VIA ECFS

June 8, 2016

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

Re: Amendment of Part 11 of the Commission's Rules Regarding the Emergency Alert System [15-94]; Wireless Emergency Alerts [PS Docket No. 15-91]

Dear Ms. Dortch:

Enclosed for filing in the above-referenced Notice of Proposed Rulemaking are the comments of the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) and the Georgia Institute of Technology's Center for Advanced Communications Policy (CACP).

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 the
Federal Communications Commission
Washington, D.C. 20554

In the Matters of	)	
	)	
Amendment of Part 11 of the Commission's	)	PS Docket No. 15-94
Rules Regarding the Emergency Alert System	)	
	)	
Wireless Emergency Alerts	)	PS Docket No. 15-91

COMMENTS OF
GEORGIA INSTITUTE OF TECHNOLOGY (GEORGIA TECH), CENTER FOR ADVANCED COMMUNICATIONS POLICY (CACP)
AND THE REHABILITATION ENGINEERING RESEARCH CENTER FOR WIRELESS TECHNOLOGIES (WIRELESS RERC)

Georgia Tech's Center for Advanced Communications Policy[1] (CACP) in collaboration with the Rehabilitation Engineering Research Center for Wireless Technologies[2] (Wireless RERC**)** hereby submits comments to the above-referenced Notice of Proposed Rulemaking, released on January 29, 2016. CACP is recognized at the state and national level as a neutral authority that monitors and assesses technical developments, identifies future options, and provides insights into related legislative and regulatory issues. CACP evaluates technological trends that can impact issues as diverse as emergency communications, vulnerable populations, and social media. CACP is the home the Wireless RERC, funded by the U.S. Department of Education's National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) since 2001. The Wireless RERC mission is to research, evaluate and develop

[1] Georgia Tech's Center for Advanced Communications Policy (CACP) conducted WEA research supported, in part, by the Integrated Public Alert & Warning System (IPAWS) Project Management Office (PMO) under contract # HSFE5-13-R-0031; and the Department of Homeland Security's Science and Technology (S&T) Directorate under contract #HSHQDC-14-C-B0004. The opinions contained herein are those of the grantee and do not necessarily reflect those of the U.S. Department of Homeland Security, IPAWS PMO or S&T.

[2] The Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) is sponsored by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90RE5007-01-00). NIDILRR is within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this filing do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.

innovative wireless technologies and products that meet the needs, enhance independence, and improve the quality of life and community participation of people with disabilities. We believe it is essential that information and communications technologies (ICT) and services, especially those in and adjacent to the wireless technology industry, increase their levels of accessibility for people with disabilities; as access to technology can enhance inclusive and independent living.

Since 2001 both CACP and the Wireless RERC have been actively involved with research and regulatory issues concerning accessible wireless technologies and services. Additionally, both entities have been studying the accessibility of WEA messages for people with disabilities and the WEA legislative and regulatory framework since the proposed legislation which resulted in the WARN Act. The researchers that guide the progress and outcomes of these efforts have the combined expertise in disability research and development and include research specialists, emergency management specialists, focus group and survey technicians, designers and engineers. The comments respectfully submitted below are based on subject matter expertise developed over the past 14 years. Findings from our consumer surveys and focus groups, policy research, and development efforts inform the recommendations made herein.

State EAS Plan Filing Interface (SEPFI)

Paragraph 28: Standardization.

Would adopting a standardized online template dramatically increase the consistency and thoroughness of State EAS Plans?

A template for states should be more of a guidance tool as states have very different assets and operational capabilities. There are certain important elements that should be in all plans (e.g., key stations, monitoring, etc.), but some states have unique geographic areas, radio coverage, and populations. These should be presented prominently and explained. To ensure that all members of the population understand the messages, emergency managers and those writing the plans should also be very specific in their instructions concerning emergency actions to be taken, eliminating jargon and abbreviations. Included in planning efforts for this population, should be state coordinating entities that work closely with people with disabilities

as this would facilitate relevance of the plans to the present realities of the state's population, operational capabilities, and assets. To ensure this level of inclusion, we recommend that every state plan contain a standardized comment regarding "contingencies to include outreach to people with disabilities." The Wireless RERC further recommends that protective action instructions be part of any State EAS Plan template, and that said template contain information ensuring that the needs of people with disabilities are included. In so doing, all people, including those with disabilities will be better able to take protective actions.

