Documents for the record – "Connecting Every American: The Future of Rural Broadband Funding"

Majority

1. A September 21, 2023, letter from Asian Americans Advancing Justice to Communications and Technology subcommittee leadership on the Connecting Every American: The Future of Rural Broadband Funding hearing.
2. A September 21, 2023, letter from CCA to Communications and Technology subcommittee leadership on the Connecting Every American: The Future of Rural Broadband Funding hearing.
3. A September 21, 2023, letter from Incompass to Communications and Technology subcommittee leadership on the Connecting Every American: The Future of Rural Broadband Funding hearing.

Minority

4. A July 26, 2023 Letter from CCD regarding ACP.
5. A September 21, 2023, letter from the ACLU to Committee leadership on ACP.
6. Common Sense and BCG Report
7. Dallas News OpEd by Rep. Veasey and FCC Chain Rosenworcel re ACP
8. Fiber Broadband Association Letter for the Record September 21, 2023, The Future of Rural Broadband
9. James Madison Institute re ACP in Florida
10. Leadership Conference on Civil and Human Rights Letter re ACP
11. Members of Congress Letter re ACP
12. NACo Letter re FY24 Appropriations
13. Natl Governors Association Letter re FY24 Approps
14. Natl Urban League Letter re ACP
15. NCSL_CFI Resolution re ACP
16. NRECA Statement re Rural Broadband
17. Rural Broadband Caucus Letter re ACP
18. Rural Organizations Letter re ACP
19. Senate Republican Letter to President Biden RE ACP
20. 20. Wall Street Journal article by Liz Young

ASIAN AMERICANS ADVANCING JUSTICE AAJC

September 21, 2023

The Honorable Cathy McMorris Rodgers
Chair, House Energy and Commerce
2123 Rayburn House Office Building
Washington, D.C. 20-515

The Honorable Bob Latta
Subcommittee Chair, House Energy and Commerce Subcommittee on Communications and Technology
2123 Rayburn House Office Building
Washington, D.C. 20-515

RE: Subcommittee on Communications and Technology Hearing Titled: "Connecting Every American: The Future of Rural Broadband Funding."

Dear Chairman McMorris, Ranking Member Latta, and Members of the Committee,

On behalf of Asian Americans Advancing Justice – AAJC, we submit this letter in connection with the September 21st hearing, "Connecting Every American: The Future of Rural Broadband Funding."

Asian Americans Advancing Justice – AAJC (Advancing Justice – AAJC) is dedicated to furthering civil and human rights for Asian Americans and promoting fair and equitable society for all. We provide the growing Asian American community with multilingual resources, culturally appropriate community education, and public policy and civil rights advocacy. In the communication field, Advancing Justice – AAJC works to promote access to critical technology, services, and media for our consumers.

Asian Americans, Native Hawiians, and Pacific Islanders and the impact of the Digital Divide

According to the Infrastructure, Investment, and Jobs Act (IIJA), "access to affordable, high-speed broadband is essential to full participation in modern life in the United States" and "the persistent digital divide in the U.S is a barrier to the economic competitiveness…and equitable distribution of essential public services, including health care and education."[1] Recognizing that economic competitiveness and access to public services are critical to bridging the digital divide, it is imperative that Asian Americans, Native Hawiians, and Pacific Islanders (AANHPI) are actively included in broadband studies and broadband deployment programs.

While many national surveys suggest some Asian American communities are well-connected to digital tools, these studies often fail to include representative samples of the community. Much of the data masks disparities between ethnic groups and often completely excludes entire communities. When other factors such as educational achievement and household income are considered and weighted, the digital divide in AANHPI communities becomes more apparent:

[1] https://www.congress.gov/bill/117th-congress/house-bill/3684/text

- According to data from 2021, 3.6% of Japanese Americans have less than a high school diploma, compared with 46.8% of Burmese Americans.[2]
- The median household income of Indian Americans is $1,575,893 that of Samoan Americans and Sri Lankan Americans is $55,278 and $28,959, respectively. [3]
- In 2016, 26% of Asian Americans and 37% of Pacific Islanders were enrolled in Medicaid or some other public insurance program.[4]
- In 2021, 9.4% of the AAPI community was enrolled in SNAP benefits. However, the divide between certain ethnic groups was stark: 31.4% of Taiwanese Americans were enrolled in SNAP, compared with 20.5% of Native Hawaiians, and 33.6% of Burmese Americans.[5]

Combining these digital divide indicators with a map of Asian American religious institutions[6] confirms that there are AANHPIs in rural, urban, and suburban communities across the United States that continue to fall behind in the digital divide. These communities had difficulty connecting long before the pandemic, and the need for better access to broadband for education, health, and economic opportunities will continue to grow post-pandemic unless efforts are made to address access and adoption barriers.

Parts of rural Hawaii that have long experienced the digital divide[7] and a lack of broadband access saw the direct impact of distanced learning on the education of students during the pandemic. With schools closed, administrators had to act quickly to ensure students were ablet o continue to participate in class, but not every district or state was successful. As students left their schools and attempted to get online from home, their need for quality broadband access grew exponentially, but the infrastructure and services provided remained insufficient.

Even when families have access to devices at home there are barriers to broadband infrastructure which can impact a student's ability to get online. One school administrator in Wailuku reported that while the school distributed Chromebooks to students, 29% of students were unable to get online due to limited broadband bandwidth at home.[8] Unreliable internet prevents students from actively participating in class, leading to lower engagement and attendance.[9] In some cases students were forced to seek digital access outside of their home,[10] further putting their families at risk during a public health crisis.

Communities of color are disproportionately negatively impacted by a lack of or insufficient access to broadband, but more research is needed to understand the concerns and the impact of the digital divide on AANHPI in rural America. It's imperative that congress hear from trusted community leaders and

---

[2] https://data.census.gov/table?t=-04:-05:012:031
[3] https://data.census.gov/table?t=-04:-05:012:031
[4] https://www.advancingjustice-aajc.org/sites/default/files/2020-02/Lifeline%20Backgrounder.pdf
[5] https://data.census.gov/table?t=-04:-05:012:031
[6] https://earth.google.com/web/@35.56400929,-90.29597583,-427.80811719a,8108012.73452282d,30.00021954y,0h,0t,0r/data=MikKJwolCiExaU10OEd4MUlobVg3YnhXT25QV2Jwb0hMVzJ1bFRUNXcgAjoDCgEw?authuser=0
[7] https://www.salon.com/2019/11/15/how-native-hawaiians-are-taking-internet-access-into-their-own-hands_partner/
[8] https://www.civilbeat.org/2020/08/doe-struggles-to-get-students-the-technology-they-need-for-online-learning/
[9] https://www.hawaiitribune-herald.com/2020/06/28/hawaii-news/survey-many-e-hawaii-students-were-mia-during-distance-learning/
[10] https://www.hawaiibusiness.com/todays-lesson-no-wi-fi-no-learning/

consider how funds can be allocated to address racial barriers such as infrastructure issues that exist because of historical redlining and other profit-drive decisions.

Language Accessibility as a Barrier to Access and Adoption

Another dimension of getting AANHPI communities connected is cultivating digital literacy in a population where approximately 34% of individuals have Limited English Proficiency (LEP). Disaggregated data shows that LEP rates among Asian Americans and Pacific Islanders vary significantly:

- For example, 78% of Bhutanese Americans are LEP while 58% of Thai Americans have LEP as well.[11]
- The LEP rate among Pacific Islanders is 8.5%, but these numbers also vary among different ethnic groups, from 41% of Marshallese Americans to 2% of Native Hawaiians.[12]

Language access is critical to ensuring that Asian Americans, Pacific Islanders, and Native Hawaiians, once connected to broadband can get the most out of their experiences online. This is especially important when it comes to accessing government services and relief programs, yet many existing programs such as ACP and Lifeline only have applications in English and Spanish. Without in-language applications and outreach materials, community members with LEP have a harder time accessing government services and may be prohibited from enrolling in a program they are eligible for unless they have additional support.

Community groups have expressed concern that many programs designed to bridge the digital divide fail to provide accessible translations, making it challenging for immigrant communities to participate. Even in rare instances where translated informational materials are provided, they may not be corrected for cultural context or have quality issues making them difficult to decipher. Additionally, live support lines may not support AANHPI languages translators. Together, this can make it difficult to sign up and pay for broadband, but it also makes it nearly impossible for individuals to troubleshoot technical issues.

Language access and accessibility is critical to ensuring that Asian Americans and Pacific Islanders, once connected to broadband, can get the most out of their experiences online. This is especially important when it comes to accessing government services and relief programs. Only native-level speakers with deep knowledge of the community, cultural context, and familiarity with the vernacular should be utilized for translations. Community groups and leaders should be consulted before translations are published to ensure they are accessible and understandable to the target audience. Furthermore, some languages do not have written alphabets, posing unique challenges for groups like Rohingya refugees who do not have a universally accepted script and require additional in-language audiovisual support. Translations should also include PSAs on local ethnic broadcast stations and resources that community organizations can distribute directly to clients.

The Importance of Stakeholder Input and Community Engagement in Federal Broadband Efforts

[11] https://aapidata.com/infographic-aa-limited-english-proficiency-2015/

[12] https://www.advancingjustice-aajc.org/report/community-contrasts-aanhpi-south#:%7E:text=A%20Community%20of%20Contrasts%3A%20Asian%20Americans%2C%20Native%20Hawaiians, with%20concrete%20and%20up-to-date%20data%20and%20policy%20recommendations.

Solutions must be localized and tailored to the precise populations they seek to target. Even amongst AANHPI and immigrant populations, cultures and lifestyles vary significantly. Broadband deployment funding should be allocated to conducting community-based research to better understand the needs of real people and update the needs assessments regularly as populations and situations change. Online training and digital literacy programs need to be facilitated with community groups to make sure they are customized to be most useful for communities. Local organizations are already trusted by communities, have the necessary language skills, and can more effectively promote messages and important information. Projects should not be approved without applicants thoroughly demonstrating that they have consulted and incorporated the input and expertise of local leaders and communities.

Trusted community partners provide local groups with necessary information about federal programs and policies and offer the infrastructure to launch programs with the necessary cultural competency, language skills, and trust. Working directly with national organizations and trusted community partners in urban in rural communities can provide states with diverse local stakeholders and begin the process of relationship building and information sharing that can better inform projects to better serve marginalized and disadvantaged groups.

