

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of
Wireless E911 Location Accuracy
Requirements

PS Docket No. 07-114

COMMENTS OF AT&T

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INTRODUCTION AND SUMMARY

AT&T shares the Commission's aims of improving overall public safety by providing our first responders with sufficient information on the location of wireless callers and, thereby, improving the assistance those callers get. This is why AT&T believes that the Commission should abandon efforts to just incrementally improve ALI in the near term and focus instead on providing public safety what it needs most: a dispatchable address. In addition to not providing a dispatchable address, the Commission's proposals in the Third Further Notice for a near-term improvement in ALI are unwise for several reasons.

First and foremost, the ability to improve indoor location accuracy to the degree suggested in the Third Further Notice is not yet technically or commercially feasible. The much hyped new indoor location technologies have yet to pass credible testing and show that they can in fact and on a consistent basis appreciably improve indoor location accuracy. Moreover, equipment vendors are not yet in a position to offer commercially viable solutions based on those technologies or to commercially deploy these new technologies on a nationwide basis. Before the Commission even considers setting new indoor location-accuracy benchmarks for CMRS providers, it should know to a reasonable certainty that there are multiple, commercially viable, and technology-proven solutions for CMRS providers to choose from. The results of the "CSRIC III, Working Group 3 (E9-1-1 Location Accuracy), Indoor Location Test Bed Report" demonstrate that such solutions are not yet available.

Second, the Commission's proposed timeframes for implementing its proposal—two to three years from the effective date of the new rules—are wholly unrealistic. We are not even in a position to know which, if any, "promising" technologies vendors might be able to turn into viable end-to-end solutions for CMRS providers, much less to know what standards development or other modifications might be necessary to put them to good use. Therefore, it is impossible for vendors, equipment manufacturers, and providers to say with any degree of accuracy and veracity how long it might take for any such "promising" technologies to be developed as

commercially viable, end-to-end solutions and to meet the benchmarks proposed in the Third Further Notice.

Third, it makes no sense to waste scarce resources (*i.e.*, time, talent, and money) to develop and implement another incremental refinement that would, at best, increase location accuracy by a few meters, because there is no evidence that the incremental improvement would bring about the intended result, which based on the Commission's cost-benefit analysis would appear to be a reduction by at least one minute in ambulance response times. In fact, the evidence is to the contrary, especially with respect to vertical (z-axis) data aimed at pinpointing locations in multi-story buildings in dense-urban and urban morphologies. Moreover, continually chasing a refinement in x/y-axis and z-axis data diverts resources from the one thing that public safety says it needs and would guarantee better public-safety results: a dispatchable address. Instead of trying to lop "inches" off latitude/longitude data, the Commission should facilitate the deployment of a dispatchable-address solution by working with industry and public safety to establish standards for exploiting commercially available location-based services found in WiFi systems and Bluetooth beacons. Anything short of a dispatchable address will always be found wanting.

Fourth, the implementation and enforcement scheme proposed by the Commission in the Third Further Notice is an unworkable and expensive administrative nightmare. It would lead to a great deal of compliance uncertainty and force CMRS providers to defend location data results from questionable technology from one corner of the nation to the other. Even with the proposed refinements to the enforcement process that we make in these comments, which would alleviate most of the enforcement uncertainty the Commission's proposed scheme leaves open, an enforcement mechanism that relies on an independently administered test-bed program would be very time consuming and expensive. With a dispatchable-address solution, the enforcement questions are reduced to whether the provider has made the appropriate changes to its network and handsets to exploit commercially available location-based systems—which are nearly

everywhere and, indeed, can be made practically ubiquitous—and whether the provider is passing location data from those systems to public safety.

Fifth, the Commission's cost-benefit analysis used to justify imposing yet another (and only incrementally better, if that) set of location-accuracy benchmarks on CMRS providers is highly suspect. Essentially the Commission takes two unproven assumptions—*i.e.*, that improving ambulance response times by one minute would save lives and that the new location-accuracy benchmarks would accomplish that reduction in response times—and couples them with the misapplication of the Department of Transportation's Value of a Statistical Life (VSL) to arrive at what can only be described as a wildly inflated monetary estimate of the benefit of the Commission's new standards. The Commission's calculation of a \$92 billion benefit from establishing new indoor location-accuracy standards does not withstand minimal scrutiny.

On top of all these issues, the Commission's proposal focuses almost entirely CMRS providers even though public safety and the Commission itself recognize the importance of improving the technology and processes deployed by first responders. The entire burden of improving E911 access shouldn't fall to the wireless industry alone. Rather, public safety itself needs to implement process changes that would improve response times (which is after all the point of the Salt Lake City Study cited by the Commission in support of its cost-benefit analysis). Likewise, federal, state and local legislators should work to change building codes to obligate architects, developers, and business managers of high-rise buildings (residential and business) to install and maintain commercially available location-based technologies that wireless devices and providers can exploit to provide more detailed location information, to-wit: a dispatchable address. Once people begin to think creatively about the placement of these sorts of location-based beacons and services, the location possibilities are practically endless. And the cost of exploiting this technology is also reasonable, especially when compared to the potential costs associated with a short-lived scheme to enable CMRS providers marginally to improve location data in the near-term.

In large measure, the wireless industry has already vastly improved public safety simply by making mobile devices and wireless access readily at hand. When incidents occur and police, fire fighters, and EMTs/paramedics need to be dispatched, people don't need to stop and wonder how to contact public safety—the answer is in their pockets or purses or attached to their belts. If the Commission is interested in further improving the response times of first responders, it needs to encourage public safety, the wireless industry, and others to focus the long-term goal, not the near-term goal. Diverting everyone's energies and resources to yet another near-term, incremental improvement of ALI data will not prove cost-effective or practical and will in all likelihood further delay the one goal everyone agrees needs to be reached: a dispatchable address.

DISCUSSION

The Commission has released its Third Further Notice of Proposed Rulemaking in this docket to examine ways of addressing indoor location accuracy (both near-term and long-term solutions) and improving outdoor location accuracy.¹ AT&T Services, Inc., on behalf of itself and its affiliated companies, (AT&T) files these comments in response.

I. INDOOR LOCATION ACCURACY REQUIREMENTS

A. LONG-TERM INDOOR E911 LOCATION REQUIREMENTS

- 1. The Commission should abandon efforts to marginally improve indoor location accuracy in the near term and focus its efforts at fostering the long-term solution of providing public safety a dispatchable address.**

Everyone acknowledges that public safety wants more specificity in the wireless automatic location information (ALI). In fact, the CSRIC III, Working Group 3, Indoor Location Test Bed Report (Test Bed Report) itself recognizes that public safety's "expressed needs" really amount to a dispatchable address (*i.e.*, the consistent identification of "the specific building and floor" from which 9-1-1 calls originate) and that the technologies that the WG3 tested did not meet those needs.² For its part, the Commission confessed that its own set of new indoor location-accuracy rules won't satisfy public safety's expressed needs, either:

The accuracy requirements discussed above [50/meters horizontal and three/meters vertical] only provide for a "rough" approximation of a wireless 911 caller's location. The proposed requirements for horizontal location within 50 meters and z-axis information within 3 meters could still result in building misidentification, and are insufficiently granular to provide room or apartment-level location. We agree with commenters who assert that public safety would be best served through the delivery of a dispatchable address.³

Rather than wasting scarce resources on incremental improvements in location accuracy that will not be appreciably more effective than the data we are presently generating, the Commission should focus on providing public safety with what it needs, a dispatchable address, especially

¹ *Wireless E911 Location Accuracy Requirements, Third Further Notice of Proposed Rulemaking*, PS Docket No. 07-114, FCC 14-13 (rel. Feb. 21, 2014) (Third Further Notice).

² CSRIC III, Working Group 3, E9-1-1 Location Accuracy, "Indoor Location Test Bed Report," at 54-55 (March 14, 2013) (Test Bed Report).

³ Third Further Notice para. 117 (emphasis supplied).

since forcing providers to near-term solutions would significantly delay implementation of a dispatchable-address solution.

2. The Commission should look at leveraging commercial location-based services to provide a dispatchable address.

In multiple meetings on the topic of wireless location capabilities, participants invariably ask some variation of this question: “If Starbucks can find me and tell me the address of its store, then why can’t my mobile phone tell public safety where I am?” The answer to this question is quite simply that the commercial services employed by businesses like Starbucks are not using the CMRS providers’ existing E911 location technology; rather, these services are exploiting the ability of the customer’s smartphone to identify the WiFi and Bluetooth beacons associated with the business establishment. Given consumer’s expectations in this regard, it would seem totally consistent with the Commission’s general policy to “ensure that its E-9-1-1 rules adapt to keep pace with consumer expectations” by leveraging the power of these commercial location-based services to serve the public interest in providing better location information to public safety.⁴

The Devil in any plan is in the details, and AT&T readily admits that many details of any plan to exploit commercial location-based services would have to be worked out. Nevertheless, we have a good idea of how CMRS providers could leverage this technology to provide public safety with a dispatchable address. At a minimum, when a caller places a 9-1-1 call from an indoor location, the handset would need to temporarily force-enable the WiFi and Bluetooth radios to begin the search for nearby location beacons.⁵ When the network queries the handset for location data, the handset returns both the A-GPS location estimate and the “identity” of location beacons it has detected. The network would use the combined A-GPS location data and

⁴ See *Wireless E911 Location Accuracy Requirements; E911 Requirements for IP-Enabled Service Providers*, PS Docket No. 07-114 & WC Docket No. 05-196, Further Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 18957, Statement of Commissioner Mignon L. Cyburn (2010).

