

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
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Wireless E911 Location Accuracy Requirements) PS Docket No. 07-114
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**COMMENTS OF T-MOBILE USA, INC., RURAL CELLULAR ASSOCIATION
AND THE RURAL TELECOMMUNICATIONS GROUP, INC.**

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T-Mobile USA, Inc. (“T-Mobile”), Rural Cellular Association (“RCA”) and the Rural Telecommunications Group, Inc. (“RTG”) hereby comment in response to the Commission’s Public Notice of November 6, 2009.¹ T-Mobile, RCA and RTG commend the Commission for updating the record and undertaking a fresh look at these issues. Getting a constructive, effective and practical set of E911 rules in place is important for consumers, public safety agencies and wireless carriers alike. In particular, as the D.C. Circuit’s vacatur of prior rules² and the record compiled last fall made clear, improving accuracy in the minority of areas where county-level accuracy is not achieved today requires a workable, technically feasible path that will be a net benefit both to public safety and to the public interest as a whole.

¹ Public Notice, *Public Safety and Homeland Security Bureau Seeks to Refresh the Record Regarding Service Rules for Wireless Enhanced 911 Phase II Location Accuracy and Reliability*, PS Docket No. 07-114, DA 09-2397 (rel. November 6, 2009).

² *Rural Cellular Association and T-Mobile USA, Inc. v. Federal Communications Commission and United States of America*, Docket No. 08-1069, Order at 1 (D.C. Cir. Sep. 17, 2008).

I. Summary.

Over the past year, continued experience confirms that network-based carriers will be able to improve accuracy performance in “hard-to-estimate” outdoor areas only by transitioning to A-GPS technology. For these environments (such as limited cell site deployments, “string-of-pearls” cell sites and cell sites on the edges of coverage areas), A-GPS technology provides a better accuracy solution than existing network-based technologies. Because few GSM 2G A-GPS handsets are readily available in the marketplace today (and then only for a small number of high-end handsets), carriers can make the transition to A-GPS only as part of their implementation of 3G services.

Fortunately, the market is driving carriers to deploy 3G as rapidly as possible, which means that 3G adoption will power the transition to A-GPS. T-Mobile, for example, has succeeded in clearing its AWS spectrum in substantial parts of the country, and has now launched its 3G services in markets covering more than 170 million people nationwide, with a target of reaching 200 million by year end. T-Mobile’s current 3G handset line-up is entirely A-GPS capable, including both high end handsets and handsets that are offered free with a two-year contract. RCA and RTG member carriers are also beginning to roll-out 3G services, although with substantial schedule variance from carrier to carrier and limited 3G handset availability.

Recognizing that 3G would provide the path to improved accuracy particularly for rural areas, in 2008, T-Mobile and RCA proposed a set of benchmarks – modified from those proposed by AT&T – that would ultimately transition from a network-based E911 solution to an A-GPS handset-based solution over ten years. In the ensuing thirteen months, it has become apparent to T-Mobile and RCA that the handset penetration

projections that underlay their 2008 proposal³ were overly optimistic. The sagging economy, continued buildout of “hard-to-estimate” cell sites in rural areas, and slowed customer growth contributed to these over-estimates. Consequently, establishing a fixed set of deadlines for A-GPS penetration, whether stated expressly or implicit in a set of county-level benchmarks that can only be met through increased A-GPS handset penetration, will be problematic. Projections of 3G handset penetration even one year into the future – let alone ten – are highly uncertain and will be affected by intervening events that cannot reasonably be anticipated. This uncertainty is compounded by the fact that different carriers began or will begin their 3G deployments at different times.

Fortunately, there is a better, forward-looking approach – one that moves the network-based carriers toward deployment of currently “best available” location technology in a rapid, but realistic timeframe. Adapting a 2007 proposal by RTG,⁴ T-Mobile, RCA and RTG now propose migrating 3G services to a single, baseline handset-based A-GPS solution. However, rather than attempting implicitly or explicitly to prescribe A-GPS-capable handset penetration benchmarks, as virtually all of last year’s proposals would have done, the Commission should consider a simpler and more easily enforced means of effectuating that transition – requiring that all 3G handsets manufactured in or imported into the United States be A-GPS capable after a date certain. This A-GPS handset requirement could be accompanied by a directive that carriers, after an appropriate transition period, enable their entire network to be able to handle and to

³ See *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of T-Mobile USA, Inc. and the Rural Cellular Association on the 911 Location Accuracy Remand (filed October 6, 2008) (“T-Mobile/RCA 2008 Comments”).

⁴ *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of the Rural Telecommunications Group, Inc. (filed August 20, 2007) (“RTG Proposal”). See also *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of the Rural Telecommunications Group, Inc. (filed October 6, 2008) (“RTG 2008 Comments”)(proposing transitioning to a single, handset-based accuracy standard).

provide to PSAPs, GPS-based location data from an A-GPS-capable handset. Together these two rules would ensure that PSAPs receive more accurate A-GPS-based location estimates in these “hard-to-estimate” areas as 3G handsets are distributed – even in areas with only 2G services – and that carriers convert to A-GPS as they rollout their 3G handsets. These rules would also avoid the need for an otherwise inevitable slew of waivers because some carriers – especially smaller ones – will be further behind in their 3G transition and thus unable to meet any arbitrarily selected benchmarks.

