Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
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FCC Seeks Comment and Data on Actions to Accelerate Adopting and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies	)	GN Docket No. 16-46
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COMMENTS OF CTIA

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CTIA[1] submits these comments in response to the Public Notice released by the Federal Communications Commission ("Commission") seeking comment on actions it can take to accelerate adoption and accessibility of broadband-enabled health care solutions and advanced technologies.[2]

I. INTRODUCTION AND SUMMARY.

CTIA commends the Commission and the Connect2Health Task Force for focusing on steps the Commission can take to stay ahead of the health technology curve. Wireless technology enables increased access to health care, resulting in improved health care outcomes and reducing unnecessary costs, including for seniors, rural Americans, and those with accessibility needs.

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[1] CTIA® (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st century connected life. The association's members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry's voluntary best practices, hosts educational events that promote the wireless industry and co-produces the industry's leading wireless trade show. CTIA was founded in 1984 and is based in Washington, D.C.

[2] *FCC Seeks Comment and Data on Actions to Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies*, Public Notice, GN Docket No. 16-46, FCC 17-46 (2017) ("Public Notice").

As the Commission recognizes in the Public Notice, health care costs represent a large percent of the U.S. gross domestic product ("GDP"), and are projected to increase significantly over the next six years.[3] In 2015, health care expenditures reached $3.2 trillion in the United States, or approximately 18 percent of the GDP.[4] These rising costs can be attributed to a number of factors, including an aging population, inefficiencies and complexities in the health care system, and severity of illnesses.[5] In fact, as a recent Deloitte report observed, the U.S. has a lower life expectancy and higher levels of chronic diseases as compared to other developed nations, yet spends nearly twice as much per capita on health care.[6]

Wireless technology is particularly well suited to addressing these rising costs and improving health care outcomes. Indeed, according to estimates from Goldman Sachs, digital health technology can save $305 billion annually, with two thirds of the savings resulting from chronic disease management and remote patient monitoring.[7] Among other applications, wireless connectivity supports technologies like remote patient monitoring and diagnostics, which can facilitate clinical trials, allow health care providers to care more efficiently for patients, and empower consumers to manage chronic conditions. Wireless innovations can also enable seniors and consumers with disabilities to engage fully with their communities through functionalities like voice commands, artificial intelligence platforms and location information

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[3] *Id.* at 2 (citing a 2014 report noting that health spending is expected to increase an average of 5.7 percent per year between 2013 and 2023).

[4] *Wireless Connectivity Fuels Industry Growth and Innovation in Energy, Health, Public Safety, and Transportation*, DELOITTE (Jan. 2017), https://www.ctia.org/docs/default-source/default-document-library/deloitte_20170119.pdf ("Deloitte Report").

[5] *Id*.

[6] *Id*.

[7] *Id.*

technologies. The next generation of wireless will further these trends, enhancing connectivity and providing the low latency necessary to support critical care functionalities.

Given these important health and economic benefits, the Commission should implement policies that will support adoption and deployment of mobile health solutions. In particular, the Commission should:

- Avoid application of outdated Title II regulations to mobile broadband services, which threaten advancements that could unlock future opportunities for the health care sector;
- Adopt modernized infrastructure policies that will streamline deployment processes so that wireless providers can deploy broadband rapidly and efficiently across the country;
- Make available licensed, exclusive-use spectrum in low-, mid-, and high-band frequencies, which are necessary to support next-generation networks; and
- Ensure that the Commission's Universal Service rules permit the deployment of wireless networks.

By taking these steps, the Commission can foster a regulatory environment that promotes the development of additional mobile health innovations for the benefit of all consumers.

II. WIRELESS TECHNOLOGY EMPOWERS CONSUMERS AND HEALTH CARE PROVIDERS.

As CTIA President and CEO Meredith Attwell Baker noted at the 2015 Broadband Health Summit, mobile health means "improving access, expanding opportunity, and democratizing the delivery of health care, especially for rural communities and the underserved."[8] From clinical trials to telehealth and chronic disease management, mobile health solutions can have a dramatic effect on patient care and health care costs.

Importantly, wireless allows health care providers to care more efficiently and effectively for their patients and enables consumers to manage chronic conditions and achieve wellness by

[8] Remarks of Meredith Attwell Baker, President and CEO, CTIA – The Wireless Association, Broadband Health Summit (Oct. 1, 2015).

providing anytime, anywhere access to actionable health data. These benefits hold particular promise for patients lacking access to traditional health care resources. For example:

- AT&T provides highly secure wireless connectivity for the ZywiePro, a mobile cardiac monitoring system that detects cardiovascular arrhythmias in patients and sends doctors detailed diagnostics of cardiovascular health metrics. This connected device provides prompt, actionable information of irregularities and reduces the need for patients to make multiple office visits for device adjustments.[9]

