VIA ECFS

September 11, 2014

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

Re: **Tentative Findings about the Accessibility of Communications Technologies for the 2014 Biennial Report Under the Twenty-first Century Communications and Video Accessibility Act [10-213]**

Dear Ms. Dortch:

Enclosed for filing in the above referenced Public Notice are the comments of the Georgia Institute of Technology (Georgia Tech), Center for Advanced Communications Policy (CACP) and 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,

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Center for Advanced Communications Policy
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Enclosure

Before the
Federal Communications Commission
Washington, D.C. 20554

CONSUMER AND GOVERNMENTAL AFFAIRS BUREAU SEEKS COMMENT ON ITS TENTATIVE FINDINGS ABOUT THE ACCESSIBILITY OF COMMUNICATIONS TECHNOLOGIES FOR THE 2014 BIENNIAL REPORT UNDER THE TWENTY-FIRST CENTURY COMMUNICATIONS AND VIDEO ACCESSIBILITY ACT

CG Docket No. 10-213

COMMENTS OF
GEORGIA INSTITUTE OF TECHNOLOGY (GEORGIA TECH), CENTER FOR ADVANCED COMMUNICATIONS POLICY (CACP)
AND THE REHABILITATION ENGINEEERING 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 in the above-referenced Public Notice released on August 28, 2014. 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 of the Wireless RERC. The Wireless RERC 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. We believe it is essential that information and communications technologies (ICT) and services 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

[1] Georgia Tech's Center for Advanced Communications Policy (CACP) is 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 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.

involved with research and regulatory issues concerning accessible ICT. The comments respectfully submitted below are based on subject matter expertise developed over the past 13 years. Findings from our consumer surveys and focus groups, policy research, and development efforts inform the recommendations made herein.

¶16: *Information, documentation, and training.* Continuing concerns over the lack of readily available accessibility information at retailers and retail staff lacking familiarity with accessibility features, namely, hearing aid compatible phones.[3]

In April 2013 the Wireless RERC conducted its annual Hearing Aid Compatibility (HAC) survey. It was a national survey that collected data from April 2013 – December 2013 and included questions supplied by the Wireless Telecommunications Bureau (WTB) of the Federal Communications Commission (Commission). Six hundred and fifty six (656) people responded; the majority of which used behind-the-ear (BTE) aids (60%), 27% used cochlear implants and the remaining 13% use in-the-ear (ITE) and bone-anchored hearing aids (BAHA). Findings from the survey support the need to increase the ease with which consumers can shop for HAC phones. In response to the question "*How difficult was it to find a cell phone that works with your hearing aid, cochlear implant or other tech?*" only 22% of respondents that use BTE aids selected easy or very easy, 24% for respondents with ITE aids, 25% with cochlear implants and 33% with BAHAs.[4] Percentages for the same question by age are all below 30%. This is in stark contrast with the wide availability of HAC compliant devices.

Respondents to the HAC survey used multiple methods to obtain information about their phones: recommendations from family and/or friends, package labels, sales persons, online, and "other." When asked about their satisfaction with HAC information, only 21% of respondents indicated that they were satisfied or very satisfied with the information found on provider and manufacturer websites and packaging, and 17% were satisfied or very satisfied with the

[3] Comments of Consumer Groups in PN 10-213 at ¶16.

[4] Morris, J., Mueller, J, Jones, J. Lippincott, B. (2014). *Hearing Aid Compatibility of Cellphones: Results form a National Survey,* Presented at the 29th Annual International Technology and Persons with Disabilities Conference, March 18-22, 2014. Available at http://www.wirelessrerc.gatech.edu/sites/default/files/content/newroom/Hearing%20Aid%20Compatibility%20Results%20from%20a%20National%20Survey.pdf

information received from retail staff.[5] The Wireless RERC agrees with, and the research supports the Commission's finding "…that industry has engaged in some efforts to ensure the availability of information about accessible products and services to people with disabilities, including training personnel about accessible products and services. Nevertheless, we also tentatively find that gaps remain in the usability of these offerings."[6]

In other research conducted to gauge the accessibility of wireless emergency alert (WEA) capable phones, the CACP Collaborative[7] found that out of 211 devices, all of them had at least a HAC rating of M3 or T3;[8] this is on a scale of 1-4. M4 ratings account for 53% of the devices in the sample and T4 account for 48%. When M and T ratings are available for the same device, theoretically, consumers are more likely to find the appropriate device for their needs. As is shown in Figure 1, a majority of the sample consisted of phones with combined ratings. From the findings of this research, it is possible to draw the conclusion that the accessibility gap, in this case, is a consequence of limited and/or inaccessible HAC information, documentation, and training.