The Commission should also use this fresh look to cure the notable defects in the record to date. First, none of last year’s proposals fully acknowledged technical and economic feasibility limits. These limits must be recognized and addressed in any set of rules that seeks to meet the arbitrary or capricious standard. Moreover, due to the lack of A-GPS-capable handsets for 2G, the new rules should provide that rural carriers operating a 2G GSM network may lawfully operate, notwithstanding an inability to meet the applicable accuracy standards on a network-wide basis, provided that they have taken all reasonable steps to meet such standards by deploying a network-based Phase II solution at each of their existing cell sites. Second, different carriers remain in different places with respect to their 3G deployment so that timelines that are appropriate for one carrier can be wholly inappropriate for another. Third, a benefit-cost analysis is necessary to examine whether the rules the Commission is considering will be a net benefit or a net detriment, both to public safety interests and to the public interest as a whole.

Requiring carriers other than AT&T to comply with AT&T’s proposal would still be arbitrary and capricious. AT&T’s putative ability to comply with its proposal is not

indicative of the technical and economic feasibility of that proposal for other carriers. AT&T's proposal would require other carriers to provide high-accuracy results using network-based triangulation in areas where that simply cannot be done. Moreover, in contrast to AT&T, some carriers may have their service area predominantly comprised of counties that are impossible to triangulate within the FCC's accuracy standards using their existing networks and network-based technology. Similarly, some carriers that primarily serve urban areas, such as T-Mobile, have built out additional "hard-to-estimate" rural cell sites even when they are not selling service to consumers in those particular areas (but instead are simply enabling customers from other areas to pass through without losing coverage), thus increasing T-Mobile's percentage of "hard-to-estimate" counties. AT&T's proposal is a "one-size-fits-all" proposal designed so that AT&T can comply given its particular mix of "hard-to-estimate" and "easier-to-estimate" cell sites, but without any evidence that AT&T's mix of cell sites is representative of any other carrier's.

In addition, AT&T has been marketing 3G devices, including the highly popular iPhone, for much longer than other network-based carriers. Other carriers therefore cannot hope to transition to 3G faster than AT&T, which would be required for any other carrier to comply under AT&T's plan. For similar reasons, as discussed *infra*, it would also be arbitrary and capricious simply to require all other handset-based carriers to meet the Verizon/Sprint proposal, without recognizing differences in their local circumstances.⁵

⁵ See *RTG 2008 Comments* at 2; *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Reply Comments of the Rural Cellular Association on the 911 Location Accuracy Remand at 2-3 (filed October 14, 2008) ("RCA Reply Comments").

II. The Commission Should Require All 3G Handsets Manufactured in or Imported into the U.S. to Be A-GPS Capable After a Date Certain Instead of Setting County Level Compliance Benchmarks.

Current network-based technologies have very minimal room for improvement in the “hard-to-estimate” areas (*e.g.*, limited cell site deployments, “string-of-pearls” cell sites and cell sites on the edges of coverage areas); thus, moving to A-GPS is the only feasible way to improve accuracy in these areas. Over the past year, T-Mobile has deployed service in 169 counties, mostly in an effort to reduce its reliance on other carriers. Yet in many of these newly added counties T-Mobile could not meet the network-based accuracy standards when measured at the county level. No available technology, other than A-GPS, can substantially improve accuracy in these areas.

Implementing A-GPS, however, requires changing out customers’ handsets, which can most readily be accomplished as customers upgrade or replace their handsets.⁶ With few GSM 2G A-GPS capable handsets available – and those only being high-end handsets – the transition to A-GPS for GSM carriers will necessarily occur in conjunction with a carrier’s implementation of 3G services. T-Mobile’s entire 3G handset lineup is now A-GPS capable, including some handsets that are free with a two year service contract. RCA and RTG member carriers are also beginning to roll-out 3G services, although with substantial variance from carrier to carrier with respect to schedules and 3G handset availability.

⁶ Unfortunately, the overall base of wireless subscribers is not growing nearly as rapidly as it was a few years ago. Moreover, most of the “net add” growth that is taking place is concentrated among the nation’s two largest providers – Verizon Wireless and AT&T. In fact, the Commission was recently advised that in the 2Q 2009, Verizon Wireless and AT&T collectively accounted for 86% of the net customer additions by the largest U.S. carriers. *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Condition With Respect to Mobile Wireless including Commercial Mobile Services*, WT Docket No. 09-66, Comments of Cellular South, Inc. at 2 (filed Sept. 30, 2009). Thus, handset replacement is now more likely to be occurring than adding new subscribers that do not have a wireless handset.

