

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

In the Matter of)	
)	
Amendments to Part 4 of the Commission's Rules Regarding Disruptions to Communications)	PS Docket No. 15-80
)	
New Part 4 of the Commission's Rules Concerning Disruptions to Communications)	ET Docket No. 04-35
)	
The Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers)	PS Docket No. 11-82
)	

To: The Commission

**COMMENTS OF
THE BOULDER REGIONAL EMERGENCY TELEPHONE SERVICE AUTHORITY**

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Summary

BRETSA's experience is that providers do not adequately or properly report service outages affecting 9-1-1, argue that the Commission's reporting requirements for mammoth 900,000 affected-minute outages prevent or preclude 9-1-1 outage reporting to states and PSAPs (which can take remedial steps), and are sometimes actually hostile towards PSAPs regarding outage reporting.

The Commission's outage reporting rules stand public safety priorities on their head. PSAPs need to be advised first when an outage occurs, because PSAPs and the First Responder agencies they dispatch are the governmental entities which are in a position to take remedial action pending restoration of service. PSAPs need to be advised of outages, and have the option of implementing remedial measures, for outages much smaller than the 900,000-minute outages reportable under the Commission threshold, yet at least wireless and VoIP providers object reporting thresholds other than that adopted by the Commission and argue it preempts or precludes reporting requirements with more realistic thresholds.

Responsible *state* authorities also need to be notified of outages affecting the public's ability to reach 9-1-1 on an expeditious basis, second only to the affected PSAPs. 9-1-1 calls are *intrastate* calls. Responsible state authorities, whether 9-1-1 offices or utilities commissions, should and do have relationships with 9-1-1 authorities and PSAPs throughout their states, as well as with state-level representatives of the providers responsible for making notifications and restoring service. Such responsible state authorities are in a position to coordinate among multiple affected PSAPs and providers, and constitute first level escalation for PSAPs, when required. State utility commissions have a responsibility to monitor the health of the state's telecommunications infrastructure, and they may also participate in the state office of emergency

management with responsibility for monitoring the status of communications facilities in services during public safety incidents or widespread disasters.

The Commission's responsibility and focus should be on high level monitoring of the health of the nation's telecommunications infrastructure and services, and spotting and taking action with respect to identified trends affecting the reliability and continuity of telecommunications services and the underlying infrastructure. Its reporting requirements, forfeiture actions and other actions pertaining to network outages must not interfere with providers' reporting of outages to PSAPs and state officials and actions to restore service.

Outage notifications to the Commission may be better delayed; the Commission would be better served through filing of "after-action reports" prepared after the providers have had the opportunity to determine the cause of the outage and confirm that service has been reliably restored. More importantly, when an outage is ongoing and PSAPs, local and state officials and providers are focused on remediation of the outage and service restoration, providers should not be distracted from this work by the requirement for senior/national management and counsel to also be inquiring into the cause and status of the outage to meet Commission reporting requirements while seeking to minimize exposure to liability for Commission forfeitures arising out the outage or reporting errors.

At the same time, states and PSAPs should be able to make their own NORS and DIRS filings to assure that outages are reported. States provided access to NORS and DIRS reports should be permitted to file responses or supplements to provider reports, where a state feels a provider's report was incomplete or misleading. The Commission should not focus on the reports for enforcement purposes, but to identify common causes of outages and means by which they can be avoided, expeditiously remedied, or their impacts reduced. The states, rather than the

Commission, can and should levy any forfeitures arising out of outage failures affecting *intrastate* 9-1-1 calls. If a state believes Commission intervention is required in a particular case, the state should be able to escalate the matter to the Commission.

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**COMMENTS OF
THE BOULDER REGIONAL EMERGENCY TELEPHONE SERVICE AUTHORITY**

The Boulder Regional Emergency Telephone Service Authority (“BRETSA”), by its attorney, hereby submits its Comments on the Commission’s May 26, 2016 Report and Order, Further Notice of Proposed Rulemaking, and Order on Reconsideration in the above-referenced Docket (“FNPRM”).¹

I. Outage Reporting Requirements Should Be Reasonably Related To The Stakeholder’s Role In The 9-1-1 Ecosystem.

Outage reporting requirements, both in terms of the information to be reported and the time within which reports should be made, should follow the hierarchy of need and ability to institute remedial measures of 9-1-1 stakeholders. The PSAPs must be ranked at the top of this

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. BRETSA initially filed its Comments on May 9, 2016. These Amended Comments are filed to better distinguish between the views of BRETSA and the Boulder County Office of Emergency Management regarding use of EAS for local alerting.

hierarchy, and the FCC at the bottom; but the Commission's regulations have turned this hierarchy on its head. Indeed, in Colorado Public Utilities Commission Proceeding 15R-0318T, service providers argued that the Commission's Rules preempt the states from requiring reporting of outages which do not meet the Commission's 900,000 user-minutes-affected threshold to PSAPs and the PUC.² While BRETSA vigorously disagrees with this position,³ the arguments of the providers in Commission proceedings and to state legislatures alike carries weight just due to the size and importance of these companies to the state's economy.

A. Role of, and Outage Reporting To, 9-1-1 Authorities and PSAPs.

There are two scenarios in which reporting of telecommunications service outages will be important to a PSAP and local public safety authorities, and the threshold for reporting will differ based upon the scenario. The first situation is a "sunny day outage," such as may be caused by "backhoe fade" or failure of network components. It is important for a PSAP to be advised of these types of outages when the scope and scale is such that 9-1-1 calls are likely to be affected.

