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Rehabilitation Engineering Research Center for
Wireless Technologies

VIA ECFS

January 10, 2011

Marlene H. Dortch, Secretary
Office of the Secretary
Federal Communications Commission
445 12th Street, S.W.
TW-A325
Washington D.C. 20554

Re: ***Facilitating Deployment of Text-to-911 and Other Next Generation 911
        Applications [PS Docket No. 11-153]; Framework for Next Generation 911
        Deployment [PS Docket No. 10-255]***

Dear Ms. Dortch:

        Enclosed for filing in the above referenced proceeding are comments of the
Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC).

        Should you have any questions concerning this filing, please do not hesitate to
contact me via email at helena.mitchell@cacp.gatech.edu.

Respectfully submitted,

Helena Mitchell
Principal Investigator, Wireless RERC
Center for Advanced Communications Policy
Georgia Institute of Technology

Enclosure

Before
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Facilitating the Deployment of Text-to-911 and	)	PS Docket No. 11-153
Other Next Generation 911 Applications	)	
	)	
Framework for Next Generation 911	)	PS Docket No. 10-255
Deployment	)	
	)	
	)	

Notice of Proposed Rulemaking

REPLY COMMENTS OF
REHABILITATION ENGINEEERING RESEARCH CENTER FOR
WIRELESS TECHNOLOGIES (WIRELESS RERC)

The Rehabilitation Engineering Research Center for Wireless Technologies

(Wireless RERC), hereby submits reply comments in the above-referenced proceeding

released on September 22, 2011.

The Wireless RERC[1] mission is to research, evaluate and develop innovative

wireless technologies and products that meet the needs, enhance independence, and improve

the quality of life and community participation of people with disabilities. As such, we are

pleased that the FCC is taking steps to enhance access to emergency services by people with

disabilities and commends the FCC in its sustained approach for including people with

disabilities in public forums, and their concerns in public policy outcomes. The Wireless

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[1] The Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) is
sponsored by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S.
Department of Education under grant number H133E110002. The opinions contained in this filing are
those of the authors and do not necessarily reflect those of the U.S. Department of Education or NIDRR.

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RERC reaches out to the community of people with disabilities to garner their interest and gather their input regarding their specific accessibility needs. This is an ongoing effort conducted through the Web-based Wireless RERC Survey of User Needs (SUN), which is updated regularly. In addition, the Wireless RERC conducts periodic surveys on topics of a timely nature such as hearing aid compatibility, use of social media and the potential of next-generation 911 (NG911) technologies. The comments respectfully submitted below are based on subject matter expertise developed over the 10 years of the Wireless RERC's existence. The Wireless RERC has created several projects dealing specifically with emergency communications, emergency alerting, the Emergency Alert System (EAS), the Commercial Mobile Alert System (CMAS), communications with 911 services, and e-911. Findings from our research and development efforts inform the recommendations made herein.

III. A Facilitating the Short-Term Deployment of Text-to-911

Reply to comments filed by Telecommunications for the Deaf and Hard of Hearing, et al. (Consumer Groups)

"The Consumer Groups maintain that SMS is a viable interim text-to-911 solution that can be rapidly deployed and is particularly beneficial to people with disabilities, including people who are deaf, hard of hearing, or have speech impediments, who increasingly use technologies such as SMS, smart phones, and the Internet to communicate instead of TTYs and other legacy devices." [2] The Wireless RERC agrees with this assertion.

In an effort to gather data on TTY usage in the United States the Wireless RERC sent a request for information (RFI) on TTY distribution to the administrators of State Equipment

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[2] Comments of Telecommunications for the Deaf and Hard of Hearing, et al. in Docket No.s 11-153 and 10-255, p.5.

Distribution Programs (SEDP). Of the forty-six (46) states that have a statewide[3] equipment distribution program, twenty-two (22) responded to our RFI with distribution numbers covering the period from 2008 to the present.[4] The combined total for TTYs distributed by respondent states is estimated at 2,322. Some of the SEDP administrators clarified their numbers by stating that these were not all new customers, but included those replacing broken TTYs. Compared to the number of deaf, hard of hearing and speech impaired populations in these states, 2,322 TTY users is a low number; indicating that people who are deaf, hard of hearing or speech impaired have transitioned from TTY devices to text-capable mobile phones as their preferred method of telecommunication.

