

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

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

**PETITION FOR RECONSIDERATION
OF
THE FOURTH REPORT AND ORDER**

Joseph P. Benkert
Joseph P. Benkert, P.C.
P.O. Box 620308
Littleton, CO 80162
(303) 948-2200

Its Attorney

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Summary

BRETSA continues to be concerned that the Commission's actions with respect to 9-1-1 caller location accuracy does not reflect the way location information is used by PSAPs and First Responders.

As BRETSA understands the regulatory scheme adopted by the Commission, test-bed testing will determine the percentage of calls which comply with the location standards using different location technologies. Those percentages will then be applied to the numbers of live calls for which caller locations are provided using the various location technologies in six "Test Cities" to establish compliance with the standards.

ATIS/ECIF recommended that test-bed testing be completed in the six Test Cities, because each presented differing conditions representative of areas of the country, which it deemed likely to result in *different* performance results. However the rules do *not* require test-bed testing in the Test Cities. Instead the providers will establish a test bed testing in a city of their choosing, and apply the test-bed performance to the Test Cities notwithstanding that the Test Cities should in fact provide divergent results. Application of test bed performance to Test Cities in which divergent results would be expected, cannot demonstrate compliance.

Because the regulatory scheme presumes that results achieved in the test beds will be applicable to cities with diverse characteristics, PSAPs and local public safety authorities must be able to test the presumed accuracy of ALI data against actual location information. To avoid complaint proceedings being mired down in arguments regarding the test procedures, the Commission must establish, or require providers to establish for Commission approval, PSAP-friendly test procedures. Alternative procedures should be provided for gathering of live call data, and for conducting test calls.

The Commission has also stated that test results should be confidential because in previous testing the participants in the testing agreed to keep the results secret. This does not support a finding that the information is proprietary or confidential.

There is substantial and important public interest in the accuracy of ALI data, and test data must be public, absent a specific demonstration that information is proprietary or confidential and should be redacted.

The Commission assumes that dispatchable location and VoLTE location techniques will meet the 50-meter accuracy standard. The Commission has adopted rules that require wireless carriers either use (i) location technologies which will meet the 50-meter, or (ii) dispatchable location/VoLTE technologies. Thus, the rules would permit use of these technologies even where they are found in the test bed not to meet the standard.

The Commission should not assume any technology will meet the 50-meter standard prior to the test bed testing. The Rules should simply require that location technologies be employed which will meet the 50 meter standards for the required percentage of calls. If dispatchable location or VoLTE technologies meet the standard, they can be deployed.

The Commission also leaves it to the discretion of providers to select a location technology(s) which meets the Commission's standards. This provides wireless providers the discretion to shift costs of ALI compliance to other parties, even where it may not be the most effective or cost-effective solution. It permits providers to select less accurate and/or less cost-effective solutions which will place the least cost on them. The Commission must reserve the ability to reasonably approve the technology solutions selected by providers, to assure they meet the public interest.

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The Boulder Emergency Telephone Service Authority (“BRETSA”), by its attorney, hereby petitions the Commission to reconsider its February 3, 2015 *Fourth Report and Order* in the above-captioned proceeding.¹

I. The Rules Do Not Reflect The Way Automatic Location Information Is Used In 9-1-1 Service and Emergency Response.

In the *Fourth Report and Order*, the Commission states:

By standardizing confidence levels, call-takers will more easily be able to identify when a location fix is less trustworthy due to larger uncertainty.

Fourth Report and Order, para. 184. This statement is footnoted:

TCS Comments at 2 (if the call-taker does “not have enough trust in the location fix [because] the uncertainty level is too high,” it should perceive the need to obtain further location information from the caller before dispatching emergency services.

¹ *Wireless E911 Location Accuracy Requirements (Fourth Report and Order in PS Docket No. 07-114)*, FCC 15-9 (released February 3, 2015), 80 FR 11806-01 (March 4, 2015)(“*Fourth Report and Order*”).

Id., at fn. 464. These statements demonstrate that the Commission has a fundamental misunderstanding of PSAP operations, and how location information is used by PSAPs.

