BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Order Instituting Rulemaking Regarding Broadband Infrastructure Deployment and to Support Service Providers in the State of California	Rulemaking 20-09-001

REPLY COMMENTS OF CTIA ON ASSIGNED COMMISSIONER'S RULING

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CTIA[1] respectfully submits these Reply Comments in response to the opening comments filed pursuant to the California Public Utilities Commission's ("Commission's") August 7, 2021 Assigned Commissioner's Ruling in this proceeding.

I. INTRODUCTION AND SUMMARY.

The middle-mile phase of this proceeding is intended, in part, to identify routes so that communities across California have the infrastructure connectivity necessary to enable last-mile networks to provide broadband services to unserved and underserved Californians. The wireless industry welcomes the opportunity to provide input into the planning and development of the middle-mile broadband network. Wireless last-mile services—including both fixed 5G home service and mobile broadband—are key solutions that can connect to middle-mile routes and deliver the broadband services that Californians value for both today and tomorrow.

To ensure that this proceeding properly sets parameters for a network that will most effectively deliver broadband that reaches California's unserved and underserved residents, CTIA takes the opportunity here to highlight wireless broadband solutions and respond to opening comments suggesting that last-mile networks attaching to the middle-mile network should be required to offer symmetrical speeds (equivalent upload and download speed requirements) or even meet 100 megabit per second ("Mbps") download /100 Mbps upload speed requirements. Nothing in Senate Bill 156, which initiated the creation of the statewide open-access middle mile network, suggests that such speeds should be required, and in fact, the highest upload speed mentioned

[1] CTIA—The Wireless Association® (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, and 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 tradeshow. CTIA was founded in 1984 and is based in Washington, D.C.

anywhere in SB 156 is 20 Mbps, in the context of projects eligible for grant awards from the Broadband Infrastructure Grant Account.[2] As described below, a requirement for last-mile networks of 100 Mbps download/100 Mbps upload speed, or even symmetrical speeds generally, would not serve Californians' interests. In these reply comments, CTIA provides data that show a 100 Mbps download/20 Mbps upload network speed requirement is a more appropriate standard that meets Californians' needs both today *and in the future,* and often can be deployed to unserved and underserved communities more quickly than fiber-to-the-home. These data illustrate the key role wireless broadband plays as a last-mile technology, contradicting commenters that promote fiber as the only adequate last-mile option.

CTIA urges the Commission to avoid going down any path that would disadvantage or unnecessarily limit technological options, including wireless broadband, that can fully meet Californians' needs for connectivity.

II. WIRELESS SERVES A CRITICAL ROLE IN DELIVERING BROADBAND AND CLOSING THE DIGITAL DIVIDE IN CALIFORNIA.

Americans' reliance on wireless service cannot be overstated, and as California develops a statewide program to close the digital divide, the Commission should ensure that wireless broadband networks can be part of the solution.

Americans continue to use wireless broadband networks to consume data at tremendous rates. In 2020, wireless data traffic had another record year, topping 42 trillion megabytes—a 207% increase since 2016. From 2010 to 2020, Americans have driven an increase of 108 times in data traffic on mobile broadband networks.[3] In 2019, the number of wireless-enabled tablets and laptops

[2] *See* Sen. Bill 156 (Cal. 2021) at sec. 7, amending Section 281 of the California Public Utilities Code ("SB 156").

[3] *See* CTIA, *2021 Annual Survey Highlights*, at 8 (July 27, 2021), ("2021 CTIA Annual Survey Highlights"), https://api.ctia.org/wp-content/uploads/2021/07/2021-Annual-Survey-Highlights.pdf (last accessed Sept. 21, 2021).

was up 24% over the previous year, to 52.6 million.[4] And in 2020, overall wireless connections grew to 468.9 million (a growth of 272 percent since 2013).[5] To that end, data-only devices (including medical sensors, hotspots such as those used by schools to enable distance learning during the pandemic, smartwatches, and other Internet of Things devices) now represent 41.3 percent of all estimated devices.[6]