Federal Communications Commission Broadband Maps

The Federal Communications Commission's broadband maps are a crucial step bridging the digital divide. To get a more complete picture of households without broadband access across the U.S., the FCC should combine their broadband maps with the U.S Census Bureau's American Community Survey (ACS) data and state broadband maps. Together these maps will help states further understand who does and does not have broadband access and households that have not adopted broadband even where access is available. Furthermore, the FCC should continue to hear challenges to the maps, which can help identify areas where there are discrepancies in federal and state data.

****

Asian Americans Advancing Justice – AAJC thanks you for the work that you have already done to make high-speed reliable internet affordable and accessible to AANHPI communities across the country and for your attention and examination of this critical issue.

For more information, please contact Emily Chi, Senior Director of Telecommunications, Technology, and Media at Asian Americans Advancing Justice – AAJC at echi@advancingjustice-aajc.org.

Sincerely,
Asian Americans Advancing Justice - AAJC

rural.
regional.
nationwide.®

September 21, 2023

The Honorable Bob Latta
Chairman
Subcommittee on Communications & Technology
Committee on Energy & Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Doris Matsui
Ranking Member
Subcommittee on Communications & Technology
Committee on Energy & Commerce
U.S. House of Representatives
2322A Rayburn House Office Building
Washington, D.C. 20515

The Honorable Buddy Carter
Vice Chairman
Subcommittee on Communications & Technology
Committee on Energy & Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Latta, Ranking Member Matsui, and Vice Chair Carter:

Competitive Carriers Association (CCA)[1] respectfully submits this Letter for the Record for today's hearing titled "Connecting Every American: The Future of Rural Broadband Funding." CCA's members are keenly aware of the challenges facing rural America regarding connectivity. Investment in - and commitment to - rural, unserved, and underserved communities is needed to achieve ubiquitous and reliable connectivity for all Americans. True ubiquitous connectivity across must include both fixed and mobile services, which carriers can only deliver with wireless technology. The House Energy and Commerce Committee (Committee) and the Subcommittee on Communications and Technology (Subcommittee) have long championed policies focused on connecting all Americans and should continue to prioritize these efforts by investing in, and ensuring, robust support to preserve and to expand wireless connectivity.

The Subcommittee has pursued important federal policies to support wireless broadband deployment in rural communities. CCA commends the bipartisan efforts to reauthorize Federal Communications Commission (FCC) spectrum auction authority, to fully fund the Secure and

[1] CCA is the leading trade association for competitive wireless carriers and represents carrier members ranging from small, rural providers to regional and nationwide providers serving millions of customers, as well as vendors and suppliers that provide products and services throughout the wireless communications ecosystem. As you consider the future of rural broadband funding, we hope you will consider the perspective of our carriers that often serve rural communities, often with fewer than 5,000 customers.

Trusted Communications Networks Reimbursement Program ("Rip and Replace"), and to rationalize permitting and siting rules to support broadband deployment. These efforts are critical building blocks for the foundations of wireless networks. CCA encourages a similar bipartisan effort as the Subcommittee examines the future of federal programs supporting broadband networks and urges policymakers to note that strategic and significant investment in wireless technologies, building on historical investments recently made to truly close the digital divide, utilizing all technologies available.

Wireless and the Future of the Universal Service Fund

As Congress reviews federal programs that support broadband buildout and access, like the Universal Service Fund (USF), it should look to build on previous USF investment and other similar federal programs that have worked to expand wireless coverage. Congress should preserve these existing successes and ensure that every American has access to the robust mobile wireless connectivity that is essential in the 21st Century. USF support for wireless is crucial to meeting consumer needs and should be a priority for the future.

Historically, USF has been effective in and essential to preserving and expanding connectivity in rural and underserved communities, with many CCA members that serve rural America relying on USF support to provide critical connectivity. Providing service to rural areas is generally more expensive than in urban or suburban areas because there are fewer potential subscribers and greater geographic challenges. Despite these challenges, many CCA members are USF success stories. Members have been able to deploy and maintain service in areas that would otherwise go unserved, bringing connectivity to consumers where they would otherwise lack access. Future USF decisions should sustain these investments to maintain the connectivity needed for public safety, telemedicine, education, economic development, and overall benefits from the latest technologies. Importantly, this connectivity can provide a critical lifeline during emergency situations, not only for the retail subscribers served by a rural carrier, but for all Americans as they roam onto networks that would not be in place without USF support.

CCA urges Congress to bolster USF, as well as the FCC's ability to administer the USF. Current litigation at the Circuit Court level challenges the fundamental constitutionality of the USF. CCA believes that recent attempts to challenge the constitutionality of the USF in appellate court are not only incorrect, but they are also harmful to the efficacy of this critical program. It is imperative for the courts to affirm USF and Congress be prepared to act and protect the program if necessary. A sufficient and predictable USF, as Congress mandated, is key to ensuring that all Americans have connectivity regardless of income levels or where they live, work, or travel.

Mobility Support and USF

While recognizing numerous successes, USF has not funded mobility with sufficient and predictable support as required by statute. Except for Mobility Fund Phase I, new opportunities for funding for mobility have been scarce. Rural America, beyond just major transportation

routes, should not be excluded from the opportunity to meaningfully participate in a world increasingly powered by affordable access to reliable mobile broadband. Providing adequate support to preserve existing service in rural areas should remain a priority, as well as incentivizing expansion to deploy the latest mobile broadband in places that remain unserved and underserved. If the lack of wireless coverage is not addressed and support is not provided to preserve services available today, a new "5G gap" will leave rural America behind without the mobile broadband infrastructure needed to support indispensable tools of daily life.

Modernizing Federal Programs to Support Rural Wireless Connectivity

In 2020, the FCC acted to create a 5G Fund for Rural America, replacing the previously proposed Mobility Fund Phase II. CCA supports modernizing the 5G Fund, as it would allow the FCC to advance its universal service objectives by supporting the deployment of 5G mobile networks alongside fixed networks supported by the Infrastructure Investment and Jobs Act (IIJA). Indeed, the Broadband, Equity, Access, and Deployment (BEAD) Program, as created by the IIJA, will need both fiber *and* wireless connectivity to succeed. To compliment the BEAD program, a modernized 5G Fund should be sufficient and predictable, and without a lapse in funding between legacy support and the 5G Fund. Transitioning away from legacy funding abruptly would undermine those networks and threaten not only the development of 5G services, but also the continued offering of existing services on which rural Americans depend for connectivity. Further, accurate and reliable data must be used to determine support. The FCC has a unique role to play in advancing mobile connectivity through USF, and Congress should ensure that it does so.

Similarly, within USF, CCA encourages efforts to modernize and expand programs like E-Rate, the Rural Health Care Program, and Lifeline. E-Rate should be expanded to include funding for education outside of the classroom. Any reforms to E-Rate should be technology neutral for program applications. Additionally, as the COVID-19 pandemic has made it clear that telehealth applications are critical for healthcare and mobile broadband is required for access to distance medicine and telehealth, USF's Rural Health Care program should be updated to support more wireless networks for telehealth.

Additionally, the FCC's Lifeline program and the Affordable Connectivity Program (ACP) administered by the FCC are key to ensuring connectivity for low-income consumers in many CCA member service areas. The ACP has over 20 million low-income families in every State and across urban, suburban, and rural communities enrolled to help purchase broadband services.[2] This program ensures that these Americans can contact public safety services, continue their education, apply for jobs, and access health information. Unlike Lifeline, ACP has been funded through Congressional appropriations, and without additional action from Congress, the program is projected to run out of funding next year. In that event, CCA members must determine how they can continue serving these Americans – or not – without ACP funding. CCA

[2] *ACP Dashboard*, https://acpdashboard.com/ (last visited Sept. 18, 2023).

encourages Congress to pursue options to provide additional funding as an immediate solution to ACP funding needs.

CCA appreciates your attention to issues affecting federal funding for rural broadband. Funding sources, such as USF, have been vital to preserving and expanding wireless connectivity in rural and high-cost areas and by providing support for low income, rural health care, and programs for schools and libraries. CCA members rely on this support to provide and maintain wireless broadband service to millions across the United States in some of the hardest to reach areas. CCA and our members look forward to working with you and the entire Committee to advance wireless broadband connectivity for all Americans.

Sincerely,

Tim Donovan
President and CEO
Competitive Carriers Association

cc:
The Honorable Cathy McMorris Rodgers, Chair, House Committee on Energy & Commerce
The Honorable Frank Pallone, Jr., Ranking Member, House Committee on Energy & Commerce

INCOMPAS
THE FUTURE OF COMPETITION

1100 G STREET, NW, SUITE 800
WASHINGTON, DC 20005

September 21, 2023

Dear Chairman Rodgers, Ranking Member Pallone, Chairman Latta, and Ranking Member Matsui:

We would like to thank you for holding this important hearing today to discuss the vital broadband programs that are essential to bridging the digital divide, specifically the Universal Service Fund (USF).

INCOMPAS—the internet and competitive networks association—offers a unique perspective to the USF as we represent the competitive broadband and communications service providers that are serving residences, businesses, and anchor institutions, as well as over-the-top companies that are providing services and content over these networks, such as voice, social media, streaming, and cloud. Our members are delivering more choice and more affordable services to customers across the nation. Almost all our communications service provider members participate in the USF through the E-Rate program, and some participate in the Rural Health Care program. Moreover, many of our providers that offer residential broadband participate in the Affordable Connectivity Program (ACP). Our members understand the importance of fast, affordable, future-proof connectivity and the value that the USF brings to connectivity. They also contribute to the USF based on the telecom services they provide and purchase, including our over-the-top companies that purchase telecom services such as transit.

The USF is one of our nation's most critical connectivity programs. Millions of families, community anchor institutions, and small businesses rely on it for affordable voice and broadband services. Moreover, the recent influx of tens of billions of congressionally-appropriated dollars to help fund broadband deployment and affordability also are critical to addressing the digital divide in our nation. Nevertheless, additional funding is needed to secure the ACP, and we urge congressional action before the end of 2023.[1] According to FCC Chairwoman Rosenworcel, the ACP is expected to deplete its funds as early as April 2024,[2] and she has warned Congress that the FCC will "have to make hard decisions about what kind of choices will need to be made to wind this program down if Congress does not provide an additional appropriation."[3] While Congress may decide to put the ACP into the USF in the long-

---

[1] Angie Kronenberg, *The Affordable Connectivity Program: Additional Funding from Congress is Needed Before Year End 2023*, (Aug. 1, 2023).