- Qualcomm and Novartis have collaborated to leverage Qualcomm Life's connectivity solutions to power Novartis' next-generation Breezhaler to treat Chronic Obstructive Pulmonary Disease. A Qualcomm module is designed to connect seamlessly with Qualcomm Life's 2net Platform and can detect and report inhaler usage, as well as the duration of the patient's inhalation, which indicates quality of inhalation.[10]

- Through its SafeLink project, Tracfone partners with more than 20 managed care organizations to offer phones, service and mobile health technology to consumers eligible for Medicaid.[11]

- Intel and the Michael J. Fox Foundation for Parkinson's research use smart watches and movement sensors to collect and analyze movement measurements in real time, better enabling Parkinson's progression detection and symptom management. Intel's data analytics resources help researchers interpret vast amounts of raw data from devices capable of recognizing 150-300 samples per second each; storage and algorithms interpret this data, examining the validity and progression of patterns, which can accelerate first stage discoveries.[12]

- In 2015, a major medical device manufacturer introduced a smartphone app for patients using the manufacturer's continuous glucose monitor to receive alerts. Results are uploaded to the app every five minutes, giving patients better control in the event of diabetic episodes.[13]

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[9] AT&T to Provide Connectivity to Zywie's Remote Cardiac Monitoring Solution (Feb. 20, 2017), http://about.att.com/story/att_to_provide_connectivity_to_zywie.htmlv .

[10] Press Release, Qualcomm Expands Collaboration with Novartis for Connected COPD Therapy (Jan. 5, 2016), https://www.qualcomm.com/news/releases/2016/01/05/qualcomm-expands-collaboration-novartis-connected-copd-therapy.

[11] Comments of Tracfone Wireless, Inc., CG Docket No. 02-278 (filed Sept. 19, 2016).

[12] Radboud University (Sponsor), *Real-PD Trial: Development of Clinical Prognostic Models for Parkinson's Disease*, NCT02474329 (Apr. 13, 2017), http://clinicaltrials.gov/ct2/show/NCT02474329.

[13] *See* Deloitte Report.

- In Massachusetts, the Connected Cardiac Care Program uses a combination of remote monitoring, social media, and data management applications to provide telehealth services, including centralized telemonitoring, self-management, and nurse intervention, resulting in a 51 percent reduction in heart failure readmissions, a 44 percent reduction in non-heart failure readmissions, and costs savings of $8,155 per patient. In the six years since the program's launch, it has accrued more than $10 million in savings.[14]

Wireless technology innovations are also enabling seniors and consumers with disabilities to utilize accessible services, including with improved voice command, artificial intelligence platforms, and location information technologies that provide new opportunities. For example:

- Apple's Voice Over screen reader provides users with an audio description of everything that is happening onscreen and how to navigate it.[15]

- Amazon Echo's voice activation feature provides a variety of empowering benefits for users with disabilities, such as the ability to order groceries or schedule appointments without the need to move one's hands.[16]

- Google maps now provides information regarding whether a particular location is wheelchair accessible.[17]

- HTC offers individuals with various hearing disabilities a range of accessibility features, including hearing aid compatibility, Sidetone (providing immediate, low-level audio feedback of the user's own voice during a phone call), closed captions, LED notification (providing a visual notification or vibration for notifications, including phone calls), and mono/stereo sound (allowing a user to toggle sound input between mono and stereo sound).[18]

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[14] *Id*.

[15] Accessibility: VoiceOver, Apple, https://www.apple.com/accessibility/iphone/vision/ (last visited May 10, 2017).

[16] Allen St. John, *Amazon Echo Voice Commands Offer Big Benefits to Users with Disabilities*, CONSUMER REPORTS (Jan. 20, 2017), http://www.consumerreports.org/amazon/amazon-echo-voice-commands-offer-big-benefits-to-users-with-disabilities/.

[17] Zoya Teirstein, *Google Maps Now Shows if a Location is Wheelchair Accessible*, THE VERGE (Dec. 15, 2016), https://www.theverge.com/2016/12/15/13968054/google-maps-twenty-percent-wheelchair-accessible.

[18] Accessibility, HTC, http://www.htc.com/us/accessibility/ (last visited May 10, 2017).