Automatic Location Information (“ALI”) is used, first and foremost, to route the call to the correct PSAP. ALI data may also identify for the PSAP the First Responder Agencies, precincts or stations, responsible for responding to an emergency at the caller’s location. The problem is that wireless 9-1-1 calls are routed based on the least granular information available, the cell tower or antenna through which the CMRS provider receives the call (“Phase I Routing”). The ALI issues which affect the greatest number of outcomes are Phase I *Misroutes*—the routing of a 9-1-1 call to a PSAP other than the one which can dispatch First Responders to the location of the incident.²

The dispatcher³ *always* talks to the caller *before* dispatching First Responders. The dispatcher needs to interview the caller to determine whether the matter about which the person has called requires dispatch of First Responders, sending out a civilian aid to take a report, advising the caller to fill out a counter report or an online report or complaint, some other action or no action. If a matter requires dispatch of First Responders, the dispatcher needs to question

² BRETSA is aware that some members of the Commission staff and certain Commissioners appear to promote consolidation of PSAPs to one-per-state. This would not resolve the issue of 9-1-1 Misroutes, because such a consolidated dispatch center would still need to get the call to the dispatcher assigned to the jurisdiction in which the caller is located. Dispatcher “local knowledge,” including knowledge of the area, the business rules of the First Responder agencies in the area which would be dispatched, and other matters, is important to the efficient and appropriate handling of the call. Such consolidation would also not lead to the economies of scale and efficiencies the Commission might anticipate. *See* Comments of the Boulder Regional Emergency Telephone Service Authority on Policy Statement and Notice of Proposed Rulemaking, filed March 23, 2015 in PS Docket No. 14-193, pp. 10-14, available at <http://apps.fcc.gov/ecfs/comment/view?id=60001027340> (last visited March 29, 2015).

³ In larger PSAPs, the responsibility for answering 9-1-1 calls (“calltaking”) and dispatching First Responders are separated. Although PSAP personnel will be trained both as calltakers and as dispatchers, they will generally work in only one of those capacities on any shift. The calltaker will interview the caller, gather the relevant information, and enter that information in an incident file in the Computer Aided Dispatch (“CAD”) system. A dispatcher will dispatch First Responders based upon the information in the CAD incident file. Some PSAPs find it more efficient, separate PSAP roles in this manner as personnel can focus on the specific roles assigned, and callers are less likely to overhear information relayed to First Responders. In the vast majority of PSAPs, personnel simultaneously perform both calltaker and dispatcher functions. For the purpose of these Comments, the term “dispatcher” will be used to refer to PSAP personnel whether they perform calltaking, dispatching or both functions.

the caller to determine what complement of units should initially be dispatched. For example, if the person reports a fire to the Longmont PSAP, the dispatcher needs to know if it is a grass fire *not* threatening a structure, for which a brush truck would be dispatched, or a structure fire for which three engines, one ladder truck two ambulances and a Battalion Chief would be dispatched. Other jurisdictions will have different complements of units which would be dispatched to different types of incidents, based local conditions and experience.

The majority of 9-1-1 calls do *not* require or result in *emergency* dispatch of First Responders, to “race to the scene, lights and sirens on.”

With the BRETSA-affiliated PSAPs, and we believe with most PSAPs, it is standard procedure for the dispatcher to ask the caller’s location and phone number. If a caller says they are in the library, the dispatcher will ask where they are in the library (if the incident is at their location).⁴ If a caller reports an accident on a limited access, divided highway, the dispatcher may ask whether the accident is on the eastbound or westbound side of the highway, for example, if it will impact which units can reach the scene soonest, and to help First Responders locate the accident. Even though the BRETSA systems automatically rebid for Phase II Wireless location data, First Responders are usually dispatched based upon location information provided by the caller.

When Phase II ALI *is* used, it is most often used to determine if there has been a Phase I Misroute, or to help identify caller locations in the mountains or other rural areas where there are not as many cross-streets or landmarks to identify the caller’s location. In addition, in those cases where the dispatcher doesn’t get a response from the caller, Phase II ALI may be used to try and

⁴ While individuals calling 9-1-1 are most often involved in and at the scene of the incident about which they are calling, in about twenty percent of cases the individual is not calling from the location of the incident.

locate the caller. Less than 1% of 9-1-1 calls involve use of ALI to locate a caller who doesn't know or can't communicate their location to the PSAP.