All of last year's proposals implicitly or explicitly recognized that network-based technologies had limits that would not permit carriers to meet location accuracy standards at a county level in every county, and that a transition to A-GPS handsets would have to occur in order to improve accuracy in the "hard-to-estimate" areas. AT&T's proposal implicitly required a carrier to reach 95% A-GPS-capable handset penetration nationwide by the end of the fifth year after the effective date because a carrier would need to rely on handset-only measurements in some counties in order to meet a county-level requirement of 67% of calls located within 100 meters.⁷ In their 2008 proposal, T-Mobile and RCA modified AT&T's proposed benchmarks so that, in application, a carrier would be required to reach 85% A-GPS capable handset penetration by the end of the seventh year after the later of the effective date or the start of a carrier's A-GPS handset deployment, and 95% A-GPS capable handset penetration by the end of the tenth year after the later of the effective date or the start of a carrier's A-GPS deployment.⁸

While the T-Mobile/RCA proposal allowed more flexibility than AT&T's proposal, including pacing the deadlines from the date a carrier begins to offer 3G services, upon revisiting the proposal with the benefit of additional experience, T-Mobile and RCA have determined that it still may not be flexible enough to recognize reality. For example, predicting the rate of handset replacement even a year from now is tricky – as T-Mobile has learned over the past year. It has not yet achieved the levels of 3G handset penetration that it anticipated in its proposal last year, even though it met its aggressive targets for rollout of its 3G network. Handset deployment predictions that

⁷ AT&T's proposed benchmarks are summarized in Attachment A.

⁸ As under the AT&T proposal, the deadline for A-GPS handset penetration results from the need to reach the 100-meter location accuracy requirement for 67% of calls in each and every county. The need to comply in the "hardest-to-estimate" county essentially determines the deadline for meeting A-GPS handset penetration deadlines. T-Mobile/RCA's proposed benchmarks are summarized in Attachment B.

may sound reasonable now have only the illusion of accuracy. Furthermore, to the extent that the market trends toward supplying devices through sources other than carriers, carriers will not be able to control the mix of devices being used on their networks. Already, gray market devices could make it difficult for a carrier to reach an A-GPS handset deployment requirement of 95%, if those devices are included.

Given the diversity of each carrier's 3G deployment, and the potential variations in the speed at which its customers are adopting 3G handsets, a more direct – and less legally perilous – path for the Commission would be simply to require that all 3G handsets manufactured in or imported into the United States be A-GPS-capable after a date certain. The Commission could also require that, after an appropriate transition period, carriers enable their entire network to be able to handle and to provide to PSAPs GPS-based location data from an A-GPS-capable handset, rather than locating these handsets using network-based technology. This last requirement will ensure that A-GPS handsets can provide A-GPS functionality for E911 wherever they may go on a carrier's network – meaning that even PSAPs in areas where a carrier has not yet deployed 3G services can still receive more accurate A-GPS-based location estimates – a result better for both public safety and consumers

This handset requirement approach is simpler than the complex combinations of benchmarks and exclusions in virtually all of last year's proposals, can be easily monitored and enforced, and would ultimately produce the best technically feasible results for these “hard-to-estimate” areas. By mandating that all 3G handsets be A-GPS-capable, the transition to A-GPS handsets takes place coextensively with the transition to 3G, regardless of whether carriers continue specifically to approve handsets for their

networks or if another business model emerges. By including importation and manufacture, all handsets are covered. Further, the Commission would avoid the otherwise inevitable slew of waivers that would follow from adopting any compliance schedule that expressly or implicitly adopts a codified set of handset-penetration deadlines. Finally, the confidence and uncertainty information that carriers voluntarily provide to PSAPs who can use it (and whose LEC network providers permit such information to be passed) will allow PSAPs to know, on a call-by-call basis, when the location is reliable in these “hard-to-estimate” areas – which should occur even more frequently as A-GPS handset penetration grows.

Mandating A-GPS in handsets likely would not constrain the further development and evolution of additional E911 location technologies. All the E911 location technology vendors that have filed in the record promote their solution as a complement, rather than a replacement for, A-GPS. These complementary technologies could continue to be developed, and even incorporated by carriers or handset manufacturers, to the extent that they prove to be effective and capable of standardized implementation.

The market will ensure that carriers do not drag their feet in converting subscribers to A-GPS. Carriers have substantial independent business reasons to move customers to 3G handsets, including the opportunity to increase revenues. While 2G handsets will not (with the exception of a small number of high-end models) contain A-GPS location technology, these devices would remain covered by existing network-based location technology, and over time, the number of new 2G handsets will steadily decrease and, in all likelihood, eventually be phased out altogether.⁹ However, forcing such a

⁹ 2G networks would remain subject to network-wide accuracy requirements except where such compliance is technically infeasible for smaller carriers, as set forth in Section IV, *infra*.

phase-out to occur more quickly could harm consumers, particularly those that are most cost-sensitive, thereby actually harming public safety by reducing the number of consumers with mobile phones

III. AT&T's County Level Proposal Is Not Technically Feasible for Other Carriers, and Thus Would Be Arbitrary and Capricious if Imposed on Other Carriers.

Last year, almost every commenter pointed out that, although the Verizon Wireless and AT&T proposals may be suitable for those companies, they were not technically and economically feasible for other carriers.¹⁰ As Nokia put it, “the specific proposals put forward by [Verizon Wireless and AT&T] may not be right for every carrier.”¹¹ Indeed, AT&T itself conceded that its proposal “cannot be met solely in reliance on technology that is available today.”¹²

As courts have recognized, inquiries into technical and economic feasibility are “made necessary by the bar against arbitrary and capricious decision-making,”¹³ and

¹⁰ Among carriers the exceptions were Sprint, which endorsed the Verizon Wireless plan, and AT&T, which simply pronounced without any support or engineering analysis that its proposal should be feasible for other carriers. *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of Sprint Nextel Corporation at 3 (filed October 6, 2008) (“Sprint Comments”); *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Reply Comments of AT&T Inc. at 2 (filed October 14, 2008) (“AT&T Reply Comments”). Sprint’s comments did not address the AT&T proposal. In their declaration dated December 8, 2008, which has never been rebutted, John Pottle and Ryan Jensen showed that contrary to AT&T’s assertions, its proposal would not be technically feasible for other carriers. *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Declaration of John F. Pottle and Ryan N. Jensen at 6-22 (filed December 8, 2008) (“Pottle/Jensen Declaration”).