- Switch Access by Android provides a touch-screen alternative for individuals with mobility-related impairments to control the device.[19] Consumers with dexterity-related disabilities can also use the voice input feature on HTC's One (M8) smartphone to speak text instead of typing it.[20]

- Beacon technologies allow mobile apps running on either iOS (using iBeacon) or Android devices to deliver hyper-contextual, highly-targeted content to users who are blind or visually impaired to understand an exact location in a store and obtain information about various products, such as prices, locations, and ingredients.[21]

Moreover, wireless allows clinical trials to collect more comprehensive data using technologies like remote patient diagnostics and monitoring. For example:

- The U.S. Food and Drug Administration has recognized the positive impact that mobile health technology can have on clinical trials, including the potential to "improve … retention of trial participants," "allow for collection of data and communications wherever the trial participant is located," and "present sponsors with the opportunity to capture data more frequently and efficiently than would be feasible if data collection were only conducted when the trial participant visited the study site."[22]

- In 2015, Novartis selected Qualcomm as a partner in its Trials of the Future program to collect and aggregate medical device data during clinical trials.[23]

- In collaboration with Partners HealthCare, Samsung provides software and devices to power clinical research of chronic conditions with data on blood pressure, blood glucose levels, and weight. Additionally, the University of California – San Francisco and Samsung established a Digital Health Innovation Lab, a first-of-its-kind mobile health

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[19] About Switch Access for Android, Google, https://support.google.com/accessibility/android/answer/6122836?hl=en (last visited May 10, 2017).

[20] HTC One (M8), HTC, http://www.htc.com/us/support/htc-one-m8/howto/464908.html (last visited May 10, 2017).

[21] What is iBeacon?, iBeaconInsider, http://www.ibeacon.com/what-is-ibeacon-a-guide-to-beacons/ (last visited May 10, 2017); Google Beacon Platform, Google, https://developers.google.com/beacons/ (last visited May 10, 2017).

[22] FDA. Notice; establishment of docket; request for comments – "Using Technologies and Innovative Methods to Conduct Food and Drug Administration-Regulated Clinical Investigations of Investigational Drugs; Establishment of a Public Docket," 80 Fed. Reg. 66, 453, 66,544 (Oct. 29, 2015).

[23] Press Release, Qualcomm Announces Strategic Collaboration with Novartis to Optimize Global Clinical Trials (Jan. 5, 2015), https://www.qualcomm.com/news/releases/2015/01/05/qualcomm-announces-strategic-collaboration-novartis-optimize-global (last visited May 10, 2017).

test bed that serves as a center of collaboration among researchers, biotech startups, venture capitalists, and technologists.[24]

The Internet of Things will accelerate these trends through enhanced connectivity and data insights, and 5G wireless networks will unleash wireless technological advancement. Two characteristics of 5G in particular stand out for mobile health: lower latency and increased capacity. Next-generation technologies will have exponentially improved latency, which is the time it takes the network to respond. This will increase reliability for time-sensitive critical care applications, unlocking new real-time applications for consumers. 5G solutions will also have increased capacity, which means that wireless networks will be able to support more devices, including medical devices that can connect patients and their caregivers. The wireless industry is expected to invest $275 billion over the next decade to deploy the 5G networks that will support these innovations.[25] The future of mobile health is thus very promising, and CTIA commends the Commission for considering how communications policy can best foster, and not hamper, mobile health.

III. POLICIES THAT ENABLE ROBUST WIRELESS BROADBAND ARE NECESSARY FOR ACHIEVING THE PROMISE OF MOBILE HEALTH.

A. The Commission Should Promote Connected Health Solutions by Avoiding Public Utility Regulation of Mobile Broadband Services.

Mobile health solutions cannot reach their full potential in a regulatory environment that suppresses the ability of mobile broadband providers to support telemedicine and other real-time

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[24] Kristen Bole, *Samsung, UCSF Partner to Accelerate New Innovations in Preventative Health Technology*, UNIVERSITY OF SOUTHERN CALIFORNIA SAN FRANCISCO (Feb. 21, 2014), https://www.ucsf.edu/news/2014/02/111976/samsung-ucsf-partner-accelerate-new-innovations-preventive-health-technology.

[25] *Smart Cities: How 5G Can Help Municipalities Become Vibrant Smart Cities*, ACCENTURE STRATEGY (Jan. 2017), https://www.ctia.org/docs/default-source/default-document-library/how-5g-can-help-municipalities-become-vibrant-smart-cities-accenture.pdf.

applications through differentiated service offerings. Unfortunately, at a time when experimentation, innovation, and investment are critically important, the 2015 *Title II Order* puts at risk advancements that could unlock future opportunities for the health care sector.[26] For example, as discussed above, the high speed and low latency promised by 5G will improve the responsiveness of wireless networks and devices, creating new use cases in telemedicine, patient monitoring, data collection, and connected tablets for use in the field. To optimize the performance of these and other applications, however, 5G may require the use of quality-of-service ("QoS") management techniques that enable operators to prioritize traffic to support mission-critical health-related services and address specific use cases. As one analyst has observed, however, "with Title II as the baseline regulation, it's unclear that QoS capabilities can be used as intended."[27] The *Title II Order*'s rules can straightjacket providers and restrict opportunities to deploy innovative apps – including mobile health apps – that rely on QoS.