It is important to note that most agencies have a policy of sending an officer to investigate *wireline* 9-1-1 calls which are disconnected or involve a caller who does not respond to the dispatcher. In the case of *wireless* calls, however, agencies cannot afford to respond or investigate every call which is disconnected or involves a caller who does not respond; due to the number of wireless "pocket dials" (especially where the "9" key has been programmed to auto-dial 9-1-1), and the mobile nature of the service.

In the case of *wireless* calls in which the caller does not respond to the dispatcher, or which are disconnected before the caller responds, the dispatcher uses his/her discretion as to whether to try to locate the caller and dispatch a First Responder, usually based upon background noise. If the dispatcher hears muffled road noise and conversation at an ordinary volume in the background, the dispatcher may conclude that the call is a pocket dial and take no action. There have been 9-1-1 calls in Longmont and in Clear Creek County, Colorado, however where women who were abducted managed to surreptitiously dial 9-1-1 on their cell phones while they were being driven in a vehicle, and the dispatchers were able to determine their plight, and use ALI data and/or cues from the conversation to guide law officers to the vehicles' locations. These two instances occurred over the past ten years.

When trying to locate a caller who does not respond, the dispatcher may use Phase II ALI data if available, or request the provider to "ping" for the caller's location (locate the wireless device on its network). Requesting a wireless provider to locate a device on its network is not equivalent to Phase II ALI data. Under Colorado law, the standard for requesting a provider to locate a customer's device is one of "extreme emergency." In some jurisdictions, a PSAP

supervisor or certified law officer supervisor must approve such a request; while other jurisdictions require approval of the County, City or District Attorney's office. Judicial review must also be obtained within three days.

Once a request for a provider to "ping" for the location of a device on its network has been approved, the PSAP must determine which provider's network the device is on, so the PSAP can submit the request to the correct provider. The wireless providers each require that its own unique paper form be filled out, signed and faxed to the provider before the provider will begin to ping for the device location. The actual process for the provider to locate the device and notify the PSAP of the location requires varying amounts of time; and much longer than required obtaining Phase II ALI, when ALI is available.⁵

To put the uses of ALI data into perspective, the Longmont PSAP receives about five Phase I Misroutes per dispatcher per shift. The PSAP requests a provider to "ping" for person's location (device location) about five times per week.⁶ By comparison, the Longmont PSAP receives only about *one* call per week from an individual who doesn't respond or doesn't know their location, where the PSAP tries to locate the caller using Phase II ALI data or by requesting the provider "ping" for their location.

From BRETSA's perspective, location accuracy within 50 meters, if used for call routing, would eliminate many of the Phase I Misroutes, and would provide sufficiently accurate location

⁵ BRETSA's November 21, 2012 Petition for Rulemaking sought the adoption of rules which would, inter alia, require the wireless providers to supply a single number for PSAPs to use to submit requests to locate a customer's device no matter what network the device was on, and to provide for electronic submission of requests to locate callers, in order to minimize delay in obtaining caller locations.

⁶ This usually involves (i) a suicidal individual who has called 9-1-1 but disconnected the call before Phase II ALI is received or officers arrive at his/her location, (ii) a person who has called to report a suicidal individual has called them, provides the individual's wireless number, and the PSAP is seeking the location of the suicidal individual even though they have not called 9-1-1, or (iii) the PSAP is trying to locate a person with dementia or some other condition. See BRETSA's April 4, 2014 Comments on the Commission's January 31, 2014 Policy Statement and Second FNPRM in 11-153, at Attachment 1 "Suicide by Semi" 9-1-1 Call transcript. The audio file of the "Suicide by Semi" call is available at <http://911colorado.org/911-audio-videos/other-911-calls/> (last checked April 2, 2015).

information for the majority of cases in which a caller did not know or could not describe his/her location to the PSAP.⁷ Ideally, where the 50 meter accuracy was insufficient to allow First Responders to expeditiously locate the caller, the PSAPs would “bid” for more accurate location data, and the provider would use any or all available alternative location techniques to supply a more accurate location. This manner of proceeding would potentially avoid provider costs of providing the more accurate location information for the majority of calls where such information is not required.

BRETSA is disappointed that the Commission has not chosen to address in this proceeding wireless location accuracy and time-to-first-fix for wireless 9-1-1 *call routing* purposes. BRETSA urges the Commission to assure that data relevant to more accurate wireless call routing is gathered in the test bed.⁸

II. The Commission’s Failure to Follow The ATIS/ESIF Test Bed Recommendations Will Produce Unreliable Results.

As BRETSA understands the manner in which the Rules are intended to operate, various location technologies will be tested in a test bed. The percentage of calls using each technology which comply with the 50-meter accuracy standard will be determined for each of the four morphologies has identified (dense urban, urban, suburban and rural).