The Emergency Access Advisory Committee's *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis* states that 90.7% of respondents with disabilities use wireless mobile devices[5]; based on a survey sample that was heavily oriented to hearing and speech impaired persons, nearly 70% of the total.[6] The need to implement a text-to-911 solution as soon as possible is more applicable to people with hearing and speech impairments than the general public as they do not have as many options to independently contact 911. While some have commented that text-messaging is not an ideal solution because, among other reasons, it lacks location information, we respectfully point out that for a person without options for communicating with 911 operators from their mobile devices, even a limited option is better than zero access. For this reason, the Wireless RERC supports an interim text-to-911 solution that includes extensive outreach and education on the

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[3] Ohio's numbers are included but their program is relegated to the city of Columbus. They do not distribute statewide, but they are included on the national list of Equipment Distribution Programs.
[4] This is an estimated total. Some states provided numbers for each year, while others provided the total for several years combined; some provided "up to the present," while others provided totals through 2010.
[5] Emergency Access Advisory Committee (2011). Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis. P. 13. Available at http://www2.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf.
[6] The Wireless RERC calculated these figures using the data provided on p.7 of the Emergency Access Advisory Committee 2011 report noted above.

capabilities and limitations of the solution, including educating citizens on what information

to provide in their text-to-911 communique such as, the nature of the emergency, their

location and their text-back number.

Reply to comments filed by The National Emergency Number Association (NENA)

      According to NENA, "…the primary objective of an interim text solution should be

to provide parity of access to 9-1-1 between hearing individuals, and the deaf or hard of

hearing[7]." In the 2010-2011 Emergency Communications Survey conducted by the Wireless

RERC, of the 1115 respondents with disabilities, 367 included text message, email, or instant

messaging among their preferred modes of emergency communication. These 367

respondents were asked to identify which of the following text-based modes was *most*

important to them:

Text message over cell phone:	48%
Real-time text over cell phone:	27%
Email:	9%
Real-time text over computer:	7%
Text message over computer:	5%
TTY:	2%
No response:	2%

      These findings suggest that people with disabilities, including the hearing impaired,

consider text-messaging as an accessible solution for contacting emergency services. The

Wireless RERC strongly supports the incorporation of text messaging (SMS), as well as

Real-Time Text (RTT), among the essential features of initial deployment of a NG911

system.

      Additionally, we agree with NENA's assertion that "the absence of data about

attempted uses of text messaging to contact 9-1-1 should not diminish its obvious importance

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[7] Comments of NENA in Docket No.s 11-153 and 10-255, p. 3.

as an emergency communications tool.[8]" The Wireless RERC will seek to fill this void in data by conducting a supplemental consumer survey on the topic of text-to-911; specifically addressing failed attempts at contacting 911 via text message.

Reply to comments filed by The Public Safety Communications Office (PSCO) of the California Technology Agency

The PSCO of the California Technology Agency states that "While [they] support making texting to 9-1-1 available to the community of people with disabilities on an interim basis, widespread implementation could cause additional complexities, future interoperability issues, public confusion, and negatively impact public confidence."[9] The Wireless RERC contends that with the appropriate planning and execution of the interim texting solution, the technical and social complexities can be effectively addressed; and the benefits of accelerating the deployment of an interim text-to-911 solution outweigh the potential problems. Currently, people with speech and hearing disabilities cannot *directly* contact a 911 operator[10]; therefore there is no parity of service between people with hearing and speech disabilities and their non-disabled counterparts. The "public confidence" regarding accessing 911 among the hearing and speech impaired is already damaged as there are currently no telecommunications alternatives for direct, independent, mobile, wireless access. Deploying an interim solution would improve public confidence among the disability community.