Paragraph 45: ***We seek comment on the extent to which social media has served as a reliable and effective source of crowdsourced data about developing situations. To what extent have alert originators begun taking advantage of social media's crowdsourced communications functionality in order to establish a real-time conversation with individuals and communities in crisis?***

Two-way communication functions via social media allow citizens to communicate directly with emergency personnel and possibly enhance the efficacy of first responders in the area.[3] Individuals may also request help through social media as many did during a 2011 Japanese earthquake by tweeting for assistance.[4] Finally, crowd-sourced images and information sent to emergency organizations from the public can aid in damage assessment and estimates.[5]

Twitter, in particular, represents a promising use of social media for emergency communications. Deployed in 2006, Twitter is a free online service that can be accessed via the web or mobile device. Users can tweet messages of 140 characters or less by typing them into the online site, mobile application, or by sending an SMS text. Unlike phone calls that can fail if cellular networks are overloaded, Twitter text messages are queued and posted when service is available. Finally, Twitter features a fast and effective means of search by use of

[3] Glassman, M., Straus, J., & Shogan, C. (2013). Social Networking and Constituent Communications: Member Use of Twitter During a Two-Month Period in the 111th Congress. Retrieved from http://fas.org/sgp/crs/misc/R43018.pdf.

[4] Lindsay, B. R. (2011). Social media and disasters: Current uses, future options, and policy considerations (Vol. 41987): *Congressional Research Service*.

[5] White, C., Plotnick, L., Kushma, J., & Hiltz, S. R. (2009). An online social network for emergency management. *International Journal of Emergency Management, 6*(3), 369-382.

hashtags (e.g., **#Sandy**, **#ReevesCounty**). Users can search lists of tweets related to specific hashtags (e.g. topics and/or events), or include hashtags in their tweets for context and to contribute to the dialogue. Twitter proved to be invaluable to California officials in distributing information on dangerous wildfires in 2007.[6] In late 2008, a New England ice storm left 400,000 homes and businesses without power. The Public Service of New Hampshire later cited Twitter as an instrumental tool in communicating with the public and tracking how many users were engaging through Twitter.[7]

Government agencies and public authorities have expressed interest in and made efforts towards using social media to warn individuals at local, state, and national levels.[8] In a longitudinal study of the official use of social media by states and the top 100 cities in the US[9], researchers found a marked increase in the percentage of social media uptake (Table 1).

Table 1: Longitudinal comparison of social media adoption by states and cities

	2011	2013
States on SM	**74%**	**98%**
Twitter	36%	88%
Facebook	29%	59%
YouTube	13%	29%
Cities on SM	**45%**	**73%**
Twitter	35%	59%
Facebook	34%	59%
YouTube	11%	14%

Source: Wireless RERC, Survey on Emergency Communications and People with Disabilities, 2011 and 2013.

[6] Wagner, M. (2007). Google Maps and Twitter Are Essential Information Resources for California Fires. *InformationWeek*.

[7] Ragan, E. (2009). Emergency communications in 140 characters or less. Retrieved from GroupIntel website: https://www.groupintel.com/2009/03/26/emergency-communications-in-140-characters-or-less/

[8] Mitchell, H., Bennett, D., & LaForce, S. (2011). *Planning for Accessible Emergency Communications: Mobile Technology and Social Media.* Paper presented at the 2nd International Accessibility Reaching Everywhere (AEGIS) Conference and Final Workshop Proceedings, Brussels, Belgium.

[9] As defined by population size.

On the national level, the Federal Emergency Management Agency (FEMA) has had a Twitter account since 2008. Additionally, FEMA's Integrated Public Alert and Warning System (IPAWS), includes social media amongst its communications media for alert dissemination.[10]

Crowdsourcing and Emergency Communications

During emergency situations, access to accurate and timely information can be critical to maintaining the safety of individuals in affected areas. "People need information as much as water, food, medicine or shelter. Information can save lives, livelihoods, and resources," stated the former secretary-general of the International Federation of Red Cross and Red Crescent Societies (IFRC), Marrku Niskala.[11] Access to reliable information during the oft-chaotic environment of a disaster can be difficult, but mobile technologies can assist in the dispersion and reporting of information.

Modern technologies allow for two-way communications, thereby introducing a valuable resource for emergency managers to both receive and transmit disaster-related information to and from multiple sources. For decades, cellular technologies have been the fastest growing and most adopted systems by emergency management institutions, and advancements in smartphone technology facilitate two-way communications even further.[12] In 2013, FEMA released an update to its app, Disaster Reporter, that enables users to directly upload photos and other information related to disasters.[13] Moderators authenticate information and images submitted through Disaster Reporter checking for altered footage or misleading information.

