

In the Matter of)
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Modernizing the FCC Form 477 Data Program) WC Docket No. 11-10
To: The Commission

The Boulder Regional Emergency Telephone Service Authority (“BRETSA”), by its attorney, hereby submits its Comments on the Commission’s August 5, 2017 Further Notice of Proposed Rulemaking in the above-referenced Docket (“FNPRM”).¹

The Commission states that the purpose of the FNPRM includes exploration of how it can revise other aspects of the data collection to increase its usefulness to the Commission, Congress, the industry and the public.² The Commission states that “[a]ccurate and reliable data on fixed and mobile broadband and voice services are critical to the Commission’s ability to meet its goal of decision-making based on sound and rigorous data analysis.³

¹ BRETSA is a Colorado 9-1-1 Authority which establishes, collects and distributes the Colorado Emergency Telephone Surcharge to fund 9-1-1 service in Boulder County, Colorado.

² FNPRM, para. 1 at 1-2.

³ FNPRM, para. 6 at 3.

II. Information Should Be Required Pertaining To Potential Loss of Significant Text-to-911 Coverage Through Replacement of SMS Text Messaging Services With Real Time Text.

Control-channel based SMS text-messaging has extended wireless service and, indeed, telecommunications service, far beyond the service contours for voice service. In addition to facilitating the deaf and hard-of-hearing community contacting 9-1-1, SMS text-to-911 extended 9-1-1 coverage to rural areas and locations inside structures where wireless voice calling to 9-1-1 was not previously possible. BRETSA understands that session-based Real Time Text (“RTT”) requires a persistent minimum field strength for maintenance of a “session,” and that such session-based text-messaging coverage will not significantly exceed voice coverage. The Commission should gather data through Form 477 to enable it to monitor whether transition to RTT results in a diminution of effective wireless and 9-1-1 coverage.

The Commission should require that wireless service providers submit data concerning wireless service areas in which sufficient field strength is provided for reliable voice communications, and areas in which sufficient field strength is provided for control-channel based text-messaging but not reliable voice communications. Because location information is not available for ordinary calls and text messages, this may require analysis of 9-1-1 voice call and text-to-911 traffic as well as technical analysis of predicted and actual field strength contours, at least in sample markets. As RTT is deployed, the field strength requirements for reliable RTT sessions can then be measured against the SMS text messaging benchmarks.

In PS Docket No. 11-153, in which the Commission was considering whether to require the provision of SMS text-to-911, the University of Colorado, Interdisciplinary Telecommunications Program submitted comments establishing that SMS text messages can be transmitted in areas where radio frequency field strengths are much lower than that required for a wireless voice call (or, apparently, to establish and maintain a persistent session required for

RTT).⁴ For a substantial distance beyond the field strength contour at which a sufficient signal for voice calls persists, CMRS signal strength fluctuates, momentarily reaching or exceeding the necessary level for transmission of an SMS text message. The brevity of SMS text messages and the fact that a user device will try to resend the message, permits the transmission of SMS text messages during the brief intervals when the signal strength exceeds that necessary for the system antenna and device to make a connection.

BRETSA understands that a persistent connection, or session, must be maintained between the wireless system and the user device for session-based RTT communications. BRETSA has also been advised that the effective service area for emulated, session-based SMS will only very slightly exceed the effective wireless *voice* service area.

Well before SMS text-to-911 was made available, lost, stranded or injured individuals in the backcountry of Colorado and other states with mountainous or wilderness areas, including snowmobilers, hikers, and mountain climbers, for example, were able to exchange text-messages with family members who alerted public safety officials. PSAP personnel also used personal cellphones to exchange text-messages to communicate with such individuals and help effectuate rescues. BRETSA is aware of communities in rural areas where residents are unable to make wireless voice calls and rely upon text-messaging for all communications. There are also areas within urban office and apartment buildings in which wireless voice calls cannot be made or received, but control-channel based SMS text messaging is possible. The availability of SMS text-to-911 in these areas has provided a means for individuals to reach 9-1-1 directly, *with location data*, even when they cannot place a voice call to 9-1-1. The replacement of control-channel based SMS text messaging with RTT could reduce the areas within which individuals

⁴ Comments of the University of Colorado, Interdisciplinary Telecommunications Program, filed December 12, 2011 in PS Docket 11-153 at 3, 12 (Available at <http://apps.fcc.gov/ecfs/comment/view?id=6016877949>).

can reach 9-1-1 to report emergencies and get help, and indeed in which any wireless service and any wireless 9-1-1 is possible.