Early deployers of new technologies need flexibility to innovate, not the overhanging risk that their investments may be prohibited by the Commission. Chairman Pai's proposal to revisit the *Title II Order* appropriately recognizes the harmful impact of applying Title II utility rules to broadband, and the investment and innovation benefits of reclassifying broadband Internet access service as an information service. CTIA looks forward to participating in the Commission's proceeding and working with Congress to develop a sustainable, common sense net neutrality framework that promotes billions of dollars of investment, millions of jobs, and the innovation needed to sustain consumers' mobile-first lives.

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[26] *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601 (2015) ("*Title II Order*").

[27] Peter Rysavy, *How "Title II" Net Neutrality Undermines 5G*, RYSAVY RESEARCH, at 4 (Apr. 19, 2017), http://www.rysavy.com/Articles/2017-04-How-Title-II-Net-Neutrality-Undermines-5G.pdf.

B. Sound Infrastructure Policies Are Imperative for Unleashing the Mobile Health Care Potential.

The promise of 5G—and mobile health solutions that will ride on 5G—rests in part on the deployment of dense wireless networks and hundreds of thousands of new small cells, as well as expanded backhaul and transport facilities, to provide needed capacity and coverage. Rapid, affordable access to state and local rights-of-way and other locations is critical to the successful deployment of these services. CTIA commends the Commission for initiating proceedings to streamline the deployment of new facilities to support wireless services.[28]

Although some localities are modernizing their policies to account for the evolution of wireless technology, others are imposing increased barriers that either directly or indirectly prohibit access and create delays to deployment, despite the clear national interest in U.S. 5G leadership. The Commission should therefore move forward with its proposals to modernize local review of wireless infrastructure applications, clarify that certain actions prohibit or have the effect of prohibiting wireless service, and ensure that compensation for use of public rights of way is based on the actual, direct costs for managing those public spaces. The Commission should also update its shot clocks and broaden the deemed granted remedy to account for the smaller size of next-generation infrastructure deployments. Actions such as these to modernize and streamline the Commission's wireless infrastructure deployment processes are critical to enabling the deployment of 5G services that will support mobile health applications.

C. The Commission Should Ensure Sufficient Spectrum Is Available to Support Next Generation Networks.

[28] *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, Notice of Proposed Rulemaking and Notice of Inquiry, WT Docket No. 17-79, FCC 17-38 (2017); *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket No. 17-84, FCC 17-37 (2017).

The benefits of mobile health will come to fruition only if our nation fosters sound policies to promote investment in 5G systems, and that starts with making sufficient low-, mid-, and high-band spectrum resources available for licensed wireless use. Regarding high-band spectrum, the Commission should build upon the momentum it created last year as it unlocked the 28 GHz, 37 GHz, and 39 GHz bands for wireless broadband as part of the *Spectrum Frontiers* proceeding.[29] The Commission should act swiftly to revise rules for additional wireless broadband opportunities in millimeter wave bands and ensure that sufficient spectrum is made available for exclusive, licensed use.

The Commission's successful 600 MHz incentive auction delivered a significant amount of new low-band spectrum that the industry will use for the provision of innovative services to American consumers, including to support mobile health applications. The post-auction transition plan is essential to delivering on the promise of the 600 MHz band. The Commission should not revisit the sound decisions it made in crafting its well-reasoned and carefully balanced transition plan.[30] Further, it should manage the process in a transparent and efficient manner to ensure the spectrum is available for consumers as expeditiously as possible.

Finally, mid-band spectrum provides the coverage and capacity needed to help facilitate the transition to 5G. Today, the 3.5 GHz band is the only mid-band spectrum targeted for 5G use in the United States. CTIA therefore urges the Commission to evaluate other mid-band opportunities for licensed, wireless use. The Commission should also ensure that the policies in

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[29] *Use of Spectrum Bands above 24 GHz for Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016).

[30] CTIA Opposition to Petition for Reconsideration, GN Docket No. 12-268, MB Docket No. 16-306 (filed Apr. 26, 2017).

place for the 3.5 GHz band reflect a workable three-tier framework that provides the certainty needed for wireless providers to invest and deploy to the benefit of consumers.

D. The USF Rural Health Care Program Should Support Wireless Technologies Evenly.

5G networks will provide massive increases in speed and capacity, and will therefore enable wireless networks to become a competitive alternative for rural health care providers to meet their speed and bandwidth needs. 5G wireless networks may well be the best option for rural health care providers in the near future. To unleash the full potential of broadband-enabled health care solutions, the Commission should ensure that its Universal Service rules do not preclude wireless technologies from deployment under the Rural Health Care program.

IV. CONCLUSION.

CTIA commends the Commission for issuing this *Public Notice* and urges it to take the steps outlined herein to enable the full potential of wireless broadband-enabled health care solutions in the United States.

Respectfully submitted,

/s/_____

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