[10] Alert, I. P. (2010). Warning System(IPAWS). *Emergency Management Agency, US: http://www. fema. gov/emergency/ipaws*.

[11] Walter, J. (2005). *World disasters report 2005: Focus on information in disasters*: International Federation of Red Cross and Red Crescent Societies.

[12] Narvaez, R. W. M. (2012). Crowdsourcing for disaster preparedness: Realities and opportunities. *Master's thesis, Graduate Institute of International and Development Studies, Geneva*.

[13] Kuriakose, D. (2013). FEMA App Adds Crowdsourcing for Disaster Relief. Retrieved from http://mashable.com/2013/07/29/fema-app-disaster-relief/

The central theme of this app update focuses on crowdsourcing – a de-centralizing of responsibility by emergency managers to generate content and instead introduces a reliance on coordinating actions by the crowd. This approach confers many benefits, but also presents some challenges. Crowdsourcing information in disaster situations can provide more timely and rich data from people that are being immediately affected. Instead of waiting for emergency responders to deploy and report back from an area, crowdsourcing relies on individuals co-located with the disaster. However, crowdsourcing poses some challenges regarding how management agencies ensure their information comes from trusted sources. The aforementioned FEMA app requires submitted photos be geo-tagged for a location to confirm they are from the affected area.

Perhaps the most well-known and successful platform for disaster reporting is Ushahidi, first used in 2008 to report violence and illegal activities during Kenya's electoral process. In its first iterations, Ushahidi allowed users to text or email reports and concerns that would then be visualized in a map for relief operations to investigate. Now a smartphone application, Ushahidi has been used to crowdsource disaster information during the Haiti and Christchurch, New Zealand earthquakes.[14] This app improves situational awareness during times of crisis for emergency managers.

The app, Help Me Help, combines real-time map annotation with tools to comb disaster-related Twitter-based messages.[15] The developers recognize that information during an emergency may come from many sources (e.g., Flickr, Facebook, Reddit, and Twitter) and created a platform that combines relevant information together for access by those affected. Additionally, the app provides a separate dashboard service for emergency managers allowing them to verify submitted information within the app.

[14] Okolloh, O. (2009). Ushahidi, or'testimony': Web 2.0 tools for crowdsourcing crisis information. *Participatory learning and action, 59*(1), 65-70.

[15] Lardinois, F. (2013). Help Me Help Uses Crowdsourcing To Make Disaster Response More Efficient. Retrieved from http://techcrunch.com/2013/07/04/help-me-help-wants-to-make-emergency-response-during-disasters-more-efficient/

In the observations and studies conducted by CACP and the Wireless RERC, we believe that crowdsourcing is proving to be a valuable tool for emergency managers in gathering and dispersing information. None the less, the challenge of authenticating and verifying submitted information is a growing one, and currently only solved by manual moderation of incoming reports. Continued review of agencies that utilize crowdsourcing technologies and social media during disaster response is recommended.

Paragraph 45: ***To what extent has the use of social media platforms supplemented alert accessibility, either by providing translations of alerts in languages other than English or by providing alerts in multiple formats?***

To our knowledge, social media in this context has been primarily used as a secondary channel for disseminating emergency information related to a disaster event. The accessibility of that information depends, in large part, on the accessibility of the social media platform and then, the accessibility of the user-generated content. Content posted to social media can include multiple formats. Often, text is accompanied by an image, which could increase comprehension and impact of the text. Designed to increase the accessibility of images posted to their respective platforms, Twitter and Facebook both recently announced accessibility updates. Facebook for iOS rolled out automatic alternative text (alt text) to provide people who are visually impaired or blind with a text description of a photo using recognition technology.[16] Individuals using screen readers are now able to hear a list of items that may be shown in a photo. This feature is available in English and Facebook plans to roll out the feature on additional platforms, in different languages and other markets soon. Twitter took a different approach, allowing users to add descriptions to the images they tweet, so people with vision disabilities can know who or what is being depicted in the photo.[17] Currently, the alt text feature is only available for the mobile Twitter app used on iOS and Android platforms.

[16] Garcia, D., Paluri, M., Wu, S. (2016). Under the hood: Building accessibility tools for the visually impaired on Facebook. *Facebook Blog.* Retrieved from https://code.facebook.com/posts/457605107772545/under-the-hood-building-accessibility-tools-for-the-visually-impaired-on-facebook/

[17] Kloots, T. (2016). Accessible images for everyone. *Twitter Blog*. Retrieved from https://blog.twitter.com/2016/accessible-images-for-everyone

These accessibility features, in theory, could improve the accessibility of disaster photos and symbology posted on Facebook and Twitter.

