1-1 testing mandate) is reasonable for indoor location accuracy purposes if done fairly and with sufficient parameters.[27] The Texas 9-1-1 Entities also support NENA's recommendation against permitting wireless carriers to have a "good-faith" alternative loophole in lieu of using the independent indoor test beds.[28]

---

[25] *See*, Motorola Initial Comments at pp. 17-18 ("[T]he Commission should specifically recognize that any geolocation information gathered for the purposes of E911 location accuracy must be limited to that information necessary to satisfy the acute need for location information at that time. That is, the information will be limited in scope, time, and retention such that sufficient information will be supplied for PSAP locating purposes for the relevant emergency. However, the location information will not be persistent (*i.e.*, will not be ongoing or occurring outside of an emergency situation), nor will the location data gathered be retained on the device, by the carrier, or by the PSAP.").

[26] *Cf.*, http://www.lcwc911.us/lcwc/LiveStatus/LiveIncidentList.aspx; http://apps.sandiego.gov/sdfiredispatch/; http://www2.seattle.gov/fire/realtime911/getRecsForDatePub.asp?action=Today&incDate=&rad1=des.

[27] NENA Initial Comments at pp. 27-29.

[28] *Id.*

As far as whether the information from the independent indoor test beds should be publicly available to consumers, the comments of Verizon and National Association of State 9-1-1 Administrators ("NASNA") appear representative of the competing public policy issues. Verizon asserts:

> Under Verizon's recommended indoor location accuracy framework, PSAPs should know that an individual service provider has implemented a particular vendor's test bed-compliant solution, and how it performed in particular environments. Public disclosure of such data creates a significant risk of customer confusion, as a particular customer may reside or work in a particularly challenging RF environment, and it would be difficult (if not impossible) to meaningfully convey that fact, whether through simplified but generalized data or mountains of statistics. (Footnote in original omitted)[29]

On the other hand, NASNA notes:

> Summary test data should be made available to the public. An informed public may create a market incentive for carriers to improve compliance beyond minimum standards.[30]

Verizon and NASNA both make reasonable points for consideration. However, making summary per wireless carrier data publicly available is the better public interest result. When it comes to public safety-related matters, it is important for consumers to know if there may be better choices available to them to lessen risks and potential dangers, similar to automobile crash test type information.

VIII. The Commission should re-evaluate the "up to 15%" automatic exclusion for elimination or limitation.

NENA recommends limiting the 15% automatic exemption, or at least applying the looser network-based location accuracy standard to excluded areas.[31] NENA's recommendation

---

[29] Verizon Initial Comments at p. 35.

[30] NASNA Initial Comments at p. 10.

[31] NENA Initial Comments at p. 7 ("Currently, the Commission's rules allow wireless carriers to "exclude" from the E9-1-1 location requirements up to 15% of counties that are "heavily forested" or

is in the public interest and long past due for Commission action. The "up to 15%" automatic exclusion disproportionally adversely impacts rural areas and limits the benefits from the Commission's wireless 9-1-1 Phase II outdoor location accuracy requirements in these areas. In a highly mobile and automobile traveling society, an automatic 15% exclusion that seems to disproportionally impact rural areas should be a concern to everyone. For example, the CSEC 9-1-1 program in Texas covers only 20.5% of the state population (because it is predominately rural), but covers 73%, of the land miles in Texas. It also unfortunately accounts for 53% of the fatal vehicular crashes in Texas. Rural areas should not forever remain unable to benefit sufficiently from the Commission's wireless 9-1-1 Phase II requirements.[32] Accordingly, the Commission should adopt NENA's recommendation to limit the 15% exemption and at least apply the looser network-based location accuracy standard to excluded areas.

IX. Conclusion

The Texas 9-1-1 Entities appreciate the opportunity to provide reply comments on the critically important issues in the Commission's Third Further Notice of Proposed Rulemaking on wireless 9-1-1 location accuracy, and respectfully request that the Commission take action on these matters consistent with their initial and reply comments.