⁷ If a caller does not know his/her location but is responsive, dispatchers might instruct the caller to advise when they hear sirens, whether the sound of the sirens is getting closer to or further from the caller, or to take other actions to assist First Responders in locating them.

⁸ BRETSA has previously stated in its Comments on the Second Further Notice of Proposed Rulemaking in PS Docket No. 11-153, available at <http://apps.fcc.gov/ecfs/comment/view?id=6017611014> (last checked April 3, 2015), at 40, that in the “transition to LTE-IMS, wireless systems will provide emulated SMS messaging over a data channel rather than true SMS messaging over a control channel, resulting in the loss of additional coverage area. The Commission requested comment on this in *Facilitating the Deployment of Text-to-911 and Other Next Generation 9-1-1 Applications (Second Report and Order and Third Further Notice of Proposed Rulemaking in PS Docket No. 11-153)*, FCC 14-118, n. 336 at 54, but BRETSA is not aware of comments which addressed the issue. To the extent the test bed required by the rules will test LTE location technologies, LTE-IMS text messaging coverage might also be tested. Snowmobilers lost in the Colorado back country and others requiring help in areas where voice coverage is not provided or is not reliable have been rescued when they have been able to reach help using text messaging. The loss of text coverage beyond the area of reliable voice coverage may prevent individuals ability to contact 9-1-1 even as text-to-911 is being deployed.

The wireless carriers will then demonstrate compliance with the Commission’s accuracy standard by applying the test bed performance to live 9-1-1 call data in the six Test Cities. The provider will identify the total number of 9-1-1 calls made in a Test City during a test period, and the number of calls made during the test period which utilized each of the location technologies in each morphology. Each technology will be presumed to produce the same percentage of calls meeting the 50-meter standard in each morphology as it produced in the test bed. The sum of presumed number of calls meeting the standard with all technologies will be divided by the total number of 9-1-1 calls made during the test period to determine if the provider is in compliance with the Rules.⁹

ATIS ESIF proposed to use “five plus one” test *beds* representative of different geographical morphologies in the United States: San Francisco Bay Area, Chicago, Atlanta, Denver/Front Range, Philadelphia, and Manhattan. These test beds were selected because they “provide a good mix of the different location-affecting parameters [identified by ATIS ESIF]...have good local mixes of the various morphologies, building construction materials, densities and heights, span the range of latitudes and average cell site radii seen across the country, and include as well coastal edge-of-coverage effects.”¹⁰ The test bed recommendations noted that (i) the San Francisco Bay Area test bed might be able to replicate an island test, (ii) the Chicago test bed includes a lake/shoreline, (iii) the Atlanta test bed includes heavily forested mountain terrain, (iv) the Denver/Front Range test bed includes mountainous and basin terrain as well as 1-mile elevation, and (v) Manhattan includes extreme dense urban morphology and

⁹ While this procedure is not entirely clear from the Rules, this interpretation is shared by other parties as well.

¹⁰ Letter from Thomas Goode, General Counsel, Alliance for Telecommunications Industry Solutions, to David DeLorenzo, Chairman, CSRIC IV Working Group 1, Task Group 3 (dated Feb. 7, 2014), at 4, *available at* https://www.atis.org/legal/Docs/ESIF%20DOCS/ESIF_Letter_DeLorenzo_Feb2014.pdf (last viewed April 1, 2015).

extremely high cell site densities. *Id.*, at 3-4. New section 20.18(i)(1)vi includes these cities in the definition of the term “Test Cities.”

While these six Test Cities were selected by ATIS ESIF because they represented diverse environments representing diverse areas of the country where *different* results from indoor location technologies should be expected, new section 20.18(i)(3)ii requires that providers apply the results achieved in a test bed of the providers’ choosing to these cities to demonstrate compliance with the 50 meter standard throughout the U.S. In other words, the ATIS ESIF recommendation was to use the Test Cities, representative of different areas and cities within which different results should be expected, to provide test results to be compared live call information from cities with like characteristics. However *the Rules do not require that the test bed include all, or indeed any, of the Test Cities.* The Rules instead require that the providers establish “a” test bed of their choosing, and apply the results against live call data from the Test Cities to establish a presumption of compliance nationwide; notwithstanding that testing in these cities would be expected to produce divergent results. The providers are free to select the least challenging test bed location for application to live call data from the Test Cities.