(iii) Testing/Outreach Elements

Paragraph 56: ***We also seek comment on whether the notification requirement should incorporate the new accessibility component of Section 11.51 of our EAS rules, which establishes requirements for the visual message portion of an alert.***

Yes, to ensure the accessibility of actual and test messages, EAS accessibility rules should apply across the board. This would also allow for the EAS participants to continuously practice and remediate any issues with the accessibility of the visual crawl. To our knowledge, the accessibility requirements have not been tested by the population to ensure their effectiveness with regard to speed of crawl and size of the font. The live code test presents an opportunity to gather data and feedback from the populace on the extent to which the accessibility requirements improve readability and comprehension of the message.

Paragraph 57: ***In particular, with respect to State/Local WEA Testing, we seek comment on whether the ubiquity of smartphone technology makes it likely that, in the event of a Presidential Alert, members of the public would likely have their smartphone closer at hand than any traditional EAS source. If so, we seek comment on whether it is likely that the first medium through which members of the public would receive notice that a Presidential Alert is occurring is through their smartphone, notwithstanding the fact that the actual alert may be aired over EAS. We seek comment on whether this makes State/Local WEA Testing procedures a necessary component of state-level preparedness to receive a Presidential Alert.***

In 2015, Georgia Tech researchers conducted a national online survey (*2015 WEA Survey*) to gain a greater understanding of awareness, availability and accessibility of WEA messages. The survey collected data on mobile phone usage and type, as well as landline phone usage. The vast majority of respondents (98%) owned a mobile phone; with respondents with disabilities owning a mobile phone at a similar rate to their non-disabled cohorts; 96% and 99%, respectively. Of the total respondents (with and without disability) who answered the

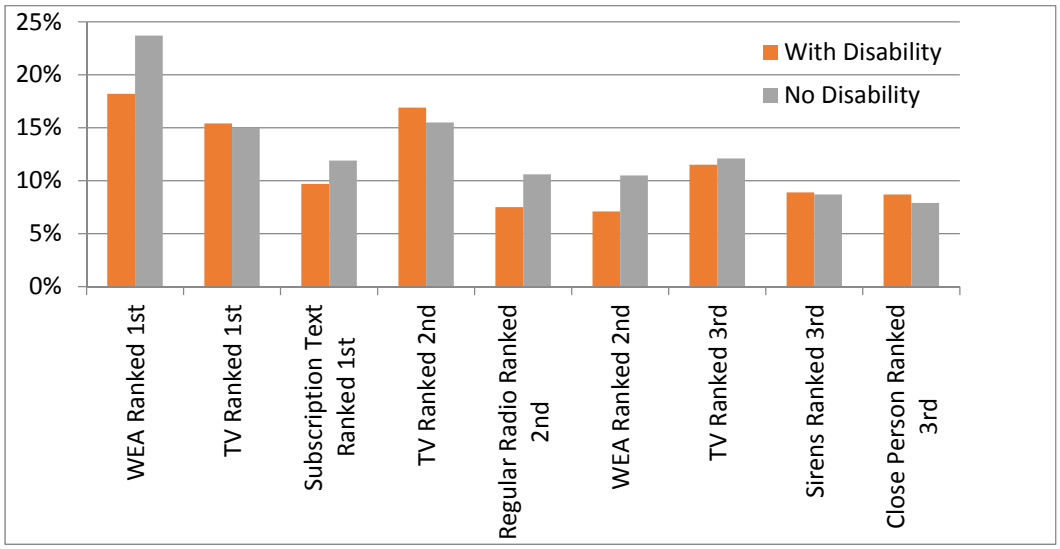
question regarding mobile phone type, 82% identified their phone as a "Touchscreen" type (i.e. smartphone) illustrated in the survey as an iPhone from Apple, Inc. Nine percent (9%) of respondents identified their phone type as "numeric" which has no direct alphabetic keys, only keys 0-9, *, # where alphabetic characters must be entered by repeatedly pressing a numeric key. The remaining two categories "Touchscreen-QWERTY keyboard" and "QWERTY" keyboard received 3% each. Regarding wireless only households, 40% of respondents with disabilities and 43% without disabilities reported that they did not have a landline phone, suggesting that a large percentage of respondents may rely on their mobile phones even while at home. These data suggests that it is likely that people who have a WEA-capable device, would likely receive the initial message via Smartphone.