² See, e.g., Transcript of November 19, 2015 Workshop in Colorado PUC Proceeding 15R-0318T, p.13 line 9-p.133 line 17, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search.

³ See *New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, ET Docket No. 04-35, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 16830, 16909 (2004) ("With respect to the issue of potential duplication of the efforts of the states, we emphasize that we do understand the potential value of having one outage template instead of 50 different templates. Individual states, however, may have their own unique needs that could necessitate their collection of outage-reporting data that may differ from that needed by the Commission. For example, South Dakota requires many more outage reports than our criteria would generate. But since South Dakota is a small state, it may need tighter criteria in order to generate more than a handful of useful outage reports. It is, however, possible that our reporting requirements may provide a common framework that will be of assistance to state, commonwealth and territorial governments; and which may, therefore, serve to reduce the number of outage reports that might otherwise be required by those jurisdictions."), *Amendments to Part 4 of the Commission's Rules Concerning Disruptions to Communications; New Part 4 of the Commission's Rules Concerning Disruptions to Communications*, PS Docket No. 15-80; ET Docket No. 04-35, Notice Of Proposed Rulemaking, Second Report And Order and Order On Reconsideration, 30 FCC Rcd 3206, 3223, 3224 (2015) ("In the absence of routine access to NORS data, many states independently require communications providers to file network outage reports with their public utility commissions or similar agencies." and "Granting states access to NORS data on a confidential basis *could advance compelling state interests in protecting public health and safety* in an efficient manner." Emphasis added.)

In such cases, PSAPs can take remedial measures such as increasing patrols by mobile units, employing broadcast or social media to advise the public of the outage and to use alternative means to seek assistance, implement conditional routing, or take similar steps to ameliorate the impact of the outage.

The second scenario is when a network outage occurs during a major public safety incident such as a wildfire, flood, or similar disaster affecting both user's ability to reach 9-1-1 and the ability of public safety officials to launch or the public in affected areas to receive ENS, WEA, social media and other alerts and directives, including evacuation notices. In such cases, outages affecting even small subdivisions may be critical information, and First Responders might be sent door-to-door in the affected area to advise individuals to evacuate. In such cases, the situation may be constantly changing, as telecommunications facilities may burn in a fire or be washed away in a flood or lose power as power lines are damaged or lost. Provider personnel with the most current information as to the status of their facilities should be available to PSAPs and Offices of Emergency Management 24/7, and should also initiated contact with PSAPs and OEMs when updates on the status of facilities are available.

In both of these scenarios, outages far smaller than those affecting 900,000 user minutes will be critical. BRETSA notes that there are telephone companies in Colorado serving fewer than 100 customers, which would not have to report a complete service outage for over 6 days. A service outage of 4 hours would not have to be reported to the PSAP unless it affected 3,750 subscribers. To put this into perspective, 184 Colorado cities and 9 Colorado counties have populations of less than 3,750 (122 cities have populations between 400 and 3,750). Service to these entire cities and counties would have to be disrupted for at least 4 hours before the outage would have to be reported.

PSAPs and First Responders are on the front line of Homeland Security, and local and state authorities have at least an equivalent if not greater interest as the federal government and Commission in the proper functioning of 9-1-1 and in knowledge of outages affecting 9-1-1 service. Local and state authorities are also in a position to take remedial measures in the event of such outages. Thus, BRETSA believes each state should set outage reporting requirements to PSAPs and the responsible state agency, for providers doing business within the state. Colorado, for example, has providers with limited numbers of customers, which may nevertheless constitute a significant portion of the people served by a PSAP. Colorado has end-offices which are not protected by redundant and diverse routes, for example due to population distributions and geography (increasing the cost of placing facilities). These considerations may make establishment of such diverse routes uneconomic for the legacy wireline exchange provider which has seen the percentage of homes its facilities pass which take basic telephone service fall from nearly 100% to less than 25%; but which interoffice facilities transport wireless and/or VoIP traffic for CMRS providers.⁴

During the 2013 floods in Colorado, the CenturyLink interoffice facilities connecting to the end office serving Estes Park were washed away, along with the roadway in which they had been placed. The outage isolated Estes Park and environs from the rest of CenturyLink's exchange network and the PSTN, including connections to the 9-1-1 Selective Router. Because the CenturyLink interoffice facilities also connected the CMRS sites in the Estes Park area to the respective wireless carrier's Mobile Switching Centers ("MSC"), calls including 9-1-1 calls did not reach the MSC, and 9-1-1 calls from the area could not be routed to the 9-1-1 Selective

⁴ The use of common facilities by otherwise competing services means that the services do not provide alternative or diverse means of reaching 9-1-1.

Router.⁵ The Estes Park end office was not protected by diverse interoffice facilities, because of the expense of constructing facilities in the mountainous terrain, and likely the fact that CenturyLink's market share and revenues from basic exchange service have decreased significantly.⁶

PSAPs must be notified of network outages affecting 9-1-1 of a size the state has determined is reportable, including all services impacted by the outage, and the geographic scope of the outage.

B. Role of, and Outage Reporting To State Officials.

States have a dual interest in telecommunications network and service outages within their borders. First, they have an interest in monitoring the health of the state's telecommunications infrastructure, including the reliability of 9-1-1 service. If outages resulting from common and avoidable causes recur, the states should be able to direct investment to avoid such outages, at least insofar as the SSP is concerned.

