

Before the  
Federal Communications Commission  
Washington, DC 20554

In the Matter of )  
Public Safety Issues Related to )  
Broadband Communication To and From )  
People with Disabilities, NBP #14 ) GN Docket Nos. 09-47, 09-51,  
 ) 09-137  
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Comments of the Rehabilitation Engineering Research Center  
on Telecommunications Access

**I. Introduction**

The Rehabilitation Engineering Research Center on Telecommunications Access (RERC-TA) submits these comments in response to the Federal Communications Commission's (FCC or Commission) Public Notice seeking additional information about public safety issues related to broadband deployment in rural and tribal areas and broadband communications to and from persons with disabilities.<sup>1</sup> The RERC-TA is a joint project of Gallaudet University and the Trace Center of the University of Wisconsin, Madison, funded by the National Institute on Disability and Rehabilitation Research of the U.S. Department of Education. The RERC-TA previously submitted comments or otherwise participated in numerous FCC proceedings on broadband-related issues. This included the submission of comments on the National Broadband Plan (NBP) (submitted July 21, 2009) and on Barriers, Opportunities and Policy Recommendations (submitted October 6, 2009) in preparation for the FCC's second workshop on broadband

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<sup>1</sup> *Comment Sought on Public Safety Issues Related to Broadband Deployment in Rural and Tribal Areas and Broadband Communications to and from People with Disabilities*, NBP Public Notice #14, DA 09-2369, GN Docket Nos. 09-47, 09-51, 09-137 (November 2, 2009).

accessibility for people with disabilities, which was held October 20, 2009.<sup>2</sup> Because many of the issues that already were addressed in our previous broadband comments apply as well to the context of public safety, we hereby incorporate by reference those comments, and emphasize again the need for affordable and accessible broadband services by all persons with disabilities. In the comments submitted herein, the RERC-TA will focus on the specific policy issues raised by the Public Safety Notice concerning communications to and from persons with disabilities in emergency situations. Specifically, these comments address third-party communication services (e.g., interpretation, re-voicing, reading and describing services) through broadband, the dissemination of information to broadband users in emergencies, and broadband access to 9-1-1.

## **II. Third-Party Communication Services**

### **A. Opportunities for Public Safety Using Third-Party Communication Services**

The following are just a few of the ways that broadband services can play a critical role in both facilitating communication with and providing information to people with disabilities in the event of an emergency:

*ASL over Video Communications.* The provision of video information in American Sign Language (ASL) via the web has proven invaluable in times of emergency. As just one example, video commentary in ASL from Qualcomm stadium during the 2007 San Diego area wildfires showed available supplies and explained that there were interpreters on the site. The information was accessible not only to local signing deaf people for their direct benefit, but to others throughout the country who were concerned about whether accessible services were available to deaf friends and loved ones in the area of the fires. It is commonly known that information in

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<sup>2</sup> See Comments filed by the RERCs on Information and Technology Access and Telecommunications Access in GN Docket No. 09-51 (July 21, 2009) and Comments filed by the RERC-TA in GN Docket Nos. 09-47, 09-51, 09-137 (October 6, 2009). The RERC-TA also participated in the October 20<sup>th</sup> workshop.

multiple languages is a key component of access during an emergency. This is especially true for people who are fluent in ASL and who do not have high enough literacy levels to either comprehend complex information through English text or effectively respond to that information in situations where their health or safety is endangered.

*Video Remote Interpreting.* Video remote interpreting (VRI), which uses sign language interpreters who are accessed from remote locations via Internet connections, also has been successfully deployed in emergency situations. Specifically, this has been utilized in emergency shelters, so that local information at the site could be successfully interpreted and deaf evacuees' questions answered. VRI can be seen as the functional equivalent of services such as Language Line,<sup>3</sup> commonly used by emergency responders for the translation of spoken languages. As mobile networks begin to utilize sufficient bandwidth to support ASL, VRI can also be made available in the field to emergency responders, as long as the field equipment is properly designed for interpretation, for example, with a camera on the same side of the device as the screen so that the person signing can see the interpreter.

*Real-Time Transcription Services.* For individuals with hearing loss who do not use ASL, but instead rely on text, live transcription services can be provided through a remote Communication Access Real-Time (CART) service so that information can be conveyed to persons at a shelter or other response site. This would provide access for many people who are hard of hearing or deafened later in life, which is commonly the case for the elderly segment of our population.