¹¹ *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of Nokia Inc. and Nokia Siemens Networks US LLC at 2 (filed October 6, 2008) (“Nokia Comments”); *see also, e.g., Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of Motorola, Inc. at 4 (filed October 6, 2008) (“Motorola Comments”) (Motorola “notes the concern of other carriers that AT&T and Verizon Wireless do not represent the wireless industry as a whole” and thus recommends referring the proposals to an E911 Technical Advisory Group *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Reply Comments of United States Cellular Corporation at 4-5 (filed October 14, 2008) (“One Size Does Not Fit All”).

¹² *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of AT&T Inc. at 3 (filed October 6, 2008) (“AT&T Comments”).

¹³ *Nuvio Corp. v. FCC*, 473 F.3d 302, 303 (D.C. Cir. 2006).

“[i]mpossible requirements imposed by an agency are perforce unreasonable.”¹⁴ While the Commission may rely on reasonable predictive judgments, those judgments must be based on record evidence.¹⁵ Here, the record evidence identifies the impossibility of meeting the AT&T and Verizon Wireless proposals for many carriers. Ultimately, “the FCC’s ‘conclusory statements cannot substitute for the reasoned explanation that is wanting in [the] decision.’”¹⁶

A. Requiring High Accuracy Network-Based Triangulation in Areas With Fewer than Three Cell Sites, Or Where High Accuracy Triangulation is Otherwise Impossible, Would Be Arbitrary and Capricious.

Last year’s comments confirmed that the Commission must exclude from network-based accuracy standards areas in which it is simply impossible to meet those standards.¹⁷ Nothing in the intervening year alters that conclusion. AT&T, in its proposal, recognized that counties with no cell sites, but only incidental wireless coverage, should be excluded; APCO and NENA agreed. But this exclusion did not fully recognize the engineering realities of technical infeasibility. As Corr Wireless pointed out, “[t]he impossibility of achieving extremely high levels of accuracy in network-based E-911 systems in the absence of multiple cell sites has been a continuing ‘core’ fact which has realistically defined the capability of network-solution carriers to meet the

¹⁴ *Alliance for Cannabis Therapeutics v. DEA*, 930 F.2d 936, 940 (D.C. Cir. 1991).

¹⁵ *BellSouth Telecomms., Inc. v. FCC*, 469 F.3d 1052, 1060 (D.C. Cir. 2006) (“We cannot overlook the absence of record evidence . . . simply because the Commission cast its analysis as a prediction of future trends”; “the deference owed agencies’ predictive judgments gives them no license to ignore the past when the past relates directly to the question at issue.”).

¹⁶ *AT&T Corp. v. FCC*, 236 F.3d 729, 737 (D.C. Cir. 2001) (quoting *Arco Oil & Gas Co. v. FERC*, 932 F.2d 1501, 1504 (D.C. Cir. 1991)).

¹⁷ T-Mobile/RCA 2008 Comments at 20-22.

accuracy levels demanded by the public safety community.”¹⁸ Like T-Mobile, RCA and RTG, Corr observed, “while all commenters to date accept county-based measurement as feasible in many areas, there is also general acknowledgement that county-based measurement is *not* feasible and therefore *not* an appropriate measurement tool in all areas.”¹⁹ The Commission cannot ignore these basic engineering facts.

As two T-Mobile engineers described in a declaration filed in December 2008, “[i]n some rural and isolated counties that have only one or two cell sites, there simply will not be enough measurements to perform a triangulation.”²⁰ They explained, “[i]n those [one or two cell site] counties, it is very unlikely that U-TDOA will be able to triangulate a location – except in the rare circumstance in which a third cell site in another county is located within range of those cell sites.”²¹ They further explained, “[t]his would occur, for example, when the distance between the cell sites is too great for three cell sites to receive the signal, when terrain obstructions (for example, mountains, urban or rural canyons, forests) block a handset’s signal from reaching three cell sites, or when the handset is located along the coverage area boundary.”²² It is thus impossible, absent extraordinary measures, for carriers to meet high accuracy requirements in counties with fewer than three cell sites; requiring them to do so would be arbitrary and capricious.

¹⁸ *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of Corr Wireless Communications, LLC on Revised Accuracy Metric at 2 (filed October 6, 2009) (“Corr Wireless Comments”).

¹⁹ *Id.* (emphasis in original)

²⁰ Pottle/Jensen Declaration at 7.

²¹ *Id.*

²² *Id.*

There are other circumstances in which it is not technically possible to obtain a high-accuracy location estimate. As T-Mobile’s engineers set forth:

[E]ven when a handset’s signal can be received by three cell sites, U-TDOA will still not be able to determine an accurate location estimate in some areas. For example, when cell sites are arrayed along a highway or similar areas in a “string of pearls” cell site configuration, triangulation will not typically yield position estimates within the proposed accuracy standards because the cell sites do not have sufficient angular separation. In other situations, mountains or buildings can channel signals in ways that delay the receipt of the handset’s signal at the cell site, or that create multipath issues (where a signal from a handset reaches a cell site by multiple paths, each with a different time of arrival, creating uncertainty as to the measurement to be used for the location calculation).²³

The physical limitations T-Mobile’s engineers described are not unique to U-TDOA, but apply to any triangulation of a caller’s location.