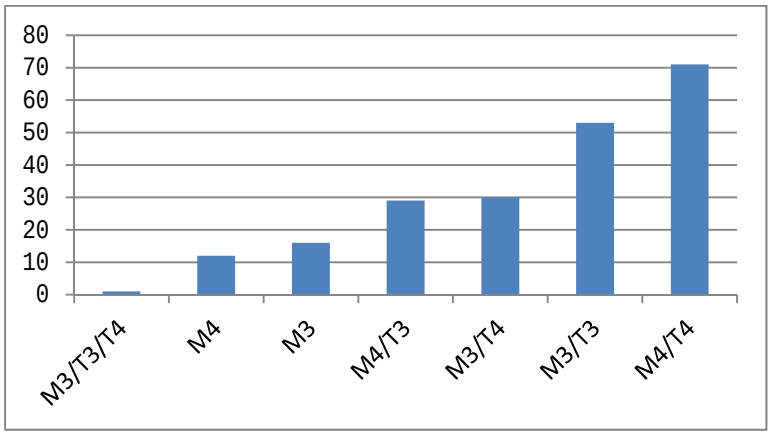

Figure 1: HAC Ratings of WEA Capable Devices

[5] [5] Morris, J., Mueller, J, Jones, J. Lippincott, B. (2014). *Hearing Aid Compatibility of Cellphones: Results form a National Survey*, Presented at the 29th Annual International Technology and Persons with Disabilities Conference, March 18-22, 2014. Available at http://www.wirelessrerc.gatech.edu/sites/default/files/content/newroom/Hearing%20Aid%20Compatibility%20Results%20from%20a%20National%20Survey.pdf

[6] PN 10-213 at ¶ 26.

[7] The CACP Collaborative includes three centers at Georgia Tech: Center for Advanced Communications Policy (CACP), Interactive Media Technology Center (IMTC), and Center for Assistive Technology and Environmental Access (CATEA), that collaborate on research funded by DHS S&T Directorate and the FEMA IPAWS Project management Office (PMO).

[8] The M and T in the HAC ratings stand for microphone and telecoil.

The Wireless RERC would like to further note that customer service is also central to providing information to people who have vision loss, as oftentimes the online and print information is not consistently accessible. Throughout the course of the Wireless RERC's work with the disability community, discussions have often centered on the inability of customer service support representatives to resolve their issues. A common theme was that customer support agents simply did not have the required expertise to address specific inquiries made by people with disabilities, hence support was inadequate. These instances are representative of the frustration felt by people with vision loss regarding the insufficient knowledge of accessibility features, and the deficient technical assistance provided by manufacturers and service providers. The accessibility of the devices, equipment and services should be conceived as a continuum that includes the technology itself and any support for using/accessing the technology.

¶8: With respect to staff training, Microsoft reports that it has established a "disability Answer Desk" that consumers can contact by phone, e-mail, or chat to receive assistance from staff "specifically trained in assistive technologies and assisting persons with disabilities."[9]

As CTIA also states, this has proven to be a successful strategy.[10] However, research conducted on behalf of the Federal Emergency Management Agency (FEMA), Integrated Public Alert and Warning System (IPAWS) highlighted the need to accommodate people who are deaf and whose primary language is ASL via the provision of interpreters.[11] ASL is a distinct language used by individuals of the deaf community and is grammatically dissimilar to English.[12] For hundreds of thousands of people in the United States, encompassing individuals with an array of capacities, ASL is their primary form of communication. Representing a diverse group of individuals, the deaf community includes those who were born deaf, became deaf later in life, or were born into families with deaf members. There are individuals who were born deaf that have an excellent command of English. However, for many people born deaf, English is (at best) a

[9] Comments of Microsoft in PN 10-213 at ¶8.

[10] Comments of CTIA in PN 10-213 at ¶49.

[11] CACP Handout: *Common Misconceptions Regarding People who are Deaf and Rely on ASL*. Available at http://www.cacp.gatech.edu/handouts/aslrevised.pdf.

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

second language that may not be able to provide them with access to "clear and effective" communication as required by the Americans with Disabilities Act (ADA). The Commission recently addressed this issue when they launched a service they are calling the "ASL Consumer Support Line." This video-based support line engages deaf and hard of hearing consumers who communicate through ASL. The Wireless RERC and CACP encourage industry to include a similar option in their efforts to comply with the CVAA.