However, other survey data suggests that legacy and traditional technologies are equally yoked distribution channels for reaching the public. Survey respondents were offered 16 different methods for receiving emergency alert messages and asked to rank the top 3 methods by which they receive the messages most frequently. With this many choices, no one method received more than 24% within any respondent group. The methods "WEA" and "TV" alternated as the first method between the two respondent groups; respondents with a disability selecting "TV" as their first method of alerting (18%), while respondents without disability chose "WEA" as their first method of alerting (24%). Although "TV" was the most popular first method with respondents with a disability, respondents with vision disabilities received emergency messages via "TV" at a higher percentage (22%) than respondents that were deaf/hard of hearing (hoh) (17%). The other methods were significantly less used by respondents; the "TV" and "WEA" method was 3% or higher that the next most frequent selection among the respondent groups, with the remaining 13 methods receiving very small percentages.

For the second most common method, "TV" was the most frequent method among all respondents and all respondent groups; the difference of frequency of "TV" being close between respondents with disability (17%) and without disability (16%), additionally, the respondents that were deaf/hoh received emergency messages via "TV" more (15%) than did

the respondents that were blind/low vision (lv) (10%, which tied with "WEA" also at 10%). Trailing after the "TV" method, respondents without disability use conventional radio broadcasts (8%), while blind/lv respondents selected "WEA" (10%, tied with "TV"), and respondents that were deaf/hoh indicated "email" (11%).

Figure 1: Ranked Methods - Emergency Message Receipt



For the third most likely method of receipt, "TV" was the selected method for respondents without disability (12%) and respondents that were deaf/hoh (10%). Respondents that were blind/lv were more often notified by "Neighbor, Friend, or Family" (10%, tied with "TV"). Trailing after these methods, respondents without disability listed email (9%), while respondents that were blind/lv selected "TV" (10%, tied with "Neighbor, Friend, or Family") and respondents that were deaf/hoh indicated "VideoPhone" (8%) as the third most common method.

Given the 16 methods of receiving alerts "TV" and "WEA" are the dominant methods by which respondents received emergency messages, trailed by conventional AM-FM Radio broadcasts (respondents without disability only), "email"(deaf/hoh only), "notification by neighbor friend or family" (blind/lv only), and "videophone"(deaf/hoh only). It is important to note that two of the most frequently used methods are on mobile platforms (i.e. WEA or subscription-based text message). Despite the prominence of "TV" as an alerting method, these data support the

addition of State/Local WEA Testing in state-level preparedness procedures.

Paragraph 60: Live Code Tests

The Wireless RERC supports amendment of the EAS rules to authorize EAS participants to conduct periodic EAS exercises using live event header codes provided that they are used in a non-misleading manner and that the steps outline in paragraph 60 become requirements. Adherence to them will prevent public confusion before and during the test.

Building Effective Community-based Alerting Exercise Programs

Paragraph 68: Public Perception of EAS Attention Signal

We support the use of EAS and WEA PSA's. It is recommended that the PSAs present the information about the systems in several formats including audio, text, American Sign Language (ASL), and other languages with high usage in a particular area, and the symbol set provided by the IPAWS Symbology Plan approved by DHS and the National Alliance for Public Safety GIS Foundation. This alone may improve tolerance of EAS/WEA attention signal as the population will have a greater awareness of the significance of the alerting systems.

Paragraph 70: ***We seek comment on how to best ensure that community-based alerting exercises address the accessibility needs of individuals with limited English proficiency and individuals with disabilities…and on how to better prepare such communities for emergencies through PSAs.***

Our 2015 WEA Survey collected data on WEA awareness. A majority of all respondents (60%) had heard of WEA prior to the survey. In the 2013-2014 WEA survey data, 59% of all respondents had heard of WEA. This indicates that despite increased WEA-capable phone penetration, WEA awareness levels have remained flat. Respondents without a disability were twice as likely to report having heard of WEA (69%) than those respondents with disability (53%) ($p<0.01$). Chi-squared analysis revealed that people who have no difficulty hearing are two times more likely to have prior knowledge of WEA than people who have hearing difficulties ($p< 0.001$). People with full upper extremity function are two times more likely to have prior knowledge of WEA than those with reach or dexterity limitations ($p < 0.01$). People

with full mobility are 1.5 times more likely to have prior knowledge of WEA than those with mobility impairments ($p<0.01$). Variations in level of WEA awareness by the disability category is as follows:

- Blind/Low Vision (56%)
- Anxiety (52%)
- Mobility (52%)
- Speaking (51%)
- Deaf/Hard of Hearing (49%)
- Concentration (49%)
- Dexterity (44%)
- Reach/using hands and arms (41%)

These data suggest that there is significant room for growth regarding educating people with disabilities on the availability of WEA. Due to the differing awareness levels based on disability category, we support targeted outreach, as well as ensuring that outreach materials and methods are appropriate and accessible to the target population. In ¶74, we specifically address the needs of people with disabilities and the use of ASL.