*Speech-to-Speech over Video.* Speech-to-speech communication assistance, for people who can hear but whose speech is difficult for others to understand, can also be enhanced by video communications achieved over broadband services. For example, at present, speech-to-speech

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<sup>3</sup> [www.languageline.com](http://www.languageline.com)

relay services rely only on an individual's speech, and not gestures or lipreading, to enable a communication assistant (CA) to convey what a person with a speech disability is saying. If video over broadband is used, however, the accuracy of what the CA re-voices is likely to improve greatly, because that person will have multiple forms of information from the caller (gestures, body movements, etc.) to assist in understanding the caller's message. In an emergency, the person facilitating communication could be a professional speech-to-speech communication assistant, or a friend or family member who understands the person's speech.

*Streaming audio.* Finally, streaming audio (spoken) information to provide access to text and complex visuals, such as maps on a responder's site, is needed to make communications more accessible to people who are blind or who have low vision. This is especially critical where there are elements of a responder's site that are inaccessible to screen readers, or accessible only to a subset of screen readers, or that have other barriers to people with vision disabilities. Provision of an audio service could be done by a third party (experienced in description technique as well as the needs of blind users) at a remote location, and linked from the emergency management site via broadband.

#### B. Possible Barriers and Solutions to Third Party Communication Services

The above third-party communication applications reinforce the importance of providing broadband to all citizens, including those people with disabilities who do not have the financial means to afford broadband at today's rates. As noted above, we have addressed both the lack of financial means and technical access barriers impeding broadband adoption and use at some length in our previous comments in response to the FCC's ongoing broadband proceeding.

The above uses of broadband also reinforce the importance of getting broadband service to facilities identified as shelters in times of emergency. Providing broadband at low or no cost

to sheltering facilities should be considered a priority in the NBP. Mobile devices and wireless Internet technologies may solve the need for communication in an emergency, but redundancy in how this information is conveyed (e.g., text where there is audio; audio where there is text) will also be needed to ensure disability access to information and communication.

Similarly, Telecommunication Service Priority (TSP), an FCC area of responsibility and leadership, is authorized for relay call centers. Under this program, relay providers may apply for TSP status to ensure that their relay services are restored as soon as possible if they are interrupted by loss of power or other damage. Application of the TSP concept, or some version of it as it relates to people with disabilities, should also be a part of the NBP. Specifically, third party communication providers using broadband services to provide accessible communication services should also be eligible for TSP status, or a broadband counterpart to TSP, if they provide communication assistance during times of emergency. This would help to ensure communication in rescue and response situations and other face-to-face situations for people with disabilities when they are using third-party communication services delivered by broadband.

Finally, public safety communities need to become fully informed about the purpose and use of the above third party technologies. Without awareness and action by responders, these technologies will not meet their full potential in emergency situations.

### **III. Opportunities for Making Alerts Available to Broadband Users**

The FCC also has responsibility for determining which communication services are responsible for carrying and disseminating Emergency Alert Service (EAS) messages. In recent years, the FCC has responded promptly to Congressional action by establishing a national message service for wireless devices (the Commercial Mobile Alert Service, or CMAS). If the

NBP is successful in increasing broadband use, more of the public's time will be spent watching a screen that is connected to the Internet via broadband. Accordingly, the FCC should consider the extent to which emergency messages, especially first-alerts, should be received via broadband technologies.

A. Possible Barriers and Solutions to Pushing Emergency Alerts to Broadband Terminals

Where the delivery of information to large populations is provided in one communication format, it must be made available in redundant formats to ensure that everyone regardless of disability, receives that information. For example, at Gallaudet University, it has been necessary to have custom software developed to push screen-pop alerts to all PCs on the internal network, because public address systems are inaccessible to Gallaudet students and most faculty and staff. Even now, the university cannot push alerts to Mac users on its network, without funding additional customized development. As our nation moves forward in pushing emergency alerts from public safety management to broadband users, the FCC should actively take steps to ensure that these alerts are accessible to all recipients.

In addition, the FCC should act to develop an accessible version of EAS for broadband, with the understanding that this will require concentrated technical efforts and is unlikely to happen overnight. One way that this can be facilitated would be for the new Communication Security, Reliability and Interoperability Council (CSRIC) to be tasked with finding solutions for this issue.