III. B 911 Prioritization in Major Emergencies

Reply to Comments filed by CTIA – The Wireless Association

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[8] Comments of NENA in Docket No.s 11-153 and 10-255, p. 12
[9] Comments of the PSCO of the California Technology Agency in Docket No.s 11-153 and 10-255, p. 5.
[10] Comments of The King County E911 Program in Docket No.s 11-153 and 10-255, p. 3.

CTIA states that the FCC should take a forward looking approach to 9-1-1 prioritization issues, specifically, "…not to impose a solution that would do little to address the problem of unanswered 9-1-1 calls during massive calling events."[11] We agree to some extent that prioritization might require a policy determinant, but determining which communication is "more important" can be difficult. The needs of people with disabilities are different from the general public who can more easily access voice and video emergency communications, both when receiving emergency alerts/information and when initiating calls for emergency response. Therefore we propose that any prioritization consider the specific emergency communications need s of people with disabilities along the continuum of emergency response and recovery, including identifying when prioritization would become active, the duration, and the indicators for when to stay priority access. These policies should then be included in the text-to-911 and NG 911outreach programs to the disability community so they are aware and can incorporate the knowledge into their personal preparedness plans.

Reply to Comments filed by AT&T

With regard to prioritization of 911 traffic, AT&T comments that "…prioritizing presumes that calls other than 911 calls during a disaster lack societal value. Not all emergency calls are made to PSAPs…Some calls are directed to loved ones, care givers, or agencies that provide disaster assistance. Restricting the public's ability to make these types of calls…might lead to a greater degree of panic or confusion…[12]" The Wireless RERC agrees with AT&T on this point and warns that prioritization of 911 calls could undermine personal preparedness plans. According to the FEMA pamphlet "Preparing for Disaster for

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[11] Comments of CTIA – The Wireless Association in Docket No.s 11-153 and 10-255, p. 11.
[12] Comments of AT&T Inc. in Docket No.s 11-153 and 10-255, p.8.

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People with Disabilities and other Special Needs" important components of preparedness are a personal support network and a communications plan.[13] This is especially important for people with disabilities who according to our research, generally rely more heavily on their personal networks for assistance during crises.[14] Communications plans of people with disabilities could be rendered useless at a time in which they need them the most.

Additionally, since EAS is not fully accessible, people who are blind have reported having to receive emergency information from family, friends and neighbors. A recent survey conducted by the Wireless RERC on the accessibility of national EAS test revealed that 82% of blind respondents did not have access to EAS messages because they carried no audio of the text crawl; and 58.5% of deaf respondents did not have full access to the message because they did not hear the attention signal and missed all or part of the content. The FEMA pamphlet acknowledges this problem as well and recommends that "If you are vision impaired, deaf or hard of hearing, plan ahead for someone to convey essential emergency information to you if you are unable to use TV and radio." Therefore, viable short-term options are even more critical and need to occur in conjunction with prioritization rules; ensuring that prioritization does not result in a higher volume of calls to 911 operators because the ability of citizens to act was hindered.

In summary, prioritizing 911 calls involves substantial trade-offs that impact the communications options for people with disabilities during emergencies. Considerations for people with disabilities must be part of any emergency communications deployment strategies for 911.

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[13] See http://www.fema.gov/library/viewRecord.do?id=1442.
[14] The Wireless RERC's field trials of accessible mobile emergency alerting surveyed participants on what methods they used to confirm emergency information; 66% contact friends and family.

III. C Facilitating the Long-Term Deployment of NG911 Text and Multimedia Applications

Reply to comments filed by NENA

According to NENA, the long-term deployment of NG911 should include three essential capabilities: (1) "enhanced features such as delivery status notification, typing indication, and session persistence; (2) Real Time Text (RTT) to "better emulate TTY conversations;" and (3) "three-way video calling…to glean tremendous information about a caller's situation, environment, and emotional state while communicating via an American Sign Language interpreter."[15] The Wireless RERC agrees with all three points and herein provides further comments on the importance of implementing a video calling solution for NG911. Findings of the Wireless RERC's 2010-2011 Emergency Communications Survey suggest that accessibility of video relay services is important to people with disabilities. Fourteen percent (14%) of respondents included video relay service among their preferred mode of emergency communication. Furthermore, 71% of those respondents cited preference for video relay with both the caller and interpreter visible to the 911 operator; 25% cited a preference video relay with the interpreter visible only to the caller (4% did not respond).