B. Tentative Findings on Compliance with Sections 255, 716, and 718

¶21: Section 255.

Generally speaking, our research supports the tentative finding that "there has been an increase in the availability of telecommunications equipment with varying degrees of functionality and features, and offered at differing price points, that are accessible to individuals with disabilities during the period covered by this Report."[13] The CACP Collaborative conducted an accessibility review of WEA capable devices. We assessed up to 27 points of data for 215 phones. Sources included PhoneScoop, the Global Accessibility Reporting Initiative (GARI) website, and the device user manuals. In addition to noting the model, operating system (OS), providers, dimensions and display size, 15 features that impact accessibility and/or were designed to provide access to people with vision, hearing, cognitive and mobility disabilities were tabulated:

1. Hearing Aid Compatibility (HAC) Rating
2. Font Adjustment
3. Contrast Adjustment
4. Vibration Adjustment
5. Built-in TTS
6. Procure TTS
7. Simple Display
8. 2 Way Video
9. Voice Control for Dialing
10. Voice Control for Features

[13] PN 10-213 at ¶21.

11. Touch Input
12. Physical QWERTY keyboard
13. Physical # Keypad
14. Full access screen reader
15. Braille access

Findings of the accessibility review indicated that the most frequently incorporated accessibility features were voice control to access the phone's features, voice dialing, and text-to-speech technology. These features can be assistive to people who are blind, have low vision, cognitive disabilities and/or physical disabilities.

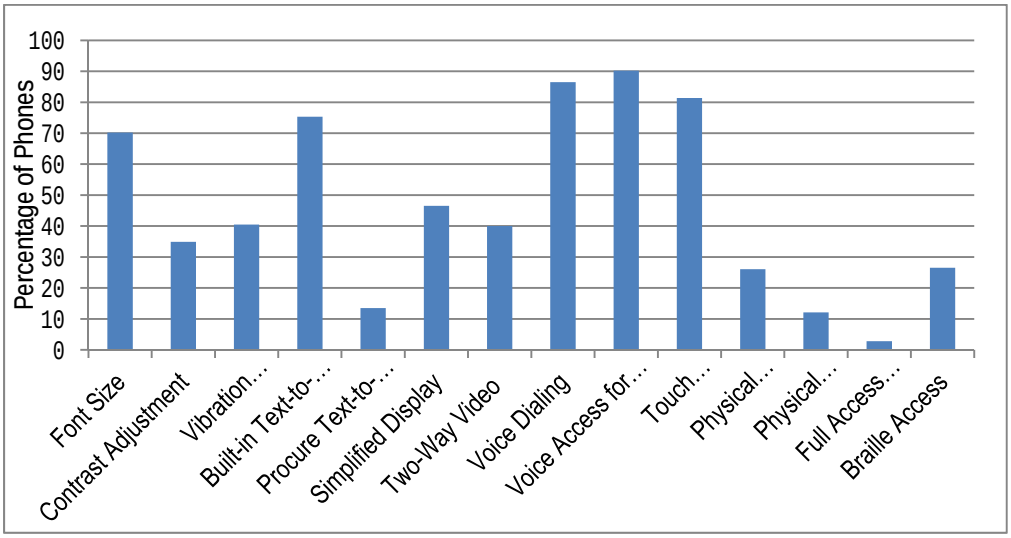

Figure 2: Accessibility Features of WEA Capable Devices

However, there are further considerations with respect to the Commission's finding. This research on WEA devices *also* found that accessibility does not often "span the device.[14]" Only 3.7% (n=8) of devices evaluated had full, out-of-the-box accessibility, that is, the device may require the user to enable accessibility features, but all of the accessibility features evaluated were built into the device's OS. The benefit of full, out-of-the box accessibility is that it simplifies phone selection for people with varying capabilities. Currently, people with disabilities are limited to a subset of devices that suit their needs, whereas the general population can choose from the

[14] Comments of ACB in PN 10-213 at ¶4.

full array of options. The subset of devices may or may not be within their desired price range. In a recent Delphi survey conducted by the Wireless RERC, one respondent noted that youth with hearing impairments often paid more for devices to achieve better access.[15]

¶24 : Accessibility gaps.