[2] Statement of Jessica Rosenworcel, Chairwoman of Federal Communications Commission, before the Subcommittee on Financial Services and General Government Committee on Appropriations in the U.S. Senate, Sept., 2023, available at DOC-397034A1.pdf (fcc.gov).

[3] Nicole Ferraro, *Rosenworcel warns Congress that not funding ACP will 'cut families off,'* Light Reading, (June 21, 2023).

term, the ACP needs funding more immediately to secure its future, and incorporating it into the USF would take a much longer time to obtain congressional approval.

INCOMPAS urges Congress to heed our concern about the rising USF contribution factor, which currently burdens residential and business telecom customers. Congress should be urging the FCC to move forward with contribution reform with all due speed as required by the Reforming Broadband Connectivity Act.[4] The contribution factor has reached its highest in history at 34.5% for the fourth quarter of 2023, which is unsustainable and puts the entire Fund at risk, including new litigation each time the FCC releases its quarterly contribution factor.

The FCC should move forward with reform by including the revenues for broadband internet access service (BIAS) into the contribution base. INCOMPAS is part of the USForward Coalition, which is comprised of over 340 organizations that all support the FCC initiating this type of reform based on the USForward Report written by former FCC senior official and USF-expert Carol Mattey. As the USForward Report shows, while telecom revenue is declining, BIAS revenue is increasing.[5] Each USF program has been modernized to support BIAS availability and affordability, yet these services do not currently contribute to the Fund. The FCC has the legal authority to act now on this reform without reclassifying BIAS as a Title II telecommunications service. Section 254(d) of the Communications Act mandates contributions from "[e]very telecommunications carrier that provides interstate telecommunications services," and under its permissive contribution authority, the Commission may demand USF contributions from "[a]ny other provider of interstate telecommunications . . . if the public interest so requires."[6] In *Vonage v. FCC*, the D.C. Circuit relied on the statute and concluded that the FCC has statutory authority to require interconnected VoIP providers to contribute to the USF without classifying the service as a telecommunications service.[7] Moreover, the Commission has repeatedly determined that BIAS includes a transmission or telecommunications component—whether it is a Title I or a Title II service.[8] As such, the FCC can include BIAS revenues into the contribution base like it

---

[4] S.975 - Reforming Broadband Connectivity Act of 2023, https://www.congress.gov/bill/118th-congress/senate-bill/975.

[5] USForward Report, https://www.incompas.org/Files/filings/2021/USForward%20Report%202021%20for%20Release_FINAL.pdf.

[6] 47 U.S.C. § 254(d).

[7] *Vonage v. FCC*, 489 F.3d 1232 (2007), *available at https://docs.fcc.gov/public/attachments/DOC-273733A1.pdf*.

[8] When the Commission classified broadband as a telecommunication service in 2015, it noted that BIAS providers are offering "straightforward transmission capabilities." *See Protecting and Promoting the Open Internet,* Report and Order on Remand, Declaratory Ruling and Order, GN Docket No. 14-28, 30 FCC Rcd 5601, para. 43 (2015), aff'd sub nom., *United States Telecomms Ass'n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016). When the Commission reversed its position, and classified broadband as an information service, it stated that "[t]he record reflects that information processes must be combined with transmission in order for broadband Internet access service to work." *Restoring Internet Freedom*, WC Docket No. 17-108, Declaratory Ruling, Report and Order, Order, 33 FCC Rcd 311, para. 49 (2018), vacated in part,

did with interconnected VoIP using its permissive authority. As such, moving forward with adding these revenues is the smartest, fastest, and most logical path to reform.

INCOMPAS is pleased to present a new report from the Brattle Group (attached), which offers an economic analysis that supports the USForward Report's conclusion that expanding the USF base to include BIAS revenues is the best reform methodology because it is a more economically sound approach that causes the least market distortion. Importantly, it finds that consumers will not face a significant price increase and many will likely achieve savings due to the decrease in the contribution factor on voice service. It also concludes that assessing online content providers, such as advertising, streaming, or cloud revenue will cause a reshuffling of resource allocation for consumers and businesses—imposing arbitrary distortions on the market. Furthermore, it finds that arguments claiming that any such fees on these online content providers would not be passed on to consumers to be unfounded. The Brattle Group Report follows the Analysys Mason Report, which shows that tech and streaming companies are investing at least $120 billion annually in global internet infrastructure (in addition to their investment in content) to deliver the modern internet economy—support that is critical to the overall broadband internet economy in the U.S.[9]

As your committee continues to work through the complex issues of the USF, please do not hesitate to use INCOMPAS as a resource. We look forward to working with you.

Respectfully submitted,

Angie Kronenberg
President
akronenberg@incompas.org

Mozilla Corp. v. FCC, 940 F.3d 1 (D.C. Cir. 2019). And, although the FCC reversed the "telecommunications service" classification of BIAS, the Commission stated that the "basic nature of Internet service – '[p]rovid[ing] consumers with a comprehensive capability for manipulating information using the Internet via high-speed telecommunications' – has remained the same since the Supreme Court upheld the Commission's similar classification of cable modem service as an information service twelve years ago." *Id*. at 321, para. 28 (quoting *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs*., 545 U.S. 967, 987 (2005)). Thus, BIAS includes the provision of telecommunications, and the Commission can exercise its Section 254(d) authority to bring its revenues into the USF contribution base whether BIAS is a Title I or a Title II service.

[9] Analysys Mason Report: *The impact of tech companies' network investment on the economics of broadband ISPs*, https://www.incompas.org//Files/2022%20Tech%20Investment/FINAL%20Analysys%20Mason%20Report%20-%20Impact%20of%20tech%20companies'%20network%20investment%20on%20the%20economics%20of%20broadband%20ISPs.pdf.

Attachment

The Economics of Universal Service Fund Reform

THE BRATTLE GROUP

PREPARED BY

Coleman Bazelon
Paroma Sanyal
Yong Paek

PREPARED ON BEHALF OF

INCOMPAS

August 24, 2023

NOTICE

This report was prepared for INCOMPAS in accordance with The Brattle Group's engagement terms, and is intended to be read and used as a whole and not in parts.

The report reflects the analyses and opinions of the authors and does not necessarily reflect those of The Brattle Group's clients or other consultants.

The analyses and opinions reflect information available to the authors at the time of publication.

There are no third-party beneficiaries with respect to this report, and The Brattle Group does not accept any liability to any third party in respect of the contents of this report or any actions taken or decisions made as a consequence of the information set forth herein.

CONTENTS

Executive Summary iii

I. Introduction 4

II. Brief Background on USF 5

A. History 5

B. Demand for and Supply of USF Funding 8

III. Economic Principles of Internalizing Externalities 11

A. Internalizing Society-Wide Externalities through a Broad Revenue Base 12

B. Subsidies Should be Funded from a Non-Distortionary Revenue Base 14

C. Money should be Raised from an Inelastic Revenue Base 15

IV. Expanding the Contribution Base to Broadband Services 15

A. Consistency with Institutional History and Construct 16

B. Consistency with Sound Economic Principles 17

C. The Impact of Including Broadband Internet Access Service Revenues in the Contribution Base 20

V. Assessment of the Alternative Proposals for Expanding the Contribution Base 23

A. Assessment of Arguments for Expansion through Inclusion of Additional Entities 24

B. Assessment of Arguments Claiming an Internalization of an Externality 28

VI. Conclusion 30

Executive Summary

In the FCC's recent Future of the Universal Service Fund (USF) proceeding, one of the most extensively debated subjects in the record was the possibility of modernizing the USF contributions system. Among others, there were two broad proposals that were advanced – (1) expanding the contribution base to include revenues from broadband internet access service, and (2) broadening the USF contribution base to include entities including edge providers such as streaming video providers, digital advertising firms, and cloud services companies. We find that the most economically efficient option for reform is to expand the contribution base to include broadband internet access service revenues.

The USF is currently funded through fees collected from telecommunications providers. Funds are then used to subsidize the various programs under the USF, promoting universal connectivity. Even though the USF supports broadband through its disbursements, the contribution base for the USF is funded based on interstate and international telecommunications revenue. As the industry shifts towards internet-based communication, the contribution base for universal service has dramatically shrunk. Since 2012 the contribution base has declined more than 42%. Given this, in the past two decades the contribution factor (*i.e.*, Projected USF Expenditures/Contribution Base) has more than tripled – from around 7% to over 29%. Without funding reform we predict it will be 44.0% in 2025 and 49.7% in 2027.

There are economic consequences from such large fees (currently at 29.2%) on such a narrow base (mostly voice revenues) as fees become more distortionary and burdensome on an inequitable subset of Americans who primarily rely on voice services. Expanding the contribution base to include broadband internet access service revenues will simultaneously lower the effective USF fee (to 3.7%) and broaden the base from which the funding comes (all uses of broadband), reducing market distortions in line with economic principles and the institutional history of the USF. We also find, under plausible assumptions for service plan prices, that consumers will not face a significant price increase and many will likely achieve savings due to the decrease in contribution factor on voice service. In addition, to the extent any additional fees levied are passed onto downstream consumers, the burden will likely be borne relatively more by high-income consumers.

We also find that various other proposals to include certain edge providers would arbitrarily increase market distortions and are not in line with economic principles. In addition, these proposals also assert, without reliable evidence, that fees levied on edge providers will not be passed down to consumers. We find that economic principles and empirical trends in the industry suggest otherwise.

I. Introduction

The Federal Communications Commission ("FCC") has been continuously working on modernizing and improving the Universal Service Fund ("USF" or the "Fund") program to meet the changing needs of the telecommunications industry and to close the digital divide.[1] On the disbursement side, in addition to historically funded voice services, the Fund finances broadband subsidies in the high-cost programs, including, for example, the Alternative Connect America Cost Model ("ACAM") program, the Rural Digital Opportunity Fund ("RDOF") and the 5G Fund for Rural America; the Lifeline Program; the Rural Health Care Program; the Schools and Libraries ("E-Rate") Program; and various other affordability and access programs.[2]

Telecommunications companies pay a percentage of their interstate and international end-user telecom revenues into the USF. This percentage is called the contribution factor, and this factor is calculated four times a year and is increased or decreased depending on the needs of the USF programs.[3] The total USF funding budget has not varied significantly over the past decade. The financial constraints facing the USF arise from the composition of contributors to the Fund and the growing need for broadband internet access service support.[4] The FCC has historically funded the program by assessing the revenues for interstate voice calling and other traditional telecom services, and that traditional telecom base is shrinking.[5] This shrinking base (primarily due to shifts from voice to data) has caused the USF contribution

---

1 In addition to USF other federal infrastructure programs include the Broadband Equity, Access, and Deployment Program funding ($42.5 billion), the Reconnect Program ($4.8 billion from 2018 to present), the Tribal Broadband Connectivity Program ($3 billion), the Enabling Middle Mile Infrastructure Program ($1 billion), the Broadband Infrastructure Program ($288 million), and the Affordable Connectivity Program/ Emergency Broadband Benefit Program ($17.2 billion). *See,* FCC, "In the Matter of Report on the Future of the Universal Service Fund," WC Docket No. 21-476, Report, FCC-22-67, ¶¶ 6-9, released August 12, 2022, https://docs.fcc.gov/public/attachments/FCC-22-67A1.pdf, ("FCC USF Report 2022").