However, there are potential methods other than text or video-relay for persons with disabilities to connect to NG911, such as *direct* video connection to PSAPs for persons whose primary language is ASL, video connections for lip reading, or enhanced audio connections to perhaps alleviate some need for speech-to-speech relay using revoicers (revoicers are trained relay operators who listen to speech from persons with speech disabilities such as Cerebral Palsy and respeak the speech to the person on the other end of the phone call). Including technologies such as American Sign Language direct to the PSAP

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[15] Comments of NENA in Docket No.s 11-153 and 10-25, pp. 14-15.

should embrace and codify within the NG911 rules, standards and guidelines for PSAPs to provide equivalent service from PSAP to PSAP.

Reply to Comments filed by the RERC on Telecommunications Access

The RERC on Telecommunications Access addressed TTY (text telephone) compatibility in their comments.[16] As essential as it is to deploy next-generation access to 911, it is equally crucial to ensure that no citizen is left behind should they have access only to analog TTY equipment. The RERC on Telecommunications Access recommends that a "robust alternative would need to have gateways that transcode between TTY tones on the analog network and a real-time-text format on the VoIP segment." In the "2010-2011 Emergency Communications Survey" conducted by the Wireless RERC, of 1115 survey respondents with disabilities, 5% said they prefer to use a TTY (among other preferred methods) to reach emergency services; 7% had actually used a TTY to make an emergency call. Among the 447 survey respondents who are deaf or hard of hearing, 14% had placed an emergency call via TTY, and 10% preferred TTY to place emergency calls. While these numbers may seem low, they are nevertheless important and represent a population that should not be overlooked in the development of NG911 rules and regulations. These survey results lead the Wireless RERC to recommend that any transition to NG911 must provide support, or alternative support, for TTY users for some defined period of time, after which TTY would not be supported.

Among those survey respondents (ranging in age from 24 to 84) who identified TTY as one of their preferred mode(s) of emergency communication, 64% cited other modes of communication as most important to them:

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[16] Comments of the RERC on Telecommunications Access in Docket No.s 11-153 and 10-255, pp.6-9.

TTY:	36%
Text message over cell phone:	30%
Real-time text over cell phone:	18%
Email:	5%
Real-time text over computer:	4%
Text message over computer:	2%
No response:	5%

Analog-based TTY technologies date from the 1960's. Continuing to support them is a significant cost burden on PSAPs and on phone service carriers. The Wireless RERC supports setting a date where TTY will no longer be accepted as a method to contact 9-1-1, as was done with the analog to high definition television transition.

The Wireless RERC suggests that a longer-term plan should be established as soon as feasible to replace TTY with mobile devices as the method for connecting to both existing e911 PSAP's and NG911 PSAP's. This will necessitate the purchase and distribution of new hardware to consumers who use TTY, as well as training of these users on how to use the new equipment. This could be done by the State Equipment Distribution Programs that distributed the TTYs. There could be a trade-in program in which TTY users bring in their old equipment and trade them for advanced mobile devices. Some states have already updated their Telecommunications Access Programs to include mobile devices. For example, Kentucky has 647,000 deaf and hard of hearing consumers and in the last three years has only distributed 14 TTY devices.[17] In contrast, in the first year of distributing BlackBerry's and iPhones, they have given out more than 500 devices. The switchover will also require creation of gateways to allow the new technology to connect to 9-1-1 centers that have not yet upgraded to accept text in any format other than TTY.

III. D. 2. A State or Regional Approaches

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[17]Kentucky Commission for the Deaf and Hard of Hearing. (2011). Data provided in response to the Wireless RERC's Request for Information on TTY Distribution by State Equipment Distribution Programs.