Americans, especially low-income Americans, are increasingly opting for wireless solutions for their communications needs. According to the National Center for Health Statistics, in the last six months of 2020, 65.8% of adults and 75.5% of children lived in wireless-only households for phone service.[7] And studies show that many low-income Americans prefer mobile broadband as their single broadband solution, as demonstrated by the fact that wireless is currently the only broadband connection for over a quarter of low-income households.[8]

Wireless broadband has kept Americans connected during the COVID-19 pandemic.[9] In the span of just one week in March 2020, hundreds of millions of Americans transitioned abruptly from their normal lives to staying at home as much as possible. COVID-19 presented the ultimate stress test for mobile connectivity, and America's wireless networks aced that test. During that time, mobile usage increased around 40%.[10] And wireless networks not only handled this unprecedented

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[4] *See id.*

[5] *See* 2021 CTIA Annual Survey Highlights at 10.

[6] *See id*.

[7] *See* National Center for Health Statistics, *Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July-December 2020*, at 3 (Aug. 2021), https://www.cdc.gov/nchs/data/-nhis/earlyrelease/wireless202108-508.pdf (last accessed Sept. 21, 2021).

[8] *See* Meredith Attwell Baker, *The Wireless Industry's Key Role in Closing the Digital Divide*, CTIA Blog (May 7, 2021), https://www.ctia.org/news/the-wireless-industrys-key-role-in-closing-the-digital-divide#top (last accessed Sept. 21, 2021).

[9] *See* CTIA, *The Wireless Industry Responds to COVID-19*, https://www.ctia.org/homepage/covid-19 (last accessed Sept. 21, 2021).

[10] *See id.*

shift and surge in traffic adroitly, but they also continued to improve their performance, with speeds actually *increasing* during the pandemic. According to Ookla's Speedtest data, despite the onset of the pandemic, median wireless download speeds over mobile in the U.S. increased by 56.9% between January and December of 2020.[11]

In addition to mobile broadband offerings, wireless providers are rolling out latest-generation fixed wireless broadband options, also known as 5G home service, that meet—and surpass—Americans' broadband needs. Most 5G home services already offer speeds capable of 100 Mbps download and 20 Mbps upload, or even greater.[12] Analysts have recently noted that "5G home broadband … should offer a compelling solution in more rural markets … in particular."[13]

CTIA urges the Commission to embrace wireless solutions and take a technologically inclusive approach to closing the digital divide that recognizes that both wired *and* wireless solutions are needed to connect 100 percent of Californians.

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[11] *See* Isla McKetta, *2020 Recap: How the Internet Held Up During a Global Pandemic*, Speedtest (Jan. 12, 2021), https://www.speedtest.net/insights/blog/2020-how-the-internet-held-up-coronavirus/.

[12] *See, e.g.,* Verizon, Verizon 5G Home Internet FAQs | Ultra-fast home Internet, Features, https://www.verizon.com/support/5g-home-faqs/ (Verizon 5G Home Internet customers can expect typical speeds of 300/50 Mbps, with maximum download speeds up to 1 Gbps) (last visited Sept. 21, 2021); Press Release, UScellular, *UScellular, Qualcomm, Ericsson, and Inseego Address Digital Divide with Multi-Gigabit Extended-Range 5G Milestone Over mmWave* (May 6, 2021), https://www.uscellular.com/get-to-know-us/our-company/press-room/2021/UScellular-Qualcomm-Ericsson-Inseego-Address-Digital-Divide-with-Multi-Gigabit-Extended-Range-5G-Milestone-over-mmWave (US Cellular reports achieving approximately 730/38 Mbps sustained average speeds of 1.75 kilometers with no line of sight); T-Mobile, Home Internet, Frequently Asked Questions, https://www.t-mobile.com/isp/faq (all T-Mobile Home Internet customers will see average download speeds of 25 Mbps or more, with some averaging in excess of 100 Mbps) (all last accessed Sept. 21, 2021). CTIA notes that the Commission recently submitted comments to the Federal Communications Commission ("FCC") questioning the accuracy of speed data for mobile wireless services. *See* Comments of the California Public Utilities Commission, WC Docket Nos. 19-195 & 11-10 (filed Sept. 10, 2021) (filed by Kimberly J. Lippi). CTIA does not have access to the data or methodologies underlying those comments, but in any event, they do not relate to the fixed wireless broadband services we are generally discussing here. And the FCC's ongoing Broadband Data Collection program will apply standardized speed reporting criteria that may be applied to any speed thresholds ultimately adopted.

