



VIA ECFS

July 6, 2021

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

Re: Update on Commission's Fulfillment Of The Twenty-First Century Communications And Video Accessibility [GN Docket No. 21-140]

Dear Ms. Dortch:

Enclosed for filing in the above-referenced Public Notice are reply comments of the Rehabilitation Engineering Research Center for Wireless Inclusive 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,

A handwritten signature in blue ink, appearing to read "H Mitchell".

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 Matter of

CONSUMER AND GOVERNMENTAL AFFAIRS, MEDIA, AND WIRELESS TELECOMMUNICATIONS
BUREAUS SEEK UPDATE ON THE COMMISSION'S FULFILLMENT OF THE TWENTY-FIRST CENTURY
COMMUNICATIONS AND VIDEO ACCESSIBILITY ACT

GN Docket No. 21-140

REPLY COMMENTS OF

GEORGIA INSTITUTE OF TECHNOLOGY (GEORGIA TECH), CENTER FOR ADVANCED
COMMUNICATIONS POLICY (CACP)

AND THE REHABILITATION ENGINEERING RESEARCH CENTER FOR
WIRELESS INCLUSIVE TECHNOLOGIES (WIRELESS RERC)

INTRODUCTION

The Georgia Institute of Technology's Center for Advanced Communications Policy (CACP), in collaboration with the Rehabilitation Engineering Research Center for Wireless Inclusive Technologies¹ (Wireless RERC), hereby submits comments to the above-referenced Public Notice seeking comment on the FCC's fulfillment of the CVAA, released on April 7, 2021. 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 wearable technologies, the Internet of Things, emergency communications, and communications and technology access by people with disabilities.

CACP is the home of the Wireless RERC, funded since 2001 by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), a Center within the Administration for Community Living (ACL), U.S. Department of Health and Human Services

¹ The Rehabilitation Engineering Research Center for Wireless Inclusive Technologies (Wireless RERC) is sponsored by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number 90RE5025-01). 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.

(HHS). The Wireless RERC mission is *to integrate established wireless technologies with emerging wirelessly connected devices and services for a transformative future where individuals with disabilities achieve independence, improved quality of life, and enhanced community participation*. Over the past 20 years, subject matter experts at CACP and the Wireless RERC have been actively involved with research and regulatory issues concerning accessible wireless technologies and services. The comments respectfully submitted below are based on subject matter expertise developed over the past 20 years. Findings from our consumer surveys and focus groups, policy research, and development efforts inform the recommendations made herein.

The Wireless RERC joined the Accessibility Advocacy and Consumer Organizations in their submissions to the FCC in response to the Commission's Public Notice in this proceeding. While we strongly support their reply comments, the Wireless RERC submits these specific comments based on our areas of expertise and research.

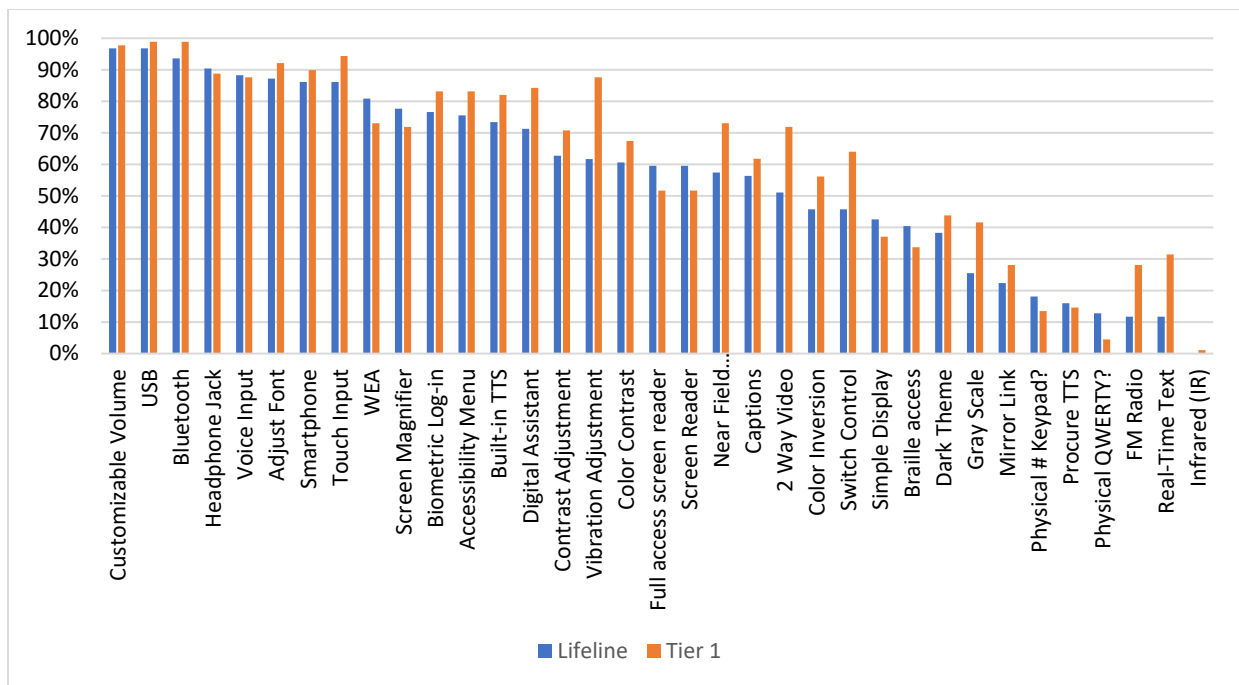
Reply to Comments made American Council of the Blind (ACB)