Second, the states have an interest in assuring that PSAPs and public safety officials and agencies are timely notified of outages, so that the PSAPs can maintain situational awareness and take remedial action when necessary. For the reasons stated in Section I.A. immediately above,

⁵ As late as the workshops in this proceeding in the fall and winter of 2015, two years after the floods and outages, wireless providers were representing to the Colorado PUC that the outage occurred in the facilities of CenturyLink *qua* SSP ("Basic Emergency Service Provider," or "BESP" in Colorado), and thus occurred after the handoff of the 9-1-1 call to the SSP. This was incorrect, as the calls never reached the MSC. That the outages occurred in LEC interoffice facilities transporting wireless traffic from cell sites to the MSC makes undeniable that the outages occurred prior to handoff to the SSP.

⁶ When inquiry was made in PUC Proceeding No. 15R-0318T as to the potential for diversity of facilities connecting the wireless sites in the Estes Park area with the MSCs, the provider's response was that the placement of diverse facilities to each cell site was a non-starter. Transcript of October 20, 2015 Workshop in Colorado PUC Proceeding 15R-0318T, p.80 line 25-p.83 line 15, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search. Thus, BRETSA does not know if wireless providers aggregate traffic in such a service area for transport to the MSC, creating an opportunity for redundancy and diversity between an aggregation point in a particular area and the MSC. If so, then there may be opportunity for wireless (and VoIP) providers which have captured traffic the exchange provider has lost, and generated additional traffic, to share in the cost of establishing diverse routes to the MSC and diversity for all telephone service in currently unprotected areas. Nevertheless, there are certainly some unprotected areas which it will never be economic to protect with diverse interoffice facilities.

the states are in the best position to assess the state of telecommunications infrastructure within their borders, evaluate the needs of their constituents and the PSAPs which serve them, and determine the appropriate reporting thresholds. This assumes that the responsible state agency is the utilities commission, although it could also be a state 9-1-1 office or administrator with respect to 9-1-1 service.

States should also be in a position to intervene when necessary to assist in coordination among multiple jurisdictions' PSAPs affected by outages and the providers involved, and to assure outage information is timely conveyed to affected PSAPs. State authorities generally have knowledge of, contact information for, and should have a good working relationship with, the provider representatives in their state with whom matters regarding an outage should be escalated when necessary. For this reason, states should also be notified of outages.

To the extent assessment of a forfeiture from a provider due to an outage reporting failure, or a service failure giving rise to a 9-1-1 outage, is appropriate; the *states* are the proper authorities to assess such forfeitures. First, in states which regulate SSPs pursuant to rate-of-return, tariff regulation, the state is in the best position to determine an appropriate amount of forfeiture to deter rule violations without making the service uneconomic. Even states which do not impose rate-of-return regulation on SSPs, but contract with SSPs for service or provide other oversight will be in the best position vis-à-vis the Commission to determine appropriate forfeitures.

By contrast, the large forfeitures the Commission has assessed for recent 9-1-1 outages (outages affecting *intrastate* calls), has SSPs considering and threatening to abandon provision of 9-1-1 service. Generally the former RBOCs with extensive networks within each state have been

in the best position to act as the SSP for the state, and to most cost-effectively aggregate and route 9-1-1 calls.

The aggregation, routing and delivery of 9-1-1 calls to the appropriate PSAP, whether pursuant to traditional selective routing or NG9-1-1, is a capital intensive undertaking. Providers are often expected or required to capitalize infrastructure and recover substantial non-recurring costs through recurring charges, albeit at a modest rate of return to compensate for the carrying of capital costs, the low risk of providing a regulated service to governmental entities under a tariff with the color of law (where provided pursuant to tariff), and the current low cost of money. The size and nature of the market, the fact that the service is regulated in some states, and the fact that most SSPs contract with a third party provider for essential services in the provision of 9-1-1 service, provides SSPs more limited returns, and lower rates of return on the service than other lines of business in which they could invest their capital. It is in this context that the levying of such significant forfeitures as the Commission has sought, or settled on with providers, has caused providers to question whether they even want to continue to provide the service. The Commission's levying of forfeitures should not legally or practically (considering the cumulative impact of both the Commission and the state levying forfeitures) preclude state enforcement actions, including imposition of forfeitures, related to *intrastate* 9-1-1 calls.

Finally, the Colorado PUC has settled enforcement actions with providers making voluntary payments into funds that have been used to improve 9-1-1 service. It was just such a payment that funded the pairing of the 9-1-1 Selective Routers in Colorado with redundant and diversely located Selective Routers, and interconnection of the Selective Routers permitting two-digit transfer of calls between PSAPs statewide. By contrast, at a time when the local, state and

federal stakeholders are seeking means of funding the transition to NG9-1-1, the recent forfeitures negotiated by the Commission have been lost to the 9-1-1 Community.⁷

Notably, although exchange providers have for years notified the Colorado PSAPs and PUC of outages, and reported on their cause and duration; wireless and VoIP providers have only recently begun submitting reports. Some of these reports have stated only that there is or that there may be an outage, without supplying any information as to the areas or number of subscribers affected, or the time or duration of the outages.⁸ The reporting has also been inconsistent, and unnecessarily confrontational.⁹

Providers have also argued that their submission of Network Outage Reporting System (“NORS”) and Disaster Information Reporting System (“DIRS”) reports to the Commission is exclusive or preemptive of any obligation to report outage information to states. Transcript of November 19, 2015 Workshop in Colorado PUC Proceeding 15R-0318T, p.216 line 4-p. 222

⁷ To the extent the Commission continues to assess forfeitures related to 9-1-1 outages, reports, etc., the Commission should require that forfeited amounts be invested or contributed to improve the 9-1-1 system and service in the areas affected. If the Commission cannot accomplish this by order, it should be able to approve such investments or contributions in negotiated resolutions of enforcement actions; and the Commission should seek Congressional authority to direct that 9-1-1 related forfeitures be invested in improvement of the 9-1-1 system.