⁵ This point touches on two related issues: consumer choice and privacy. First, as to consumer choice, consumers should remain free to “turn off” their phone’s WiFi and Bluetooth functionalities. We are aware that some consumers worry about the drain these functionalities have on their handset batteries. Second, consumers may want to turn off these functionalities for privacy reasons—not just to save on battery life. But in an emergency, the device should be allowed override those decisions and turn both WiFi and Bluetooth back on for the duration of the call on the presumption that a 9-1-1 caller wants to be located.

the location information on the WiFi and Bluetooth beacons from a dispatchable-location database to provide the PSAP the caller's location. In the absence of database location information, the CMRS providers would still provide the handset-based ALI (*e.g.*, A-GPS or OTDOA). CMRS providers would necessarily need to make sure their handsets have both WiFi and Bluetooth integrated chipsets and their networks would have to be able to query the WiFi/Bluetooth beacon location database and provide the data to the PSAP.

From this brief, general description, it is clear that significant standards work needs to be done to bring all the disparate parts of the plan together in order to allow beacons to augment existing systems to provide PSAPs with a dispatchable address, including developing and populating the WiFi and Bluetooth location database with trustworthy location data. But this work should not dissuade the Commission, public safety, and the industry from starting the process to make providing a dispatchable address to public safety a reality. If the industry is not diverted from tackling this project now by trying to meet some new indoor location-accuracy standards, then significant work can be completed within the same timeframe that the Commission is projecting for the effective date of its new rules (*i.e.*, two to three years).

There are many benefits to starting now to work on leveraging commercial location-based services in the provisioning of a dispatchable address. First and foremost, providing public safety with a dispatchable address is clearly what public safety needs. Second, it saves CMRS providers from wasting scarce resources on a temporary and incremental improvement to ALI data and, thereby, delaying the move to dispatchable address. There is after all no indication today that work done for these proposed near-term technologies would enable CMRS providers to provide a dispatchable address in the future, making any expenditures on near-term solutions a stranded investment. Third, while the industry is busy addressing the standards and mechanisms of making a dispatchable address a reality, federal, state, and local legislators can work toward changes to expand location-based services and create trustworthy location data through legislation aimed at modifying building codes to require the installation of location beacons, especially in high-rise commercial and residential buildings. These beacons can be just

another part of the building-code mechanisms to guarantee public safety, like illuminated exit signs, fire alarms, emergency signage, *etc.* Indeed, some of the existing safety mechanisms—*e.g.*, fire alarms or exit signs—could even house such beacons. And of course, there would be nothing to stop other equipment and service providers from incorporating these beacons in their devices (*e.g.*, video set-top boxes, DVRs, high-speed broadband modems, *etc.*), especially those intended for use at fixed locations.⁶ In short, starting this work today will only quicken the day when providing PSAPs with a dispatchable address will be a reality. Delaying this work for a near-term, ineffective, and highly speculative solution is simply unwise.

3. There are other reasons why the Commission should leverage commercial location-based services to provide dispatchable address to public safety.

In addition to offering a viable solution for providing a dispatchable address, there are other reasons the Commission should seek to leverage commercial location-based services to support E911 location data.

First, the obligation to provide this sort of data should not fall solely on the shoulders of CMRS providers. Public safety is everybody's job. And many of the complications and difficulties in providing good ALI result from the construction and sale of high-rise residential real estate.⁷ There is no reason that legislators could not (or should not) require real estate developers that profit from the sale or rental of high-rise residences to share in the costs associated with public safety, especially as the technology is readily available and reasonably inexpensive.⁸ The fact that many of their customers are choosing to rely on wireless technology for their communication needs is reason enough to demand that real estate developers help bear

⁶ As discussed briefly above, AT&T is already providing dispatchable address through its small cell and 3G microcell deployments and hopes to introduce soon enhancements to its Wireless Home Phone solutions to do the same. AT&T may find other ways to incorporate these beacons in other devices it provides in connection with other services. And we fully expect that building owners and owners of commercial locations will enthusiastically embrace this endeavor—even without the need to legislate retro-fitting existing structures (although mandating retro-fitting is a good idea). Not only is the technology relatively inexpensive, but it would be a selling point to potential customers just as the existence of WiFi access is today.

⁷ As noted above, employers in high-rise commercial buildings provide their employees access to wireline services that provide detailed location information. Still, in our opinion, even high-rise commercial properties could benefit from installation of WiFi and Bluetooth beacon systems for use in conjunction with wireless 9-1-1 calls.

⁸ As this technology should be relatively inexpensive, the general public could begin adoption of the technology in residential applications allowing everyone to benefit from address information.

the burdens of making dispatchable address information available to public safety. After all, they typically incorporate other communications features (*e.g.*, phone jacks, high-speed data ports, and associated wiring) into their projects, not to mention safety devices and systems (*e.g.*, fire and burglar alarms).

Second, regulatory compliance with a location-based service system would be administratively simple. CMRS providers would only need to show that they were incorporating the necessary chipsets and software in their handsets and that their networks were modified to access the WiFi/Bluetooth location database and provide the resulting data to PSPAs. This long-term solution would obviate need for the incredibly complicated and expensive test-bed mechanism proposed by the Commission for the near-term solutions aimed at merely incrementally improving ALI.

In sum, acting now on the long-term solution—one that leverages the power of location-based services—benefits everyone. Delay, especially delay associated with pursuing a wasteful near-term solution that relies on questionable technology, means that public safety is denied the location information it claims it needs and could be made available: a dispatchable address.

B. NEAR-TERM INDOOR LOCATION ACCURACY REQUIREMENTS

1. The Commission should pursue a long-term dispatchable address solution in lieu of wasting scarce resources on a near-term solution based on incremental improvements to horizontal and vertical ALI, with its attendant complexities.

In the Third Further Notice, the Commission proposes to establish a new subset of location-accuracy standards specifically for wireless 9-1-1 calls originating indoors.⁹ The proposed new standards include not only a horizontal (x/y-axis) standard of 50 meters but also, for the first time, a vertical (z-axis) standard of three meters. The Commission expects CMRS providers to successfully meet these standards over the course of five years.¹⁰ But, as discussed

⁹ Third Further Notice para. 26.

¹⁰ *Id.* at 3: “CMRS providers would be required to provide horizontal location (x- and y-axis) information within 50 meters of the caller for 67 percent of 911 calls placed from indoor environments within two years of the effective date of adoption of rules, and for 80 percent of indoor calls within five years. . . . CMRS providers would be required to provide vertical location (z-axis) information within 3 meters of the caller for 67 percent of indoor 911 calls within three years of the adoption of rules, and for 80 percent of calls within five years.”

in these Comments, the technologies for meeting these new proposed indoor location-accuracy benchmarks are not yet technically and commercially feasible, and the proposed solution would provide little in any real benefit to public safety. As a consequence, rather than imposing a near-term solution that waste scarce resources, the Commission should focus instead on a long-term solution to provide public safety with a dispatchable address, which all stakeholders agree should be the ultimate goal.

The Commission’s proposal is based on various technologies still under development by different vendors. These technologies include Qualcomm’s AGPS/AFLT, Polaris’ RF fingerprinting, a beacon technology from NextNav, as well as TruePosition’s UT-DOA technology for 2G networks.¹¹ These technologies may have different architectures and present different strengths and weaknesses, but they all share one common factor: none is yet capable of enabling a CMRS provider to comply with the Commission’s proposed indoor location-accuracy standards nationwide.¹² While some of these technologies work better in some morphologies than others, none works well in all morphologies—dense urban, urban, suburban, and rural—and none provides anything approaching a consistent, reliable, or accurate indoor ALI of the kind proposed by the Commission.

At the end of the day, however, even if these technologies could perform satisfactorily in all morphologies, they would not provide public safety with anything approaching a dispatchable address. The proposed indoor location-accuracy standards amount to little more than just another step towards incrementally better ALI. To provide that incremental improvement in ALI, CMRS providers will most assuredly need to expend significant additional resources—money, time, and talent—on upgrading or reconfiguring handsets and networks,¹³ and then create, maintain, and

¹¹ *Id.* at paras. 14 & 17. Note: TruePosition did not participate in the WG3-sponsored test-bed process.

¹² *See* Test Bed Report Table 7.2-1, at 27. The systems of all three vendors participating in the test-bed process provided horizontal location data, but only one, NextNav, provided vertical location data.

¹³ The evaluation of costs considerations was beyond the scope of the Test Bed Report; however, the WG3 noted: “Some technologies have relatively low costs upfront but are relatively costly to operate and maintain. Others have relatively high upfront costs and have lower operational/maintenance costs. Some methods have cost implications in the handsets, some to the wireless network, and some impact both. Others require infrastructure development independent of the wireless network. Some require the development and maintenance of various databases to operate.” Test Bed Report at 53.

submit to an ongoing, complex, and cumbersome test-bed compliance program.¹⁴ The Commission should stop chasing incremental improvements in ALI and turn its attention to providing dispatchable addresses to public safety, especially through a mechanism that doesn't foster compliance uncertainty among the various stakeholders—providers, public safety, and regulators.

2. The WG3 test-bed results prove that the proposed indoor location-accuracy standards are at present technologically and commercially infeasible.

As designed, the Test Bed Report provided the Commission with data on “the current capabilities and limitations of location based technologies” using “an objective and consistent test platform.”¹⁵ That study provided “verified data” to assist the Commission in making decisions “as regards the strategic direction of public safety services.”¹⁶ This was accomplished by employing a test-bed mechanism to conduct “side-by-side testing of location technologies under well defined, clearly quantifiable conditions.”¹⁷ To meet the standards of the test, the WG3 had to select a disinterested third-party test vendor, find a suitable location (in this case, San Francisco, CA) to capture the relevant morphologies (dense urban, urban, *etc.*), and choose suitable buildings to reflect typical environments and then choose test points within each of those buildings. All aspects of the tests were well considered—from the statistically relevant number of test calls to the mechanism for determining accurate ground truth. In short, over a period of months and at considerable time and cost, the WG3 was able to devise an objective mechanism for testing state-of-the-art location technologies.¹⁸

Based on that report and using upbeat descriptions like “show[ing] significant promise” and “substantial progress,” the Commission claims to be “encouraged that, at least in suburban and rural environments, a 50-meter (or less) search ring can already be produced by existing

¹⁴ See Third Further Notice paras. 84-97. And *see* Test Bed Report Section 13.1 at 52.