[13] *See* CTIA.org, "5G for Home Broadband – The Next 5G Breakthrough" (May 27, 2021), https://api.ctia.org/wp-content/uploads/2021/05/5G-Home-One-pager-x.pdf (last accessed Sept. 21, 2021).

III. 100 MBPS/20 MBPS BROADBAND SPEED MEETS OR EXCEEDS CONSUMERS' NEEDS, MAKING 100MBPS UPLOAD SPEED REQUIREMENTS UNNECESSARILY LIMITING.

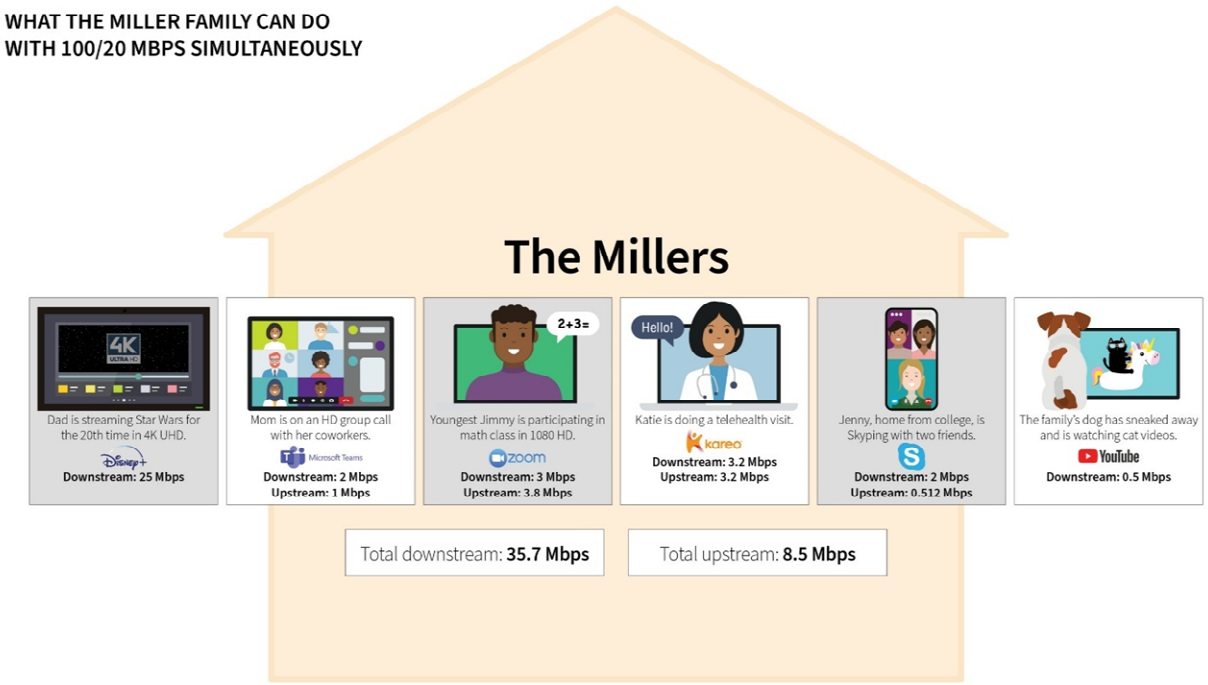
Some commenters, directly or indirectly, suggest that California should require that any last-mile network that attaches to middle-mile routes provide symmetrical upload/download speeds, preferably 100 Mbps apiece.[14] But a 100 Mbps upload requirement overstates consumer needs, and any insistence on such upload speed comes at a high cost by potentially excluding wireless services that can provide the speed and capacity that consumers need, and can often be more quickly deployed and at a lower price than other technologies. Consumers need broadband that meets the demands of multi-person households today and in the future, and as shown below, 100/20 Mbps service meets or exceeds those needs, particularly as to upload requirements.