⁸ The Commission has not established a mechanism for local or state authorities to file information regarding 9-1-1 outages in NORS or DIRS, so the Commission may have an incomplete and certainly has an unverified picture regarding outages. Over the past several months, BRETSA’s PSAPs have experienced a number of service outages preventing residents in areas they serve from reaching a PSAP, and have taken remedial measures with respect to some of these outages, without receiving *any* notification of or communications regarding the outages from any service provider.

⁹ At a February 4, 2016 public hearing in PUC Proceeding No. 15R-0318T, Scott Rose, a Manager of the Lakewood Police Department Public Safety Answering Point appeared and testified regarding a January 18, 2016 outage of the Verizon wireless network. The PSAP had learned of the outage from callers to 9-1-1 reporting that they had been unable to reach 9-1-1 to seek help in emergency situations using their Verizon service, and were using another service to reach 9-1-1. While the outage had been reported by Verizon to other affected jurisdictions, it had not been reported to the Lakewood Police PSAP, and Mr. Rose had contacted Verizon to inquire about the extent and expected duration of the outage. In his testimony, Mr. Rose related what he had been told by Verizon’s representative regarding the cause of the outage, when he had contacted Verizon. Verizon filed a written response on February 25, 2016 including a Declaration of Michael Kelly of Verizon in which Mr. Kelley states that “The allegation in Mr. Rose’s testimony that Verizon Wireless was performing routine maintenance or replacing Mobile Switching Center cards is entirely inaccurate.” Verizon’s entirely gratuitous attack on Mr. Rose’s veracity was uncalled for, and misplaced since he in fact testified to what he was told by a Verizon employee, and could not and did not assert that the facts related by Verizon were true and correct. It is important that provider’s and PSAPs maintain a civil and respectful working relationship regarding 9-1-1 service and outages, for the good of the general public.

line 16, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search. They also argue that (i) they cannot be required to provide to the states the information they provide to the Commission in their NORs and DIRS reporting because of its sensitive nature, (ii) the states and state commissions do not have in place sufficient protections for that information, and (iii) the states must obtain the information from the Commission. See, *e.g.*, Transcript of November 19, 2015 Workshop in Colorado PUC Proceeding 15R-0318T, p.216 line 4-p.222 line 16, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search. It is unacceptable and places Americans at risk for the Commission's requirements for filing of outage data to interfere with the ability of local PSAPs and states, which can take practical remedial actions in the event of 9-1-1 outages, to obtain real-time outage information. We note that state utility commissions and other state agencies which might require this outage information, also participate in state emergency operation centers, and have a need for outage information in the context of their roles in managing state coordination of responses to major emergencies, and can meaningfully intervene to assure PSAPs are getting information they require.

Precluding state authorities from accessing NORs and DIRS reports has also prevented verification of their accuracy. Rather than simply allowing states access to the reports, the states must have the ability to challenge the accuracy of the reports, file comments or additional data pertinent to specific provider-filed reports, and report outages which a provider may have failed to report.

C. Role of, and Outage Reporting To the FCC.

The Commission has an interest in monitoring the health of the nation's telecommunications infrastructure and service, including 9-1-1 service. However the Commission does not have personnel on the ground in the states with relationships with the 9-1-1/PSAP community and the providers and their local representatives, to escalate matters in a

productive, working context during an outage. Particularly given (i) the Commission's recent assessment and negotiation of steep forfeitures as a result of 9-1-1 outages to "send a message," and (ii) the perception that the Commission is particularly aggressive and draconian in its levying of forfeitures; Commission intervention is more likely to get senior management and legal counsel involved to mitigate potential regulatory liability, and to take up time of personnel who could be working to restore service to assure that accurate information is provided the Commission regarding the outage, when the public interest demands that the focus be on restoration of service.

Finally, the Commission should assess NORS and DIRS data to determine whether there are common or recurrent causes of outages reports, and whether there are steps which might be taken to avoid or mitigate the duration or effect of some of these service outages. The Commission may find that there are facilities that commonly lack redundancy and diversity which could be economically provided. Or it may find that direct 9-1-1 call routing, or contingent 9-1-1 call routing to a local fire station or other location, could be provided for wireless and/or VoIP 9-1-1 calls when an unprotected transport service suffers an outage.

II. Protection of Outage Information From Disclosure.

Information pertaining to the specific location of telecommunications facilities, and means by which those facilities might be disabled, is "security information" which State Commissions and the 9-1-1 Community and First Responders they dispatch (which are on the front line of Homeland Security) have as much interest in protecting as the service providers. However, while providers may consider outage information and the reliability of their services to be confidential, it is in fact market information to which consumers should have access. This type of information is essential to the proper functioning of markets, and to create market pressure for service providers to make investments to improve reliability. It is this type of market

pressure which obviates the need for comprehensive regulation of the service. Service providers should not be able to cloak their service failures behind claims that the information is proprietary or warrants protection for homeland security purposes, and enlist the Commission as a tacit ally in potential misrepresentations as to the quality and reliability of their services. More importantly, the PSAPs and State Commissions have a need to know when there are service outages.