Further, outreach efforts will have a return on the investment in the form of more individuals taking the suggested actions. The data collected concerning behavioral response to WEA messages (e.g., took action immediately, verified the alert, took no action) was examined based on whether the respondent had been aware of WEA prior to taking the survey. We found that individuals who were familiar with WEA were more likely to act immediately, less likely to be unsure of what action to take, and less likely to make judgments about whether the emergency alert applied to them.

We also know from our focus groups that many people, with and without disabilities, assume WEA alerts are as far reaching as EAS alerts. They do not realize that they are geo-located. PSA's or other community outreach, through disability specific groups, could allow for more in-depth information to be disseminated to those communities. Items such as what is a WEA

message, who sends it, how does it differ from an EAS alert, ensuring device accessibility features are optimized for their device, etc. could be included in targeted outreach and PSAs.

Paragraph 71: Accessible Live Code Testing.

Are there additional steps that we should take to ensure that the public is not misled or confused by state use of live codes for testing purposes? What technical and operational issues might be implicated by such an approach?

Use of real codes should also require the use of several PSA's explaining the real test code before and after the test. The PSA's should also be in American Sign Language (ASL) due to the fact this might be the only opportunity to explain to the Deaf Community who rely on ASL. Forty states have identified ASL as a non-English language in various forms, either through identifying ASL as "the official and native language of Deaf people" as in Alabama or, more commonly, by stating that ASL can be counted as foreign language credit by educational institutions.[18] Under the Communications Act, the FCC has implemented rules requiring that emergency information presented aurally must also be accessible to individuals with hearing disabilities either through captioning or "visual presentation."[19] Thus, we recommend adding "THIS IS ONLY A TEST" in ASL to help reduce inappropriate actions being taken by someone who did not have clear and effective communication access to the PSA or the test alert.

Regarding symbology, the Wireless RERC recently (June 2016) conducted a usability study incorporating symbology into a WEA message to determine if it increases comprehension for people for whom English is a second language. The analysis of the data is forthcoming. Once the data analysis and reporting is completed, we will submit ex parte comments to update the record on recommendations for the inclusion of symbology.

Paragraph 72: ***How should broadcasters and other EAS Participants, as well as PSAPs and emergency managers that coordinate live code tests, be equipped with the tools necessary to***

[18] Laurent Clerc National Deaf Education Center. (2000). "States that Recognize American Sign Language as a Foreign Language." Gallaudet University, Washington, D.C.

[19] 47 CFR 79.2

serve multilingual communities and communities of individuals with disabilities?

Providing multilingual WEA messages to areas with substantial populations that English is a second language could provide additional warning, but WEA rules would have to be modified to allow the sending of two alerts. For example, one message in English and one in Spanish in the Atlanta area, Vietnamese or Hmong in the Mississippi Gulf Coast, Spanish and Korean in the Los Angeles area.

Paragraph 73: ***…should the Bureau conduct outreach to EAS Participants and other stakeholders in particular regions that have non-English speaking communities to gather information about best practices for ensuring alerts reach non-English speaking communities?***

Yes, this would be an excellent idea either via formal comment or via solicited public listening sessions. Many people with and without disabilities are still not familiar with EAS, especially if English is not their primary language. We recommend that the Commission periodically:

- Issue News Releases and provide accessible information to outlets with a disability and/or linguistically diverse audiences such as the Multicultural Media, Telecom and Internet Council (MMTC), Telecommunications for the Deaf, Inc., and other appropriate organizations.
- Disseminate outreach in multiple languages directly through the FCC website.
- Showcase approved examples of PSA's that the FCC has received from broadcasters, organizations, and communities.

Again, this information on their website should be accessible to people who are deaf and rely on ASL.

Paragraph 74: Accessible PSAs.

Would it be helpful if EAS PSAs were made available in American Sign Language (ASL) in order to better meet the needs of certain individuals with hearing loss?