2 Congressional Research Service, "The Future of the Universal Service Fund and Related Broadband Programs," July 11, 2023, accessed August 7, 2023, https://crsreports.congress.gov/product/pdf/R/R47621.

3 FCC, "Contribution Methodology & Administrative Filings," accessed August 7, 2023, https://www.fcc.gov/general/contribution-methodology-administrative-filings.

4 Masha Abarinova, "Why the USF is a Ticking Time Bomb – Analyst," Fierce Telecom, January 10, 2023, accessed August 7, 2023, https://www.fiercetelecom.com/telecom/why-usf-ticking-time-bomb-analyst.

5 Covington Alert, "Debate Over How to Fund the Federal USF Continues with Potential Impacts for Tech Companies, ISPs, and Consumers," accessed August 7, 2023, https://www.cov.com/en/news-and-insights/insights/2022/08/debate-over-how-to-fund-the-federal-usf-continues-with-potential-impacts-for-tech-companies-isps-and-consumers.

factor to increase significantly over the past decade or more.[6] The FCC has deliberated on this and commenters have proposed various solutions.[7]

On July 28, 2023, Members of the Senate Universal Service Fund (USF) Working Group, Senators Luján of New Mexico, Thune of South Dakota, Klobuchar of Minnesota, Capito of West Virginia, Peters of Michigan, and Moran of Kansas, invited comment submissions regarding the future of the USF.[8] In response to this invitation, our report will discuss the solutions that have been proposed by various parties, both in FCC proceedings and other publications, from an economic perspective and evaluate the pros and cons, with a recommendation of the preferred approach. In summary, we support assessing revenues for the provision of broadband internet access service in the contribution base, in addition to the current mostly voice-related revenue contribution base. Doing so would significantly reduce the high current contribution factor, given that disbursement levels are expected to stay fairly stable.[9] We believe this approach is a more economically sound one that causes the least distortion, as we discuss further below.

II. Brief Background on USF

A. History

The foundation of the USF can be traced back to the Communications Act of 1934, which established the Federal Communications Commission (FCC).[10] The Act's stated objective was to create for "the people of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges…."[11] The idea of universal service gained more formal

---

6 Covington Alert, "Debate Over How to Fund the Federal USF Continues with Potential Impacts for Tech Companies, ISPs, and Consumers," August 4, 2022, accessed August 7, 2023, https://www.cov.com/en/news-and-insights/insights/2022/08/debate-over-how-to-fund-the-federal-usf-continues-with-potential-impacts-for-tech-companies-isps-and-consumers.

7 FCC, "In the Matter of Report on the Future of the Universal Service Fund," WC Docket No. 21-476, Notice of Inquiry, FCC 21-127, released December 15, 2021, https://docs.fcc.gov/public/attachments/FCC-21-127A1.pdf.

8 Ben Ray Luján – U.S. Senator for New Mexico, "Universal Service Fund (USF) Working Group Request for Comment," accessed August 8, 2023, https://www.lujan.senate.gov/usf/.

9 White House, "Table 21-1 Federal Budget by Agency and Account," FY 2022 President's Budget Policy, p. 417, https://www.whitehouse.gov/wp-content/uploads/2021/05/21-1_fy22.pdf.

10 Maria Royle, "Broadband and the Communications Act of 1934," Vermont Legislative Counsel, January 12, 2021, accessed August 8, 2023, https://legislature.vermont.gov/Documents/2022/WorkGroups/House%20Energy%20and%20Technology/Telecommunications/Broadband/W~Maria%20Royle~Broadband%20and%20the%20Communications%20Act%20of%201934~1-12-2021.pdf.

11 The Living New Deal, "Communications Act (1934)," November 18, 2016, accessed August 21, 2023, https://livingnewdeal.org/glossary/communications-act-1934/.

recognition when the FCC introduced the "universal service concept" in the 1950s.[12] The concept aimed to ensure that telephone service was available to all Americans at reasonable rates, regardless of where they lived. The vertically integrated pre-1984 Bell system was a regulated monopoly providing telecom services in that construct, and universal service encompassed the array of services mandated by regulators for widespread availability, the baseline service quality stipulated by regulators, and the interconnected pricing framework designed by regulators to remunerate the service providers.[13] The modern USF began to take shape in the 1980s when the FCC established the "Universal Service High Cost Support" mechanism.[14] This mechanism provided financial support to telecommunications carriers serving high-cost, rural, and remote areas, enabling them to offer services at affordable rates. In the past, the regulatory compact that was reached with telecommunication companies (and AT&T in particular) was that the guarantee of universal connectivity was to be funded through a fee on revenues generated by such connectivity.

The Telecommunications Act of 1996 overhauled the telecommunications regulatory landscape in the U.S. It expanded the concept of universal service to include not just voice services but also advanced telecommunications and information services.[15] The Act aimed to promote the availability of affordable services for schools, libraries, rural healthcare providers, and low-income consumers.[16] In its implementation, the FCC established the four primary programs that make up the USF today. These programs include the High-Cost Program, the Lifeline Program, the Schools and Libraries (E-Rate) Program, and the Rural Health Care Program.[17]

The USF is funded through fees collected from telecommunications providers, which are then typically passed on to consumers as a USF fee on their monthly bills.[18] The FCC does not require companies to charge their customers for these contributions – this funding decision is left up to the individual companies.[19] Historically, only long-distance companies were responsible for making contributions to

---

[12] Diane S. Katz, "13. What is Universal Service?" August 16, 2004, accessed August 15, 2023, https://www.mackinac.org/6775.

[13] John D. Borrows, Phyllis A. Bernt, and Raymond W. Lawton, "Universal Service in the United States: Dimensions of the Debate," The National Regulatory Research Institute, June 1994, pp. 1-3, https://ipu.msu.edu/wp-content/uploads/2016/12/Borrows-Universal-Service-in-the-United-State-94-08-June-94-1.pdf.

[14] "Universal Service: Transforming the High-Cost Fund for the Broadband Era," Senate Hearing 111-1021, June 24, 2010, https://www.govinfo.gov/content/pkg/CHRG-111shrg67401/html/CHRG-111shrg67401.htm.

[15] Michael I. Meyerson, "Ideas of the Marketplace: A Guide to the 1996 Telecommunications Act," *Federal Communications Law Journal,* 49(2) (1997): 251-287, pp. 266-267, https://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1124&context=fclj, ("A Guide to the 1996 Telecommunications Act").

[16] FCC, "Universal Service," accessed August 9, 2023, https://www.fcc.gov/general/universal-service.

[17] FCC, "Universal Service," accessed August 9, 2023, https://www.fcc.gov/general/universal-service.

[18] Universal Service Administrative Co. (USAC), "Universal Service," accessed August 9, 2023, https://www.usac.org/about/universal-service/, ("USAC – About Universal Service").

[19] USAC – About Universal Service.

support the USF.[20] The scope of contributors was expanded with the Telecommunications Act of 1996 and at present, all telecommunications companies that engage in interstate services are mandated to provide financial support to the USF.[21] Additionally, providers offering international telecommunications services are also obligated to make contributions to the Fund. This was further reinforced in June 2006 when the FCC decided that providers of interconnected Voice over Internet Protocol (VoIP) services should contribute to the USF in the same manner as traditional telephone services.[22] These funds are then used to subsidize the various programs under the USF.[23] The contribution base for the USF is the total revenue generated by the contributing telecommunication providers.[24] Note that the FCC does not assess revenue attributed to broadband internet access service, wireless data, texting, one-way VoIP, intrastate services, cable video, and Direct Broadcast Satellite (DBS) services.[25] But it does assess some broadband services, such as business data services.[26]

The contribution factor is the percentage of a telecommunications provider's interstate and international end-user telecommunications revenues that must be remitted to the USF.[27] This contribution factor is calculated quarterly by the FCC based on the projected needs of the USF programs and the total projected contributions.[28] The FCC adjusts the contribution factor to ensure that the necessary funding is collected.[29]

---

[20] FCC, "Universal Service Fund," accessed August 9, 2023, https://www.fcc.gov/general/universal-service-fund.

[21] A Guide to the 1996 Telecommunications Act, pp. 267-268.

[22] Bloomberg News, "Net Phone Service Providers Are Told to Pay Subsidy Fee," The New York Times, June 22, 2006, accessed August 9, 2023, https://www.nytimes.com/2006/06/22/technology/22ownership.html.

[23] USAC – About Universal Service.

[24] Covington Alert, "Debate Over How to Fund the Federal USF Continues with Potential Impacts for Tech Companies, ISPs, and Consumers," August 4, 2022, accessed August 7, 2023, https://www.cov.com/en/news-and-insights/insights/2022/08/debate-over-how-to-fund-the-federal-usf-continues-with-potential-impacts-for-tech-companies-isps-and-consumers.

[25] Carol Mattey, "Universal Service Fund," USForward, September 2021, p. 8, https://www.incompas.org/Files/filings/2021/USForward%20Report%202021%20for%20Release_FINAL.pdf, ("USForward Report").

[26] USForward Report, p. 8.

[27] USAC – About Universal Service.

[28] USAC – About Universal Service.