---

present especially challenging mobile network geometry issues. For the same reasons of technological advancement and standardization explained above, NENA believes that the high rate of modern handset adoption can now enable at least *some* level of Phase II location capabilities to *all* counties. NENA therefore recommends that, as the Commission standardizes on the tighter handset-based location accuracy standard for non-excluded areas, it should begin to apply at least the looser network-based location accuracy standard to excluded areas." [footnotes in original omitted]).

[32] There should be few, if any, reasonable justifications for national Tier I wireless carriers being able to automatically have a 15% exemption given its potential impact on rural areas, and there should be an extremely high threshold for any waivers for Tier II and Tier III wireless carriers from meeting the Commission's existing wireless 9-1-1 outdoor location accuracy requirements.

Respectfully submitted,

Michael J. Tomsu
Vinson & Elkins L.L.P.
2801 Via Fortuna, Suite 100
Austin, Texas 78746
512-542-8527
512-236-3211 (fax)
mtomsu@velaw.com

On behalf of the Texas 9-1-1 Alliance

Patrick Tyler by mjt by permission

Patrick Tyler
General Counsel
333 Guadalupe Street, Suite 2-212
Austin, Texas 78701-3942
512-305-6915
512-305-6937 (fax)
Patrick.tyler@csec.texas.gov