Yes. The population of people that are deaf and rely on ASL is often not fully informed in the absence of an ASL translation. ASL is a visual, conceptual language that uses a system of iconic and arbitrary elements to communicate. These elements follow systematic rules and

manifest as signs produced by the hands of the speaker.[20] ASL is a distinct language and is grammatically dissimilar to English.[21] Some people who are deaf rely primarily on ASL for communication and may have difficulty translating written English; in a similar manner to a person whose primary language is French would have difficulty understanding text written in English.[22,23] Other people who are deaf are comfortable with written English and have no problem with the difference in grammar and syntax. Due to the language diversity within this community, emergency preparedness information, outreach, alerts, and subsequent emergency information are not always completely accessible for people who are deaf that rely on ASL. Those who have become deaf or hard of hearing late in life can use closed captioning as an accommodation. These individuals grew up speaking an auditory, verbal language, such as English, and can read the text form. Closed captioning is not a useful means of communication for those who rely on ASL. One size does not fit all; and in this case, English text as a sole means of communication is not entirely accessible. Therefore, we support the use of PSA's in languages other than English and specifically recommend that all PSAs include both captions and ASL.

Leveraging Technological Advancements in Alerting

Paragraph 82:

Does the widespread and growing availability of programming distributed by IP-based networks, including STBs and "smart" TVs capable of "on-screen" graphical user interface (GUI) user input, suggest that greater user control with respect to EAS acknowledgment and/or feedback should be supported or encouraged?

EAS has always been a push mechanism. Adding feedback changes the fundamental nature of EAS. If a feedback loop is incorporated it should ask for specific things like images and video of

[20] Ferguson, C. A., Heath, S.B., Finegan, E., and Rickford, J.R. (2004). *Language in the USA: Themes for the Twenty-First Century*. Cambridge University Press.

[21] Neidle, C. J. (2000). *The Syntax of American Sign Language: Functional Categories and Hierarchical Structure*. MIT Press.

[22] Mitchell, Ross E, and Karchmer, M.A. (2011). "Demographic and Achievement Characteristics of Deaf and Hard-of-Hearing Students." *Oxford handbook of Deaf studies, language, and education*. 1: 18-31.

[23] Schein, Jerome D. (1989). *At Home among Strangers*. Gallaudet University Press Washington, DC.

the emergency event, and use as an alternative to 911 should be strongly discouraged. People's expectations may not be consistent with emergency personnel's capabilities to respond to "calls for help" done via EAS feedback.

Could alerts via non-traditional platforms offer consumers greater personalization options?
The history of ICT suggests that greater personalizability is characteristic of new digital technologies and media, one would expect this to be the case with alerting protocols. The 2015 WEA Survey examined the effectiveness of the WEA message attention signals and the results indicated a wide variability in preferences across and within sensory disability types tested (deaf, hard of hearing, blind and low vision).

Respondents who had received WEA messages (871 respondents) were asked to indicate their agreement with three statements related to WEA attention signal effectiveness. As an example, the statement related to the vibration signal was: "The vibration produced by the alert was effective in getting my attention." Comparison of those in the each disability group was evaluated. The effectiveness of the vibration and sound signals varied based on whether the respondent had a disability; however the visual signal did not.

Neither group found the vibration signal particularly effective in getting their attention. Sixteen percent (16%) of those with disabilities strongly agree or agree that the vibration signal gets their attention, while 55% of the same group disagree or strongly disagree. For those without disabilities, 15% strongly agree or agree that the vibration gets their attention, while 56% disagree or strongly disagree with this statement. These distributions appear close. However, they are impacted by the percentage of respondents with and without disabilities who had received WEA messages in the past. Respondents with disabilities were statistically less likely to own a cell phone and have received a WEA message, than their non-disabled counterparts.

Similarly, neither group found the sound alert effective in getting their attention. Sixteen percent (16%) of those with disabilities and 11% of those without disabilities strongly agreed or

agreed that the sound alert was effective in getting their attention. Sixty-seven percent (67%) of those with disabilities and 56% of those without disabilities disagreed or strongly disagreed with that statement. As above, these distributions are impacted by the differences in the percentage of respondents who had received WEA messages in the past (60% of respondents with disabilities vs. 72% of respondents without disabilities). Even though a greater percentage of respondents without disabilities had received WEA messages, respondents with disabilities were more likely to report dissatisfaction with the effectiveness of the vibration signal. Finally, the majority of respondents did not report that the visual signal was effective in getting their attention. Sixty-seven percent of respondents with disabilities and 66% of respondents without disabilities disagreed or strongly disagreed with the statement, while 16% of those with disabilities and 18% of those without disabilities strongly agreed or agreed.

Given that the data concerning the vibration, sound, and light attention signals indicate a strong need to improve their effectiveness for both people with and without disabilities, mobile phone manufacturers should design handset with the capability to adjust the strength of the vibration and sound and to include a light feature. The vibration motors in current WEA-capable handsets may not be strong enough to reliably alert users that are deaf or hard-of-hearing of WEA messages, and thus, manufacturers would need to design future phone models with the goal of increasing the effectiveness of vibration and the other signaling features in mind. Likewise, we recommend that the FCC release a rulemaking concerning prescribing a specific light cadence for WEA messages.