In other words, the Commission Rules require that results in a test bed of the provider’s choosing be applied to cities which an expert advisory group has determined *will produce divergent challenges and results*, to demonstrate compliance with the indoor accuracy standards in all areas of the U.S. This is irrational and cannot be expected to produce an accurate indication of compliance with the Rules.

The Commission should modify the Rules to expressly require that the Test Bed include the six Test Cities, or should eliminate entirely the approach of establishing performance statistics in a test bed and applying them to live test calls as a means of assessing compliance. In

the latter case, the Commission should instead require test calls in each jurisdiction to demonstrate compliance.

III. The Commission's Must Provide Test Procedures For PSAPs To Establish A *Prima Facie* Case of Non-Compliance With the Rules Based Upon Actual Performance.

The Rules adopted by the Commission do not provide for any actual testing of indoor location performance to demonstrate compliance, or non-compliance. As discussed above, the regulatory scheme proposed in the Roadmap and adopted by the Commission provides for (i) performance statistics for various location technologies to be established in a test bed of the providers' choosing, and (ii) application of those statistics to live 9-1-1 calls in cities (which would be expected to produce different test results) to demonstrate compliance with the accuracy standards. This regulatory scheme thus piles irrational assumption upon irrational assumption. The scheme also necessitates blending more accurate outdoor location technologies with indoor technologies, because the providers will not be able to identify whether the live calls, to which the test-bed statistics will be applied, originated in indoor or outdoor locations.

The Rules *do* provide that local PSAPs or public safety authorities can file complaints against providers for failure to meet the standards. The mechanism provided in the rules to demonstrate noncompliance is for the PSAP to request live call records for its jurisdiction from a provider, and apply the test bed compliance percentages against the location determination technologies used for those live calls. If the result indicates that the provider did not use location technologies meeting the 50 meter standard for the required percentage of the calls, the PSAP may file a complaint after consultation with the provider. (The rules do not require that the providers sort or summarize the calls by location determination method, let alone morphology.) Section 20.18(i)(2)iii(A) requires CMRS providers to "certify that the indoor location technology (or technologies) used in their networks are deployed consistently with the manner in which they

have been tested in the test bed;” but the application of test bed performance statistics to the number of live calls in the Test Cities market or any PSAP jurisdiction, precludes testing of that certification. The enforcement mechanism continues to pile assumption upon assumption with no actual measurement of location accuracy.¹¹

If a PSAP were to engage in testing of location performance accuracy based upon test calls or accuracy measurements for live calls, a PSAP could make out a *prima facie* case supporting a complaint for violating the indoor accuracy requirements without relying on application test bed performance to live call data. However the parties would likely become mired in disputes regarding the test procedures employed by the PSAP, and whether they provide a fair measure of performance. Therefore, the Commission should establish, or require that the providers establish through the test-bed for Commission approval, test procedures which may be followed by a PSAP to evaluate actual compliance with the Rules and make a *prima facie* case to support a complaint for non-compliance.¹²

Two alternative test procedures should be provided. One should be a “Live Call” test procedure in which PSAPs and First Responders would gather information to compare the ALI data for live 9-1-1 calls with the actual caller locations as reported by the callers. Because collection of live-call data cannot be permitted to interfere with emergency response, an objective test procedure based upon test calls must also be provided. This would involve test calls to 9-1-1 made from test locations in the PSAP’s jurisdiction. The tests might be made by

¹¹ The regulatory scheme adopted by the Commission may penalize providers for deploying a technology which does not meet the standard in a high percentage of cases, or which may provide accurate results in only a limited morphology. BRETSA believes that it would be better to have available a variety of location technologies which could be applied in those cases where callers do not know or cannot communicate their location, so that a dispatcher could use his/her judgment as to which is supplying the most accurate information in a given case in order to prioritize search areas. Similarly, providing both a 90% and a 60% C/U radius would provide perspective on the overall distribution of possible caller locations and allow a dispatcher to prioritize search areas. Ultimately provision of raw information from which C/U information may be derived, allowing a PSAP to variably display different C/U areas, would be ideal.