¹⁵ Test Bed Report at 8.

¹⁶ *Id.* at 6.

¹⁷ *Id.* at 12.

¹⁸ Not all vendors participated in the WG3 test bed.

technology.”¹⁹ The Commission went on to assert that “stringent requirements for indoor location accuracy” combined with “a reasonable implementation timeframe” would produce “the necessary technology to enable compliance with the proposed requirement regardless of the environment.”²⁰ But this assertion is mere speculation that puts the regulatory cart before the feasibility horse. Instead of setting a two-year compliance deadline before there is a proven technology, it would make more sense to wait until an independent test-bed administrator has actually certified that technically feasible systems are available to CMRS providers. Even that, however, is not the full picture, because proven technologies must still be commercially available on a nationwide basis to multiple providers, and there is no evidence in the record that reliably indicates that a compliant technology will be commercially available and deployed nationwide for use in the timeframe articulated in the Third Further Notice. In fact, because all evidence is to the contrary, it would be arbitrary and capricious for the Commission to require CMRS providers to meet the proposed location accuracy benchmarks in the proposed timeframe. Even if we supported a proposal to improve wireless ALI by incrementally trimming inches off of location-accuracy standards, which we do not, this approach is still backwards and ill conceived.

In any event, the data in the Test Bed Report do not support the Commission’s assertion that a technical solution that would enable CMRS providers to meet the proposed standards will be available any time soon. Rather, the 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.”²¹ Pointedly, the Test Bed Report notes that “*even the best location technologies tested have not proven the ability to consistently identify the*

¹⁹ Third Further Notice paras. 15 and 47.

²⁰ *Id.* para. 47.

²¹ Test Bed Report at 54. We feel this is “committee speak” for: “The results were wildly disparate.” As Table 7.2-1 of the Test Bed Report demonstrates, the horizontal accuracy statistics vary widely. The “Average Error” column shows a range from 27.2 meters to 845.6 meters.

specific building and floor, which represents the required performance to meet Public Safety’s expressed needs.”²² Although it does not appear from the Test Bed Report that the WG3 tested these systems with a view of meeting the standards proposed in the Third Further Notice, the only system that even occasionally approached the proposed horizontal accuracy standard of 50 meters was NextNav LLC (NextNav)—as shown in the following chart:

NextNav Horizontal Accuracy Statistics (All Environments)²³

MORPHOLOGY	TOTAL OF CALLS	67 %	90 %	AVERAGE ERROR	STANDARD DEVIATION
DENSE URBAN	4859	57.1	102.4	57.5	64.9
URBAN	4238	62.8	141.1	69.5	99.9
SUBURBAN	3581	28.6	52.9	27.2	99.7
RURAL	820	28.4	49.9	70.3	1231.5

The NextNav system appears to have worked best in suburban and rural morphologies, even though in the case of the rural morphology the standard deviation was very high (1231.5 meters). Thus, even the NextNav system cannot yet meet the Commission’s proposed indoor location standard of 50 meters.

Equally important, the NextNav system—the best performing of the three systems tested—is not commercially viable at this time.²⁴ According to the Test Bed Report, while NextNav has “largely completed its commercial deployment in the San Francisco Bay area,” its initial network deployment will only be available “in the top 40 metropolitan areas” over the next 18 to 24 months.²⁵ Among other things, this means the NextNav system will be deployed in

²² *Id.* at 54-5 (emphasis supplied).

²³ *See Id.* at 27.

²⁴ In spite of the attention it receives in reports from the Commission’s various CSRIC working groups, in the Third Further Notice, the Commission is strangely silent about standards development. Neither NextNav’s network beacon technology nor Polaris’s RF fingerprinting technology are yet fully standardized for 3G and 4G networks. Standardization could take the 3GPP years, and, once standardized, it might take vendors at least couple of years to comply with and support them. In short, they will take significant development work to provide any real value in the future. *See e.g.*, the Commission’s own Policy Statement issued with respect to developing a text-to-911 solution: *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications; Framework for Next Generation 911 Deployment*, Ps Docket Nos. 11-153 & 10-255, Policy Statement and Second Further Notice of Proposed Rulemaking, FCC 14-6, para. 15 (rel. Jan. 31, 2014) (“The Commission intends to pursue a technologically-neutral approach that provides platform-independent norms for all stakeholders, based on high-level functional standards set by the relevant stakeholders in industry and the public safety community.”) (Emphasis supplied.)

²⁵ Test Bed Report at 45.

limited areas nationwide, but, ironically, not in many suburban and rural areas where it appears to perform best.

The Commission should acknowledge that the WG3 test-bed process was limited to merely evaluating the feasibility of technologies and base lining the performance of those tested technologies in indoor environments. This represents just the first step. The arc between developing a technology and being ready to provision an end-to-end solution in the field for a variety of CMRS providers is long. Many steps have to be taken before a technology—no matter how “promising”—becomes a commercially available solution and a deployment-ready offering. None of the tested technologies have yet completed that arc.

If all that were not enough, it would be reckless for regulators to require providers to put all their indoor location-accuracy eggs into one vendor basket; that is, the solution to meeting any mandate must not only be technically feasible but commercially and economically feasible, as well. As a predicate to adopting new indoor location-accuracy standards the Commission needs to know in advance of mandating compliance that, not only are there cost-efficient, proven technologies available, but also that there are multiple vendors capable of providing such technologies. Providers can't be reliant upon only a single vendor or, as demonstrated by the Test Bed Report where provider performance was dictated in part by morphology, only one technology. At present, even if NextNav were able to demonstrate its ability to comply consistently with the proposed benchmarks under rigorous CSRIC-sanctioned testing conditions, the other tested systems appear far less likely to be viable alternatives anytime soon.²⁶

3. Even if they were technically and commercially attainable, the Commission's proposed indoor horizontal (x/y-axis) standard of 50 meters is of dubious value to public safety, especially in dense-urban and urban morphologies.

As mentioned above, the WG3 does not appear to have conducted the technology test bed with the Commission's proposed horizontal standard of 50 meters in mind. Effectively the test-bed results simply amount to a side-by-side comparison of the three tested technologies in

²⁶ *Id.*, Section 11.2 at 45.

relation to the “accurate ground truth” of the call-origination point.²⁷ Both NextNav and Qualcomm Inc. (Qualcomm) did relatively better in suburban and rural morphologies than did Polaris Wireless (Polaris).²⁸ When compared with their suburban and rural performance, however, neither NextNav nor Qualcomm performed as well in dense-urban and urban morphologies.²⁹ The resulting “search rings” created by the average location test data (*e.g.*, NextNav, Urban, 69.5 meters) led the WG3 to observe that “even the best location technologies 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.”³⁰

In dense-urban and urban morphologies, even a 50-meter radius creates a large search ring. While buildings in suburban and rural environments may be more widely spaced apart, buildings in urban environments are packed more closely together and are often side by side. Location data creating a search ring with a 50-meter radius may very well encompass three or more buildings of various heights.

To appreciate the significance of this, one needs to consider the urban grid plan. The urban areas of older cities (*e.g.*, New York, Boston) look significantly different from those of newer cities (*e.g.*, Houston, Denver). Likewise, even within cities, grid plans can vary (*e.g.*, older urban areas versus newer urban areas). Consequently, there are wide variations among cities in the dimensions of their “standard square blocks.” While there may be no standard urban grid plan, because urban areas typically developed organically over time, looking at representative cities can be illuminating. For example, based on data from Wikipedia, the following chart provides some examples of standard square blocks for four American cities:

²⁷ *Id.* at 13.

²⁸ *Id.*, Table 7.2-1 at 27.

²⁹ *Id.*

³⁰ Test Bed Report at 54-55.

Examples of Standard City Blocks³¹

CITY	DIMENSIONS IN FEET	DIMENSIONS IN METERS
HOUSTON TX	330 x 330	100 x 100
NEW YORK CITY ³² NY	264 x 900	80 x 274
PORTLAND OR	260 x 260	79 x 79
SACRAMENTO CA	410 x 410	120 x 120

Based on these dimensions, it would appear highly likely that a search ring with a diameter of 100 meters would encompass quite a few building locations on one or more city blocks.

The fact is that most people recognize that a search ring with a 100-meter diameter is not ideal. The stated belief underpinning the Third Further Notice is that improving wireless location data even by a few meters would improve the response time of police and fire department personnel and possibly save lives.³³ Yet, even this supposition is highly doubtful. In these urban environments particularly, it is not at all clear that reducing the diameter of the search ring by a few meters will significantly impact the ability of first responders to find that subset of 9-1-1 callers that are unable to communicate their location.³⁴ In short, given the nature of the urban environment, where multiple buildings can be crowded into a search ring with a 100-meter diameter, moving the “location bogey” a few meters will probably not produce significant improvements in response time.

4. Instead of mandating a vertical location (z-axis) standard, the Commission should be facilitating the adoption of a long-term solution that provides public safety with a dispatchable address.

In the Third Further Notice, the Commission proposes requiring “CMRS providers to deliver z-axis location information within 3 meters of the caller’s location, for 67 percent and 80 percent of indoor wireless 911 calls within three years and five years of the effective date of

³¹ See: http://en.wikipedia.org/wiki/City_block.

³² These dimensions are “typical” for the Manhattan Borough.

³³ Third Further Notice para. 33.

³⁴ We are clearly not talking about the whole universe of all 9-1-1 calls. Most callers will be able to tell public safety agents where they are or others nearby will be able to do so on the caller’s behalf, especially in urban areas.

adoption of rules, respectively.”³⁵ This proposal appears to be based on little more than the Commission’s over-reliance on vague marketing claims by location technology vendors on the future capabilities of their technologies and the power of smartphones. While AT&T does not support the adoption of vertical location-accuracy standards (for the reasons set out below), at a minimum, such standards should not be mandated in advance of proven, commercially available, and cost-effective technologies and in advance of the ability of public safety and first responders to effectively apply vertical location data to real-world conditions. But, even if z-axis location technologies were available, they would not provide public safety a dispatchable address, which all agree is the appropriate goal.