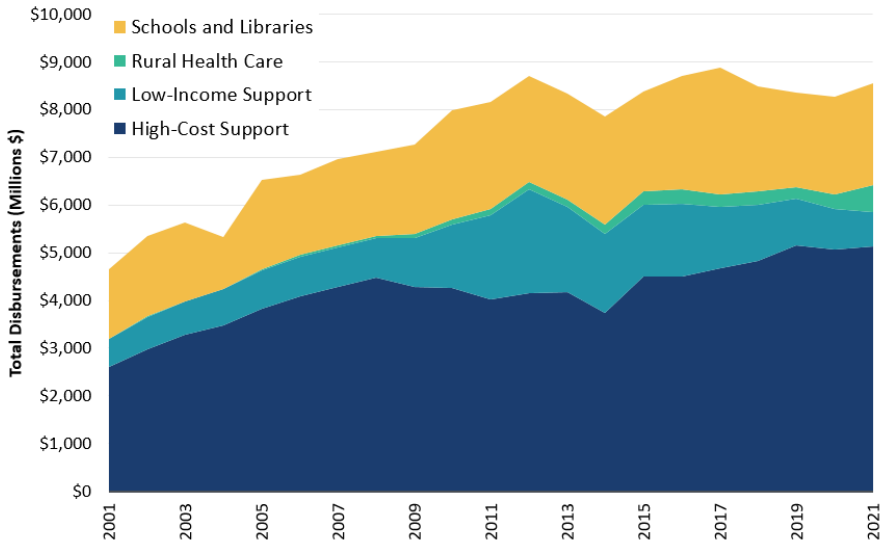
[29] FCC, "In the Matter of Connect America Fund…," WC Docket Nos. 10-90, 07-135, 05-337, and 03-109, GN Docket No. 09-51, CC Docket Nos. 01-92 and 96-45, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, FCC-11-161, released November 18, 2011, p. 20, https://docs.fcc.gov/public/attachments/FCC-11-161A1.pdf.

B. Demand for and Supply of USF Funding

On the funding supply side, the contributing entities include "wireline and wireless companies, and interconnected VoIP providers, including cable companies that provide voice service."[30] Providers must attribute their projected revenues to one of several categories on the annual reporting form; these categories include fixed local service, toll services, and mobile services. Providers must further break their revenue into interstate and intrastate categories.

On the demand side, every quarter the Universal Service Administrative Company ("USAC") is required to submit a projection of demand for the four universal service programs – High-Cost Program, Lifeline Program, E-Rate Program, and Rural Health Care Program. The demand for funds is then compared with estimated interstate revenues and the contribution factor (the ratio of total projected expenses to the total projected revenue) is determined such that all funding objectives can be met. Actual deployment for the four programs can be seen in Figure 1 below. In 2021, USF disbursements totaled $8.6 billion.

FIGURE 1: USF DISBURSEMENTS 2001-2021



Sources and Notes: "Table 1.10 – Universal Service Disbursements 2001 – 2021," 2022 USF Monitoring Report.

As the industry shifts towards internet-based communication, the contribution base for universal service continues to shrink.[31] Since 2012 the contribution base has declined more than 42%, falling from $65.8

[30] USAC – About Universal Service. Note that providers file quarterly estimates of projected revenues on FCC Form 499-Q and a detailed breakdown of annual revenue on FCC Form 499-A. *See,* USFoward Report, p. 6.

[31] USForward Report, pp. 9-10.

billion to $37.9 billion in 2021.[32] The average annual contribution base decrease from 2013 through 2021 was 5.9%.[33] We use this average decrease to forecast the contribution base in Figure 2. In 2027, we estimate the contribution base will be $19.6 billion. As the FCC has recognized, this decline "does not generally appear to be a result of service providers reclassifying telecommunications revenues from interstate to intrastate; rather, providers are reporting a declining share of telecommunications revenues and an increasing share of non-telecommunications revenues."[34]

As the denominator continues to shrink, the contribution factor will continue to grow. In Q1 2001, the contribution factor was 6.67%.[35] In Q3 2023, the contribution factor is 29.2%.[36] We combine the estimated annual contribution base forecasts with the FCC's USF budget estimates to calculate the projected contribution factor.[37] The estimated annual contribution factor can be seen in Figure 2 below. In the past two decades the contribution factor has more than tripled - from around 7% to over 29%. The current contribution factor, Q3 2023, is 29.2%, in 2025 we predict it will be 44.0%, and by 2027 we estimate it will be 49.7%.[38] Thus, if no new funding sources are brought into the contribution base, customers of voice telephone services will face an increasing burden due to the rising contribution factor.

[32] FCC, "Universal Service Monitoring Report 2022," CC Docket No. 96-45, WC Docket Nos. 02-6, 02-60, 06-122, 10-90, 11-42, 13-184, and 14-58, https://docs.fcc.gov/public/attachments/DOC-391070A1.pdf, ("2022 USF Monitoring Report").

[33] 2022 USF Monitoring Report, p. 17. We see no reason to believe this decrease will slow or reverse with current market trends.

[34] FCC USF Report 2022, ¶ 91.

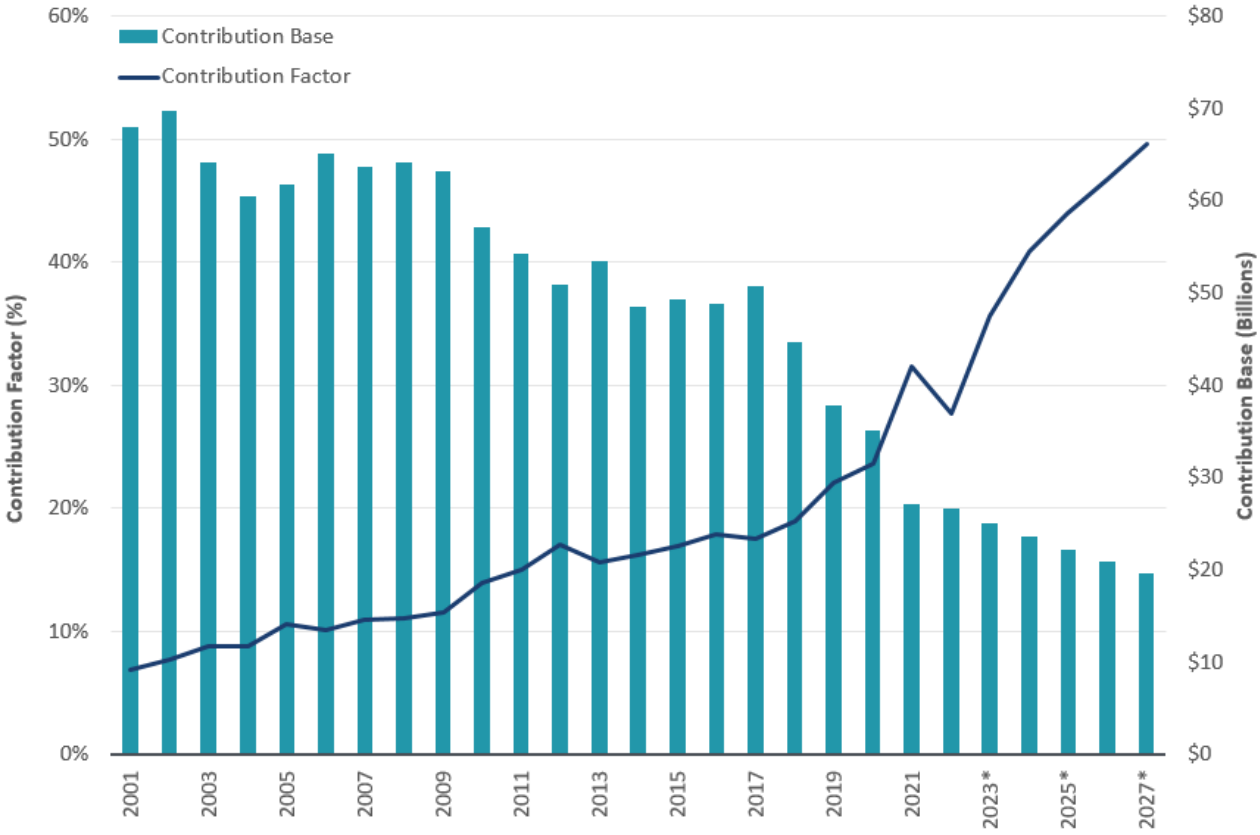
[35] FCC, "Proposed First Quarter 2001 Universal Service Contribution Factor," CC Docket No. 96-45, Public Notice, DA 00-2764, released December 8, 2000, https://docs.fcc.gov/public/attachments/DA-00-2764A1.pdf.

[36] FCC, "Proposed Third Quarter 2023 Universal Service Contribution Factor," CC Docket No. 96-45, Public Notice, DA 23-507, released June 14, 2023, https://docs.fcc.gov/public/attachments/DA-23-507A1.pdf.

[37] White House, "Table 21-1 Federal Budget by Agency and Account," FY 2022 President's Budget Policy, p. 417, https://www.whitehouse.gov/wp-content/uploads/2021/05/21-1_fy22.pdf.

[38] For current contribution factor, *see,* "Proposed Third Quarter 2023 Universal Service Contribution Factor," CC Docket No. 96-45, Public Notice, DA 23-507, released June 14, 2023, https://docs.fcc.gov/public/attachments/DA-23-507A1.pdf. For estimated contribution factors, *see,* Figure 2.

FIGURE 2: ACTUAL AND PROJECTED CONTRIBUTION BASE AND FACTOR



Sources and Notes:
Historical contribution factors and disbursement totals sourced from the annual USF monitoring reports. *See,* https://www.fcc.gov/general/federal-state-joint-board-monitoring-reports. To calculate the historical annual contribution base, we divide the disbursement total by the contribution factor. We rely on federal budget estimates, *see,* White House, "Table 21-1 Federal Budget by Agency and Account," FY 2022 President's Budget Policy, p. 417, https://www.whitehouse.gov/wp-content/uploads/2021/05/21-1_fy22.pdf. The average growth rate of the contribution base from 2013-2021 is -5.896%. We forecast the contribution base using this annual growth rate. We then estimate the necessary contribution factor given our estimates for annual disbursement and the contribution base. 2022-2027 represent forecasted years.