The Wireless RERC agrees with ACB's statement that "The Commission must conduct rigorous oversight to ensure all wireless devices are accessible and that wireless carriers are effectively communicating accessible device features to consumers for all devices. This oversight must include entities providing devices and services to consumers under the Lifeline and all other federal programs that support the proliferation of communications services and devices" (ACB, 2021, p. 2).

In the Wireless RERC *Biennial Analysis of Mobile Phone Accessibility*, we compared Lifeline provided phones and Tier 1 Carrier provided phones available as of April 2020. While there are study limitations, the results indicated that mobile phone models provided via Tier 1 providers outperformed Lifeline provider phone models on twenty-four of the thirty-five accessibility features (Figure 1). The rates of feature inclusion in Tier 1 phone models exceeded those of Lifeline providers, in many cases, by a significant margin. The features and characteristics with the greatest percentage point differentials include Vibration Adjustment

(88% for Tier 1 and 62% for Lifeline), Real-Time Text (RTT) (31% for Tier 1 and 12% for Lifeline), 2-Way Video (72% for Tier 1 and 51% for Lifeline), Switch Control (64% for Tier 1 and 46% for Lifeline), and Grayscale (42% for Tier 1 and 26% for Lifeline). These results suggest a differential access experience of Lifeline subscribers, which is doubly unfortunate given that Lifeline was created to bridge the digital divide, but unintentionally, may have created an accessibility divide. The good news, however, is that change in a positive direction has been observed. Lifeline providers have improved accessibility levels compared to our 2017 mobile phone accessibility review. (LaForce and Bright, 2020) While we hope that this positive trend will be propelled by market innovations in accessibility, encouraging Lifeline providers to be cognizant of the accessibility levels of their service offerings would be a welcome specification to the FCC's fulfillment of the CVAA.

Figure 1: Comparison of Tier 1 and Lifeline Phone Features



ACB also stated that "The Commission should review how people with multiple disabilities are served by accessible communications technology and services. This should be done with a very wide lens to encompass all forms of sensory, cognitive, and physical disability"

(ACB, 2021, p. 2). We agree. Our studies have found that accessibility features are not uniformly available in all phone models, and gaps in the accessibility experience persist. Ideally, all accessibility features would be present across available devices at rates similar to features that are seemingly now part of standard mobile phone designs, such as customizable volume (99%), USB (99%), and Bluetooth (97%). However, currently, parity has not been achieved, and the inconsistencies may be especially frustrating for those who use several types of accessibility features to access the device. Having more than one disability (i.e., comorbidity) makes identifying an appropriate mobile device more complex, particularly if they are the disabilities that have a fewer number of associated accessibility features. For example, an individual with comorbidities, possibly caused by a condition like diabetes, may have mobility and vision limitations and be confronted with choosing between a mobile phone that is better apt to assist with one functional limitation but not the other. 2,835,949 non-institutionalized civilians are living with comorbid hearing and cognitive disabilities.² These smartphone users would likely search for devices that offered features that are assistive to both functional limitations. However, on average, only half, or in some cases less than half, of the accessibility features important for people with dexterity/mobility, hearing, vision, and cognitive disabilities were present on mobile devices (LaForce, Bright & Garcia, 2019).