On behalf of the Texas Commission on State Emergency Communications

Melissa Tutton by mjt by permission

Melissa Tutton
President

On behalf of the Municipal Emergency Communication Districts Association

On the comments:
Richard A. Muscat
Bexar Metro 9-1-1 Network District

July 14, 2014

APPENDIX A

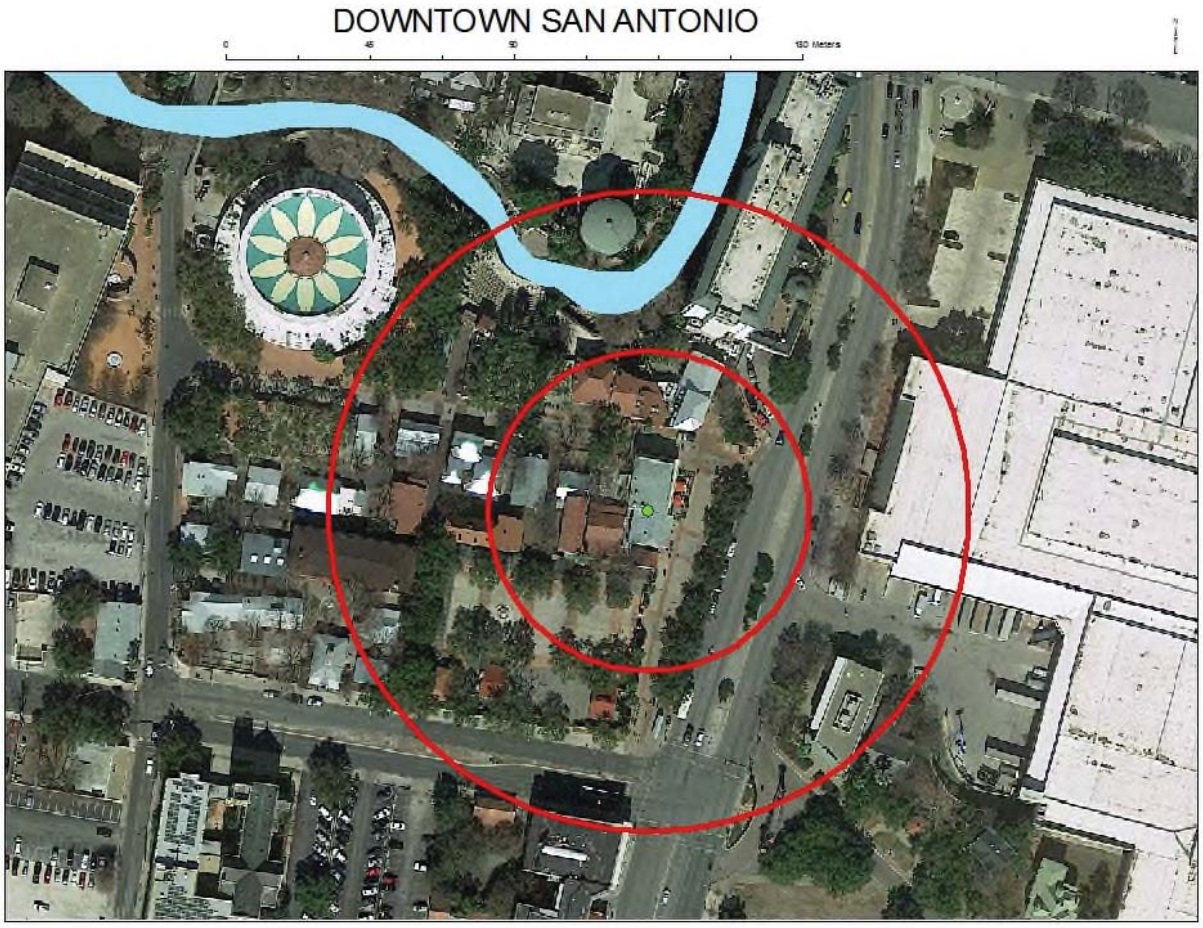
FIGURE 1

Figure 1 depicts an image of a residential neighborhood. The larger circle has a radius of about 100 meters. The smaller circle has a radius of about 50 meters.

APPENDIX A

FIGURE 2

Figure 2 depicts a downtown neighborhood. The larger circle has a radius of about 100 meters. The smaller circle has a radius of about 50 meters.



APPENDIX A

FIGURE 3

Figure 3 depicts an image of an urban neighborhood. The larger circle has a radius of about 100 meters. The smaller circle has a radius of about 50 meters.

APPENDIX A

FIGURE 4

Figure 4 depicts an apartment complex. The larger circle has a radius of about 50 meters. The smaller circle has a radius of about 25 meters.

APPENDIX B

Propose amending 20.18 to add new paragraphs (r), (s), and (t) as follows:

(r) Indoor location information address requirements under paragraph (d) of this section from a femtocell or small cell. CMRS providers subject to this section must identify an indoor femtocell or a small cell that they provisioned as an addition to their network to be the cell site or base station for purposes of the location requirements of paragraph (d) of this section and transmit the information to the PSAP as an address in accordance with the requirements of paragraph (d).

(s) Indoor location information dispatchable address requirements under paragraph (e) of this section from a non-mobile or portable wireless device sold as functionally equivalent to a fixed or nomadic indoor local exchange service or interconnected voice over internet protocol service or from a femtocell. In addition to providing the location of all 911 calls by longitude and latitude, CMRS providers subject to this section must provide the location information dispatchable address identifying an indoor femtocell that they provisioned as an addition to their network or identifying a non-mobile or portable wireless device sold as functionally equivalent to a fixed or nomadic indoor local exchange service or interconnected voice over internet protocol service (*e.g.* wireless home phone service) consistent with and meeting the requirements of rule 9.5 applicable to Interconnected VoIP 9-1-1 in order to comply with and satisfy the location requirements of paragraph (e) of this section and transmit such to the PSAP as the location information dispatchable address in accordance with the requirements of paragraph (e), and notwithstanding paragraph (e) or (r), route 9-1-1 calls to the same designated PSAP as 9-1-1 calls from Interconnected VoIP under rule 9.5 unless specifically requested to do otherwise by the authority for the designated PSAP.

(t) Supplemental outdoor and indoor location information requirements under paragraphs (d) and (e) of this section. CMRS providers subject to this section must provide the following supplemental information comparable to a local exchange service or interconnected voice over internet protocol service and transmit such to the PSAP as part of complying with and satisfying the location information requirements of paragraphs (d) or (e) of this section:

(1) Customer name information associated with the account or telephone number;

(2) Billing address information associated with the account or telephone number, except in cases subject to the requirements of paragraph (s) for dispatchable location address information or in other cases where dispatchable location address information is voluntarily provided.