**IV. Broadband Access to 9-1-1**

A. Opportunities for Broadband to Improve 9-1-1 are Well Documented.

A major element of the NBP needs to include upgrading the 9-1-1 system to be capable of communicating and providing information using 21<sup>st</sup> Century technologies. This comment

has been made many times in many forms to the Commission, through consultants' reports on wireless technologies,<sup>4</sup> federal advisory committee recommendations regarding next-generation networks,<sup>5</sup> and various proceedings of the Commission. In addition, proof-of-concept trials and architecture designs evidencing the need to keep up with modern technologies have been produced under projects funded by the U.S. Department of Transportation<sup>6</sup>.

Although we understand that upgrades to PSAPs are not directly under the Commission's control, and we applaud the Commission's leadership in enabling IP-enabled relay services to call 9-1-1,<sup>7</sup> as well as taking the lead in enabling VoIP users to reach 9-1-1,<sup>8</sup> nonetheless, the NBP will be incomplete without a mechanism for making the PSAPs themselves broadband-capable for purposes of *direct* communications with the public in multiple media forms (voice, text, and video). This is critical to ensure emergency access for people with all types of disabilities and will offer a vast improvement over the existing system, which relies solely on voice communication.

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<sup>4</sup> Hatfield, D. (2002). *Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services*.

<sup>5</sup> National Reliability and Interoperability Council VII, Focus Group 1B (2005). *Long-term Issues for Emergency/E911 Services: Report 4*. Retrieved from [http://www.nric.org/meetings/docs/meeting\\_20051019/NRICVII\\_FG1B\\_Report\\_September\\_2005.pdf](http://www.nric.org/meetings/docs/meeting_20051019/NRICVII_FG1B_Report_September_2005.pdf).

<sup>6</sup> Intelligent Transportation Systems, U.S. Department of Transportation. (2009). Next Generation 9-1-1 (NG 9-1-1) Initiative: Final System Design Document. Retrieved from [http://www.its.dot.gov/ng911/pdf/USDOT\\_NG911\\_FINAL\\_System\\_Design.pdf](http://www.its.dot.gov/ng911/pdf/USDOT_NG911_FINAL_System_Design.pdf).

<sup>7</sup> *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket No. 03-123; E911 Requirements for IP-Enabled Service Providers, WC Docket No. 05-196, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 11591 (2008); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; E911 Requirements for IP-Enabled Service Providers*, Second Report and Order and Order on Reconsideration, CG Dkt. No. 03-123, CC Dkt No. 98067, WC Dkt No. 05-196, FCC 08-275 (December 19, 2008).

<sup>8</sup> *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Report and Order and Further Notice of Proposed Rulemaking, CC Dkt. No. 94-102, RM-8143, 11 FCC Rcd 18676 (July 26, 1996), recon., 12 FCC Rcd 22665 (1997).

## B. Barriers and Solutions for Access to 9-1-1

There are many barriers to the goal of achieving universal access to 9-1-1 services – funding limitations, jurisdictional fragmentation, and security concerns, to name a few. History has shown that when new systems are developed (digital television for example), accessibility is one of the last issues to be addressed, even when it is mandated. First, broadband terminals, including wireless devices, need to be identifiable by location to PSAPs. Mapping technology, with proper privacy safeguards as are present for PSTN emergency calls, can make this possible. Additionally, the FCC needs to monitor 9-1-1 broadband deployment to be sure that text and video are given equal treatment – using open standards for interoperability – in call-handling at the PSAPs.

Open standards have been the subject of many of the RERC-TA's comments to the FCC.<sup>9</sup> This is because interoperability of text, voice, and video is essential to public safety. Interoperable two-way video is important for users who sign, who use lip-reading to supplement sign or listening, for users with cognitive, language, and learning disabilities, and for all users where gestures and body language can assist in understanding. Real-time text in a digital environment, which will allow for character-by-character transmissions, rather than the “type and send” format typical of instant messaging, is critical in emergencies for users who are deaf, those who are hard of hearing including those that use captioned telephony, people with speech disabilities, and people who are deaf-blind, who are in the process of abandoning their legacy TTYs that relied on analog technologies. This type of instant communication to and feedback from PSAPs can often mean the difference between life and death. The FCC needs to increase

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<sup>9</sup> See Comments filed by the RERC-TA in CC Dockets Nos. 02-33, 95-20, 98-10 (May 3, 2002); Comments filed by the RERC-TA in WC Docket No. 04-36 (May 28, 2004).

its efforts to make real-time text interoperability a reality, as the marketplace is not making this happen.

