

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

In the Matter of )  
 )  
Reliability and Continuity of ) PS Docket No. 11-60  
Communications Networks, Including )  
Broadband Technologies )

**BRETSA’S COMMENTS**

The Boulder Regional Emergency Telephone Service Authority (“BRETSA”),<sup>1</sup> by its attorney, hereby submits its Comments on the Commission’s March 26, 2021 Public Notice seeking comment on Wireless Service Provider’s safety measures for their customers during disasters.<sup>2</sup> In support whereof, BRETSA respectfully states:

**I. Wireless Service Is Now the Primary Means of Calling 9-1-1.**

CMRS services once provided an alternative means of reaching 9-1-1. Today, however, over ninety percent of 9-1-1 calls received by some PSAPs are from wireless devices, and it seems unlikely wireless 9-1-1 calls do not constitute the majority of 9-1-1 calls received by any PSAP. In Colorado, basic residential wireline subscription rates have plummeted.

The general public as well as members of the 9-1-1 Community in Colorado believed wireless provider networks provided an alternative means and route for the public to call 9-1-1 and reach a PSAP, until the 2013 floods along the Northern Colorado Front Range that killed eight people, left two missing and presumed dead and hundreds unaccounted for during the

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<sup>1</sup> 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.

<sup>2</sup> *Public Safety and Homeland Security Bureau Seeks Comment On Wireless Service Providers’ Safety Measures For Their Customers During Disasters In Connection With The Consolidated Appropriations Act of 2021*, PS Docket No. 11-60, Public Notice DA 21-362 (March 26, 2021).

event, destroyed 1,500 homes and damaged 19,000 others, destroyed 30 State Highway bridges and seriously damaged 20 others, and washed out roads including the road into Estes Park severing the single interoffice facility to the Estes Park Central Office (CO) preventing 9-1-1 calling in the affected area;<sup>34</sup> and the Colorado Public Utility Commission’s “Inquiry Into E9-1-1 Network Performance During the Recent Flood and Fire Related Disasters in the State of Colorado” in CoPUC Proceeding No. 13I-1147T.

In the case of the 2013 Floods, public safety officials in Colorado lauded the response of the wireless providers in the wake of the floods, rapidly deploying mobile and portable cell sites to restore service once the search and rescue efforts had ended and the providers could get into the area without interfering with rescue operations.

In CoPUC Proceeding No. 13I-1147T, however, it was firmly established that wireless provider networks did not provide an alternative means for individuals in the Estes Park (and Allenspark) area to reach 9-1-1. Wireless calls are transported from the cell site through which the calls are received to the wireless providers’ regional or national Mobile Switching Centers (“MSCs”) for routing to the called party such as 9-1-1. The calls are transported at least part of the way to the MSCs (from the local calling area to a centrally-located Wireless Provider Point-of-Presence) on fiber in the same sheath as the wireline provider’s interoffice facilities. Thus, when the *single* interoffice facility connecting the unprotected Estes Park CO (and Allenspark CO beyond) to the PSTN and the Selective Routers of the state E9-1-1 network was severed, the

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<sup>3</sup> Between 15 and 20 inches of rain fell in portions of the City of Boulder between September 9<sup>th</sup> and September 15<sup>th</sup>, 2013, and Boulder Creek which regularly flows at 150-200 cubic feet per second exceeded 5,000 cubic feet per second.

<sup>4</sup> Estes Park, in Larimer County Colorado, is located near the east entrance to Rocky Mountain National Park, which is visited by over 4 Million people a year. The Estes Park Central Office (“CO”) connected to the larger Public Switched Telephone Network (PSTN) and Colorado E9-1-1 Network through a single interoffice facility, and the Allenspark CO, in Boulder County, was connected to the Estes Park CO. Since the floods diversely routed facilities have been placed to the Estes Park CO, but the Allenspark CO remains unprotected.

fiber carrying *wireless* 9-1-1 calls from Estes Park and Allenspark to the MSC were also severed. This prevented the wireless 9-1-1 calls from reaching the wireless providers' regional or national MSCs where they would be identified as 9-1-1 calls, and routed back to the Colorado E9-1-1 Network.<sup>5</sup> Indeed, as BRETSA understands it, wireless users in the affected areas could not call *anyone*, because their calls could not reach the MSC where they would be routed to the called-party.<sup>6</sup>

The 9-1-1 Community has also learned in the wake of the 2013 Colorado floods that there are a large number of rural and mountainous areas in Colorado alone, where the COs are unprotected, and wireless traffic is transported between the cell sites in the area and the wireless providers' regional or national MSCs on fiber located in the same sheath as the single wireline interoffice facility. There are many other Midwestern and Western states with large, sparsely populated expanses where the number of customers in a CO serving area, and wireless service area, is apparently insufficient to justify *commercial* investment in diverse call paths. In some cases, the interoffice facilities are aerial facilities, vulnerable to fire and wind as well as to floods and earth movement to which buried fiber is vulnerable (in addition to buried fiber vulnerability to the errant backhoe). The loss of the now predominant wireless telephone service including the ability to call 9-1-1 due to severing of non-diverse facilities can impact private emergencies and

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<sup>5</sup> Deployment of an ESInet, replacing the Colorado E9-1-1 network, will be completed this year. Deployment of the ESInet will not remedy this type of situation, because the severed interoffice facilities and outage occurred in the network before the calls were delivered to the MSC, not in the Colorado 9-1-1 Network.