Such a high contribution factor can lead to various market distortions. It might encourage telecommunications providers to shift their focus away from offering traditional voice services which could potentially result in a decline in the availability and quality of voice communications options. The original intent of the USF was to promote universal access to communications services. If the contribution factor becomes too high, it might inadvertently limit access due to higher costs incurred because of the USF fee. This is particularly an issue for underserved and rural areas, and low-income consumers, where affordability is already a concern. Note that those not on Lifeline (who the contributing companies cannot assess for USF fees) will be affected even more.[39] Additionally, it may also incentivize providers to

[39] FCC, "Universal Service Support Mechanisms," accessed August 23, 2023, https://www.fcc.gov/consumers/guides/universal-service-support-mechanisms.

reclassify some of their services away from voice, as already seen in the mobile context, and lead to a further decline in the contribution base.[40]

The growing gap between the demand and current revenue base of funding and the high contribution factor are driving the debate about USF contribution reform and possible ways of widening the contribution base of revenues and/or companies that can be assessed to subsidize the Fund. Four main proposals have been advanced – (1) increasing the base of revenues of current companies whose revenues already are assessed, (2) connection-based assessment, (3) number-based assessment and (4) whether new contributors should be brought in as direct contributors to the Fund.[41] With respect to the first option, there is significant support in the FCC's record that companies' should include their broadband internet access service revenues, but the FCC also has sought comment on either a connection-based or number-based model.[42] With respect to expanding direct contributors, certain large tech companies and streamers have been targeted for their online content services (such as streaming and advertising revenues).[43] Ultimately, which services and entities need to contribute to the Fund should be determined by economic principles based on efficiency arguments, and the historic context for why the Fund was set up and who should contribute to the Fund.

III. Economic Principles of Internalizing Externalities

The economic literature on what activities should be subsidized, and how to raise these funds, is well established and accepted. In particular, sound economic principles establish three key points when it comes to subsidies and funding subsidies efficiently. First, it would be welfare improving for society to subsidize activities that generate positive externalities.[44] Externalities arise when a transaction involving a set of parties cause benefits or costs on other parties not involved in the transaction. Second, the funds

[40] USForward Report, p.10.

[41] Note that the new contributors considered in the proposals do currently pay in on the assessed telecom services they purchase.

[42] *See,* USForward Report for why assessing a contribution on broadband is the preferred approach. For a connection-based approach, *see,* Michael A Williams and Wei Zhao, "NTCA-USF Study: Expert Report of Michael A. Williams, PhD. and Wei Zhao, Ph.D.," Berkeley Research Group, May 7, 2020, https://www.ntca.org/sites/default/files/documents/2020-05/2020-05-07%20-%20Williams-Zhao%20report%20Final.pdf, ("NTCA-USF Study 2020").

[43] *See,* Roslyn Layton and Petrus H. Potgieter, "Rural Broadband and the Unrecovered Cost of Streaming Video Entertainment," ITS Gothenburg, June 11, 2021, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3820644, ("Layton and Potgieter Report"). *See also,* Hal Singer and Ted Tatos, "Subsidizing Universal Broadband Through a Digital Advertising Services Fee: An Alignment of Incentives," Econ One, September 16, 2021, https://www.econone.com/wp-content/uploads/2021/09/Digital-Divide-HSinger-TTatos-2.pdf, ("Singer and Tatos Report").

[44] Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Seventh Edition (Pearson, 2009), pp. 339-342.

for these subsidies should be raised from a broad, non-distortionary revenue base;[45] and third, a non-distortionary revenue base is from relatively inelastic economic activities.

A. Internalizing Society-Wide Externalities through a Broad Revenue Base

In the context of the USF, the fact that there are positive externalities associated with the universal connectivity of Americans is uncontroversial and presumed. In other words, the USF exists, not only because it is difficult to deploy broadband (and in the past, voice telephony) to high-cost and low-income areas, but also because it is understood that there are positive externalities generated from having Americans connected to affordable, nationwide internet access services (and in the past telephony services). The nature of these externalities take many forms. More recently, since the Covid-19 pandemic, the positive externalities generated by fast and reliable internet service has been motivated by the fact that it can soften the negative impact of diseases that prevent humans from interacting physically.[46] Note that this is but a small subset of the total societal benefits that accrue from voice and broadband connectivity. Other examples include the propagation of telemedicine,[47] improved equity of access to education,[48] and improved quality of education.[49] These benefits accrue to society in a real way, for

---

[45] Ved P. Gandhi, "9 Tax Structure for Efficiency and Supply-Side Economics in Developing Countries," in *Supply-Side Tax Policy,* ed. Ved P. Gandhi *et al.* (International Monetary Fund, 1987): 225-249, pp. 231-232, 238-239.

[46] Canan Birimoglu Okuyan and Mehmet A. Begen, "Working from Home During the COVID-19 Pandemic, its Effects on Health, and Recommendations: The Pandemic and Beyond," *Perspectives in Psychiatric Care,* 58(1) (2022): 173-179, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8242705/ ("[Working from home] also helps to reduce the spread of the disease by keeping most people at home to practice physical distancing").

[47] Yosselin Turcios, "Digital Access: A Super Determinant of Health," Substance Abuse and Mental Health Services Administration, March 22, 2023, accessed August 8, 2023, https://www.samhsa.gov/blog/digital-access-super-determinant-health; Ambrish A. Pandit, *et al.*, "Association Between Broadband Capacity and Telehealth Utilization Among Medicare Fee-for-Service Beneficiaries During the COVID-19 Pandemic," *Journal of Telemedicine and Telecare*, (2023): 1-8, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10076155/; Adie Tomer, *et al.*, "Digital Prosperity: How Broadband Can Deliver Health and Equity to All Communities," The Brookings Institution, February 27, 2020, accessed August 21, 2023, https://www.brookings.edu/articles/digital-prosperity-how-broadband-can-deliver-health-and-equity-to-all-communities/.

[48] Thomas McElroy, "Addressing The Digital Divide an Education: Technology and Internet Access for Students in Underserved Communities," Forbes, December 3, 2021, accessed August 8, 2023, https://www.forbes.com/sites/forbestechcouncil/2021/12/03/addressing-the-digital-divide-in-education-technology-and-internet-access-for-students-in-underserved-communities/?sh=355949d25cec; Adie Tomer, *et al.*, "Digital Prosperity: How Broadband can Deliver Health and Equity to All Communities," The Brookings Institution, February 27, 2020, accessed August 21, 2023, https://www.brookings.edu/articles/digital-prosperity-how-broadband-can-deliver-health-and-equity-to-all-communities/.

[49] Internet Society, "Internet Access and Education: Key Considerations for Policy Makers," November 20, 2017, accessed August 8, 2023, https://www.internetsociety.org/resources/doc/2017/internet-access-and-education/; North Carolina Department of Information Technology, "Benefits of Broadband," accessed August 8, 2023, https://www.ncbroadband.gov/broadband-101/benefits-broadband.

example, the normalization and ability to take high quality online classes for students that are unable to attend classes physically for any reason is a society-wide positive externality because it contributes to a more educated and productive citizenry. Also, it is well-established that educational attainment levels are strongly associated with better health outcomes which alleviates pressures on a society's social security systems and reduces a nation's healthcare costs.[50]

Given that the beneficiary of the positive externality is society as a whole, a broad society-wide contribution base is advised. The USF funding requirements could be put into the annual appropriations process by Congress, which would be the broadest contribution base and would generate minimal distortions. However, annual appropriations from Congress may in the long run make for an unpredictable and uncertain source of funding. Under the current statute, Congress has determined that the USF should have its own financial support that the FCC is responsible for ensuring is equitable, non-discriminatory, sustainable, and predictable.[51]

We emphasize that having a broad revenue base does not imply that we increase the number of contributors and sectors to be arbitrarily larger. Whether some entities should contribute or not to the base depends on the type of externalities being generated. It is true that specific use cases of broadband can generate positive externalities. For example, search providers use data from its users to improve its search results and map suggestions—if more internet users are connected and provide more data to the service provider there is a positive externality that is not captured in an individual user's decision to use the provider's products (*i.e.*, the search provider can make more desirable products for *all* of its users not just the one that provided data). Similar sector specific externalities may arise for various use cases of broadband (*e.g.*, video streaming, social media). These externalities in turn increase the general value of broadband too. However, these types of externalities are not relevant to the USF discussion. The USF is not a means to internalize these sector specific externalities but is an institution existing to ensure universal connectivity to schools, libraries, rural healthcare facilities, low-income consumers, and high-cost households. It would be historically inconsistent and politically unprecedented for the USF to disburse subsidies to large technology companies for popularizing and normalizing use cases of broadband and vice versa, even though it is inarguable that positive externalities are generated. We will discuss below, in Section V, that sector specific externalities are and can be internalized through private negotiations and contracts anyway.

---

[50] Anna Zajacova and Elizabeth M. Lawrence, "The Relationship between Education and Health: Reducing Disparities Through a Contextual Approach," *Annual Review of Public Health* 39 (2018); Jian Gao *et al.*, "The Effect of Primary Care Visits on Total Patient Care Cost: Evidence From the Veterans Health Administration," *Journal of Primary Care & Community Health* 13 (2022).

[51] *See,* 47 U.S.C. § 254(b). As discussed in Section II.A above, USF was historically designed to be a within firm cross-subsidy across different voice telephony services offered, which by definition, was funded from its own sector. The modern incarnation of the USF is also explicitly mandated by the FCC to be funded from within the sector. 47 U.S.C. § 254(d).

B. Subsidies Should be Funded from a Non-Distortionary Revenue Base

Economic principles suggest that activities that generate positive externalities should be funded through lump-sum, non-discriminatory taxes/fees that minimize market distortions. This is because economic actors in a market economy decide, given their preferences, how to spend their limited resources based on a set of price signals for goods and services. A tax levied on a specific product changes the relative prices across all products and distorts the choices of consumers away from what they would want to consume absent the tax. This represents an inefficiency in the allocation of resources. This is the case for the USF fees. The idea that the fees assessed should not be distortionary to the market is the reasoning behind the FCC's conclusion that the approach should be "competitively neutral" such that the contribution methodology will "avoid distorting how carriers chose to structure their businesses or the types of services that they provided."[52]

Consider raising funds for a known amount of required subsidies, as is the case for the USF. These funds could either be raised by high rates on a narrow revenue base, similar to the current situation that the USF program has evolved into (see Section II.B for details), or by lower rates on a broader revenue base. How do these funding schemes affect relative prices? A high rate on a narrow set of goods or services will have a more dramatic impact on relative prices than a low rate on a broad set of goods or services. With a lower tax rate any party is only induced to adjust their behavior slightly in response to the tax. As a tax rate gets larger, its social cost becomes more than proportionally larger. We discuss how these distortions can manifest and reduce social welfare in Section V below.

Note that an important economic consideration for government financing is administrative ease.[53] A broad base of services and goods achieves this as it leaves less room for payer gamesmanship and results in less monitoring costs compared to a regime with many exceptions and exclusions. It is more likely to raise the required revenue with the correct/intended relative contributions from each paying party. In other words, if the system is designed to optimally raise taxes, it is more likely that this design will be upheld with a broad base than compared with a narrow base. Furthermore, even if monitoring was cheap and perfect, we would still be facing a relative price distortion as the firm is taxed at different rates for various goods or services that it produces and sells – this distorts the margins that the firm can make on a given portfolio of production. Subsequently, the firm's output for each product will be distorted away from its chosen levels absent the product specific tax.