CTIA's information shows that 100/20 Mbps speed is actually more than enough for the vast majority of households—and will be in the future as well. Consider the graphic below, "What the Miller Family Can Do With 100/20 Mbps Simultaneously," which illustrates that even a family of five, with each member simultaneously engaged in significant broadband usage, does not come close to needing 100/20 Mbps speeds. The Miller family usage consists of the following:

- The father is streaming a movie in 4K ultra high definition;
- The mother is on a Microsoft Teams call with her coworkers;
- One child is having a telehealth visit with her doctor on Kareo Telehealth's platform;
- Another child is using Skype with two friends;
- The youngest child is using Zoom to participate in his math class; and
- Another YouTube video is being streamed in the background.

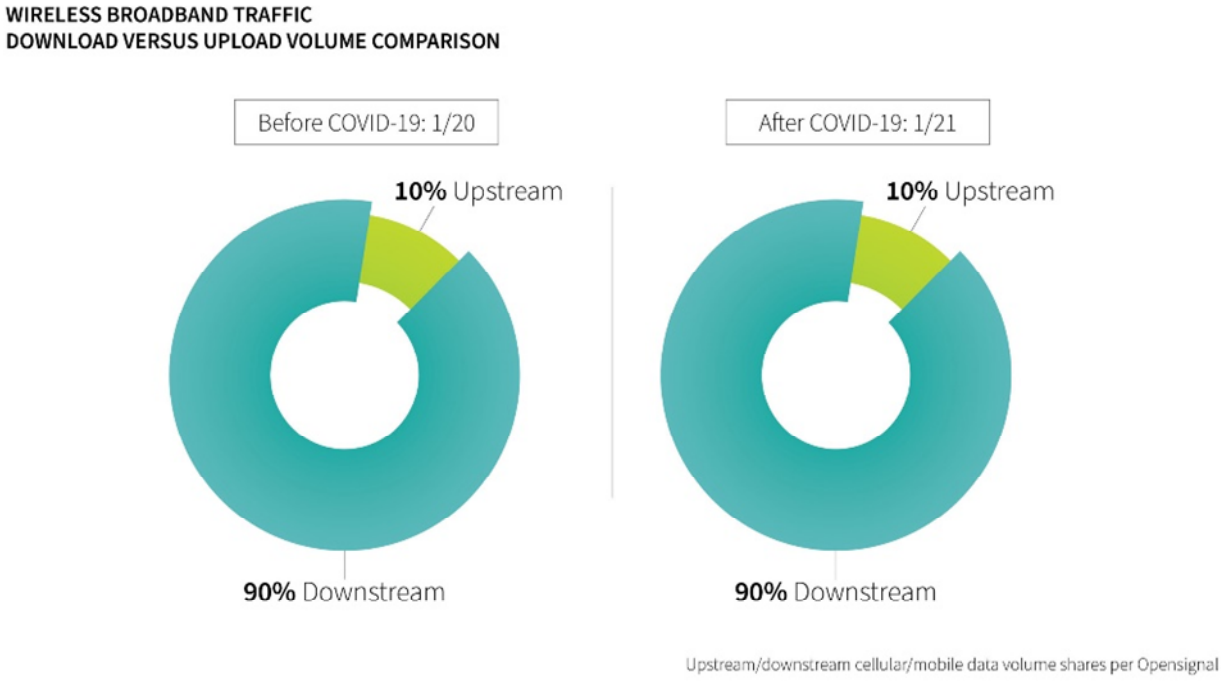
[14] *See, e.g.*, Comments of Next Century Cities, Rulemaking 20-09-001, at 4-5 (filed Sept. 2, 2021) (asserting that at least 100 Mbps upload speeds are critical); Comments of Frontier California Inc. et al., Rulemaking 20-09-001, at 5 (filed Sept. 3, 2021) (encouraging the Commission to incorporate the concept of symmetrical speeds into its broadband policies); Comments of the City and County of San Francisco, Rulemaking 20-09-001, at 1-2 (filed Sept. 3, 2021) (urging focus on upload speeds).