¹² When lives hang in the balance, compliance should not be based solely on presumptions.

First Responders outside contractors. The procedure must describe the types of devices to be used to place the calls, the number and distribution of indoor locations, identification of ground truth position (not requiring surveyed location, and perhaps based on the highly accurate PSAP GIS data which has been calibrated to geographic coordinates), and other criteria necessary to make the test fair for all parties.

The test procedure should be designed to provide reliable indicia of compliance with the rules without the necessity of specialized training or equipment. Thus, BRETSA understands that the PSAP test procedures may not be sufficiently calibrated for time, and may thus provide data only as to accuracy of location determination technologies as deployed in a PSAP's jurisdiction and not as to time-to-first-fix, or the time required to obtain an accurate location. Provider testing in response to a PSAP complaint should be calibrated for time.

Due to PSAP budgets and public safety workloads, BRETSA does not know the number of PSAPs which will test location accuracy in their jurisdictions. However BRETSA can state that the absence of an established test procedure; the likelihood of becoming mired in arguments about the test procedures used would dissuade BRETSA from engaging in such testing. If the Commission reconsiders the *Fourth Report and Order* and establishes PSAP test procedures, the PSAP testing will provide the only verification of whether the regulatory scheme adopted by the Commission results in indoor location accuracy meeting the 50-meter standard.

IV. Test Results Must Be Made Public.

The results of the test bed testing and the performance testing are matters of significant public interest. The accuracy of location technologies used for 9-1-1 calls and emergency response is critical, both with respect to public expectations, PSAP and public safety agency operations, and public interest in effective 9-1-1 systems and public safety performance.

Information pertaining to Commission rules and compliance with those rules should be open and public unless it is proprietary and confidential, or includes personal information of private individuals which would ordinarily be protected from disclosure.¹³

At paragraphs 131 and 132 of the *Fourth Report and Order*, the Commission states:

[U]nder the CSRIC III test bed regime, all parties agreed that raw test results would be made available only to the vendors whose technology was to be tested, to the participating CMRS providers, and to the third-party testing house. In order to protect vendors' proprietary information, only summary data was made available to all other parties. At this time, we will not require CMRS providers to make public the details of test results for technologies that have been certified by the independent test bed administrator. We believe the test administrators' certification is sufficient notification that a technology meets our key performance indicators.

Fourth Report and Order, at 131 (footnotes omitted). The Commission did not find that test results are proprietary, nor could it.

The Commission's decision to provide confidential treatment for test results is based upon parties to previous testing having agreed to keep similar information secret. This is not a valid basis for the Commission granting confidential treatment, let alone information of such substantial public interest importance.

BRETSA recognizes that parties should have the opportunity to make a demonstration that performance of their location technologies in a test bed operated by a third party is or includes confidential information, and upon a successful showing any confidential information should be redacted. However, if a location technology will produce such poor results that the vendor will not want its performance to be made public, then the technology should probably not participate in the test bed trials in the first place, saving all concerned the time and expense of considering an inferior technology.

¹³ For example, information identifying parties who called 9-1-1 or their numbers, or pertaining to public safety incidents, could pertain to minors or victims of sexual crimes which is generally protected against public disclosure.

BRETSA understands that while the Test City live 9-1-1 call location data reports will be provided to certain enumerated parties pursuant to 20.18(i)(3)ii, including the Commission, that section of the Rules simply identifies the parties to which the reports are to be initially delivered. BRETSA further understands that the reports will be public (and public records of the Commission) and will be released by the Commission and available through the Commission's ECFS system. Similarly, BRETSA understands that live 9-1-1 call data provided PSAPs pursuant to 20.18(k) will be public information, subject only to redaction of personal identifying information of any private individual.

V. The Commission's Rules Should Not Assume Compliance Of Any Technology Prior To Completion of Test-Bed Testing.

At the same time the Commission is adopting rules requiring independent testing of location technologies, the Commission adopts 20.18(i)(2)i(A) and (B) giving providers the option of providing either (i) dispatchable location, or (ii) x/y location within 50 meters.¹⁴ A similar alternative is provided for z axis information. See 20.18(i)(2)ii. The Commission assumes dispatchable location will be accurate within 50 meters prior to completion of the test bed tests. *See Fourth Report and Order*, at para. 184 ("For example, in the event a CMRS provider is delivering dispatchable location information, the uncertainty value would either be zero or a very tight geometric figure with a radius less than 50 meters." Footnote omitted).