5. The record does not support the implementation of a vertical (z-axis) indoor location-accuracy standard.

The Commission asserts its belief that “[v]ertical location information on a caller’s floor height would substantially benefit first responders trying to locate callers in multi-story buildings.”³⁶ This might be true presuming the vertical location information was reasonably accurate and first responders had a practical way of correlating that information to a specific building and a specific floor within that building; however, the record in this proceeding does not support those presumptions. Nothing in the record suggests that public safety and first responders are in a position to effectively use z-axis location data to place the caller on a particular floor of a particular building, even if providing z-axis location data was feasible, which it isn’t.

a. Technology

In proposing the new indoor location-accuracy standards, the Commission asserts that it has three key objectives: (1) make indoor location as widely available as technically and economically feasible, tracking recent improvements in location technology; (2) help CMRS providers, public safety entities, and the Commission to monitor performance and compliance;

³⁵ Third Further Notice para. 73.

³⁶ *Id.* para. 65.

and (3) adopt rules that are technology-neutral, cost-efficient, and easy to understand and administer.³⁷ Yet, the proposal to adopt a vertical (z-axis) standard would appear to flatly contradict all of these objectives. As a result of the WG3 Test Bed Report, we know that there is no technically and economically feasible z-axis technology that is available, much less “widely available.” Moreover, the Commission never explains how CMRS providers and public safety entities will be able to “monitor performance and compliance,” which might depend on data that is either not available or unreliable.³⁸ And the record is completely devoid of any support that the indoor location-accuracy rules will be “technology-neutral, cost-efficient, and easy to understand and administer.” Indeed, to the contrary, the Commission’s own proposed Rube-Goldberg-esque compliance scheme is anything but “cost-efficient and easy to understand and administer.”³⁹ The Third Further Notice is self-refuting.

In prior comments in this docket, AT&T has encouraged the Commission to create “a distinct ETAG [E9-1-1 Technical Advisory Group] subcommittee to drive additional research and development in this area [of plotting and capturing elevation on a z-axis].”⁴⁰ AT&T recognized that providing public safety with additional and more accurate wireless location data could be *important*, but AT&T also confessed that it was unaware of “a practical solution that captures elevation location information.”⁴¹ In brief, AT&T was recommending “further study,” because “enabling CMRS carriers to provide indoor, Z-axis location information to PSAPs . . . [was] not technically or financially feasible in the short-term.”⁴² Indeed, the CSRIC II Working Group 4C (WG4C) went further. In its March 2011, Final Report, the WG4C not only

³⁷ *Id.* para. 39.

³⁸ Below, AT&T proposes an alternative way forward for indoor location-accuracy compliance based on the Commission’s suggestion to repurpose the WG3 test-bed process. (See Section D below.) Still, this sort of technology will not lend itself to public safety monitoring.

³⁹ *See*: http://en.wikipedia.org/wiki/Rube_Goldberg

⁴⁰ Comments of AT&T Inc., PS Docket 07-114, at 12 (filed Jan. 19, 2011).

⁴¹ *Id.*

⁴² Reply Comments of AT&T Inc., PS Docket 07-114, at 21 (filed Feb. 18, 2011).

recommended that the ETAG address the viability of providing z-axis location data, but added pointedly that the WG4C didn't "view Z height as a priority."⁴³

Insofar as vertical (z-axis) data would be dependent upon "barometric pressure sensors in mobile devices to provide rough z-axis information when calls are placed from multi-story building," the Commission should recognize that barometric sensors in mobile devices can be adversely impacted by building design and construction. Many buildings are designed to be pressurized. Multi-story residential buildings and high-rise office towers are designed for HVAC systems that maintain a positive air pressure. While this increase in building pressure is not high, it is large enough to render uncompensated barometric pressure sensors useless as indoor altimeters. A one percent increase in pressure is not uncommon, and an increase of that magnitude would produce a z-axis error of about one story. Uncompensated data, therefore, could result in altitude errors that would delay emergency responses. Consequently, this z-axis methodology would require frequent barometric sensor data updates to the mobile device, and there are presently no standards for sending assistance data for such pressure sensors. What's more, this technology would more than likely involve updates to the handsets themselves, which would increase the costs of those devices, and the need for updated handsets means that it will take some time before enough new handsets are actually in the hands of consumers for there to be any appreciable impact on the ability to transmit z-axis data.

In the intervening three years since the WG4C Final Report was issued, z-axis technology has not improved significantly. Although the Third Further Notice is replete with quotes from vendors and public safety stating the importance of z-axis location data and speaking in glowing terms of unidentified technology, "significant strides" and "promis[ing] ... prototype systems," the fact remains that there are no fully tested and commercially feasible solutions available.

⁴³ CSRIC II Working Group 4C, *Technical Options for E911 Location Accuracy Final Report*, at 66 (March 14, 2011) (WG4C Final Report). In the WG4C Final Report, the Commission's advisory committee notes the following:

Current data formats for sending location to a PSAP do not support transmission of Z-height, and therefore a change to relevant standards is required. Moreover, the GIS databases available to the PSAP may not provide a way to utilize Z-height information. These limitations will need to be overcome before transmission of Z-height to a PSAP is practical. (WG4C Final Report at 28.)

Even though the WG3 did not make the z-axis location technology the focus of its test bed analysis, one vendor, NextNav, submitted to a test of its z-axis technology. While this technology shows some promise, it still falls far short of providing public safety significantly useful location data. For the NextNav technology, the Test Bed Report made the following findings:

Summary of NextNav Vertical Error by Morphology⁴⁴

MORPHOLOGY	TOTAL OF CALLS	67 %	90 %	AVERAGE ERROR	STANDARD DEVIATION	MAXIMUM ERROR
DENSE URBAN	4859	2.9	4.0	2.5	3.2	173.6
URBAN	4238	1.9	2.8	2.0	9.4	193.5
SUBURBAN	3581	4.6	5.5	3.6	1.6	9.7
RURAL	820	0.7	1.1	0.6	0.4	2.3

The test results show that the z-axis location data could vary widely. Indeed, NextNav performed best where it is needed least—in suburban and rural environments. More important, however, the maximum errors in dense-urban and urban morphologies were extremely high. Errors of those magnitudes could significantly delay, not accelerate, response times. NextNav remains positive about the value of its z-axis data service and advised the WG3 that it expects its “next generation system, which was not available for testing, will improve upon these results.”⁴⁵ Regulators, public safety officials, and CMRS providers, however, need to remain skeptical and demand proof of marketing claims and hype.

In spite of what may be described as “promising” technology, the z-axis data proposal suffers from the same ills as does improving the x/y-axis data. First, we are continuing the treadmill race of trying to incrementally hone in on more accurate latitude-longitude location data in lieu of going directly to dispatchable address. Second, the technology remains largely untested and, when tested, imprecise. Third, there is only one vendor that has submitted its z-axis service to “real-world” testing, NextNav.⁴⁶ And NextNav’s system is still in the process of

⁴⁴ See Test Bed Report at 36.

⁴⁵ *Id.* at 40.

⁴⁶ The proof of any pudding is in its tasting, and the same can be said of location-accuracy services; however, it is a practical impossibility to test these services under *real-world* conditions as that would mean testing them after adopting them, during actual emergencies, and around the country in multiple locations and under

being rolled out over the next two years or so to “the top 40 metropolitan areas.”⁴⁷ This would mean that providers could very well be tied to a single vendor or a single technology or both. Either way, the Commission should not require providers to rely on any one vendor or to *de jure* or *de facto* mandate a specific location technology.⁴⁸

b. Public Safety Readiness

The CSRIC II Working Group 4C (WG4C) studied the concept of providing PSAPs with z-axis location data. In its report, the WG4C noted that location data formats presently do not support sending PSAPs z-axis data and that, before such data could be transmitted, relevant standards would need to be changed.⁴⁹ This work remains to be done. The WG4C also noted that Geographic Information Services (GIS) databases available to PSAPs “may not provide a way to utilize Z-height information.”⁵⁰ At present there are no indications that these issues will be resolved within the projected timeframe for the effective date of the Commission’s new indoor location-accuracy standards.

Just as troubling, however, is the question of whether first responders can utilize this data in the field. The Third Further Notice does not discuss this issue. Z-axis data is expressed in meters above sea level. While cities may have a general altitude (*e.g.*, Denver CO is the “mile-high city”), altitude varies within cities. What’s more, buildings have ground floors at various altitudes and are not built to the same dimensions—*i.e.*, buildings do not have standard floor heights, and many buildings do not even have consistent floor heights within themselves. There doesn’t appear to be consensus on how or even if police, EMTs/paramedics, and fire fighters can translate z-axis data into particular building floor designations.

multiple conditions. The test-bed mechanism devised by the WG3 was an excellent (albeit expensive and complex) way of gathering useful data on the location-accuracy systems that agreed to be tested.

⁴⁷ Test Bed Report at 45.

⁴⁸ See WG4C Final Report at 60 (“[T]he FCC [should] not mandate a specific location technology but should promote additional research and development of a variety of technologies through the ETAG. Mandating a specific technology could prevent carriers, access network operators, and service providers from implementing E9-1-1 location solutions that fully leverage their unique network characteristics and could stunt future competition between E9-1-1 solution vendors.”).

⁴⁹ *Id.* at 28.

⁵⁰ *Id.*

Even assuming first responders can use z-axis data to locate the specific floor of a high-rise building, the question remains how that data pins points the location of the caller. Many high-rise buildings have multiple residences or business suites; therefore, merely arriving at the “correct” floor is only the beginning of any search for a 9-1-1 caller, especially one who cannot communicate his or her location verbally or even more from where he or she has fallen.

C. COSTS AND BENEFITS OF INDOOR LOCATION ACCURACY

1. The Commission’s cost-benefit analysis relies on unsubstantiated presumptions in support its newly proposed indoor location-accuracy standards.