Yet the total bandwidth needed to support all this simultaneous usage, according to the relevant apps themselves, is only *35.7 Mbps downstream and 8.5 Mbps upstream*.



There seems to be a common misconception among commenters that upload speed is as crucial for broadband access as is download speed. While some upload speed is necessary, overall, it is significantly less important than download speed for the vast majority of consumers—even in a post-pandemic world—and especially if the Commission's goal is universal service. Over 90 percent of wireless broadband traffic today is downstream. This has been the case for years and has remained true *during the pandemic*.[15]

[15] *See* Brad Gillen, *5G—The Missing Ingredient to Closing the Digital Divide*, CTIA Blog (May 27. 2021), https://www.ctia.org/news/5g-the-missing-ingredient-to-closing-the-digital-divide (last accessed Sept. 21, 2021).



In fact, CTIA members report that when they provide customers with symmetrical speeds, the amounts of data consumed and bandwidth utilized heavily tilt toward download. So a broadband service capable of 100/20 Mbps (more than double what is required in the Miller example) is more than sufficient to ensure that current and future usage can be accommodated. Accommodating such service would allow for not just fiber but also wireless, cable, and other solutions to help close the digital divide.

A 2021 article from CNET explaining the importance of upload speeds puts these requirements in perspective. While saying that "upload speeds are increasingly important as we continue to adapt to what may be the new normal," the article poses the question "What's a good upload speed?" and answers:

> When using a wired connection on a single device, upload speeds of *5Mbps or higher* are generally considered "good" as they will support most activities that require uploading data, including video calls in HD quality and gaming online. If you primarily use Wi-Fi or foresee

> using upload bandwidth on multiple devices at once, aim for upload speeds of *10 Mbps or higher*.[16]

Videoconferencing is sometimes cited as a reason why consumers might need greater upload speeds, but Zoom recommends nothing higher than a 3.8 Mbps upload speed recommendation even for group video calling,[17] and Skype requires only a minimum of 128 Kbps upload for video calling (with 4 Mbps minimum, and 8 Mbps recommended by Skype for group videos with seven or more participants).[18]

At the federal level, neither the FCC nor the National Telecommunications and Information Administration ("NTIA") have required speed capabilities above 100/20 Mbps in any of their broadband support programs. Under the Biden Administration's NTIA Broadband Infrastructure Program, authorized by Congress in December 2020, extra "points" are given for the ability to provide 100/20 Mbps service, but 25/3 Mbps service is eligible for funding.[19] The FCC's Rural Digital Opportunity Fund auction allowed providers to bid on four different performance tiers with varying speed and usage allowances, including a 25/3 Mbps tier and a 50/5 Mbps tier.[20] The FCC 5G Fund Order requires only median download and upload speeds of at least 35/3 Mbps.[21] And the

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[16] David Anders, *It's time we talk about your upload speeds*, CNET (Mar. 26, 2021) (emphasis added), https://www.cnet.com/home/internet/upload-speeds-explained/ (last accessed Sept. 21, 2021).

[17] *See* Zoom, Help Center, System requirements for Windows, macOS, and Linux, https://support.zoom.us/-hc/en-us/articles/201362023-System-requirements-for-Windows-macOS-and-Linux (last accessed Sept. 21, 2021).

[18] *See* Skype, Help, How much bandwidth does Skype need?, https://support.skype.com/en/faq/FA1417/how-much-bandwidth-does-skype-need (last accessed Sept. 21, 2021).

[19] *See* NTIA, *Broadband Infrastructure Program Notice of Funding Opportunity*, at 7 (May 19, 2021), https://www.grants.gov/web/grants/view-opportunity.html?oppId=333684 (last accessed Sept. 21, 2021) (defining "qualifying broadband service").

[20] *See* FCC, Economics and Analytics, Auctions, Auction 904: Rural Digital Opportunity Fund, Fact Sheet, https://www.fcc.gov/-auction/904/factsheet#technology (last accessed Sept. 21, 2021).