The Commission should not assume that dispatchable location (or VoLTE-based location technologies) will meet the 50-meter accuracy standards or provide greater accuracy than alternative technologies, *prior* to comprehensive testing in the independently administered test

¹⁴ Dispatchable location is defined by 20.18(i)(1)i as "the street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party." The dispatchable location is expected to be determined from WiFi or bluetooth Access Points ("APs") or small CMRS cells.

bed. WiFi Access Points have signal ranges extending well beyond 50 meters, even without use of signal extenders or beam-shaping. WiFi Access Points (“AP”) or other transmitters from which dispatchable locations may be derived, may be located at any location within the perimeter of a structure, or unit within a structure. Thus, the potential error in a dispatchable location would be equal to the dimensions of the structure or unit (which the AP may be placed anywhere within), plus the additional area defined by the distance the WiFi signal may extend beyond the perimeter of the structure or unit; particularly of such additional areas include the interiors of other structures or units. The accuracy of dispatchable locations must be validated through the test bed, the same as any other location technology, before the Commission find that it meets the accuracy standards.

Cisco Systems has proposed a location solution involving multiple access points with calibrated locations in an enterprise WLAN system using RSSI and a Cisco Mobility Services Engine (“MSE”) to locate callers within 7 meters.¹⁵ However the incidence of enterprise WLAN systems with calibrated Access Point locations and MSE or equivalent functionality is quite limited in relation to the number of indoor locations from which wireless 9-1-1 calls may be placed. Moreover, demonstration of a technology in Cisco’s offices during an *ex parte* presentation to Commission staff falls far short of testing in an independently administered test bed to which competing location technologies have been and will be subjected.

In the small business and residential environment single-AP WLAN systems are more likely (multiple APs will not be on the same network), AP locations are not likely be calibrated, and extrapolation of device locations based on RSSI data will not likely be possible. Lack of

¹⁵ See Cisco/TCS Sept. 26, 2014 *ex parte*, Attachment at Slide 21, available at <http://apps.fcc.gov/ecfs/comment/view?id=60000869059> (last checked April 3, 2014). BRETSA notes that the Cisco solution routes calls to a PSAP based upon cell site sector, when Phase I Misrouting of calls is the most frequent and significant ALI problem PSAPs experience. A slight modification of the Cisco process might provide a solution for the Phase I Misroute problem.

information regarding the positioning of APs, use of signal extenders or beam shaping, different signal attenuation levels based upon construction materials or the number of intervening walls, and other factors would also affect use of RSSI data to improve accuracy. If the percentage of people who voluntarily register their wireless and VoIP phone numbers and addresses with ENS services via website to protect their own lives and property is any indication, the percentage of AP owners who enter their civic addresses in their APs to provide dispatchable location will be small.

BRETSA also notes that the myth of dispatchable addresses being a “Gold Standard,” that a civic address must be provided a PSAP for First Responders to be dispatched, fails to accord dispatchers the respect they deserve. Dispatchers are quite capable of viewing coordinates on GIS-calibrated CAD maps, aerial photos and pictometry to identify not only the civic address at which the caller is located, but the location of the caller *within* a structure if more accurate coordinates are available. Even if a PSAP has does not have upgraded GIS data maintained within 98% accuracy for modern, GIS-centric CAD systems, or in anticipation of NG9-1-1; commercially available mapping software and online mapping services may be sufficiently accurate for those cases when a caller does not know his/her location or cannot communicate it to the PSAP. In fact, dispatchers’ local knowledge of the jurisdiction, including addresses and parties which produce more frequent 9-1-1 calls, information from CAD premises records and flags, and other PSAP data sources, should allow dispatchers to more accurately resolve a caller’s location when ALI provides limited accuracy.