Reply to Comments made by the Alliance of Automotive Innovation

The Alliance of Automotive Innovation (2021) asserts that "the Commission should seek more generally to allow for manufacturer and provider flexibility wherever possible. As companies consider the accessibility options for their own products, they can create innovative solutions that leverage unique aspects of their offerings and work well for their consumers" (p. 5). We agree with the caveat that accessibility innovations should be co-created with consumers with disabilities and that the automotive industry adheres to CVAA requirements to

² Calculations based on U.S. Census Bureau, 2017 American Community Survey, Public Use Microdata Sample. Based on a sample and subject to sampling variability. Durham, NH: University of New Hampshire, Institute on Disability.

include people with disabilities in the design and development phases of advanced communications features incorporated into connected and automated vehicles. For example, input and output modality for in-vehicle navigation and other onboard systems should include voice and touch. Regarding autonomous vehicles (AV), this technology can be used by people with disabilities on an individual basis and/or by expanding current public transportation systems. Public transportation can incorporate AVs in predetermined "closed-looped" routes. AVs represent powerful opportunities to increase independent living and workplace participation. Transportation is a well-documented barrier to employment (U.S. Bureau of Labor Statistics, 2020; Murray, 2018). Regarding the latter, AV access can minimize the barrier that transportation presents to people with disabilities.

It is essential to proactively include stakeholders within the disability community in AV design and development to enhance the utility of this technology for people with disabilities. This could also be achieved by encouraging industry outreach to key stakeholders in the disability community. Coordination among relevant federal agencies, such as the FCC working with the DOT's National Highway Safety Administration, is another approach to facilitate this engagement. Increasing participation in rulemaking under which these technologies will be governed and engaging policymakers is an important step so that when technology is ready, it will have been designed to be inclusive of people with disabilities. As stated by the National Council on Disability (2015), "Regardless of when AVs are available, it is essential that they be accessible to people with diverse disabilities from the outset. Different levels of automation will pose unique challenges to people with disabilities, and each of these conditions needs to be explored. An in-depth exploration of different levels of automation and their impact on people with diverse disabilities (e.g., physical, sensory, intellectual/developmental, cognitive) as well as veterans with disabilities and the aging population should be conducted. Yet the disability community knows better than any other how being involved in planning from day one is critical to a successfully accessible product, regardless of how many years in the future it lies" (p. 5).

Reply to Comments made separately by the Consumer Technology Association (CTA) and CTIA

CTA shared that "accessibility options exist for individuals who may be limited in or not vocal. For instance, Amazon's Tap to Alexa provides an example of an interface that allows consumers to interact with Alexa (originally a voice interface) using touch. CES 2021 innovation award winner Voiceitt also enables individuals with speech disabilities to control smart home devices. For individuals who are blind or low vision, Amazon's Braille display support and Braille Screen Input allows for typing and reading braille on Fire tablets and connected braille displays; users can also type text in braille directly on their tablet's touch screen" (pp. 7-8). And CTIA adds that "innovative features now consistently offered across many mobile devices enable consumers to tailor each wireless device to meet their unique needs, whether through built-in features such as voice commands or larger, high-definition screens, compatibility with the Internet of Things ("IoT") through standardized interfaces, or through innovative apps that enable people with disabilities to customize a wireless handset to meet their unique needs" (pp. 9-10). These are excellent examples of how industry has innovated for access. When smart speakers first appeared, a major concern of portions of the disability community was the voice-only interface. For some people with disabilities, for example, those who are blind or low vision and those with mobility disabilities, the voice interface was a boon for environmental control. However, for those with atypical speech or who are non-verbal, a feeling of exclusion from such an advanced technology pervaded opinions about the technology itself.

The progress made to expand access to smart speakers, home automation, and other Internet of Things devices is laudable. We look forward to even more advancement in the direction of inclusion. To that end, and as reported in our 2018 comments (Mitchell et al., 2018), the ability to set up the device independently remains a barrier for people who are blind. To address the issue of independent setup, the Wireless RERC produced a step-by-step video guide for people with vision disabilities that they can reference to set up Amazon Echo devices without sighted assistance. This three-part series provides a thorough tutorial on the setup and overall operation of the Amazon Echo.³ These videos, and an additional [audio guide](#) on the

³ [Part 1 - Out of the Box and Onto the Table-A Step-By-Step Guide to Unboxing and Powering On your Amazon Echo for People with Vision Disabilities.](#) [<https://youtu.be/6lzUPH6T3gk>]

Echo Dot, were produced in response to data we received after conducting focus groups regarding smart home virtual intelligent assistants. Participants who are blind or have low vision particularly pointed out their need for sighted assistance in the initial setup of these smart home devices. To improve total access to the systems and devices, companies should explore and develop solutions for how individuals who are blind would independently set up the technology.