---

[52] FCC, "In the Matter of Universal Service Contribution Methodology…" WC Docket Nos. 06-122 and 04-36, CC Docket Nos. 96-45, 98-171, 90-571, 92-237, 99-200, 95-116, and 98-170, NSD File No. L-00-72, Report and Order and Notice of Proposed Rulemaking, FCC 06-94, June 27, 2006, ¶ 6, https://docs.fcc.gov/public/attachments/FCC-06-94A1.pdf.

[53] David N. Hyman, *Public Finance: A Contemporary Application of Theory to Policy*, Tenth Edition, (Cengage Learning, 2010), p. 425.

C. Money should be Raised from an Inelastic Revenue Base

Economic principles suggest that taxes on inelastic market activity induce less allocative distortions in the economy. Elasticity describes how sensitive the quantity demanded or supplied is to changes in prices. In general, the most efficient taxes are those levied on commodities or inputs that are in inelastic supply, demand, or both. This is because the excess burden of a tax (*i.e.*, the welfare lost from the distortion away from market equilibrium) on goods and services decreases with how sensitively demand or supply can react to price changes. Inelastic demand or supply describes situations where demand or supply has minimal, relatively small reactions to price changes. Goods which are necessities or lack viable substitutes exhibit inelastic demand, and production technology that cannot be scaled up or down easily and immediately exhibit inelastic supply. The intuition behind this result is similar to the argument about having a broad, non-discriminatory base. The less dramatic your reaction in consumption or production is for a given price change, the less is the distortion introduced in how you allocate your resources relative to your resource allocation absent the tax.

There are, however, nuances to this result. While choosing a broad and inelastic contribution base will minimize distortions for consumption decisions, it could have a more pronounced impact on low-income customers as any passed through tax may be a larger share of their income. There are ways the FCC has tried to minimize this—and explicitly states that companies cannot collect any fees from a Lifeline program participant.[54]

IV. Expanding the Contribution Base to Broadband Services

Expanding the contribution base of USF to include broadband internet access service revenues is the most consistent and effective way to reform the USF to ameliorate the concerns surrounding the declining contribution base and consequent increases in the contribution rate (see Section III.B.). Expanding the contribution base to include broadband internet access service revenues is both consistent and true to the institutional history and construct of the USF while also simultaneously consistent with the economic principles discussed above.

[54] FCC, "Universal Service Support Mechanisms," accessed August 23, 2023, https://www.fcc.gov/consumers/guides/universal-service-support-mechanisms.

A. Consistency with Institutional History and Construct

As briefly explained in Section II, the USF was initiated in the United States to ensure that essential telecommunications services, particularly telephone services, are made accessible and affordable to all citizens, regardless of their geographic location or income level. The 1996 Act recognized that while urban areas had relatively easy access to modern telecommunications services, rural and underserved areas were at risk of being left behind due to the high costs associated with reaching them.[55] By creating the USF, the government sought to address these disparities and ensure that everyone, regardless of their location, could benefit from the social and economic advantages of telecommunications services. Voice service was the primary telecommunications service when the 1996 Act was passed and connectivity was measured in terms of voice. The USF funded ubiquitous voice connectivity and this was paid for by voice revenues—the services that benefited directly from the USF by receiving USF subsidies.

In the past two decades, as the world shifted to digital communication and internet connectivity, ensuring access to broadband internet access services in unserved and underserved areas has become the primary connectivity goal. The FCC's National Broadband Plan specifically laid out recommendations to modernize the USF to ensure its programs were supporting the availability and affordability of broadband internet access networks and services.[56] The FCC has now modernized each of its four USF programs to support affordable broadband service. This is because it is widely recognized that large positive externalities can be captured with a better-connected population. USF subsidies target precisely this externality by helping to deploy broadband to difficult to serve areas and communities that are not served by the private market. The USF programs help bridge the digital gap and bring the benefits of digital connectivity to a broader population. Note that the USF programs were never a vehicle for addressing other market failures that could arise from externalities. For example, video streaming services have significantly increased the value of broadband services in recent years by offering consumers more choice and more affordable service, but the USF does not subsidize video streaming services as an avenue for increasing broadband deployment.

The contribution base was also determined to be largely voice as this was the service that was being deployed with the funding.[57] With the digital revolution, voice service now accounts for only 10.8% of the revenues from voice and broadband services in 2022,[58] but bears most of the contribution burden. Broadband internet access service now accounts for 89.2% of the revenues from connectivity and

[55] FCC, "Telecommunications Act of 1996," January 3, 1996, 254(b)(3), https://transition.fcc.gov/Reports/tcom1996.pdf.

[56] FCC, "Connecting America: The National Broadband Plan," pp. 141-151, https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf.

[57] A Guide to the 1996 Telecommunications Act, p. 253.

[58] *See,* Table 2, rows [2]/[1].

contributes nothing.[59] It is worth noting that 60% of the USF funds, or $5.1 billion, went into funding broadband deployment and operations in 2021.[60] The shift in voice and broadband revenues reflects the changing landscape of communication technologies and the evolving needs of modern society—the USF contribution base needs to change to account for the fact that connectivity implies not just voice telephone services but predominantly, broadband internet access. We emphasize here that the USF is already being disbursed to support broadband service and networks. In other words, there is no uncertainty or debate that broadband is critical in providing Americans with affordable connectivity; rather, it is just a matter of funding these already existing efforts with a market distortion minimizing contribution base.

Given the regulatory compact that was reached with telecommunication companies (and AT&T in particular) in the past, about the guarantee of universal connectivity funded through a fee on revenues generated by such connectivity, it is a natural extension to include broadband internet access service, which is already supported by the USF, into the contribution base. From the standpoint of digital equity, broadband connectivity is front and center and the USF supports broadband connectivity and thus the USF should be supported by broadband internet access service revenues.

B. Consistency with Sound Economic Principles

a. Broadband Users Constitute a Broad and Non-Distortionary Contribution Base

As discussed in Section III.A above, assessing a low-rate tax on a broad set of goods or services minimizes behavioral distortion. This is because a small tax on a broad set of goods and services requires only a slight adjustment in behavior. Currently the USF fee is acting as a large tax on a shrinking base of traditional voice-centric telecommunications revenues. Introducing a broader base that helps level out this tax with minimal distortion is crucial to the continued work of the USF and will also address any current distortions from the high fee today.

Broadband internet access service revenues constitute a very broad base. Internet usage as a whole has been growing steadily over the years. In 2000 only 43% of the U.S. population used the internet, while today almost 92% of individuals in the United States access the internet.[61] Broadband internet access services are a driving force of these rising penetration rates; in 2022 89% of households are estimated to

[59] *See,* Table 2, rows [3]/[1]. Please note that Business Data Services (BDS) are not included in the broadband revenue estimate.

[60] *See,* "Table 1.10 – Universal Service Disbursements 2001 – 2021," 2022 USF Monitoring Report. *See also,* USAC, "Program Overview," https://www.usac.org/high-cost/program-overview/.

[61] Ani Petrosyan, "Percentage of Population Using the Internet in the United States from 2000 to 2023," Statista, February 23, 2023, accessed August 15, 2023, https://www.statista.com/statistics/209117/us-internet-penetration/.

have broadband internet access service at home.[62] With continued investment in broadband rollout, we expect this coverage to only continue to increase. Broadband's recent growth and stability is juxtaposed with the decreasing revenues of mobile and voice telephone services.[63] Between 2010 and 2019 retail mobile revenues declined 66%, local service revenues declined 35%, and toll revenues declined 35%.[64] Broadband's reach and penetration is outpacing the voice telephone market as voice telephone services are mostly provided through products that are bundled with broadband.

Broadband internet access service is not only a broad revenue base considering the reach of Americans who will participate in funding a society-wide positive externality. It is also broad (and importantly, non-discriminatory) when it comes to the use cases for broadband, which ultimately derives the positive externality, *i.e.*, it is not any particular use case or industry specific edge provider funding an externality accruing for society. In addition, distortions in consumption and investment decisions will be minimized. To achieve a similarly broad base on the services that use broadband, as opposed to the broadband connection itself, would require applying a fee to each service.

The make-up of broadband customers is important to consider when assessing the incidence of the USF fee. Many businesses are moving away from voice and towards broadband technology. This customer base would imply that a USF fee applied to broadband internet access (in addition to telecom services) would fall more heavily on businesses instead of residential consumers. We can see this breakdown by analyzing AT&T's 2022 annual report. It reports 67% of its wireline business stems from its business customer base.[65] Assuming AT&T's business is relatively representative of the broadband market as a whole, we expect that including broadband internet access revenues in the USF contribution base would induce the share of USF contributions from businesses to increase relative to residential consumers.

We recognize that if fees are levied on broadband internet access services, business customers may pass this fee on to their customers downstream. The incidence of who pays the passed-on USF fee is expected to shift away from lower income consumers if the base of support is expanded to include broadband internet access service. This is true for two reasons. First, as noted, the total business-paid share of USF support is expected to increase. The amount of revenue earned by businesses that use broadband is surely skewed toward higher income individuals. That is, people with more money tend to spend more on business services in general. Consequently, as businesses pass through some or all of the increased costs

---

[62] Marketing Charts, "Home Broadband Penetration Rises to Almost 9 in 10 US Households," January 19, 2023, accessed August 15, 2023, https://www.marketingcharts.com/industries/telecom-industries-228287.

[63] USForward Report, Figure 3.

[64] These are only the reported revenues, bundling allocation could be misrepresenting these figures. *See,* USForward Report, p. 10.

[65] AT&T, "2022 Annual Report," 2022, p. 49, https://investors.att.com/~/media/Files/A/ATT-IR-V2/financial-reports/annual-reports/2022/2022-complete-annual-report.pdf. To calculate total business wireline revenue, we take the total reported amount ($22.5 billion). To calculate total consumer wireline revenue, we take the total reported amount ($12.7 billion) less "Legacy voice and data" ($1.7 billion).

from USF fees on broadband to their customers, those costs will ultimately be borne more by higher income individuals.