Appropriately, the Commission has sought to justify its proposed indoor location-accuracy standards by performing a cost-benefit analysis.⁵¹ In the Third Further Notice, the Commission concludes that the benefit of its new indoor location-accuracy standards would be approximately \$92 billion, reasoning as follows:

- Based on a study performed in Salt Lake City, Utah, using 2001 data (Salt Lake City Study or Study),⁵² the Commission concludes that improving ambulance response times by one minute would save 10,120 lives annually nationwide,⁵³ and

⁵¹ Third Further Notice paras. 27-37.

⁵² Wilde, Elizabeth Ty, “Do Emergency Medical System Response Times Matter for Health Outcomes?” 22 Health Econ. 7, pp. 790-806 (July 2013) (Salt Lake City Study or Study). In these Comments, AT&T will cite to its standalone copy of this report; therefore, the pagination cites will differ from those in the Third Further Notice—*i.e.*, AT&T’s citations will begin on page 1, not page 790.

⁵³ Based on the Commission’s assertion that the Salt Lake City Study allegedly shows a 17 percent (17 %) reduction in total death or “746 saved lives,” the FCC took the number of “lives saved” and divided it by total number of ambulance dispatches covered in the Study and then multiplied the result by the total number of ambulances dispatched in a year, which purportedly gave the FCC an approximate number lives saved annually as a result of decreasing response times by one minute [(746 lives ÷ 73,706 dispatches) x 25 million = 253,030 lives]. Then the FCC decided that 80 % of all the calls for an ambulance dispatch would be from wireless devices, and 5 % of those would experience a one-minute reduction in response time. To find out how many wireless callers would be helped by reducing the response time, the FCC multiplied the 253,030 lives-saved figure by 80 % and then 5 % [(253,030 x 0.80) x 0.05 = 10,120].

These assumptions seem strained. First, the Salt Lake City study notes fully nine percent of EMS calls are for hospital-to-hospital transfers, thus were almost surely placed over wireline facilities. By itself, this reduction converts the postulated 80 percent figure into an even more unlikely 88 percent [= 80 % / (100 % - 9 %)] for the percentage of non-hospital-to-hospital transfer calls coming from wireless phones. Second, a good number of requests for EMS dispatch are likely placed by police or firefighters already on the scene. Presumably, these first responders are quite capable of providing the dispatcher with an accurate location. While the Third Further Notice attempts to compensate for its aggressive suggestion that 80 percent of all EMS calls come from wireless phones by assuming that only five percent will have a reduced response time, this five percent figure is advanced without any analytic or evidentiary support.

- Improving indoor location accuracy to 50 meters/horizontal and three meters/vertical would improve response times of first responders by at least one minute;⁵⁴ and
- The appropriate dollar figure to assign to lives saved through better ambulance response times is the “Value of a Statistical Life” (VSL) figure of \$9.1 million;⁵⁵
- Therefore, taking into account the number of wireless calls originating indoors and the percentage of those calls that might “experience a one-minute reduction in response time.” the benefit in dollars of the new indoor location-accuracy standards is \$92 billion.⁵⁶

The Commission’s calculation, however, is based on applying the VSL to the patient-outcome results of the Study and is premised on the unsupported assumption that the new indoor location accuracy standards alone will improve response times by at least one minute and that a one-minute improvement will save lives (estimated at 10,120 annually). The literature cited by the Commission does not support this, and, indeed, provides significant reasons why such a result is doubtful. Thus, the Commission’s contentions are not substantiated by the Study and its calculations are highly suspect, including, but not limited to, the use of the VSL figure.

2. The Salt Lake City Study does not stand for the proposition that imposing new wireless indoor location-accuracy standards will improve ambulance response times or save lives.

At the core of the Commission’s cost-benefit analysis is the Salt Lake City Study, the aim of which was to see whether the author could prove the conventional wisdom regarding ambulance response times—*i.e.*, that better response times *leads to better patient outcomes*.⁵⁷

⁵⁴ Third Further Notice para. 33.

⁵⁵ Memorandum to Secretarial Officers, Modal Administrators, from Polly Trottenberg, Under Secretary for Policy, U.S. Department of Transportation, RE: Guidance on Treatment of the Economic Value of a Statistical Life (VSL) in U.S. Depart. Of Transportation Analyses, Feb. 28, 2013 (DOT Guidance on VSL). *See* Third Further Notice para. 33 n72.

⁵⁶ To reach the \$92 billion figure, the FCC multiplied the total number of projected lives saved as a result of alleged improved response times (10,120 lives) times the VSL figure: 10,120 x \$9.1 million = \$92 billion.

⁵⁷ Previous studies in this area did not support the contention that increased ambulance response times led to improved patient outcomes. The author sought to address what she felt were possible deficiencies in those prior studies by taking into account “the endogeneity of incident severity and response time.” Salt Lake City Study at 11-12. For example, based on dispatch information provided to ambulance drivers concerning the incident (*i.e.*, trip and fall or gun shot wound to the chest), they might increase or decrease their response time based on their

Based on data derived primarily from the “2001 Utah Prehospital[sic] Incident Dataset, a collection of all prehospital [sic] incident reports collected in Utah between January 1, 2001 and December 31, 2001,”⁵⁸ the author claims to have shown that “response times significantly affect mortality.”⁵⁹ In its discussion of the Study, the Commission cites the Study’s claim that “a minute increase in response times increases mortality by between 8 (measured one day after the initial incident) and 17 percent (measured after the incident).”⁶⁰

In the Study, the author posited that increased ambulance response times in Utah were caused by the policy of relying on mutual-aid calls. Briefly, mutual-aid calls are calls “answered by agencies not covering the territory in which the incident occurred [*i.e.*, the scene of the incident].”⁶¹ In other words, when an agency “runs out of ambulance units and receives a call requesting medical service,” the home agency will ask a neighboring agency to respond in its stead. The author theorized that ambulance response times in Utah were inefficiently high,⁶² because the mutual-aid policy fosters a “free-rider problem”—*i.e.*, agencies deciding not to purchase additional ambulances because they can rely on the ambulances of neighboring agencies. This reliance on mutual-aid ambulances purportedly caused response times to be longer because relying on ambulances from neighboring agencies meant that those ambulances were much farther away from the incident scene than a home ambulance would be.⁶³ (See discussion below.) Using an estimated per-ambulance-and-crew cost of \$450,000, the Study concludes that the benefits to Utah of purchasing an additional 22 ambulances to improve response times, which would improve patient outcomes and outweigh the costs of buying them.⁶⁴

perception of the gravity of the incident. In short, why take risks racing through downtown traffic for an injury that is not life threatening?

⁵⁸ Salt Lake City Study at 13.

⁵⁹ *Id.* at 4.

⁶⁰ Third Further Notice n.70, citing to page 791 of the Salt Lake City Study (at 4 in AT&T’s copy).

⁶¹ Salt Lake City Study at 5.

⁶² *Id.* at 5.

⁶³ This assumption may generally be true but it is hard to tell from the Study, because the Study location data on which the author relied was very imprecise.

⁶⁴ Salt Lake City Study at 38-44.

Under the Commission’s cost-benefit analysis (*see* above-stated syllogism), the Commission relied on the Study to show not only that improved ambulance response times improve *patient outcomes*, but also that improved ambulance response times resulted in “lives saved,” relying on the statement in the Study that “a minute *increase* in response times increases mortality by between 8 (measured one day after the initial incident) and 17 percent (measured after the incident).”⁶⁵ The Commission asserts that, “[b]ecause the regression is linear, this result implies that a one-minute reduction in response time also saves 746 lives, *i.e.*, a 17 percent *reduction* from a mean of 4,386 deaths to 3,640 deaths.”⁶⁶

In spite of the Commission’s assertion, however, the more accurate statement of the Study’s findings is that “an increase in response time of one minute *reduces survival by 23.7 days (.065 years)*.”⁶⁷ But the converse of this statement is not necessarily true—*i.e.*, that a decrease in ambulance response time of one minute from the mean would increase survival by 23.7 days—because the Study does not make that finding. This is a significantly different assessment from the Commission’s conclusion that forms the basis of its cost-benefit analysis; *i.e.*, that a one-minute reduction in ambulance response times would save a quantifiable number of lives.

Indeed, there are even more reasons why the findings of this single Salt Lake City study are inapposite to the questions now at hand. First, the data from the SLC study are from 2001. This was a time when cellphones were not nearly as prevalent as now. It is beyond question that the proliferation of cellphones in the 13 years since that date has resulted in many more and much quicker calls to 911 than in this earlier largely wireline phone era.⁶⁸ As a result, it is likely

⁶⁵ Third Further Notice n.70, citing to page 791 of the Salt Lake City Study (at 4 in AT&T copy).

⁶⁶ *Id.* n.70.

⁶⁷ Salt Lake City Study at 42.

⁶⁸ United States population as of 2010 Census count was 308,745,538; see: <http://quickfacts.census.gov/qfd/states/00000.html>. According to the Commission’s data, the total number of wireless telephone subscribers as of June 30, 2001, was approximately 114,028,928; see: *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Seventh Report*, 17 FCC Rcd 12985, Appendix C, Table 2: FCC’s Semi-Annual Local Telephone Competition Survey (2002). This means that wireless penetration rate in 2001 (the year from which the data for the Study was derived) was approximately **37 percent**. The CTIA estimates that wireless penetration in 2014, however, is **102.2 percent**; see: <http://www.ctia.org/your-wireless-life/how->

that EMS response *from the time of injury* has already improved greatly since then because a phone is nearer at hand. Thus, percentage improvements in mortality from one-minute improvements in response times from 2001 may bear *no relation* to percentage improvements in mortality from the overall quicker response times today.

3. The Commission has not demonstrated that setting an indoor location standard—much less the proposed standard of 50 meters/horizontal and three meters/vertical—would improve ambulance response times at all, much less by one minute.