Lack of Accessible Alerting Systems

"Consumer Groups further note the need for accessible alerting systems, such as flashing lights or vibration, for advanced communications services, to prevent consumers from missing incoming video calls or other messages."[16] While the above quoted comment is specifically about video phone equipment, it is important to note that Wireless RERC research indicates notification methods to also be a challenge for wireless devices, specifically with regard to WEA messages.

The Wireless RERC is currently conducting research and development work to find solutions to these problems as they relate to awareness of incoming WEA messages. This work includes ways of providing access to third-party alerting devices such as sirens, bed-shakers, and strobe lights for incoming WEA messages. Once development is complete and the system is fully tested, the engineering findings will be provided to companies who want to build such devices. From our preliminary research that has led this activity, we concur with the comments of Consumer Groups and urge industry efforts to comply with the CVAA consider the accessibility implications of notification signals included in their devices/equipment and how the devices could interface with assistive technology used by people with disabilities to further enhance accessibility and usability.

Participation of People with Disabilities in the Research and Development (R&D) Process

"Nothing about us, without us" is more than a slogan demanding greater social inclusion. It speaks to the goal of including people with disabilities in the decisions - including design and development of accessible technologies - that affect them. Throughout the R&D work of CACP and the Wireless RERC, our data and analyses of the same, we have found the need to involve

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[15] Preliminary findings from Delphi survey on *The Futures of Disabilities: Migratory Trends in Technology*, from Wireless RERC research in progress (2014).

[16] FCC (2014). *Tentative Findings about the Accessibility of Communications Technologies for the 2014 Biennial Report Under the Twenty-first Century Communications and Video Accessibility Act* [10-213]. Federal Communications Commission: Washington, D.C., August 28, 2014.

designers, engineers, and policymakers in an understanding of the barriers, challenges, needs, and opportunities that technology presents to people with specific disabilities and access needs and to engage all of these stakeholders in processes to create accessible technology. Consumers must be engaged in technology development from the beginning to discover access and assistive technology needs. Subsequently, they must be engaged continuously during development to test and validate proposed solutions. It should not be overlooked by industry that people with disabilities, those aging into disability and seniors make up 20% of the consumer market.[17]

In November 2010, Microsoft acknowledged that its Windows Phone 7 OS did not include any significant built-in accessibility for people with vision loss, nor did it allow compatibility with third-party software designed for screen access. Notably, accessibility features and compatibility with accessible software had been incorporated in the previous version, Windows Mobile 6.5. The company admitted failing to engage accessibility experts and assistive technology developers early enough in the development process.[18] Since 2001, including consumers in design, prototype, and final product evaluations provided invaluable input to the Wireless RERC's efforts to ensure accessible features are on target to service people with disabilities. As wireless technology continues to evolve in both predictable and unforeseen ways, broader consumer inclusion will continue to be important, making participation of users diverse in ages and in intellectual, physical, and sensory abilities, even more critical in all of the stages of design and delivery. Hence, CACP and the Wireless RERC concur with the Commission's finding "… that, while some efforts to consult with such individuals for this purpose have occurred over the past two years, more can be done to include people with disabilities early on in design and development of advanced communications products and services."[19]

The Platform-Based Approach to Enabling Accessibility

The CACP and the Wireless RERC support the assertion that a platform-based approach has enabled greater accessibility. According to the Wireless RERC's Survey of User Needs, 54% of

[17] Mitchell, H. LaForce, S. (2012). *Great Expectations: Keeping People with Disabilities Connected in a Wireless Future.* Presented at The End of the Phone System Conference, Philadelphia, PA, May 16-18, 2012.

[18] Scroeder, P., Burton, D. (2010). Microsoft Backtracks on Accessibility in New Mobile Operating System, Commits to Accessibility in Future Windows Phone Platform. *AFB Access World Magazine*, December 20, Vol. 11 No. 8. Available at http://www.afb.org/afbpress/pub.asp?DocID=aw110802.

[19] PN 10-213 at ¶25.

respondents with disabilities use smartphones (30% still use basic phones).[20] Of those that use smartphones, taken together iOS and Android operating systems represent 89% of smartphone OS's in use by people with disabilities. This bodes well for some smartphone users with disabilities, as accessibility, especially for the latest version of iOS and Android, is better (with regard to richness of features) than in basic phones. However it is important to note that some users with disabilities, particularly the elderly, may prefer basic phones, so accessibility for these types of phones should not be overlooked. Nevertheless, the research supports the reported success of the platform-based approach in increasing access to mobile devices.