And the mere fact that one carrier can comply in a specific county does not mean that it is technically feasible for another carrier to comply in the same county. As T-Mobile’s engineers explained,

[T]here are many reasons why AT&T and another carrier might serve the same county with at least one cell site in the county, but have a dramatically different ability to achieve highly accurate terrestrially triangulated location estimates. In the first instance, AT&T might serve one part of a county, while the other carrier serves another, each with different terrain. Secondly, AT&T might serve most of the county, and the other carrier might serve just a small portion, such as when the county is at the edge of the other carrier’s coverage area, or if the other carrier only provides service along a highway through the county. Finally, each carrier’s cell site density and geometry could be dramatically different. For example, the other carrier’s cell sites could be in a “string of pearls” arrangement, while AT&T’s are distributed more widely with greater angular separation – thus leading to a very different ability to generate highly accurate location estimates. And the other carrier may not even sell service to subscribers in that county, but may simply have installed a network to provide service to subscribers that are driving through the area (such as along the highway).²⁴

²³ *Id.* at 7-8.

²⁴ *Id.* at 11.

Building additional cell sites solely for E911 location purposes does not amount to a technically and economically feasible solution. As T-Mobile’s engineers stated, “Although in theory further accuracy might be gained by building sites solely to create additional time of arrival measuring points (*i.e.*, not because the additional sites are needed to support the provision of the underlying service), this is not a practical or an economically viable option.”²⁵ Indeed, they observed:

Because the costs of building and operating additional sites are substantial, we think it likely that in order to comply with a requirement to meet AT&T’s proposed county-level accuracy standards based on U-TDOA only, we would have to turn off – or not deploy – service in many locations where the standards could not be met. In addition, the costs of building and operating these location-only sites would detract from the ability to build and operate sites that would enhance coverage and/or service, with the associated safety benefits for consumers from such enhanced coverage and/or service.²⁶

A technologically and economically infeasible plan could be especially detrimental to the public interest (including public safety) in underserved rural areas, where the economic case for entry by new carriers already is the most challenging.²⁷ Accordingly, AT&T’s proposal – or any other E911 location accuracy requirements that are focused on existing network-based technology rather than converting to A-GPS, “could have an unintended consequence of less coverage, less competition, and less ability to use mobile 911 and E911 in rural areas.”²⁸

The Commission needs to take all of these technical and economic feasibility factors into consideration in fashioning any new location accuracy standard. Most

²⁵ *Id.* at 8. *See* RTG Proposal at 4 (citing one rural carrier currently serving its customers with 27 cell sites which would need to construct an additional 40 to 50 cell sites to permit the requisite triangulation to satisfy current Phase II accuracy standards).

²⁶ Pottle/Jensen Declaration at 8-9.

²⁷ *Id.* at 9.

²⁸ *Id.* at 9.

importantly, including counties in which it simply is not feasible to meet the location accuracy standards using network-based technology within the scope of the new location accuracy requirements would be arbitrary and capricious. The better approach to address location accuracy in these areas is to focus on the transition from network-based technologies to A-GPS.

B. AT&T's Proposed Benchmarks Set Arbitrary and Capricious Compliance Thresholds.

Presumably recognizing that it is actually not possible using existing network-based technologies and existing network buildout to meet network-based E911 location accuracy standards on a county level, AT&T proposes benchmarks that would allow a carrier to fail to meet the requirements in a specified percentage of counties. For example, under AT&T's first proposed interim benchmark, a carrier would be required to meet the standard of 100 meters accuracy for 67% of calls in at least 60% of counties, meaning that it could fail to meet that standard in up to 40% of counties. Similarly, AT&T ultimately would require that a carrier be able to estimate location within 300 meters for 90% of calls in 85% of counties, meaning that 15% of counties would not have to meet this location accuracy standard.²⁹ AT&T never explained the derivation of or rationale for these 40% or 15% non-compliance exclusions (or any others), which were negotiated between AT&T and NENA/APCO. Without a rational foundation in the record, AT&T's thresholds are arbitrary and capricious as applied to carriers other than AT&T.

²⁹ The same would be true for all other benchmarks based on the number of compliant counties.

As T-Mobile’s engineers observed, “There is no logical basis that we can see for assuming that AT&T’s proportion of hard-to-terrestrially-triangulate areas will be the same or higher than other carriers’.”³⁰ They explained:

Simply because AT&T predicts it can meet this benchmark does not mean that it will be technically and economically feasible for other carriers to do so, even if the same network-based location technology is utilized by both carriers. AT&T has its particular mix of counties in which it has met, or believes it can reasonably meet, the 100 meter/67% of calls requirement, and in which it cannot reasonably meet the 100 meter 67% of calls requirement. This mix will vary by carrier and will determine whether a carrier can meet AT&T’s proposed benchmark, and some carriers will not be able to meet the benchmark simply because of the mix of counties that they serve.³¹

The difference in overall mix of counties, while it is equally applicable to large and small carriers, can have a particularly harsh effect on smaller, rural carriers. These carriers are unlikely to have a large number of urban counties with “easier-to-estimate” environments to offset the number of “hard-to-estimate” rural environments. Nothing in the record supports an assumption that other carriers share AT&T’s proportion of “hard-to-estimate” counties. Thus, compliance benchmarks based on that assumption are arbitrary and capricious.³²

³⁰ Pottle/Jensen Declaration at 11.