The Salt Lake City Study did not examine the question of whether improving wireless ALI for calls originating indoors would improve ambulance response times, or even if then-existing wireless location information was impacting ambulance response times in any way. Rather, the aim of the study was to see whether an increase in ambulance response times caused by the Utah practice of mutual aid was impacting patient outcomes and, if it was, whether the benefits of addressing the free-rider effect of that policy might outweigh the costs. To do this, the author used rather imprecise location data.

In the absence of actual location information from the 2001 Utah Prehospital Incident Dataset, the author *assumed* an examined ambulance dispatch began at the ambulance's home base, when in fact the ambulance could have been roaming or at a hospital or other location, and, in some cases, when the "home base" was the post office box of the agency, the author merely used the zip code.⁶⁹ In short, outside of whether the ambulance was dispatched from within the home agency territory or from a neighboring mutual-aid agency, the location data on the scene of the incident was immaterial to the Study; that is, the Study looked at *distance from dispatch*, not the *quality of the location information*. Consequently, the Commission cannot rely on the Study to show that its proposed new indoor location-accuracy standards would either improve

[wireless-works/wireless-quick-facts](#). This represents a significant jump from wireless penetration rates at the time of the Salt Lake City Study.

⁶⁹ Salt Lake City Study at 14-15 ("Because actual ambulance location prior to dispatch was unavailable, I used the agency address for the closest provider in the territory in which the incident occurs provided by the Bureau of EMS. In cases where the agency was a post office box, I used the latitude and longitude coordinates of the agency zip code as the agency location. I then used these latitude and longitude coordinates to calculate the distance between the patient and the provider and the patient and the hospital (if admitted).").

ambulance response times or patient outcomes. Apparently recognizing as much, the Commission sought to buttress its case by citing a number of well-meaning statements by public safety officials and others about the value of improving wireless ALI; yet, all these well-meaning statements amount to little more than suppositions, and not hard data.⁷⁰

Absent from the Commission's discussion of improving ambulance response times is any analysis of whether there are more cost-effective ways that local public safety officials could improve response times than mandating CMRS providers to provide marginally improved wireless ALI. Improving ambulance response times by other means was in fact the point of the Salt Lake City Study—*i.e.*, showing that response times could be improved in Utah by buying 22 new ambulances and hiring crews to operate them.⁷¹ The Study, which uses very loose location data, stands generally for the proposition that public safety has operational choices within its control that could lead to better patient outcomes. It does not show that spending scarce time, talent, and money on unproven technologies to marginally improve wireless ALI or to add z-axis data would result in improving patient outcomes, much less saved lives.

Even assuming for the sake of argument that improving wireless ALI would result in better ambulance response times, CMRS providers have already improved and continue to improve ALI without additional Commission intervention. One reason for this is due to the wider adoption of handset-based technologies (A-GPS). For its part, AT&T has announced its transition to a handset-based carrier at the beginning of this year. Our records indicate that nearly 90 percent of our devices are now A-GPS capable and will rapidly move to 100 percent as we retire our 2G network. Because A-GPS is a quite accurate way to find a caller, the diameters of outdoor search rings are already small.

⁷⁰ Third Further Notice n.69.

⁷¹ Indeed, if the Salt Lake City Study has any validity at all, it shows that the Commission's projected \$92 billion benefit from improving ambulance response times would be better spent on buying and staffing 184,000,000 new ambulances (*i.e.*, \$92 billion ÷ \$500,000 = 184,000,000). We increased the per-ambulance cost to \$500,000 to account for labor differentials across the country.

More importantly, however, wireless carriers like AT&T are continuing to look for improvements in A-GPS performance. In the years since A-GPS was introduced, chipset vendors have worked to improve sensitivity and time to first fix (TTFF) by adding more “correlators” to acquire the GPS satellites. By adopting A-GPS, carriers have been able to take advantage of these improvements with the introduction of each new generation of handset. There are also plans to supplement the existing GPS solution with the addition of the Global Navigation Satellite System (GLONASS) satellites that should provide better accuracy in challenging environments, such as urban canyons and indoor locations. Many handsets have both A-GPS and GLONASS chipset support, so the introduction of this capability will have immediate benefits for E911 once implemented.

In addition to the A-GPS technologies, wireless carriers have begun implementing better fallback technology that should improve indoor location accuracy, as well. When “Voice over LTE” (VoLTE) is launched, these handsets will begin providing Observed Time Difference of Arrival (OTDOA) location estimates in places where the A-GPS technology is not available.

AT&T and other CMRS providers are also making progress on indoor accuracy on other fronts. With the introduction of small cells and 3G Microcells, providers are able to identify and provide accurate location data in the form of MSAG address; these improved location data are available today. And as more indoor-specific applications are made available (*e.g.*, Wireless Home Phone solutions), innovative methods are being developed to provide a dispatchable address to allow public safety to send first responders directly to the caller.

As shown in detail above, the proposed technologies for improving indoor location accuracy discussed in the Third Further Notice may not appreciably improve location accuracy, if at all. First, the technologies referred to in the Third Further Notice and on which the Commission appears to be relying as a basis for imposing new and stricter indoor location-accuracy standards (both x/y- and z-axis) have not yet been proven to perform to those standards through the CSRIC-sanctioned test-bed mechanism and ultimately would not result in material improvements to ALI but, rather, only incremental improvements. Second, the issue for indoor

location accuracy is actually most important in dense-urban and urban morphologies but a search ring with a 100-meter diameter would still embrace several buildings within its compass. Third, as public safety traditionally dispatches first responders using addresses rather than latitude/longitude information, public safety often converts the wireless ALI to closest known street address. This conversion uses geospatial address databases to geocode the latitude/longitude of ALI into a useable street address. This geocoding process can distort the otherwise accurate ALI data by, for example, relating that data to an address in the center of the street rather than the entrance of a particular building. This distortive effect is more noticeable in urban areas where a point in one building may actually convert to the doorway of a nearby building. Because this process will be used after the effective date of any new proposed indoor location-accuracy benchmarks, the purportedly more accurate data will be rendered significantly less valuable. All this underscores the necessity of providing a dispatchable address directly to public safety as opposed to just marginally improving on ALI data.

4. The Commission’s use of the VSL to determine the relative benefit of its proposed indoor location-accuracy standards is inappropriate and improperly inflates the benefits of its proposed indoor location-accuracy standards.

To calculate an overall benefit of \$92 billion, the Commission multiplies its projected number of “lives saved” in a year due to the alleged one-minute improvement in ambulance response times by the VSL of \$9.1 million. But the Commission’s use of VSL, and the way it calculated VSL, in this context, to estimate the purported benefits of the Commission’s proposed indoor location-accuracy standards is inappropriate and wildly inflates the monetary expression of that benefit.

Succinctly, the VSL was developed to “evaluate in monetary terms the costs and benefits of . . . regulations, investments, and administrative actions” relative to the “[p]revention of injury, illness, and loss of life,” especially related to “job choices and consumer product purchases.”⁷² To derive the VSL, the DOT relied on various studies that analyzed “revealed

⁷² DOT Guidance on VSL at 2.

preference” (RP) data or “stated preference” (SP) data pertaining to consumer purchases and employment. RP data are derived from studies “based on consumer purchase decisions and studies based on employment decisions (usually referred to as hedonic wage studies).”⁷³ SP data, on the other hand, are derived from studies based on test-subject responses to market alternatives incorporating hypothetical risks.⁷⁴ Both of the types of studies from which these data are derived require adjustments for many potentially corrupting factors (*e.g.*, with SP data, there is no assurance that individuals’ predictions of their own behavior would be observed in practice).⁷⁵ But all the data used to derive the VSL are based on real or hypothetical *choices* aimed at preventing completely certain small probability *risks* of illness, injury, or death (*e.g.*, 1 in 10,000 chances). This is not the same as mitigating the effects of illness or injury after it has occurred (*i.e.*, improving one’s chances of survival or reduced injury after calling 9-1-1). Hence, the studies underlying the VSL do not pertain to life valuations for persons who have already contracted a disease or have already been seriously injured (and may in fact be on the brink of death). Consequently, it is inappropriate to use a figure derived from such studies when trying to assess the alleged benefit of regulations aimed at improving ambulance response times to 9-1-1 calls, especially in this case where the presumed benefit is so highly speculative.

Just as importantly, however, because the Study merely supports the contention that “an increase in response time of one minute *reduces survival by 23.7 days (.065 years)*,” the application of the VSL figure would appear wholly inappropriate. And even assuming that the VSL figure could be used in any way to assess the monetary value of the improvement “in patient outcomes,” the \$9.1 million figure would have to be reduced considerably, because the studies on which the VSL figure is based were not focused on monetizing the *value of having a*

⁷³ DOT Guidance on VSL at 3.

⁷⁴ DOT Guidance on VSL at 3.

⁷⁵ It is not uncommon for test subjects to respond to hypothetical questions in a way they believe they ought to respond (*e.g.*, “I would willingly buy organic fruit even if the cost for a similar non-organic product was \$1 a pound lower.”).

life merely extended by 23.7 days; rather, they were based on monetizing the value of life resulting from the *complete avoidance* of the postulated injury.

Also, in applying the VSL, the Commission developed an equation in which attempts to estimate the number of indoor wireless callers who would benefit from more accurate indoor location accuracy, which overstates the number of potential beneficiaries. The Commission takes the alleged number of lives saved annually by decreasing ambulance response times (253,030) and assumes that 80 percent of those lives would be associated with wireless calls and that, of that of the 80 percent, approximately five percent would see an actual benefit. But the Commission's universe of callers benefitting from the alleged decrease in ambulance response times due to "improving" indoor wireless location accuracy is far too broad.⁷⁶ The real beneficiaries of any alleged improvement in indoor wireless location accuracy would be primarily callers in dense-urban and urban morphologies calling from high rise structures—not all wireless callers.⁷⁷ So, even assuming that 80 percent of all 9-1-1 calls originated from wireless devices, only some subset of those would originate from these urban high-rise structures and the calculation would need to account for this. After making that adjustment, the Commission would still need to reduce the number by callers who are either not in distress (they are calling on behalf of others or, if injured, are not unable to communicate clearly) or have others with them who can provide precise location information. Consequently, the Commission's monetization of the purported benefit is exaggerated by using inflated percentages relative to the number of wireless users that might in fact benefit from decreased ambulance response times. At any rate, the numbers and percentages that the Commission uses are merely assumptions and are not supported by any hard data in the record.