In a deregulatory environment in which market forces are relied upon to encourage reliable, efficient and innovative service and drive prices closer to costs; the Commission has an obligation to make such information available to consumers. Competition should also be more effective than Commission enforcement in promoting improvements in service reliability. That is, after all, the theory behind the current “market regulation” approach.

III. Provision of Outage Information Must Be Required.

Provision of outage information must be mandatory; and the states must be able to mandate provision of outage information to the PSAPs and state regulatory agencies which the states deem necessary for their respective purposes. The failure of providers so notify PSAPs of outages, resistance in Colorado PUC Proceeding 15R-0318T to providing outage information, and hostility towards 9-1-1 professionals relating outage information supplied them by the providers themselves, and continued claims that wireless 9-1-1 outages occurred after the wireless providers delivered 9-1-1 calls to the SSP, when the outage in fact occurred between their cell sites and their MSCs; makes clear that they cannot be relied upon to voluntarily provide accurate outage information.

In the aftermath of the April 2014 multistate 9-1-1 outage, a number of PSAPs and public safety authorities requested from the providers information on individuals who had called 9-1-1 but whose calls had not gotten through to the PSAP due to the outage. The Commission’s report

on the outage indicated that compliance with this request was uneven, and one provider declined to provide the information citing contractual obligations.

In the Recommended Decision in Colorado PUC Proceeding 15R-0318T, a new section 4 CCR 723-2-2139(j) was adopted providing:

- (j) Following the restoration of 9-1-1 service the responsible provider shall complete the following actions:
 - (I) at the request of a PSAP or governing body, the responsible provider shall provide to the affected PSAP(s) the call-back numbers of any calls that were made to 9-1-1 but unable to be delivered due to the failure or outage, if technically capable of doing so. This information shall be provided within two hours of the restoration of 9-1-1 service or as soon as possible under the circumstances, When possible, this information should also include associated ALI information.;

Recommended Decision No. R16-0201 in Proceeding No. 15R-0318T (mailed March 11, 2016), Attachment B at 15, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search. The decision was stayed, and later vacated and the proceeding terminated in the face of a forthcoming legislative taskforce to consider requirements to improve 9-1-1 service in Colorado, and potential legislation. While the Colorado PUC's Recommended Decision required providers to provide ANIs from which calls was placed to 9-1-1 during an outage *if technically capable of doing so*, and to provide ALI information *when possible*. The Commission should require any provider under its jurisdiction to implement the capability of storing and forwarding ANI information, and where available ALI information, at key points in the network. The information would be stored during an outage, and forwarded over any usable connection when available. Provision of this data *during* an outage (if an alternative or out-of-band path is available, such as through a text or data channel even though a voice call cannot be connected), or as soon after service is restored as possible, will enable PSAPs to dispatch First Responders to the callers' locations to determine if

assistance is required, or return the calls after service is restored to determine if assistance is required.

Regulatory or legislative requirements that providers promptly supply PSAPs with telephone numbers (ANIs) and Automatic Location Information (ALI) for individuals who called 9-1-1 but whose calls were unable to reach the PSAP due to service outages would trump contractual obligations and/or require renegotiation of agreements limiting the provision of such information.

With respect to reporting requirements proposed in this proceeding, providers should *not* be required to report instances in which network facilities are at capacity, but no calls have been blocked. It is inconsistent with market regulation for the Commission to second-guess provider network configurations and capacity. Will the Commission next dictate providers' investment in their facilities and services? Will it also assure the investments it dictates do not impact profitability? Does the Commission propose to engage again in tariff-based rate-of-return regulation?

Moreover the bursty nature of wireless calling referenced by the Commission is not only capable of overwhelming designed network capacity, but also PSAP capacity. Traditional design requirements for wireline exchange networks was a P.02 standard of service, or no more than 2 out of 100 calls blocked during the busy hour of the busy month. In Colorado, the required design standard for 9-1-1 (SSP) service is P.01. However such grades of service appear to be meaningless in a wireless-dominated environment, particularly in the context of 9-1-1 calls. For example, BRETSA PSAPs have received in excess of 100 calls concerning a single accident on a major highway.¹⁰ Few, if any, PSAPs have the 9-1-1 trunks, PSAP positions, or personnel to

¹⁰ This is better than no one calling 9-1-1 to report the incident, because all witnesses assume one of the other witnesses is calling 9-1-1.

handle the number of calls which can be generated by wireless callers in such incidents (although in a networked PSAP or NG9-1-1 environment, calls may be spread across multiple PSAPs).

In addition, the Commission noted in its September 2, 2011 NPRM in PS Docket No. 11-153 that in the aftermath of the August 23, 2013 East Coast earthquake, voice calls on network facilities were blocked but SMS text messages continued to get through.¹¹ The Commission has now required that wireless and over-the-top text-messaging providers make text-to-911 messaging available. When wireless voice calls are blocked due to call volumes, users now have the option of sending text-to-911 messages, as well as calling 9-1-1 on traditional wireline or VoIP services.

IV. Wireless Outage Reporting.

BRETSA has no position on the Commission's proposed reporting requirements for wireless providers to support its monitoring of the health of the nation's telecommunications networks; except the proposed requirement to report system loading which does not result in outages, as discussed above. However the Commission's reporting requirements cannot be permitted to interfere with state adoption and enforcement of requirements for reporting outages to PSAPs and states.