³¹ Pottle/Jensen Declaration at 10. AT&T itself told the Commission: Achieving meaningful network-wide accuracy performance improvements in any existing network-based E911 location system is a significant challenge, due largely to the following three factors:

- Variations in cell site density,
- Impact of local topography on RF propagation, and
- Existing network designs.

Letter of Joan Marsh, AT&T, to Marlene H. Dortch, Secretary, FCC, PS Docket No. 07-114 & CC Docket No. 94-102, at 1 (filed September 5, 2008) (“AT&T September 5, 2008 Ex Parte”).

³² In their comments last year, T-Mobile and RCA recognized that even with their proposed modifications, the applications of proposed benchmarks to particular carriers could still be arbitrary and capricious for the same reasons as discussed above. For this reason they noted, “[e]ven with these changes the Commission should anticipate a need for waivers where small and regional carriers face unusual circumstances that render compliance technically or economically unachievable.” T-Mobile/RCA 2008 Comments at 2.

C. The Commission Cannot Reasonably Impose AT&T's A-GPS Implicit Handset Penetration Requirements on Other Carriers That Have Not Been Deploying 3G For As Long As AT&T.

As discussed above, AT&T's proposal implicitly requires that a carrier reach 95% A-GPS handset penetration within 5 years. While both the record last year and the experience of the intervening year shows that GSM carriers anticipate deploying A-GPS in order to comply, there is no indication that any carrier can reasonably do so by the same date as AT&T.³³ While the range of A-GPS-capable 3G handsets has grown over the past year, carriers other than AT&T will still need a longer period than AT&T to reach 95% A-GPS handset penetration.

This is fundamentally why, in attempting to craft a workable solution last year, T-Mobile and RCA proposed extending the dates for meeting the second, third and fourth benchmarks by two years, essentially allowing carriers other than AT&T to actually deploy their 3G services and have at least the same amount of time as AT&T had to achieve needed levels of A-GPS handset penetration.³⁴ As discussed above, however, those 2008 projections proved unduly optimistic. It is extremely difficult to sell a customer a 3G handset if the network in the customer's area still is only capable of delivering 2G services. In this respect, AT&T has had a substantial advantage in achieving A-GPS penetration because much more of its network is currently delivering 3G than any other GSM carrier.³⁵ The Commission cannot reasonably anticipate or require carriers that are only recently deploying 3G services – such as T-Mobile – or that

³³ See AT&T September 5, 2008 Ex Parte at 2-3; Corr Wireless Comments at 3; RTG 2008 Comments at 2; *Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Comments of the National Telecommunications Cooperative Association at 2 (filed October 6, 2008).

³⁴ T-Mobile/RCA 2008 Comments at 12-17.

³⁵ AT&T had at least a two year head start in deploying 3G services nationwide. T-Mobile/RCA 2008 Comments at 13-14; see also Tom Keathley, VP Radio Access & Standards, AT&T, "Deploying UMTS/HSPA," at 2, 5; http://news.cnet.com/Cingular-launches-3G-network/2100-1039_3-5984005.html.

have not yet begun to deploy 3G services – such as most rural carriers – to meet the same A-GPS handset penetration timetable as AT&T. In addition, other carriers do not have AT&T’s first-mover advantage, so their 3G uptake is likely to be slower than AT&T’s.

Imposing AT&T’s proposed A-GPS-related county-level accuracy benchmarks on all other GSM carriers according to AT&T’s timeline would therefore be arbitrary and capricious, as there is no basis in the record for concluding that such benchmarks will be technically and economically feasible for any carrier other than AT&T. Nor can the Commission justify a rule by labeling a wish as a “predictive judgment[],” which must have a basis in the record.³⁶

If the Commission continues to pursue a benchmark model, then the benchmarks in the T-Mobile/RCA proposal should be used (after making further adjustments to reflect more current handset penetration expectations), running from the effective date of the order, such that carriers would have 10 years from the later of the effective date of the order or the date the carrier started offering 3G services to achieve a 95% penetration of A-GPS handsets. Even then, the Commission would have to provide for waivers because it is impossible to predict with any reliability the course of 3G handset adoption.³⁷

IV. The Arbitrary and Capricious Standard and the Regulatory Flexibility Act Require the Commission to Recognize that Some Small Carriers Cannot Meet the Existing Standards On a Network-wide Basis.

For some smaller carriers with limited service areas, there is simply no way of using existing technologies and network deployments to meet the existing accuracy standards, even on a network-wide basis. Unlike larger carriers, these carriers lack

³⁶ *BellSouth Telecomms.*, 469 F.3d at 1060 (“We cannot overlook the absence of record evidence . . . simply because the Commission cast its analysis as a prediction of future trends”).

³⁷ For Tier III carriers, this would also be consistent with the spirit of the ENHANCE 911 Act. *See* P.L. 108-494, § 107.

sufficient “easier-to-estimate” environments within their network area to offset the “hard-to-estimate” areas. Nor have these smaller carriers had a handset-based A-GPS solution available for 2G. For them, compliance with the existing standards even on a network-wide basis is not technically feasible.