⁷⁶ For example, the Commission doesn't take into account that the number of wireless 9-1-1 calls in all likelihood includes multiple calls originating from the same incident (*e.g.*, a motor vehicle accident), which is typical in outdoor incidents but can also arise from indoor incidents, as well.

⁷⁷ The Commission seems to think that wireline POTS service or fixed interconnected VoIP service that provide either MSAG addresses or Registered Addresses have disappeared from high-rise office buildings. People working in commercial business environments have alternatives to wireless devices when calling 9-1-1, and those alternatives already provide highly accurate indoor location information. Moreover, while many people have cut the residential cord in favor of wireless service, there are still a significant number of wireline telephone subscribers, especially among the elderly. What's more, not all these cord-cutters live alone.

D. IMPLEMENTATION ISSUES

1. For any near-term solution, the Commission should adopt a simple, straight-forward compliance mechanism that doesn't add to compliance uncertainty.

The Commission is proposing to create out of whole cloth a new and wildly complex and expensive compliance mechanism fashioned after the test-bed process adopted by the WG3. As we understand it, the proposed, independently-administered test-bed compliance program would test for location accuracy, latency (TTFF), and reliability (yield) in “representative indoor environments.”⁷⁸ Under this program, CMRS providers would have “to show” that the tested technology is both the technology that “it is deploying” in its network and is being tested in a manner that reflects how the technology “will actually be deployed in the network.”⁷⁹ CMRS providers that are certified as compliant by the test-bed administrator would be granted “safe harbor” status.⁸⁰ In the Third Further Notice, the Commission discusses the mechanics of this test-bed compliance program—*e.g.*, the selection of the independent administrator, the number of test beds for accurate assessment, test-bed configurations, and testing parameters—and the scope and applicability of the new indoor location-accuracy requirements—*e.g.*, accuracy on the PSAP-level or county-level, waivers, and enforcement.

From AT&T's perspective, the Byzantine complexity of the Commission's proposed compliance program further demonstrates why the Commission should abandon its proposed near-term location-accuracy standards in favor of the long-term solution of providing a dispatchable address, which would be far simpler and easier to administer (see above). Even in the context of a proposed near-term solution, however, the Commission's proposed testing program is too cumbersome and expensive and, just as important, it does not in fact appear to provide a real safe harbor from enforcement. If the Commission has the confidence it says it has in the vendors and their location-accuracy technologies, then the Commission's compliance

⁷⁸ Third Further Notice para. 84.

⁷⁹ *Id.* para. 84.

⁸⁰ The Commission is not entirely clear on the point of what constitutes a “safe harbor,” because the Third Further Notice implies significant post-testing compliance activity, including PSAP involvement.

testing program should reflect that confidence and create compliance certainty through a meaningful post-testing safe-harbor provision.

2. With the help of its advisory committee, the Commission should design a mechanism for establishing a test-bed program that would truly provide CMRS providers with a compliance safe harbor.

Even if the Commission decides to move ahead with improved location accuracy standards (which it should not), it should work with its advisory committee to develop a test-bed mechanism that would grant CMRS providers a true safe harbor from on-going compliance uncertainty with respect to any new indoor location-accuracy standards the Commission might adopt and to keep test-bed testing expenses to a minimum.

As described above, the WG3 undertook a herculean task of developing a test-bed mechanism—setting standards, selecting an independent administrator, locating the appropriate morphologies and buildings and spots within buildings, *etc.*—in order to provide the Commission data on the state of location-accuracy technologies and the vendors that offer them. As suggested in the Third Further Notice, this same test-bed mechanism could be repurposed by the Commission’s advisory committee (*e.g.*, standards, building types, appropriate locations, *etc.*) to provide a template for an independent administrator to evaluate the adoption and deployment of appropriate indoor location-accuracy technologies by providers.⁸¹ This would allow providers to select a vendor and a technology best suited for their networks and to have the vendor and the technology tested by a disinterested third party and by means of an FCC-approved process that emulates real-world conditions. The provider and the vendor would agree on what handset or network improvements need to be adopted and incorporated, if any, for the technology to perform as designed and to meet the Commission’s location-accuracy standard (Deployment Plan or Plan), and that technology (as it would be deployed pursuant to the agreed-upon Deployment Plan) would be tested through the test-bed mechanism by the independent administrator. If the technology does not pass the test-bed process, then the provider and the

⁸¹ Whether it is the Commission’s intent, AT&T would advise the Commission against putting its advisory committee in direct charge of the actual compliance testing program.

vendor would have to return to the drawing board to determine whether adjustments have to be made to the technology or the manner of deployment. After this process, the technology would be re-tested. Once the selected vendor, technology, and the Deployment Plan passes the test-bed process, the Commission should grant the provider a true safe harbor that would eliminate the need for any compliance second guessing and future uncertainty.

For this to work, the provider and its vendor would certify that the vendor's technology would be deployed in the provider's network consistent with the Deployment Plan. It may be, for example, that the indoor location-accuracy technology doesn't need to be deployed in rural and suburban environments because the provider's existing handset-based, A-GPS location-accuracy system—as enhanced by additional global navigation satellite systems like GLONASS, Galileo, and Compass, as well as improvements associated with the deployment of the provider's LTE network—is sufficient for those morphologies or because the local PSAP cannot utilize the new indoor location data.⁸² The Deployment Plan would designate those areas in which the indoor location-accuracy technology is deployed in the network. The combination of the test-bed mechanism and the certification process would provide sufficient evidence that the provider's service appropriately meets the Commission's indoor location-accuracy standards—the test-bed would provide objective data showing the efficacy of the technology, as deployed in the network per the Deployment Plan, and the certificates would provide evidence of actual and appropriate deployment of that technology within the network.⁸³

Upon completion of this process, the CMRS provider would enjoy safe-harbor status and would not be subject to enforcement action on the question of whether it was meeting the indoor location-accuracy standards. If questions arose concerning ALI provided to PSAPs in anyway pertaining to the indoor standards—accuracy, reliability, and latency—the only enforcement issue would be whether the CMRS provider fulfilled the Deployment Plan as certified. Only if

⁸² See Third Further Notice para. 111.

⁸³ There may be reasons to repeat the test-bed process either periodically or if there is evidence of significant degradation in the ALI data or if the standard is raised (*e.g.*, from 67% to 80% in year five of the plan). Certification that the Deployment Plan is being maintained can be provided annually.

the CMRS provider failed to fulfill the Deployment Plan as certified should the CMRS provider be subject to an enforcement action.

This compliance plan obviates the need to address some issues posed by the Commission in the Third Further Notice. For example, under this compliance plan, there would be no need to share details of test results with anyone. Either the independent test administrator has certified that the technology and Deployment Plan meet the indoor location-accuracy standards or not; all that needs to be disclosed is that the test administrator has certified compliance. Likewise, with respect to indoor location accuracy, the question of satisfying the indoor standards at the county-level or the PSAP-level also would be moot.⁸⁴ The Deployment Plan should take into consideration those PSAPs that are “capable of utilizing this location information”⁸⁵ and the scope of deployment.

To be clear, in addition to providing objective enforcement data, this proposal also aims to include PSAPs in the compliance process. First, PSAPs, through their professional associations like NENA and APCO, can and should participate in the advisory committee process that will establish the test-bed template for documenting compliance with new indoor location-accuracy standards. What’s more, assuming the advisory committee or some subcommittee of that committee is involved in selecting the independent third-part test administrator, PSAPs can participate in that capacity, too. Second, PSAPs would play an important role in guaranteeing on-going maintenance and enforcement. Their perception of problems could be the first indication to providers that the system is not necessarily working as designed. In that case, PSAPs can and should engage providers in dialogue to determine whether there might be a problem that needs to be addressed.⁸⁶ Those PSAPs covered by the Deployment

⁸⁴ See Test Bed Report, Section 13.1: “Important Insights Gained from Test Bed Process,” at 52 (“FCC: ‘Should indoor locations be sampled in a statistical manner within each county of PSAP coverage area?’ CSRIC: ‘Consensus within the working group is that such widespread indoor testing would not be practical.’”).

⁸⁵ Third Further Notice para. 111.

⁸⁶ CMRS providers are well aware of what happens when stakeholders fail “to work together.” (See Third Further Notice para. 111.) In August 2013, CalNENA generated a report in which it claimed that there had been an “alarming drop in the delivery of location information on 9-1-1 wireless calls beginning in 2009 throughout California.” Letter to the Honorable Mignon Clyburn, Chairwoman, Federal Communications Commission, from Danita L. Crombach, ENP, (dated Aug. 12, 2013) (CalNENA Letter). This accusation was untrue and was totally

Plan would have the right to raise any questions with the provider and the Commission concerning performance, but adherence to the certified Deployment Plan would resolve any enforcement matter.⁸⁷

The Commission should also seek to avoid having providers justify performance in multiple locations because of the perceptions of others or merely anecdotal experiences. If a provider demonstrates compliance in the FCC-approved test bed, then the provider should not be subjected to compliance challenges in other locations with different test beds. The WG3 test-bed methodology was designed to show statistically that a specific location-accuracy technology would generally provide indoor location estimates in compliance with proposed targets. But that methodology does not guarantee that the tested technology will perform identically or flawlessly in another test bed with different characteristics. In any case, if a provider and its vendor pass the independently administered test-bed process and are certified compliant, then they should not be subjected to enforcement actions based on challenges in other environments.