BRETSA understands that wireless providers do not wish that their provision of SMS text-to-911 become a permanent obligation, or require permanent maintenance of control-channel SMS text messaging as they deploy more advanced wireless technologies. While BRETSA has previously suggested solutions intended to minimize the burden on providers; BRETSA here simply suggests that the Commission gather data to assess the impact of transition from SMS text messaging to RTT on the areas in which text-messaging to 9-1-1 is available.⁵

III. Information Should Be Required Pertaining to Redundancy and Diversity of Transport Facilities For Telecommunications Services Providing 9-1-1 Calling Capability.

There are many wireline central offices which are not connected to the broader PSTN by redundant and diverse facilities, particularly in rural, sparsely populated and mountainous areas of the country. When such an unprotected central office is isolated, conditional call routing by the central office switch permits wireline 9-1-1 calls to be temporarily routed to a local 10-digit number from which First Responders can be dispatched. For example, 9-1-1 calls might be routed to a fire station or police substation served by the same central office switch, where public safety personnel receiving the 9-1-1 calls are able to communicate with the PSAP and First Responders via public safety radio systems.

Wireless 9-1-1 calls and text messages, and VoIP calls, are not routed or switched by such central offices or other local facilities. They are not routed or switched, and indeed 9-1-1

⁵ BRETSA raised this issue 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, and the Commission requested comment on the issue by CMS providers in its *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. No service provider addressed the issue, or even contested the premise.

calls are not even identified as such, until after the wireless or broadband traffic is transported beyond the local (wireline central office serving) area to the wireless Mobile Switching Center (MSC) or the Internet Gateway and VoIP Call Routing Function (“VoIP CRF”). It is at the MSC or VoIP CRF that 9-1-1 calls are identified, and routed to the 9-1-1 Selective Router or NG9-1-1 Data Complex by the wireless or VoIP provider. If wireless and VoIP service in an area is not protected by diverse routing, wireless and VoIP calls never reach the MSC or VoIP CRF during an outage of the transport facility such as would result from a fiber cut.

In many cases, wireless and broadband traffic is transported by the local LEC over the same facilities and path(s) used for its own interoffice traffic. Even where the wireless and broadband traffic is not transported by the local LEC, the transport facilities may well be located in the same right-of-way as LEC interoffice facilities. As wireline subscription rates continue to plummet, LEC’s may not find it feasible to deploy new diversely routed transport facilities to areas currently lacking path diversity.⁶

As stated above, when non-diverse transport facilities are severed or otherwise interrupted, wireless and broadband traffic never reaches the appropriate router or switch at which the called-numbers or addresses are identified and calls are switched or routed accordingly. The wireless or VoIP user cannot call or text *anyone*; including 9-1-1.⁷ The effect is no different than when an exchange line between a central office and an end user is severed and a

⁶ Some wireless providers use a single MSC to provide routing for calls placed in multiple states. BRETSA urges the Commission to require submission of data as to diversity throughout segments of provider networks used to route and transport 9-1-1 calls. In the event this information is required to be included in other FCC reports (to which PSAPs and state authorities do not have access despite 9-1-1 being an intra-state service), it will not unduly burden providers to supply diversity information in response to Form 477 as well.

⁷ BRETSA understands that in the vast majority of cases, if not all cases, transport of wireless calls between the cell site and the MSC is via fiber or microwave. In many cases this transport is provided by an LEC and shares the same fiber or microwave path(s) as wireline interoffice traffic. This appears particularly to be the case in rural areas where diverse transport facilities are less likely to be found. Rather than providing an alternative means of contacting 9-1-1, wireless and broadband (VoIP) services often ride on the same fibers or on fiber located in the same right-of-way as wireline facilities so that *all* telephony services in an area are affected any time such facilities are cut.

wireline caller is unable to place a call to anyone. However with wireless and VoIP service, (i) *all users in the affected community(s)* are unable to call or text anyone, including 9-1-1, and (ii) the call path between the user and the switching or routing function is much longer, increasing the locations at which service might be interrupted.

With over 90% of 9-1-1 calls in some areas being wireless calls, and in light of Commission and state programs to subsidize deployment of rural broadband service; BRETSA is concerned that increasing numbers of users in such unprotected areas will have no way of reaching help during outages, including outages caused by floods, wildfires and other disasters which can destroy such network facilities and when access to 9-1-1 is even more vital.

The Commission should require the filing of data necessary to assess (i) the extent to which wireline, wireless and VoIP services or underlying networks lack redundancy and diversity, (ii) the locations potentially affected by the lack of diversity, and (iii) the deployment of alternative methods of terminating 9-1-1 calls during an outage, such as conditional call routing in the wireline environment, if any.