The potential for waivers under the Commission’s rules has not proved to be a realistic and timely possibility. Carriers have filed waivers, only to see them languish without action. In the interim, carriers are subject to substantial uncertainty – and face the prospect of being accused of violating conditions of, for example, their eligible telecommunications carrier designations, even though compliance with the accuracy standards is impossible.

As discussed above, the arbitrary and capricious standard precludes the establishment of impossible requirements. Moreover, the Regulatory Flexibility Act requires the Commission, among other things, to consider whether to exempt small entities “from coverage of the rule, or any part thereof.”³⁸ Certainly, the Commission has not at all evaluated whether requiring these carriers to cease service would result in greater harm to the public interest – such as from denying rural residents the ability to have mobile service and to make mobile 911 calls at all – than permitting continued operation with the best technically feasible location estimate that the carrier can generate.

Accordingly, the Commission should permit rural carriers who operate 2G GSM networks to operate, notwithstanding their inability to meet the applicable accuracy standards on a network-wide basis, so long as they certified to the PSAPs within their network service area that they had taken all reasonable steps, using existing technology and network sites, to provide location estimates within the FCC’s standards and that it

³⁸ 5 U.S.C. 603(c)(4).

was not technically feasible to do so. Such a request is consistent with recommendations made by the Network Reliability and Interoperability Council VII (“NRIC”).³⁹

V. The Commission Must Undertake a Benefit-Cost Analysis of Any Requirements.

One of the most glaring omissions in the record – and one which the Commission can cure now that it is taking a fresh look at this proceeding – has been the absence of any benefit-cost analysis to support the imposition of accuracy requirements over smaller regions such as counties. The “fail[ure] to consider an important aspect of the problem” would render Commission action arbitrary and capricious,⁴⁰ and thus, the Commission must analyze whether the “relative harm . . . exceeded the relative benefits.”⁴¹

The question of relative benefits versus relative harms is not trivial here. As discussed above, if forced to attempt to meet county level requirements in rural areas on the basis of its network-based U-TDOA technology, T-Mobile would likely “have to turn off – or not deploy – service in many locations where the standards could not be met.”⁴² “[T]he Commission’s new rules could have an unintended consequence of less coverage, less competition, and less ability to use mobile 911 and E911 in rural areas.”⁴³ There is no basis in the record for concluding that the net harms of AT&T’s proposed intermediate benchmarks and timetable will not exceed the net benefits.

³⁹ NRIC VII FOCUS GROUP 1A, Near Term Issues for Emergency/E9-1-1 Services, Final Report, December 16, 2005 at 21 (recommending that carriers operating in rural areas that have too few contiguous cell sites or cell sites that are geographically dispersed in a manner that prevents reliable triangulation, “make a commercially reasonable effort to provide the best service possible without extraordinary efforts,” e.g., by deploying state-of-the-art location accuracy equipment at each existing cell site); *See also* NRIC FOCUS GROUP 1A, Near Term Issues for Emergency/E9-1-1 Services, Report #1-Revised, February 15, 2005.

⁴⁰ *Motor Vehicle Mfrs. Ass’n of the U.S. v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

⁴¹ *BellSouth Telecomms.*, 469 F.3d at 1060.

⁴² Pottle/Jensen Declaration at 8-9.

⁴³ *Id.* at 9.

Moreover, the record lacks even the most basic data as to how often this E911 location information is used. In some situations, such as a “string of pearls” deployment along a highway, even a location that is off by a mile or more will not be likely materially to affect public safety response time when the caller is located along the highway. Yet if a carrier is forced to remove cell sites along that highway and to discontinue service, the caller’s ability to reach 911 at all could be compromised. None of the changes proposed by AT&T will lead to a first responder knowing, based on E911 location data, which “door to kick down.” A rational inquiry would examine these countervailing public interest considerations.

VI. Verizon Wireless’ Proposed Standards Must Also Be Modified In Order to Be Technically and Economically Feasible for All Carriers Employing Handset-Based Location Accuracy Solutions.

RCA stands by all of the legal and policy positions taken in its October 2008 reply comments with respect to handset-based solutions and hereby incorporates that pleading by reference.⁴⁴ As RCA and RTG informed the Commission last October, many of their members that operate with CDMA or iDEN technology rely on a handset-based E911 Phase 2 solution.⁴⁵ The proposed outdoor location accuracy standards by Verizon Wireless and public safety groups are not technically feasible and reasonably achievable by the Tier II and Tier III carriers that RCA and RTG represent.⁴⁶

Tier II carriers will need at least an additional six months (to 18 months after the effective date) to meet the 50 meters for 67% of calls and 150 meters for 80% requirement proposed by Verizon Wireless. Tier III carriers will need at least an

⁴⁴ See RCA Reply Comments.

⁴⁵ *Id.* at 1; see RTG 2008 Comments at 2.