WEA Alerts to Tablets

Paragraph 93:

We seek comment on whether we should consider tablets that consumers use to access mobile services as "mobile devices" under our Part 10 WEA rules. Do 4G LTE-enabled tablets currently support the distribution of WEA messages?... Specifically, we seek comment on whether modernizing alerting platforms in this manner would increase the likelihood that individuals would receive potentially life-saving alerts by requiring that they be transmitted to the devices and services they use most.

Provision of WEA messages to tablets is currently inconsistent. The iPad Air 2 and above can receive WEA messages. Android is unclear, but even if some support them, most do not. In the Wireless RERC's Survey of User Needs, respondents who use augmentative and alternative communication (AAC) devices reported higher rates of tablet ownership than others with disabilities.[24] Thus, the Wireless RERC supports consideration of tablets that consumers use to access mobile services as "mobile devices" under Part 10 WEA rules. This should be technically easy to do by the manufacturers and would support AAC devices used by those users with verbal communication disabilities.

Technological Potential for Improvements in Accessibility

Paragraph 94:

We also seek comment on the potential utility of platform-based video relay service capabilities to enhance the understanding of alerts and warnings for individuals with hearing and vision disabilities.

A system like reverse 911 presenting push of alerts to geotargeted areas over VRS could be very useful to end users.

Paragraph 95:

Could OTT EAS alerting be leveraged to improve alert accessibility for all Americans, including those with sensory disabilities those with limited English proficiency?

OTT capability in devices certainly helps people with disabilities and its incorporation in devices by manufacturers should be rigorously encouraged by the Commission. It could enable the provision of prerecorded ASL content or access to live interpreters; symbols could be coded or hyperlinked in the OTT messages and customization of alerts would be easy to provide once the OTT alert is available.

[24] Wireless RERC. (2014). SUNspot – People Who Use Augmentative and Alternative Communication Devices and Their Use of Mainstream Wireless Devices [Volume 2014, Number 01 – January 2014]. Retrieved from http://www.wirelessrerc.gatech.edu/content/publications/2014-sunspot-number-01-augmentative-and-alternative-communication-device-users

…should there be a requirement for any consumer, with or without a disability, to be given the flexibility and capability to control other settings of the alerting signals and audio levels, such as the type and intensity of vibrations and flashing lights, in order to accommodate their individual needs?

Yes, this should be easy to do and would improve accessibility. Please refer to the comments made herein response to Paragraph 82 regarding personalization. They are equally applicable to the above question and support a requirement for the user control of notification signal sound/frequency/loudness, vibration strength, and flashing lights.

Paragraph 96:

…extending WEA rules to include tablets and other mobile devices…

We support extending WEA rules to include tablets and other mobile devices, including wearable and other nontraditional communications devices. In our 2015 WEA Survey, we asked about the use of wearable devices and found that respondents with and without disabilities use wearable technology at the same rate, 14%. As an emerging technology, these numbers will most likely continue to rise. Given that wearable technology is a growing market and both people with and without disabilities have adopted its use, we support the integration of wearable technology into the WEA/IPAWS environment.

To what extent should WEA messages be subject to Commission accessibility requirements?

There is no reason that they should not be fully subject to said rules, within the technical limitations of the WEA system. We contend that all communications received on digital devices should be accessible.

Would the larger screen of tablet computing devices enable them to provide WEA messages that are more accessible to individuals with visual disabilities?

Yes, to the extent that the tablet presents the message to fit the screen and allows for the manipulation of the fonts, colors, and contrasts. Manufacturers would also need to consider how to incorporate the vibration attention signal into tablets. Would manufacturers readily do this? Do tablets currently have haptic feedback capabilities? If not what other means would be

used to get the attention of people who are Deaf or hard of hearing? Also, tablets aren't typically always-on devices like cell phones. Would this use-habit require that WEAs "wake-up" the tablet for them to be useful for individuals who rely on tablets as their communication device in lieu of cell phone?

In conclusion, we look forward to the proposed advancements for both WEA and EAS, which will ensure timely response and recognition of messages to safeguard all citizens. The recommendations made herein are intended to facilitate the maturation and modernization of both systems, empowering all to make informed choices that result in maximizing message diffusion and ensuring the same timely and effective access to alerts and warnings for people with disabilities.

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