Reply to Comments filed by CTIA – The Wireless Association

"CTIA believes that the implementation of NG911 should be coordinated at the state level, and that a statewide certification process should be employed to demonstrate a PSAP's actual readiness to receive and utilize NG911 services.[18]" The Wireless RERC generally agrees with state level coordination of implementation of interim and long-term solutions for NG911; but we also see a role for limited federal coordination in the area of public education/dissemination (discussed in the following section on pp. 12-13). Since states are responsible for distributing funds collected from subscribers' fees for 911 service, they are already in a position to allocate funds for PSAP upgrades to support text-to-911, and eventually, multimedia-to-911. As long-term NG911 solutions become available, and shared IP networks for 911 purposes become reality, funding models may be reconceived to a communal approach across localities with the state orchestrating the shared resources.[19]

Additionally, statewide implementation would aid in the outreach efforts once text-to-911 and NG911 services are implemented. It would be much more effective to execute a statewide campaign that educates citizens on NG911 capabilities and limitations, than a local campaign. Citizens cross local boundaries in a typical day of commuting to work, going to school and running errands. One could not be expected to track the availability of text–to-911 for each city or county; but it is reasonable to expect a citizen to know whether or not text-to-911 or NG911 was available in their state.

Reply to Comments filed by King County E911 Program

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[18] Comments of CTIA – The Wireless Association in Docket No.s 11-153 and 10-255, p.15.
[19] NENA (2007). Funding 9-1-1 Into the Next Generation: An Overview of NG9-1-1 Funding Model Options for Consideration. Available at
http://www.nena.org/resource/resmgr/NGPP/NGFundingReport.pdf.

The King County E911 Program comments that "…the Commission should expect that the state and regional 911 authorities will figure out how to most efficiently and effectively deploy NG911 within their states.[20]" We agree, but modify the statement to include limited federal coordination and utilization of the established FCC PSAP registry database. State authorities could be responsible for updating the information contained in a "consumer focused map or website showing [text-to-911] availability.[21]" The Wireless RERC believes that an interactive NG911 map, built utilizing the FCC's PSAP registry database, could be a good public education tool provided that it is fully accessible to people with disabilities, especially to those who are blind or have low vision. It would also need to be a coordinated effort between federal, state and local governments and the wireless industry. Federal, state and local governments would be responsible for updating the map; the FCC for requesting information from states and states gathering information from localities/PSAPs to populate the map. The wireless industry could assist with outreach to their customers about the availability of the map through its bill inserts, materials included in the packaging when the device is purchased and information on their websites.

Public education efforts should employ any and all means necessary to reach citizens; text-to-911 and multimedia-to-911 capabilities should be communicated to the public through government websites, email subscriber services, television and radio public service announcements, cell carrier and cell manufacturer instructional materials, organizations and agencies working on behalf of with people with disabilities, the FCC and other federal and state agency outreach programs and mechanisms, including social media outlets for all of the aforementioned entities. Materials should be available in alternative formats (i.e., braille,

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[20] Comments of King County E911 Program filed in Docket No.s 11-153 and 10-255, p. 8.
[21] FCC (2011). *Notice of Proposed Rulemaking In the Matters of Facilitating the Deployment of Text-to-911 and Other Next Generation Applications [11-153]; and Framework for Next Generation 911 Deployment [10-255. Released* September 22, 2011. ("*NPRM*").

large print, electronic, accessible PDF, etc.) and televised PSAs or other promotional videos should *always* have captions and/or ASL interpretations. Any awareness campaign should include radio, television, and web content specifically aimed at reaching people with disabilities by not only making the content accessible, but by including persons with disabilities as actors in the PSAs, or recounting actual stories when text-to-911 could have saved the life of a person with a disability.

In closing, as telecommunications technologies have advanced, so have consumer expectations of using these technologies to manage a multitude of everyday tasks, but in *no* area is communications more important than during emergencies. Through the provision of unbiased data, we advocate that people with disabilities be included in the development of technologies, policies and industry standards regarding the short-term and long-term solutions for NG911. The Wireless RERC wishes to emphasize the importance of *equal* access to emergency services by people with disabilities.

Respectfully submitted,

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Dated this 10th day of January 2011