⁴⁶ RCA Reply Comments at 2-3; RTG 2008 Comments at 2.

additional 12 months (to at least 24 months after the effective date) to meet the proposed that requirement. In addition, RCA recommends, for Tier II and Tier III carriers, increasing the percentage of counties that, under Verizon Wireless's proposal, can be excluded from the 150 meter requirement based upon "heavy forestation" to 25% for purposes of meeting the 150 meters for 80% of calls requirement and 20% for the proposed 150 meters for 90% of calls requirement (*i.e.*, the Year 8 benchmark).⁴⁷ Even with these changes the Commission should permit waivers where carriers face unusual circumstances that render compliance technically or economically unachievable (*e.g.*, limited access to advanced handsets).

VII. Conclusion.

T-Mobile, RCA and RTG applaud the Commission and Bureau for updating the record and taking a fresh look at this proceeding. Carriers are moving to deploy 3G networks and handsets for their own business reasons. And GSM carriers are migrating to A-GPS as their E911 location solution as part of their deployment of 3G services. A wider range of A-GPS-capable 3G handsets are now making their way onto the market, although at a more limited pace for smaller carriers. 3G is an engine that can power an orderly transition from network-based E911 solutions to A-GPS.

Rather than continuing to attempt to devise a complex series of compliance benchmarks – all of which are problematic and will likely be technically infeasible for some set of carriers – the Commission should instead take a much simpler approach to the same end – focusing on ensuring that all 3G handsets manufactured or imported for

⁴⁷ Many RCA and RTG members only serve areas with "heavy forestation" given the typically rural areas that their members serve. As a result, the county exclusion provided to Tier II and Tier III carriers based upon "heavy forestation" should be significantly larger than that afforded to generally urban-focused carriers, like AT&T and Verizon Wireless.

sale in the U.S. are A-GPS capable. Thus, regardless of how the handset market develops, carriers will migrate to A-GPS capable handsets coincident with their migration to 3G. The Commission could also require carriers to ensure that A-GPS locations can be delivered from an A-GPS-capable handset whether that handset is operating on a 2G or 3G portion of a carrier's network. These two rules would be easier to enforce, would improve location accuracy as fast as carriers sell 3G handsets, and would in no way preclude the development of other location solutions. In addition, the Commission should acknowledge that for some rural 2G carriers, it is technically infeasible to meet the current requirements on a network-wide basis, due to the lack of A-GPS-capable handsets for 2G, and thus permit those carriers lawfully to operate, provided that they have taken all economically reasonable steps to meet such standards.

Finally, if Verizon Wireless' proposed standards for handset-based carriers are to be applied to other carriers employing handset-based location accuracy solutions, they must be modified, as described *supra*, so as to be more likely to be technically and economically feasible for all carriers, with a reasonable waiver process. The location accuracy standards being proposed by Verizon Wireless and public safety groups are simply not technically and economically feasible for RCA's and RTG's Tier II and Tier III member carriers, and may pose problems for other carriers as well.

Respectfully submitted,

/s/

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Date: November 20, 2009

**Attachment A – AT&T Proposed Benchmarks
(Keyed to June 2010 Effective Date)**

<i>Benchmark No.</i>	<i>AT&T Proposed Year</i>	<i>67%/100 Meters Requirement</i>	<i>90%/300 Meters Requirement</i>	<i>Permitted Measurements</i>
<i>Benchmark 1</i>	Year 1 (2011)	60% of counties covering 70% of POPs	Not applicable	Network-based only
<i>Benchmark 2</i>	Year 3 (2013)	70% of counties covering 80% of POPs	60% of counties covering 70% of POPs	Network-based; or Blended Network-based and A-GPS
<i>Benchmark 3</i>	Year 5 (2015)	100% of counties	70% of counties; 80% of POPs	Network-based; Blended Network-based and A-GPS; or A-GPS only if handset penetration is > 95% nationwide.
<i>Benchmark 4</i>	Year 8 (2018)	100% of counties	85% of counties	Network-based; Blended Network-based and A-GPS; or A-GPS only if handset penetration is > 95% nationwide.

**Attachment B – Summary of T-Mobile/RCA 2008 Proposed Benchmarks
(Keyed to June 2010 Effective Date)**

<i>Benchmark No.</i>	<i>Proposed Year</i>	<i>67%/100 Meters Requirement</i>	<i>90%/300 Meters Requirement</i>	<i>Permitted Measurements</i>
<i>Benchmark 1</i>	Year 1.5 for Non-Tier III (Dec. 2011) and at least Year 2 for Tier III (June 2012)	60% of counties covering 70% of POPs	Not applicable	Network-based; or Blended Network-based and A-GPS – but permit carriers to exclude counties with < 3 cell sites
<i>Benchmark 2</i>	Year 5 (June 2015, or 5 years after start of a carrier’s offering 3G services)	70% of counties covering 80% of POPs	60% of counties covering 70% of POPs	Network-based; or Blended Network-based and A-GPS – but permit carriers to exclude counties with < 3 cell sites
<i>Benchmark 3</i>	Year 7 (June 2017, or 7 years after start of a carrier’s offering 3G services)	100% of counties	70% of counties; 80% of POPs	Network-based; Blended Network-based and A-GPS; or A-GPS only if handset penetration is > 85% nationwide – but permit carriers to exclude counties with < 3 cell sites if handset only threshold not reached
<i>Benchmark 4</i>	Year 10 (June 2020, or 10 years after start of a carrier’s offering 3G services)	100% of counties	85% of counties	Network-based; Blended Network-based and A-GPS; or A-GPS only if handset penetration is > 95% nationwide.