The most critical information for PSAPs are outages which prevent callers from reaching a PSAP when they call 9-1-1, which is persistent and impacts a sufficient area/number of potential callers that 9-1-1 calls are likely to be blocked. Outage of a single individual's phone service could prevent that user from reaching 9-1-1, whether due to a network issue or an inside

¹¹ Facilitating the Deployment of Text-to-911 and Other Next Generation 9-1-1 Applications (Notice of Proposed Rulemaking in PS Docket Nos. 11-153, 10-255), September 2, 2011, Para. 40 at 15-16 (Available at <https://ecfsapi.fcc.gov/file/7021748584.pdf>.) The Commission was addressing SMS text-messaging. BRETSA has expressed concern that emulated text messaging and Real Time Text, if implemented in lieu of true SMS text messaging, will not include characteristics such as the capability to send and receive text messages well beyond the voice coverage area and, insofar as RTT requires establishment of a session, it may not offer the same spectrum efficiencies as SMS text-messaging.

wiring, CPE or user device issue. However a PSAP cannot practically implement measures to remediate an outage affecting a single individual or a small number of users. Public safety resources are limited, and must be applied to the benefit of the larger number of people. Also, the larger the area/number of people affected by an outage, the greater the chance there will be an incident for which 9-1-1 would be called and Emergency Response would be required. BRETSA believes the appropriate threshold for Colorado is an outage exceeding 30 minutes and affecting more than 400 lines or 5% of the lines or customers in a service area; or the existence of an ongoing public emergency requiring updated information regarding the status of facilities in the area experiencing the emergency.

Wireless outages present a unique situation, however. The City of Longmont PSAP, supported by BRETSA, routinely receives 9-1-1 calls concerning accidents on Interstate Highway 25, which lies well-outside the Longmont city limits, with wireless towers and antennas located closer to I-25 than the wireless towers and antennas located within Longmont, 9-1-1 calls received through which are Phase I routed to the Longmont PSAP. We believe that when the towers located nearer I-25 are at capacity, wireless 9-1-1 calls “leapfrog” those closest towers which are at capacity.

BRETSA understands that wireless devices and system antennas will vary their transmitter power as necessary to establish a connection. Thus if a single cell site or even multiple cell sites go down, user devices *may* be able to connect through the nearest cell sites which remain operational. The higher-powered a cell-site is, such as a cell-site serving a rural area, the less likely it would seem that a user device could connect a voice call to an alternative site. Thus an outage of one or even multiple cell sites may not prevent callers from reaching 9-1-1, depending upon the area and network configuration.

Wireline and VoIP calls enter the network through a single end office or headend, and an outage of that end office or headend affects the specific users whose calls *must* transit that facility. The mobile nature of wireless services means that users of any specific cell site are transitory. Nevertheless, a wireless provider should know the typical volume of traffic transiting each cell-site by time-of-day and day-of-week, and be able to extrapolate the number of users affected by site outages, including the extent to which wireless callers can connect through other sites. Thus, reporting of wireless outages should not be limited to outages in network facilities handling aggregated traffic from broader service areas, but should include outages of one or more cell sites meeting outage reporting criteria.

V. VoIP and Broadband Outage Reporting.

The Commission should adopt VoIP and broadband outage reporting which allows it to monitor the health of the national telecommunications infrastructure. The thresholds for outage reporting proposed by the Commission far exceed the thresholds appropriate for alerting PSAPs and state agencies to 9-1-1 outages. A VoIP call, including a call to 9-1-1, requires only 56 Kbps or 64 Kbps of bandwidth; far less than would trigger a reporting obligation under the Commission's criteria. The focus on outages with respect to VoIP calls, especially calls to 9-1-1, should be on the upstream bandwidth. Latency is more a concern with VoIP than is packet loss. In addition, since VoIP calls are typically assigned a higher quality of service rating due to the concern with latency, perhaps the assessment of service loss should focus upon traffic bearing certain quality of service ratings.

Some broadband-based VoIP services are provided by facilities-based providers, including the cable/broadband and telephone company/DSL service suppliers. These providers not only have a relationship with their customer upon which to market their VoIP service, but they often offer VoIP service bundled with the underlying broadband service at discounted rates.

Thus, they tend to offer VoIP service to a large number of people in a relatively concentrated service area, much like traditional facilities-based exchange telephone service. An outage of their VoIP service (or the broadband service on which their VoIP service runs) is more likely to reach PSAP and state reporting thresholds. An outage of the underlying broadband service would impact all VoIP services supplied to their customers by any VoIP provider.

Non-facilities-based VoIP providers including app providers, may serve large customer bases. However their customer bases would tend to be much more dispersed. Interconnected VoIP providers are required to obtain an address from fixed VoIP customers for use in routing 9-1-1 calls from the customer to the correct PSAP in the event the customer calls 9-1-1. This “9-1-1 address” information should permit a non-facilities-based VoIP provider to determine if the number of its customers in any jurisdiction affected by an outage in the provider’s facilities reaches the state and PSAP reporting threshold.

PSAPs face difficulty even identifying the non-facilities-based VoIP providers, including over-the-top VoIP providers, supplying service within their jurisdictions. As a result, *any* Broadband outage or unacceptable latency in broadband service should be deemed a VoIP outage for each customer whose broadband service is affected.

VI. Network Dependencies.

As stated above, during the 2013 floods in North Central Colorado, the CenturyLink interoffice facilities which not only connected its Estes Park End Office to its larger network, but also carried wireless traffic from Estes Park-area cell sites to the providers MSCs, and perhaps broadband providers’ VoIP traffic, were cut when the road in which the CenturyLink interoffice facilities were placed was washed-away. CenturyLink reported the outage, yet not one wireless or VoIP provider reported the outage. The potential for wireless, VoIP and wireline providers to provide alternate means to reach a PSAP is defeated when they share network facilities.