Also, ensuring that consumers with disabilities are aware of device features, accessibility, or otherwise should be prioritized. At a recent focus group comprised of individuals who are blind, a participant, while discussing his use of the iPhone, stated he wanted to connect it to Alexa, "*but I'm not sure if there is an Alexa app.*" Attending to issues of independent setup and accessible documentation and communication of device features speaks to the "usability" requirements of the CVAA. "A product or service is "usable" if it provides individuals with disabilities with the full functionality and documentation for the product or service, including instructions, product or service information (including accessible feature information), customer support, and technical support."⁴

Speaking of technical support specifically, CTIA commented that "Recently, Apple announced new accessibility features, including AssistiveTouch to watchOS, which allows users with mobility limitations to control their device, and SignTime, which enables people who are deaf and hard of hearing to communicate with AppleCare and Apple Retail staff in sign language" (p. 9). Excellent! We hope that such accessible and inclusive business practices become the industry standard. We reiterate below comments made in response to the CVAA Biennial Report to Congress (Mitchell et al. 2020).

In our evaluations of technology access, baseline accessibility, and subsequent usability, are consistently impacted by access to customer service and print and electronic materials furnished by industry and policymakers alike. To improve access to programs and services, we

[Part 2 - Buttons at 12, 3, 6, and 9 O'clock-A Tutorial on the Location and Operation of Buttons on the Amazon Echo for People with Vision Disabilities. \[https://youtu.be/5Usbl6PvAcU\]](https://youtu.be/5Usbl6PvAcU)

[Part 3 - Part 3: Synching your Echo to the Alexa App-A Tutorial on how to Set Up your Echo for People with Vision Disabilities. \[https://youtu.be/NSdOoOoqQJo\]](https://youtu.be/NSdOoOoqQJo)

⁴47 CFR §§ 6.3(l), 7.3(l), 14.21(c); see also 47 CFR §§ 6.11, 7.11, 14.20(d), 14.60(b)(4).

recommend that fundamental issues of disability culture awareness, familiarity with instructional materials regarding device accessibility and usability, and accessible formats be addressed. We strongly encourage that other business entities follow Apple's lead in this respect, but not only for technical support but also at point of sale. The retail side of service providers and manufacturers (e.g., Apple Store) holds great power in setting the tone for the user's experience with their devices. While incredible progress has been made by industry with regard to having customer call centers with people specifically trained in accessibility matters, the in-person purchasing experience in some retail stores could be bolstered by better training of floor staff. Understandably, there is a high turnover rate of sales associates in retail establishments, but having (1) disability awareness/etiquette and accessibility features as a standard part of sales associate training and (2) a stable method for customers with disabilities to obtain in-person support during point of sale could dramatically improve the end-user experience. For example, making video remote interpreting services available to retailers would address individuals whose first language is ASL in communicating their device needs and wants at POS.

Finally, CTA stated that "Device manufacturers, which are usually the responsible party pursuant to the FCC's rules, typically have limited control over features and functionality implemented in the operating system or apps, particularly (but not exclusively) in the case of post-sale upgrades. The Commission could consider whether which party (e.g., manufacturer, operating system provider, or app provider) would be most appropriate to have responsibility for regulatory compliance and under what circumstances for relevant features" (p. 9).

We agree that an inquiry into who shares the responsibility for app-accessibility should be conducted. We generally agree that the app market should have accessibility requirements. One possible solution, which could be implemented through the manufacturer's app store, might require apps to meet certain accessibility criteria before it is allowed in the store. Such a bold move could revolutionize app accessibility.

In closing, we commend the FCC's efforts to self-regulate and ensure that implementation of the CVAA appropriately addresses innovations in advanced communications and services and business practices and is reaching back to make certain that CVAA regulations

capture the expansiveness of the law. Likewise, we are encouraged by the industry's growth in accessibility innovations, as reported by CTA and CTIA and evidenced in the increasing presence and richness of new accessibility features on mobile devices.

Respectfully submitted,

A handwritten signature in blue ink that reads "S. LaForce". The signature is written in a cursive style with a large, stylized "S" and "L".

Salimah LaForce, M.S.

Helena Mitchell, Ph.D., and

Dara Bright, M.S.

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Dated this 6th day of July 2020

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