BRETSA is hopeful that APs can provide sufficiently accurate ALI data for use in call routing; and for locating callers who do not know their locations or do not respond to

dispatchers, when more accurate ALI information is not available. However the accuracy of dispatchable location should not be assumed without comprehensive testing in the test bed(s).¹⁶

VI. The Commission Cannot Leave Selection of Location Determination Methods Solely to Service Providers.

The Commission is charged with promoting the public interest. Commercial providers primary responsibility is to maximize shareholder value. These goals are not always consistent

This proceeding has unfortunately devolved into competition among location technology providers. The location-technology providers are of course seeking to monetize their technologies, through their technologies being the only or best option to meet the Commission's indoor location accuracy requirements. Economic considerations are driving the issues in this proceeding.

The location-technology providers stand to realize a return on their respective investments through wireless carriers being effectively required to purchase or license their technologies or services, and perhaps through their technologies becoming the *de facto* standard for location-aware applications. In the case of dispatchable addresses, the existing base of deployed WiFi and Bluetooth APs, and small cells might be leveraged by providers without the expense of deploying new location technologies. The providers would have to develop and maintain an accurate NEAD (the costs of which BRETSA believes the providers have

¹⁶ As BRETSA has previously stated, if dispatchable addresses are presented to PSAPs and First Responders in the same manner as wireline ALI service addresses, First Responders and the public could be placed at risk, because the dispatchable addresses will not be as reliable as the installed service addresses for wireline service. If there is even a minor degree in error in the location determination, First Responders could be dispatched to a neighboring address to that in which a person suffering a medical emergency, a criminal, or someone requiring some other type of intervention is situated. For this reason, the dispatchable address must be presented to the PSAP with a code identifying that it has been determined by WiFi, Bluetooth or small cell identification, just as Phase I, Phase II and VoIP location information is identified to the PSAP as such; and confidence/uncertainty information must be provided. It is vital that the Commission has required that x/y coordinates also be provided.

significantly underestimated, given the costs incurred by PSAPs in keeping their GIS data current). With the costs of the NEAD being spread across providers.

Perhaps recognizing that dispatchable location is not the optimal solution the “Gold Standard” claim would suggest; the ability to triangulate the location of wireless devices based on RSSI data in highly sophisticated enterprise WLANs has been demonstrated. In the case of the Enterprise WLAN system solution proposed by Cisco, Cisco suggests that local building codes might be amended nationwide to require deployment of enterprise WLAN systems with MSE functionality solely to provide more accurate 9-1-1 indoor locations.¹⁷ This would substantially enlarge the market for Cisco’s and competing vendors’ systems, and shift the financial burden for accurate indoor location information from the wireless providers to private property owners. It would also increase the overall costs of indoor location accuracy exponentially, though not at the expense of wireless providers, and may represent an inefficient use of resources on a societal level. BRETSA is neither advocating or condemning such cost-shifting; but instead noting that whether such cost-shifting serves the public interest more than alternative options is the type of determination that should be made by the Commission.

With respect to BRETSA’s primary area of concern, the provision of more accurate indoor ALI could be delayed years while building codes are amended (assuming existing structures are not grandfathered), sophisticated enterprise WLAN systems are installed and trained technicians hired to calibrate AP locations and configure MSE functionality, in apartment buildings, condominiums, government buildings, schools, perhaps strip malls and duplex housing, and other structures nationwide.

¹⁷ See Cisco/TCS Sept. 26, 2014 *ex parte*, Attachment at Slide 21, available at <http://apps.fcc.gov/ecfs/comment/view?id=60000869059> (last checked April 3, 2014).

Simply put, the Commission must retain the authority to approve or disapprove the location technology selected by providers so that considerations of both accuracy, and costs, are given reasonable consideration and weight.¹⁸

VII. Conclusion.

The Commission should reconsider the Fourth Report and Order and modify the Rules, for the reasons stated herein.

Respectfully submitted,

**BOULDER REGIONAL EMERGENCY
TELEPHONE SERVICE AUTHORITY**

By: _____ /s/

Joseph P. Benkert

Joseph P. Benkert, P.C.

P.O. Box 620308

Littleton, CO 80162

(303) 948-2200

Its Attorney

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¹⁸ BRETSA believes the Commission should also seek and promote opportunities for costs of ALI technologies to be spread across all providers, to minimize cost impacts on providers and consumers. BRETSA has previously suggested that the Commission should promote or support service providers collectively establishing a non-profit corporation to research and establish 9-1-1 technologies and support systems. If this was funded by a contribution from providers of even a few cents per subscriber per month, the non-profit would be well-funded. Because the providers would be equally-burdened, they would maintain their competitive postures.