Again, BRETSA's purpose here is not to promote any specific solution for any lack of path diversity, but to advocate that the Commission determine where diversity does and does not exist in telecommunications networks used for 9-1-1 calling, and to identify alternatives employed by providers to mitigate outages such as conditional call routing. It is important for the Commission, state utility commissions, public safety agencies and offices of emergency management to know where network path diversity will improve the potential for individuals affected by disasters or other emergencies to reach out for help, as opposed to unprotected areas where First Responders must locate individuals in need of help.⁸ It is important to know for

⁸ There is a certain tension between provider's interests in maintaining the confidentiality of proprietary information concerning their networks and which they also contend is critical homeland security information; and provision of

purposes of Emergency Management and Response where wireline, wireless and VoIP services rely upon common transport facilities, or where they provide alternative means to reach 9-1-1.

Second, solutions can best be explored after the Commission collects full information as to path diversity or the lack thereof, and where it is practicable and impracticable to provide diversity. While the technology equally supports centralized *or* distributed call processing and routing; economic considerations in a competitive market foster highly-centralized call processing and routing. It is important that the Commission assess the impact of such highly centralized network architecture upon the reliability of service including 9-1-1 service.

BRETSA recognizes that provision of diversity to each of a wireless provider's cell-sites would be extraordinarily expensive and impracticable, significantly impact service prices, and divert resources from network improvements and expansion. BRETSA also realizes that if an individual cell site goes out of service or is isolated, customer calls may be able to be connected through nearby cell sites not affected by the outage. However a lack of redundant and diverse connections between traffic aggregation points and wireless MSCs or VoIP CRFs may impact far more users, and lack readily implementable remedial measures.

IV. The Commission Should Require Reporting Of Provider Ability To Deliver To PSAPs Data Regarding Non-Completed 9-1-1 Calls Following A 9-1-1 Outage.

In the wake of the April 2014 multistate NG9-1-1 outage, PSAPs and 9-1-1 Authorities requested that affected providers supply information regarding calls to 9-1-1 which had not been completed due to the outage, so that First Responders could follow up and determine if

such information to state utility commissions and offices of emergency management, and local First Responder and emergency management agencies. Local First Responder and emergency management agencies require this information to effectively respond to emergencies, including homeland security incidents. Local First Responders are on the front lines of homeland security. Perhaps this can be resolved by providing select local supervisory or management personnel with access to local network information pursuant to non-disclosure agreement, select state emergency management and utility commission personnel access to statewide network information pursuant to non-disclosure agreement, and select FCC and federal emergency management and homeland defense personnel with access to national level network information pursuant to non-disclosure agreement. Those FCC/federally-approved non-disclosure agreements should preempt state open records obligations of officials receiving such information.

assistance was still required.⁹ Provider response to this request was uneven, and one provider stated that it was prevented by contract from supplying such information.

To BRETSA's knowledge, the April 2014 outage represented the first time service providers were requested to supply information regarding 9-1-1 calls which were not completed due to an outage. It is no wonder the responses of the providers were uneven, and non-disclosure provisions of relevant contracts did not provide for delivery of call data in this context. Nevertheless, the ability to identify individuals who have tried to call 9-1-1 during an outage would allow First Responders to contact the callers and provide essential, if delayed, assistance; or gather essential information for investigators.¹⁰

Service providers should be required to report on points in their networks and the call paths for their customers' 9-1-1 calls at which call information is or could be captured and recorded, or transmitted out-of-band,¹¹ for delivery directly to a PSAP or via a 9-1-1 Selective Router or NG9-1-1 Data Complex during or following an outage. Service providers should also be required to identify contracted parties who would possess such information, and whether the service providers' agreements with such parties would prevent the delivery of such data to PSAPs. Providers objecting to their contractor disclosing such data to a PSAP should be required to state the basis of their objection.

The collection of this data should enable the Commission to assess the practicability of providers and their contractors supplying 9-1-1 call data such as ANI and ALI to PSAPs during

⁹ See June 30, 2014 Comments of the Washington State E9-1-1 Coordination Office in PS Docket No. 14-72, at 5; June 3, 2014 Comments of Pacific County, Washington, Sheriff Scott L. Johnson and 9-1-1 and Emergency Services Director Stephanie Fritts in PS Docket No. 14-72, at 2,

¹⁰ If systems are configured to provide such data following restoration of service, it may also be possible to provide such information to the appropriate PSAP via an alternative path such as the internet *during* an outage, facilitating real-time response notwithstanding the outage. This would require not only an assessment of the ability to capture this information at key points in the various networks through which 9-1-1 calls can be placed and transmitted, but also the availability of an alternative path for transmission out-of-band of such 9-1-1 call "metadata" such as ANI and available ALI. Individual PSAPs must also elect to receive the data following or during outages.


¹¹ Transmission "out-of-band" means other than through the established 9-1-1 call path in which there is an outage.

or following an outage, and whether there are reasons such data should not be disclosed to PSAPs

Respectfully submitted,

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