3. The Commission should avoid adopting test-bed processes that unnecessarily add costs to compliance testing.

To provide the Commission with data on indoor location-accuracy technologies, the WG3 developed a detailed test-bed process. The aim was to provide a test that would challenge these location-accuracy technologies in real-world conditions—in various morphologies, in various building types, *etc.* By all reasonable measures, the test-bed mechanism was protracted

debunked by CMRS carriers in their responses filed with the Commission. (*See e.g.*, Letter to the Honorable Mignon Clyburn, Chairwoman, Federal Communications Commission, from Joseph P. Marx, AVP – External Affairs/Regulatory, AT&T Services, Inc., (dated Sept. 6, 2013). The problem was primarily that CalNENA did not have access to all the data necessary to assess the actual status of carrier compliance with the Commission’s ALI rules. As a result, even today, people incorrectly believe that CMRS providers are not providing ALI in compliance with the rules and the CalNENA letter is still cited as some evidence that CMRS providers are putting Californians in jeopardy. Had CalNENA discussed its findings with the carriers before it wrote its letter, we believe that we could have disabused CalNENA of its incorrectly derived conclusions.

⁸⁷ In spite of efforts to harden networks and employ best practices, services can be interrupted, including those provided by location vendors. On occasion consumers of these services are the first to know that there might be a problem. We would fully expect the public safety community to alert providers of these sorts of temporary disruptions or degradations in performance.

and expensive.⁸⁸ If this mechanism is to be repurposed for compliance testing, the Commission should take all reasonable steps—just shy of performance impacting—to control costs.

AT&T is aware that the ATIS Emergency Services Interconnection Forum (ESIF) has issued a document entitled, “Consideration in Selecting Indoor Test Regions,”⁸⁹ that, among other things, recommends employing six regional test beds because “more thorough testing of a fairly small number of test regions is preferable to lightly testing in a large number of test regions.”⁹⁰ In short, the ESIF recommendation is aimed at getting a real bang for the testing buck by limiting the number of test beds. Even so, AT&T is convinced that six regional test beds are still too many and would raise the costs of testing unnecessarily. The WG3 was convinced that the test bed in San Francisco was representative of the various morphologies found in and around the average city. If this is the case, then replicating the same test bed experience in multiple cities would not appear to provide additional useful data. If a single location was good enough to recommend that carriers deploy specific technologies, then a single test-bed location should be good enough to certify compliance.⁹¹

The Commission and its advisory committee should be open to finding ways to keep testing costs down whenever reasonably possible. It may be that cost savings will be proposed during the standards setting process or they may arise after the first set of tests. Either way, the Commission should endeavor to keep the costs associated with compliance testing reasonably low and to guard against testing-expense creep.

⁸⁸ According to the Test Bed Report: “Testing in just a single geographical test area required months to plan and execute the tests—even with complete cooperation and support from vendors, carriers, and public safety. The cost to cover the planning, execution, and analysis of performance within this single test area was also substantial (\$240,000). As testing of a larger number of test points increases so do costs.” Test Bed Report at 52.

⁸⁹ ATIS, “Considerations in Selecting Indoor Test Regions,” ESIF-2014-010, ESIF-ESM-2014-003R2 (Jan. 2014).

⁹⁰ *Id.* at 3.

⁹¹ Indoor location-accuracy testing is critical in dense-urban and urban morphologies where callers are more likely to be harder to locate due to building construction and height and the population density. It might make the most sense to test only dense-urban and urban morphologies—especially since A-GPS works best in suburban and rural morphologies—and to do so in the most challenging location.

II. IMPROVING THE DELIVERY OF PHASE II LOCATION INFORMATION

A. TIME TO FIRST FIX (LATENCY):

In measuring compliance with the proposed rules, the Commission should allow CMRS providers to exclude 911 calls of less than 30 seconds duration.

The Commission is proposing to codify a new latency rule for both outdoor and indoor location-accuracy standards, requiring CMRS providers to “deliver E911 location information, with the specified degree of accuracy, within a maximum period of 30 seconds to the location information center.”⁹² As part of this proposal, the Commission is considering whether “to exclude wireless 911 calls that are dropped or disconnected in 10 seconds or less, and in which CMRS networks have not yet delivered a location fix to the location information center, *for purposes of determining compliance.*”⁹³ The Commission has sought comment on this proposal, including whether the duration of the call-exclusion provision should be longer than the proposed ten seconds.

The Commission’s proposed latency rule presents an internal conflict. On the one hand, the Commission recognizes that, while in some cases accurate location data can be generated in less than 30 seconds, the industry standard for generating location data is 30 seconds. So the Commission wants to set the codified latency standard at 30 seconds. On the other hand, the Commission wants to count calls *with less than 30-second duration* as part of the provider’s location-accuracy compliance calculation. If the Commission believes—as it seems to—that the 30-second latency value should be codified, then all calls should be given at least 30 seconds for purposes of calculating the location-accuracy success rate. To do something else (like use 10 or 20 seconds) would unfairly mischaracterize the provider’s compliance with location-accuracy benchmarks.⁹⁴

⁹² Third Further Notice para. 144.

⁹³ *Id.* at 147.

⁹⁴ Using a simplified example, if a provider were to count 100 calls lasting 11 seconds or longer and 50 percent of those calls were terminated before 30 seconds, the result could be that the provider could not demonstrate compliance with the standard even though the provider could have demonstrated compliance had the 50 calls lasted 30 seconds—*i.e.*, lasted as long as the maximum period for providing accurate location data. These proposed rules effectively penalize providers that do not calculate a location after the call has terminated.

If the Commission’s long-term goal is to reduce TTFF, then the Commission would need to establish new baselines targets for both TTFF and accuracy because there is a strong correlation between TTFF and accuracy. If the Commission were to go in this direction, then the Commission should task the CSRIC Working Group to retest all scenarios with the updated targets to ensure they are technically feasible and ensure there are commercially feasible products that could be deployed to meet any updated goals. At present, however, given the status of technology, the Commission should not act to include 9-1-1 calls of shorter duration than 30 seconds in any calculation aimed at “*determining compliance.*”

B. C/U DATA:

The Commission should adopt the ESIF recommendation to use 90 percent as a standard required confidence level.

The Commission seeks comments on recommendations from NENA and ATIS on adopting a uniform standard for the delivery of confidence and uncertainty data.⁹⁵ The ATIS ESIF recommends that the Commission use a 90-percent standard.

AT&T supports the ESIF recommendation that the Commission adopt 90 percent as a standard confidence level. We note, however, if the Commission were to abandon plans to impose new indoor location-accuracy rules for near-term solutions in favor of the long-term solution of a dispatchable address, certainty-uncertainty data would be unnecessary, except in cases where latitude/longitude ALI was provided because a dispatchable address was unavailable.

C. UPDATING PHASE II REQUIREMENTS:

Because AT&T has announced its transition to handset-based carrier status for purposes of the Commission’s wireless location-accuracy rules, it has no objection to the Commission adopting a unitary requirement for handset-based ALI.

The Commission has recognized that “nearly all handsets are now GPS-enabled” and that “CMRS providers have continued to migrate away from networks requiring network-based

⁹⁵ Third Further Notice paras. 155 *et seq.*

location technology.”⁹⁶ Given these developments, the Commission is seeking comments on whether it should adopt a unitary requirement for both indoor and outdoor calls.⁹⁷

Because AT&T opposes the adoption of the Commission’s new indoor location-accuracy rules and recommends, instead, that the Commission facilitate the leveraging of commercial location-based services to provide a long-term solution whereby CMRS providers can provide public safety with a dispatchable address, AT&T proposes that the Commission adopt a unitary requirement for location data using handset-based technologies (*e.g.*, A-GPS and OTDOA), but not the long-term indoor solution that leverages location-based services to provide a dispatchable address. Under the proposal AT&T described above, CMRS providers would provide PSAPs with a dispatchable address for 9-1-1 calls originating indoors, when possible, and would relay handset-based ALI (*e.g.*, A-GPS and OTDOA) in the absence of WiFi/Bluetooth database location information. Compliance under the proposed dispatchable address solution would only require CMRS providers to show that they made sure their handsets have both WiFi and Bluetooth integrated chipsets and their networks are able to query the WiFi/Bluetooth beacon location database and to provide that data to the PSAP. Consequently, there is no reason to unify the long-term indoor solution (*i.e.*, the dispatchable address solution) with the data provided from handset-based technologies (*i.e.*, latitude and longitude).

D. CALL TRACKING DATA:

There is no basis in the record for the Commission to require CMRS providers to periodically report E911 Phase II call tracking information.

The Commission’s thinking on why CMRS providers should be required to periodically report E911 Phase II tracking information is unclear. Initially, the Commission points to the August 12, 2013, CalNENA Report sent to the Commission claiming that there had been a “decline in the percentage of wireless 911 calls that include Phase II location information”⁹⁸—

⁹⁶ *Id.* para. 164.

⁹⁷ *Id.* para. 166.

⁹⁸ *Id.* para. 167. *See* footnote 86 *infra*.

even though that report was thoroughly debunked by providers, showing among other things that CalNENA never consulted them and, had they, they would see that providers were in fact meeting their regulatory obligations to deliver Phase II location information to Global Mobile Location Center (GMLC) or Mobile Position Center (MPC). Then the Commission references comments by NENA and APCO International (APCO) concerning limitations on their ability to monitor Phase II data.⁹⁹ None of these “facts” seem to be a good basis for requiring further data production on the part of CMRS providers.

Among the showings required by the Paperwork Reduction Act (PRA)¹⁰⁰ is that the Commission justify proposed data collection by “evaluat[ing] whether the proposed collection of information is *necessary for the proper performance of the functions of the agency*, including whether the information shall have practical utility.”¹⁰¹ AT&T cannot see how the periodic reporting proposed in the Third Further Notice meets the agency’s obligation under the PRA. If the Commission has a proper aim for this proposal, it should articulate how it is necessary for the performance of its own functions, not those of PSAPs and their associations.

CONCLUSION

AT&T respectfully requests that the Commission consider these comments in its deliberations on this matter.

AT&T

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⁹⁹ *Id.* para. 168.

¹⁰⁰ *See* 44 U.S.C. § 3501 *et seq.*

¹⁰¹ 44 U.S.C § 3506(c)(2)(A)(i).

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