However, there are some additional considerations. Software updates may "break" access to assistive technology used with, or used to access the device. For example, changes to multi-touch functionality in Android (4.0 to 4.1) have made the BrailleTouch app not function correctly, as enabling the Talkback feature disabled multi-touch, and the BrailleTouch app requires that multiple touch points on the screen be recognized. Also, as one developer reported in a phone interview, OS development teams and accessibility teams being disparate parts of a company insert managerial/organizational hurdles into the engineering process because it can result in new versions of the OS being released before it is fully vetted for accessibility.[21] Additionally, he expressed frustration with some Application Programming Interfaces (APIs) not allowing for end-to-end accessibility (i.e. from turning on the device, completing tasks of choosing and turning off the device), specifically with regard to switch access, a feature designed to allow for hands free navigation of a device.[22] Some companies are able to more easily address these situations if they have the accessibility and technical engineers in the same department. We suggest this could be a recommendation for industry, particularly as people with disabilities often use various devices/platforms (assistive and mainstream) to access their devices.

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[20] Wireless RERC (2013). *SUNspot – Use of Wireless Devices by Adults with Disabilities*, Volume 2013, Number 03 – July 2013. Available at http://www.wirelessrerc.gatech.edu/sites/default/files/publications/SUNspot_2013-03_Wireless_Devices_and_Adults_with_Disabilities_2013-07-12%5B1%5D.pdf

[21] Silva, Jorge (CTO, Komodo OpenLab). Telephone Interview, September 10, 2014.

[22] Ibid.

Lifeline Program Lacking Devices with Accessible features

Commenters addressed the lack of accessibility of some of the mobile phones distributed via the Lifeline Program (Lifeline).[23] As the Lifeline was created to ensure universal access to telephone service for the economically disadvantaged, many older adults and people with disabilities participate in Lifeline. Extra attention needs to be paid to Lifeline providers regarding their compliance with the CVAA. Specifically, those like Assurance Wireless who only provides one type of phone. In many cases, Lifeline phones are either lower-end or slightly out-of-date models still being manufactured. These phones will have the same capabilities in terms of support for CVAA as the mainline carrier's phones. The resellers of the Lifeline phones may need to be reminded of the CVAA and their responsibilities under the Act. This is in most cases a customer support issue, or an issue of a provider removing code from the phones, which need not be done for any technical reason. We found a Lifeline phone from a carrier that ran Android, and had no reason to not provide WEA alerts, except the reseller had removed the code from the firmware.

Furthermore, to ensure these populations can receive WEA messages it is essential that the Lifeline providers participate in WEA *and* that their devices be accessible. Recent research conducted on behalf of the IPAWS Project Management Office (PMO) revealed issues with the Lifeline providers not consistently providing accessible WEA capable devices. Future research should determine to what extent Lifeline service providers participate in WEA and to what extent the devices they distribute as part of the program are WEA capable. The Commission should consider requiring WEA support in all Lifeline phones that have the requisite hardware to accept the alerts, officially aligning already complementary government programs/systems, and furthering the goals of both agencies: (a) for Commission rules and regulations to bolster access to accessible and affordable advanced communications technologies,[24] and (b) for FEMA IPAWS, to maximize availability of WEA to the whole community, including people with disabilities, the elderly, and the economically disadvantaged.[25]

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[23] PN 10-213 at ¶6.

[24] As evidenced through Commission proceedings concerning the CVAA and the Lifeline Program.

[25] IPAWS PMO Fact Sheet: *Alerting the Whole Community – People with Disabilities and Others with Access and Functional Needs*. Available at https://s3-us-gov-west-1.amazonaws.com/dam-production/uploads/1406834260873-d6ac0441dbba6f5a743486f6cd539ccf/AccessandFunctional%20NeedsFact%20Sheet_20140730.pdf

In closing, we commend the FCC's efforts to measure the impact of provisions of the *Twenty First Century Communications and Video Accessibility Act of 2010* (CVAA); specifically, in these procedures, efforts to identify gaps in accessibility and to ensure that future technologies maintain accessibility gains. To that end, the CACP and the Wireless RERC wish to emphasize the importance of including accessibility for people with disabilities to the greatest extent possible. In efforts to do so, (a) people with disabilities should always be consulted throughout the design and development phases of new or changing technologies and services and (b) the accessibility implications of future technologies should become a high-level consideration when planning technology development strategies.

Respectfully submitted,

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Dated this 11th day of September 2014