A major barrier to the effective use of real-time text is the lack of a specified format that all carriers and equipment manufacturers must support where they connect to each other's systems and equipment. A call cannot make its way from a terminal device (VoIP phone, computer, etc.) across networks and into a broadband-supported 9-1-1 center unless all links in the chain support a common format where they interconnect. The RERC-TA agrees that it would be appropriate to have intermediary formats (e.g., a phone system within a company might use a different format), as long as all systems and devices support a common format at points of interconnection so that the text is not lost from the call at these interconnection points.

Unfortunately, today there is no FCC-established standard for real-time text that all parties must support where they interconnect. Although there are standards that could be used for this that are already in commercial use, and although these standards are specified in international NG911 planning documents, there have been no FCC determinations or requirements for support of these or any other real-time text formats for broadband (IP) communications to 9-1-1 from the public. Without such a determination, companies have informed the RERC-TA that they are hesitant to implement these services, and are likely to proceed with product deployment without any real-time text support. Establishing interoperability standards for real-time text is a step the FCC should take very soon to ensure that interoperable implementation of this type of communication into 9-1-1 proceeds in an orderly way, in step with upgrading the voice network call handling by broadband PSAPs.

Recently, the Telecommunications Industry Association (TIA) acknowledged that real-time text "should be considered for consumers with speech and hearing disabilities to

communicate with PSAPs via text . . .after proper review by an expert forum.<sup>10</sup> We appreciate the industry's recognition of this issue. The need for real-time text was also recognized as an issue by the Network Reliability and Interoperability Council Focus Group 1B on Long Term Issues for Emergency/E9-1-1 Services in its final report (December 2005) and by the Telecommunications and Electronic and Information Technology Advisory Committee (TEITEC) in its final report (April 2008). However, we differ with TIA in the need for another expert group to look at this issue. Real-time text has already been the subject of review by several expert forums that have specified the same standard for real-time text (RFC 4103). This was distributed to industry for comment and feedback in December of 2008 and the only feedback we received in response was positive.<sup>11</sup> We further note that companies both large and small have also all chosen this same standard for their prototypes and/or commercial implementations. Finally, the same standard is specified for real-time text in the 3GPP TS 26.235 Packet Switched Conversational Multimedia Applications; Default codecs, and the ECRIT documents for next generation 9-1-1.

Accordingly, it is incumbent on the FCC to move quickly to ensure widespread deployment of this standard for use with emergency services and NG 9-1-1 systems, especially in light of the fact that industry has stated a number of times that it cannot afford to move forward with support for real-time text in VoIP products and systems until the FCC makes a decision on a specified real-time text format. The alternative to delaying the specification of a standard will be a retrofit later that will be very costly and, as with all retrofits, will not work

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<sup>10</sup> Comments of TIA submitted in GN Docket No. 09-51 (November 25, 2009).

<sup>11</sup> The need for real-time text and this proposed standard was also profiled in a document submitted previously to the FCC in Dockets 04-36, 92-105, 96-198 and 03-123 (May 28, 2009).

reliably with the installed base without extensive and expensive re-testing and scattered modifications and/or equipment replacement.

## V. Conclusion

The NBP should be designed to

- (1) Take advantage of unique broadband opportunities that will facilitate and improve communication between emergency responders (and others who may be involved in rescue and recovery) and people with disabilities during emergency situations using third party communication services.
- (2) Alert the public regardless of the type of media a person is using on the Internet, and in a format the person can perceive. The nation's alerting systems are often in a situation where the alerting technology has to catch up with what is in use by the public; such is the case with broadband, where people are using the service for many hours a day, using varied applications, and may not be aware of an emergency because the initial alert is being delivered only on older networks.
- (3) Ensure full interoperability of video and real-time text communications for public safety. Specifically, the FCC should take immediate action to specify the standard to be used by companies in implementing real-time text on VoIP so that real-time text is reliable and interoperable. If this is not done swiftly, the opportunity to incorporate real-time text in the networks and the products used on those networks as they are built will be lost and costly retrofits will be necessary.

Respectfully Submitted,

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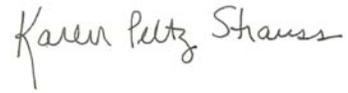
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