Where there are network dependencies, in which providers rely upon other provider's networks to deliver traffic including 9-1-1 calls, (i) the provider placing traffic upon a second provider's network should notify the second provider of the traffic so placed, (ii) the provider should advise the state utility commission and PSAPs serving the provider's service area of the network dependency, and (iii) where feasible, the provider should arrange for redundant and diverse routes for the traffic it places on the second provider's network. If traffic from multiple cell-sites is aggregated for routing to the MSC, a redundant and diverse path could be established from the aggregation point to the MSC; as it would likely be uneconomic to extend the redundant and diverse facilities to the individual cell sites.¹²

Advance notification to PSAPs of network dependencies would allow the PSAP to appreciate the scope and scale of the outage when reported. It would allow the "second provider," to appreciate the scope and scale of the outage and whether it meets the reporting threshold; and also to report the full scope of the outage to the PSAP. It should also permit the "second provider" to notify the provider whose traffic is routed over the second provider's facilities of the outage affecting its traffic, in case that provider can implement contingent or alternate routing.

Network dependencies not only include exchange carrier interoffice facilities which may transport wireless calls between cell sites and the MSC; they include the facilities of third-party

¹² Redundant and diverse facilities for transport of 9-1-1 calls could be effectuated by (i) FCC or state requirements that providers arrange for redundant and diverse transport facilities for 9-1-1 calls, (ii) state requirements that exchange providers protect end offices with redundant and diverse facilities, of which wireless or other dependent providers may wish to take advantage, or which exchange providers may need to increase rates to meet the costs, effectively compelling dependent providers to take the redundant and diverse transport offering, or (iii) the Commission could provide consumer ratings of service providers based upon redundancy and diversity of transport facilities, latency and packet loss, battery backup for VoIP devices and service, backup power for cell sites, and similar factors as determined by provider reports to the Commission, Commission tests or audits, third-party testing contracted by the Commission, and/or testing and evaluation by reputable third parties, to provide competitive incentives for such service improvements.

providers such as West, TCS, and Bandwidth.com which transport 9-1-1 calls from wireless or VoIP providers to the 9-1-1 Selective Router or NG9-1-1 Data Complex.

Focusing on the type of outages which resulted from the 2013 floods in North-Central Colorado, it would have been helpful if the PSAPs had the benefit of information regarding the network dependencies; the services dependent upon the interoffice facilities which were cut. Knowledge of this information could also be important for public safety agencies, on the front line of Homeland Security, to protect critical facilities (and know when critical facilities may be threatened by floods, fires, etc.)

Following the 2013 outage affecting Estes Park, and also affecting unprotected end office(s) in Boulder County, CenturyLink met with BRETSA representatives to identify on a map the areas served by unprotected end offices and the general location of the interoffice facilities connecting to those end offices. CenturyLink also subscribed BRETSA representatives to its internal text message feed of outages of all sizes at all locations in Colorado, to provide BRETSA situational awareness of outages in its jurisdiction even when not reportable under Commission or PUC rules. This has been helpful, and there would be several benefits to the public and providers from providers supplying and updating PSAPs with GIS layers (i) showing the location of their facilities, (ii) identifying network dependencies, (iii) identifying critical facilities, and (iv) for wireless providers, identifying the primary areas served by each cell-site from which calls are Phase I routed to the PSAP.

The benefits of providing this information would include assisting PSAPs in identifying the location of wireless callers to 9-1-1 who are located outside a jurisdiction, but whose calls are received on a CMRS system antenna located in the jurisdiction and Phase I-routed to the PSAP serving that jurisdiction. It may also assist PSAPs in identifying such calls and transferring them

to the correct PSAP, sooner than would otherwise occur. The information would assist PSAPs in determining whether facilities suffering an outage were protected by redundant and diverse facilities, or other services in the area provided alternative means of reaching 9-1-1 or were also affected by the outage. Identification of contingent call routing arrangements in the GIS data would enable PSAPs to alert personnel at the contingent routing location of the implementation of contingent call routing. If the contingent call routing location is an unmanned facility, such as a rural fire district station, personnel would have to be alerted to go to the station and relay call information by radio. In both cases, PSAPs may prefer to dispatch a trained PSAP dispatcher to the contingent call routing location to answer the 9-1-1 calls.

This information would assist PSAPs in identifying the full extent of outages, including outages of facilities on which other services depend. This information might assist PSAPs in determining the locations to place First Responder units, or patrol plans, to provide individuals with alternatives for contacting authorities during the outage in case of emergency. In the event of cell-site outages, PSAPs could refer to the GIS layers to determine the area served by the cell-site, and whether there are nearby cell-sites through which calls might be connected during the outage in determining where to position patrol units. In the event of disasters or incidents which might threaten critical telecommunications facilities, public safety authorities would be aware of facilities which might require protection, or to which restoration of access may be a priority for purposes of restoration or maintenance of services.

BRETSA recognizes that information regarding the location of providers' facilities, critical telecommunications facilities, network dependencies and cell sites and their coverage areas, are confidential both for Homeland Security and competitive purposes. Thus, PSAPs should only be provided information regarding facilities within their jurisdiction, and areas

served by facilities within their jurisdiction (*e.g.*, coverage areas of cell sites located in the jurisdiction which extend into adjacent jurisdictions, and exchange provider end offices or broadband provider headends, which serve exchange lines or broadband customers in adjacent jurisdictions). A limited number of officials within each jurisdiction with appropriate security certifications would have access to these GIS layers and the information provided therein, except in connection with an emergency.