<sup>6</sup> Ironically, because wireline calls are switched at the local CO, during CO isolation calls from lines connected to the CO switch can be connected to any other line connected to the CO switch. 9-1-1 calls can be contingently routed to any 7- or 10-digit number served by the same switch, including administrative lines at a PSAP located in the CO serving area. Where the PSAP is not located in the CO serving area, the 9-1-1 calls can be connected to another number served by the switch (perhaps at a law agency substation or firehouse) where calls can be received, and call information relayed to the PSAP. In the case of the 2013 floods, implementation of contingent routing was delayed due to ongoing search and rescue operations which prevented airlifting a telephone company technician into the affected area.

cost lives at any time. When it occurs during a natural disaster or public emergency, it can be *catastrophic*.

In the case of the Colorado Flooding of 2013, once the interoffice facility to the Estes Park CO was severed when the road right-of-way in which it was buried was washed away, people in the midst of the natural disaster who were reliant on wireless phones were unable to reach 9-1-1, or anyone, for help. In addition, public safety officials were unable to transmit ENS or WEA messages to deliver warnings, evacuation orders, or other instructions. ENS services use auto-dialers to call wireline numbers and registered wireless numbers in the target area and deliver messages warnings, evacuation notices, or other instructions from public safety officials. The calls or text messages to wireless devices must be delivered to the MSC and routed to cell sites in the affected area over the same facilities, including the same non-diverse interoffice facilities the severing of which prevents wireless customers in the affected area from having their calls connected. It is reasonable to assume that WEA messages are transmitted to cell sites from the MSC as well, although BRETSA cannot confirm this.

In workshops held in CoPUC Proceeding 19M-0026T, stakeholders sought to identify portions of the Colorado 9-1-1 Network and System which lack redundancy and diversity, and develop a plan for funding redundancy and diversity. Deciding to focus on unprotected COs which serve PSAPs, it initially appeared that microwave and standby-satellite services might provide cost-effective options for delivery of 9-1-1 calls to the COs or directly to the PSAPs. However if the majority of individuals in the area subscribe to wireless service, and the majority of 9-1-1 calls are wireless calls, those microwave and standby satellite facilities might not have much 9-1-1 traffic to deliver during a CO isolation. That is, as discussed above, wireless calls cannot reach the MSC, so they also cannot be routed back to the Colorado 9-1-1 system, through

the ESInet and over the microwave or standby-satellite service diverse *ESInet* path to the CO or PSAP. Microwave and standby satellite services do not have the capacity to transport wireless traffic out of the area for delivery to the Regional or National MSC, even if they were configured in that manner.<sup>7</sup> Because the destination of wireless calls (*e.g.*, 9-1-1) is not determined until the calls reach the MSC, the diverse path facilities would require the capacity to transmit *all* wireless calls to the MSC. Wireline calls *can* be contingently routed to the PSAP served by the CO during CO isolation.<sup>8</sup> 9-1-1 calls from other CO serving areas in the jurisdiction served by the PSAP could be routed to the PSAP over the microwave or standby satellite services, but a rural PSAP is often located in the most populated city or town in the rural county, or multi-county area, served by the PSAP. But wireless services now dominate the market and a very high percentage of 9-1-1 calls are placed from wireless devices.

## **II Diverse Network Paths to Sparsely Populated Areas Are Not Commercially Viable.**

The cost of placing facilities to rural populations in agricultural, mountainous and desert areas of Midwestern, Western and perhaps other states, is prohibitive. The distances involved or the terrain and rocky ground through which the facilities must be built increase costs, while there are fewer customers served by those facilities across which to spread the costs. If the previously dominant wireline providers which controlled all or nearly all of the telephone traffic and customers to these areas before the advent of wireless competition could not justify the cost of path diversity, the current wireless competitors and wireline provider among whom the customers in any area are divided, are less likely to justify funding path diversity to all of the COs serving rural and mountainous areas which remain unprotected by path diversity.

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<sup>7</sup> BRETSA and other 9-1-1 Authorities in Colorado are evaluating standby satellite service as an option for delivery of wireline 9-1-1 calls from isolated COs to a PSAP located outside of the affected area.

<sup>8</sup> The workshops in CoPUC Proceeding 19M-0026T were focusing on ESInet diversity to COs serving PSAPs as the first priority for eliminating single points of failure in 9-1-1 call paths.

One solution is subsidization of path diversity to these unprotected COs by the federal or state governments, using funding from a broader population including urban and suburban residents, or federal deficit spending.<sup>9</sup> The Commission has been subsidizing the expansion of broadband service in rural areas where population density is insufficient to provide a commercial incentive for providers to otherwise invest in service expansion. Modification of rural broadband programs to require or encourage use of funds to improve network resiliency, including the continued ability for individuals in those areas to call 9-1-1 and receive ENS and WEA messages during public emergencies when transmission facilities to rural COs and service areas are severed, is equally important to increased network bandwidth or speed.

The Commission should also explore other options to address this critical vulnerability of networks serving rural populations in many areas of the United States.

Respectfully submitted,

**BOULDER REGIONAL EMERGENCY  
TELEPHONE SERVICE AUTHORITY**



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<sup>9</sup> The Commission has found it improper for states to use 9-1-1 Fees to subsidize expansion of commercial networks to improve 9-1-1 access. See *911 Fee Diversion; New and Emerging Technologies 911 Improvement Act of 2008*, PS Docket Nos. 20-291 and 09-14, Notice of Proposed Rulemaking, FCC 21-25, para. 25 at 10-11 (February 17, 2021).