[21] *Establishing a 5G Fund for Rural America*, Report and Order, 35 FCC Rcd 12174, 12183 ¶ 20 (2020).

Rural Utilities Service Reconnect Program, which funds construction of broadband networks in rural areas, requires applicants to propose speeds of only 25/3 Mbps.[22]

Nor does Senate Bill 156 impose anything approaching a 100 Mbps upload speed requirement for use of the middle-mile broadband network it calls on the Commission to implement. Rather, "[i]n identifying priority statewide open-access middle-mile broadband network locations … the commission shall prioritize locations that enable last-mile connections to residences unserved by 25 mbps downstream and *3 mbps upstream*."[23]

In sum, 100/20 Mbps services are fully capable of meeting consumers' needs. This has been confirmed by app providers' own information and by independent sources. Nothing in SB 156 imposes higher speeds than this, nor do any federal programs. Any 100 Mbps upload requirements would therefore unnecessarily limit the availability of options that would meet consumers' needs, and the State's goals for universal service.

IV. A FOCUS ON 100 MBPS UPLOAD SPEED REQUIREMENTS ACTUALLY UNDERMINES IMPORTANT POLICY GOALS BY DISADVANTAGING A WIRELESS OPTION THAT COULD BETTER SERVE THE GOAL OF UNIVERSAL BROADBAND.

Any preference for 100 Mbps upload capability, which amounts to a preference for fiber, does not account for the advantages that other technologies—including wireless—bring to the table. Fiber is certainly important, and plays a key backhaul role in all wired and wireless broadband services that the middle-mile program should support. But fiber is not the only last-mile option, nor always the best option, to meet consumers' or business' needs. Wireless 5G service offers speeds that will satisfy the needs of American households and businesses today and well into the future, and can be deployed *more quickly and at less expense* than fiber. Fiber requires construction of a

[22] *See* ReConnect Pilot Program, 84 Fed. Reg. 67913, 67916 (Dec. 12, 2019).

[23] Cal. Gov't Code 11549.54 (d), as amended by Senate Bill 156 (2021) (emphasis added).

direct path to every one of the households to be served, making it inherently difficult, expensive, and time-consuming to deploy. With fixed wireless, by contrast, the upgrade or construction of a single cell site can serve large numbers of customers, miles away from the tower. Given the very different scale of construction required, building out new fixed wireless infrastructure, such as new radios or cell towers, is generally much faster than building out fiber once required approvals are granted. And once wireless broadband is available, it is quick and convenient for consumers to install and begin using the service.

Further, wireless speeds are constantly improving (by 50% last year, for instance, and more than 50 times in the last decade).[24] 5G wireless is bringing still more dramatic increases in speed, sometimes achieving maximum speeds of up to 1 Gbps.[25] And wireless networks can be readily updated. Today's wireless networks are being designed to rely more heavily on software, which is easier to update than hardware.

Focusing on 100 Mbps upload requirements to the exclusion of technologies not currently offering such speeds ignores the fact that areas needing broadband have different geography, topography, demographics, existing infrastructure, and other factors likely to make some technologies better suited to their circumstances even without offering such speeds. And notably, wireless broadband solutions offer additional value by enabling applications like IoT, connected cars, and smart agriculture that wired solutions such as fiber cannot deliver.

Given that independent sources describe 5 Mbps upload speeds as "good" for demanding applications such as HD video and gaming, the Commission should consider whether requiring upload speeds *twenty times* in excess of that is necessary for meeting its universal service goals – or

[24] *See* Gillen, *supra* note 15.

[25] *See* Verizon, *supra* note 12.

if such requirements would merely disqualify non-fiber technologies to the detriment of California's unserved and underserved consumers.

V. CONCLUSION.

CTIA respectfully submits these reply comments to highlight the role of wireless services in meeting Californians' broadband needs, so that the value of wireless last-mile services can be fully considered as the Commission plans for and develops the middle-mile broadband network. CTIA urges the Commission not to take any steps that would unnecessarily limit last-mile options to the detriment of California consumers.

Respectfully submitted September 21, 2021 at Sacramento, California.

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