Only the state would be provided the telecommunications provider GIS layers for the entire state. Only a limited number of state officials affiliated with the utilities commission, 9-1-1 office or state office of emergency management, and with appropriate security certifications, would be provided access to the map layers, and information therein, except in connection with an emergency. In an emergency, information contained in or derived from the map layers would have to be disclosed to public safety officials and First Responders beyond those designated, in order to fulfill its purpose of identifying caller locations outside of the jurisdiction, identifying the scope of service outages, and identifying critical facilities to be protected or to which expeditious access may be required for service restoration. Disclosure should be limited to that required for emergency response, and penalties should apply to security violations.

Such disclosure of network dependencies to public safety officials should be less onerous and objectionable than the Commission's proposal for provider disclosure of network dependencies and outages to the providers with which they connect; often their competitors.

VII. Geography-Based Wireless Outages.

The Commission seems to believe that outages which do not meet the 900,000 user-minutes affected threshold, but nonetheless affect a substantial portion of a provider's customers, would only be a matter of concern in rural areas. The concern should not solely be with the

portion of the provider's customers affected by an outage, but also with the portion of the population, or area, *within a jurisdiction* affected by an outage.

VIII. Consolidation of Critical Resources.

The Commission states in the NPRM that “the consolidation of critical resources in a small number of databases increases the risk of a 9-1-1 service failure that affects many PSAPs at once, even across state lines and or potentially impacting all of a service provider's customers nationwide.”¹³ This observation, while not technically correct, is of particular concern in a context such as the April 2014 Intrado NG9-1-1 outage, where dominant LECs acting as SSPs contracted with Intrado to offer its services under their brands.

It must be recognized that the error which resulted in the April 2014 outage was not a result of a database error, but the combination of a coding error which impacted the processing of 9-1-1 calls, a second programming failure in not having calls route to the alternative NG9-1-1 data complex¹⁴ for processing when the first complex failed to properly process the calls, and an inadequate alarm level resulted in the failures and/or their cause going undiscovered. It would not matter how many databases or NG9-1-1 data complexes Intrado had deployed; because the processing function at the first data complex did not fail over to the alternate complex.

What the consolidation of NG9-1-1 call processing at only two NG9-1-1 Data Complexes did, was to assure that any outage or failure *would* affect a larger number of users across a broader geographic area. Our understanding is that the NG9-1-1 standard specifically provided for assembly of an NG9-1-1 Data Complex from off-the-shelf components, to limit the cost of NG9-1-1 Data Complexes and facilitate the establishment of multiple Data Complexes at

¹³ NPRM, p. 44, para. 100.

¹⁴ “NG9-1-1 Data Complex” is the term used to refer to the collection of processes and databases deployed for the purpose of routing an 9-1-1 call and related information (such as caller location) to a PSAP in an NG9-1-1 environment, no matter where the individual process may occur.

reasonable cost. The consolidation of NG9-1-1 data complexes to just two was a business decision of Intrado (now West), which has stated that it intends to deploy additional NG9-1-1 data complexes as more states transition to NG9-1-1. However states which contract for 9-1-1 service could make it a contract requirement that the NG9-1-1 service provider deploy one, or two or whatever number it chooses of data complexes within the state, or that a separate data complex be established within the state with one or two data complexes in different states providing backup capability either in an active-active or active-standby mode.¹⁵ States which oversee 9-1-1 service pursuant to tariff regulation, or otherwise, could enact regulations or statutes mandating multiple NG9-1-1 Data Complexes. It is likely not a matter of whether a provider can or will deploy a state-specific NG9-1-1 Data Complex at the request of a state, but the impact of that request and deployment on the cost of service as states struggle to find funds to pay for the transition to NG9-1-1. The decision on the number of Data Complexes deployed, or to deploy state-specific Data Complexes, will affect costs for all states as it will increase the costs spread among a given number of states or decrease the number of states upon which the costs of deploying and operating a Data Complex can be spread.

As stated, with a limited number of NG9-1-1 Data Complexes serving the entire nation, any outages will have widespread impacts. Not only will a larger number of Data Complexes, each serving smaller geographic areas, reduce the impacts of any outages; the outages which do occur should provide lessons-learned to enable other Data Complexes to avoid similar outages. As demonstrated by the NASA Space Shuttle disasters; errors and failures will occur despite the most expert, careful and good faith planning, design and execution. The more complex the system, the more opportunity for errors and failures, whether of hardware, firmware, software, or

¹⁵ Replication of any databases at redundant and diverse data complexes could well include replication of errors in the data.

human/operator. Errors and failures are inevitable. More Data Complexes serving smaller areas will reduce the impact of any errors and failures, and contribute to the knowledge basis to aid other Data Complexes in avoiding similar errors and failures.

Ultimately, the number of NG9-1-1 Data Complexes ultimately deployed will be the determined by (i) the number of competing NG9-1-1 Service Providers (as opposed to the number of SSPs subscribing to and rebranding the service of NG9-1-1 Service Providers, and (ii) the price states and local jurisdictions which are struggling to fund their migration to NG9-1-1 are willing to pay for NG9-1-1 service.

Respectfully submitted,

**BOULDER REGIONAL EMERGENCY
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