A second reason the USF fee would be expected to shift away from lower income consumers is that within the consumer-paid share of USF support, higher income consumers tend to pay more for their broadband than lower income consumers. There is not so much variation in the quality and cost of a voice line as compared to broadband connections. That is, when a high-income consumer purchases broadband, they are likely purchasing a much higher speed and more expensive connection relative to a low-income consumer than is the case with voice connections. [66] As USF contributions are revenue based, this shift to higher individual payments from high-income consumers would also shift the burden of USF funding towards those higher income individuals. Similarly, it is likely that elderly Americans rely more on voice services exclusively.[67] This means that currently they are paying a disproportionate share of USF support, and including broadband internet access service revenues will help rebalance this demographic burden.

b. Broadband Services have Inelastic Demand

That broadband services have inelastic demand is relevant to the USF contributions analysis because it implies that any potential price increase for broadband consumers will only induce a limited reaction in broadband consumption. This means that only a minimal distortion in resource allocation and overall economic welfare will be generated by the inclusion of broadband internet access services in the contribution base. Ultimately, this implies that even if broadband service revenues are included in the USF's contribution base and do cause a potential price increase for broadband consumers, there will be limited reaction in broadband consumption and, hence, will generate minimal distortion in resource allocation and minimal reduction in overall economic welfare.

Over the last two decades, many studies have explored the demand for internet and broadband services by U.S. households. A 2020 NTCA Report offers a comprehensive survey of what researchers have estimated broadband elasticity to be and also offers its own updated estimate of broadband demand elasticity.[68] One key takeaway is that over time, the demand for high-speed internet access services has become more price inelastic. Table 1 summarizes some broadband demand elasticity estimates.

---

[66] *See,* FCC, "In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion," GN Docket No. 20-269, FCC 21-18, Figs. 8, 11, released January 19, 2021, https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf; Timothy Moore, "How Much Does Internet Cost Per Month?" Forbes Home, updated August 21, 2023, accessed August 24, 2023, https://www.forbes.com/home-improvement/internet/internet-cost-per-month/.

[67] Stephen J. Blumberg and Julian V. Luke, "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2022," National Center for Health Statistics, May 2023, accessed August 19, 2023, p. 5, https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless202305.pdf.

[68] *See,* NTCA-USF Study 2020; Michael A Williams and Wei Zhao, "NTCA-USF Study: Universal Service Contribution Methodology," Berkeley Research Group, December 13, 2022, https://www.ntca.org/sites/default/files/documents/2022-12/Williams-Zhao%20report_121322.pdf?utm_source=sendgrid&utm_medium=email&utm_campaign=Newsletters, ("NTCA-USF Study 2022").

TABLE 1: LITERATURE REVIEW OF BROADBAND ELASTICITY ESTIMATES OVERTIME

Specification		Year(s)	Methodology	Segment	Elasticity of Broadband
Past Estimates					
Kridel et al. (2002)	[1]	1999	Survey	U.S. households	- 1.08 to - 1.79
Varian (2002)	[2]	1998 - 1999	Experimental data	Faculty, staff, and students at UC Berkeley	- 1.3 to - 3.1
Dutz et al. (2012)	[3]	2005 - 2008	Discrete choice demand model	Top 100 Metropolitan Statistical Areas of the U.S.	- 1.53 to - 0.69
Glass and Stefanova (2010)	[4]	2005 & 2009	Survey	Rural subscribers	- 0.66; - 0.21
Recent Estimates					
Williams and Zhao (2020)	**[5]**	**2019**	**Survey**	**U.S. adults**	**-0.08**

Sources and Notes:
[1]: Don Kridel, Paul Rappoport, and Lester Taylor, "The Demand for High-Speed Access to the Internet: The Case of Cable Modems," Forecasting the Internet: Understanding the Explosive Growth of Data Communications (2002): 11-22.
[2]: Hal R. Varian, "The Demand Bandwidth: Evidence from the INDEX Project," in *Broadband: Should We Regulate High-Speed Internet Access?*, eds. Robert W. Crandall and James H. Alleman, (Brookings Institution Press, 2002): 39-56.
[3]: Mark A. Dutz, Jonathan M. Orszag, and Robert D. Willig, "The Liftoff of Consumer Benefits from the Broadband Revolution," *Review of Network Economics,* 11(4) (2012).
[4]: Victor Glass and Stela K. Stefanova, "An Empirical Study of Broadband Diffusion in Rural America," *Journal of Regulatory Economics,* 38 (2010): 70-85.
[5]: NTCA-USF Study 2020.

Elasticities between 0 and -1 are considered inelastic; elasticities greater (in absolute value) than -1 are considered elastic. As shown in the table above, recent estimates suggest that broadband demand is highly inelastic with an elasticity of -0.08.[69] This figure can be interpreted in the following way: a 10% increase in price will reduce the quantity of broadband subscriptions by 0.8%, or less than one-tenth the magnitude of the price increase. The recent gradual change from broadband demand being relatively more elastic to becoming more inelastic is consistent with how our society has increased its reliance on broadband.

C. The Impact of Including Broadband Internet Access Service Revenues in the Contribution Base

If only the current telecommunications revenues are included in the contribution base, then in the next five years, that segment of the market will pay nearly 50% of their revenues as a USF fee.[70] Including broadband internet access in the base changes this dramatically and leads to the contribution factor

[69] NTCA-USF Study 2020; NTCA-USF Study 2022.

[70] *See,* Figure 2.

ranging from 3.0% to 3.7% for the next five years. We expect these lower ranges will hold in the long-term as well due to the stability of the broadband market.[71]

TABLE 2: ESTIMATED CONTRIBUTION FACTOR WHEN INCLUDING BROADBAND REVENUES

		2021	2022	2023	2024	2025	2026	2027	2028
Revenue	[1]	$237.9	$246.2	$251.8	$257.9	$264.1	$270.5	$276.8	$283.1
Current Base	[2]	$27.1	$26.6	$25.1	$23.6	$22.2	$20.9	$19.7	$18.5
Broadband	[3]	$210.8	$219.6	$226.7	$234.3	$241.9	$249.6	$257.1	$264.6
USF Demand	[4]	$8.6	$7.4	$8.9	$9.6	$9.8	$9.8	$9.8	$9.8
Contribution Factor	[5]	3.6%	3.0%	3.5%	3.7%	3.7%	3.6%	3.5%	3.5%

Sources and Notes:
[1]: [2] + [3]. Note, we assumed [3] contained "Business Data Services" (BDS) revenues in the total. As to not double count these revenues, as they are already included in [2], we subtracted out the revenue from interstate and international "Local Private Line and Business Data Service." *See,* "S.1.2 Revenue Details – Historical.xlsx," 2022 Supplementary Material, https://www.fcc.gov/general/federal-state-joint-board-monitoring-reports. In 2021, this value was $3.1 billion. We forecasted BDS services using the average growth rate in revenues from 2013-2021, -1.73%.
[2]: Projected USF contribution base assuming a -5.896% growth rate (average growth rate from 2013-2021). *See,* Figure 1 for details of our projection.
[3]: Statista, "Mobile Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/mobile-data/united-states?currency=USD; Statista, "Fixed Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/fixed-data/united-states?currency=USD.
[4]: White House, "Table 21-1 Federal Budget by Agency and Account," FY 2022 President's Budget Policy, p. 417, https://www.whitehouse.gov/wp-content/uploads/2021/05/21-1_fy22.pdf.
[5]: [4] / [1].

Additionally, even if broadband internet access service revenues are included in the contribution base, consumers will not face a significant price increase, as they will experience a decrease for the USF fee for their voice service, and this will offset some of the USF fee on broadband. [72]

For example, assume for simplicity that all fees are passed through to the customer in all cases, and the average monthly fixed broadband bill in the U.S. is about $70 per month.[73] The projected contribution

[71] Cisco, "Cisco Broadband Index: Workforce Insights on Access to Internet Services," 2022, https://www.cisco.com/c/dam/m/en_us/solutions/broadband/broadband-index/reports/Cisco_Broadband_Index_2022.pdf; Statista, "Mobile Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/mobile-data/united-states?currency=USD; Statista, "Fixed Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/fixed-data/united-states?currency=USD.

[72] Of course, for any customers that currently only use broadband and are not paying any contribution to the USF, their contribution to the Fund will increase with the inclusion of broadband.

[73] FCC, "In the Matter of Communications Marketplace Report," GN Docket No. 22-203, 2022 Communications Marketplace Report, FCC 22-103, released December 30, 2022, ¶ 38,

factor of 3.7% next year will imply an added fee of $2.59.[74] If that broadband customer also has a voice line, the savings on the voice side will more than offset the increase on the broadband side. The average monthly VoIP bill is about $20 per month, but only $12.98 of that bill is subject to USF assessment.[75] At the current contribution factor of 29.2%, that average consumer's contribution to USF would be $3.79, but only $0.48 for voice services if the contribution factor was 3.7%, for a savings of $3.31 per month.[76] A consumer with fixed voice and data would save, on average, $0.72 a month.[77]

Mobile data tells a similar story.[78] The average American consumer uses 15 GB or less of data every month and one gigabyte costs about $2.75 in 2023.[79] This would lead to a contribution fee of $1.53 per month for 15 GB of mobile data.[80] If that consumer also has a mobile voice line, the savings offset the broadband fee. For example the average mobile voice bill with no data plan for an individual is about $20 per month, with $7.42 assessable for USF.[81] With a contribution factor of 29.2%, and assuming complete pass through, current mobile consumers are paying about $2.17 per month in USF fees.[82] If the contribution factor decreased to 3.7%, this fee would decrease to $0.27 implying a savings of $1.90 every month for a

https://docs.fcc.gov/public/attachments/FCC-22-103A1.pdf. *See also*, Peter Holsin, "How Much Should I Be Paying for High-Speed Internet?," August 10, 2023, accessed August 15, 2023, https://www.highspeedinternet.com/resources/how-much-should-i-be-paying-for-high-speed-internet-resource.

74 $2.59 = $70 x 3.7%. Calculations are based on an assumption of complete pass through to the consumer and 100% inclusion of broadband revenues.

75 Katherine Stone, "What is VoIP? Voice Over IP Explained," May 23, 2023, accessed August 15, 2023, https://getvoip.com/library/what-is-voip/; John Sarkis, "USF Safe Harbor Rate is Costing Carriers Money," Advanced Technologies and Services, Inc., August 10, 2021, accessed August 18, 2023, https://blog.atso.com/usf-safe-harbor-rate-is-costing-carriers-money.

76 $3.79 = $20 x 64.9% x 29.2%. After the contribution factor decreases to 3.7% we calculate the consumer contribution to be $0.48. Calculations are based on an assumption of complete pass through to the consumer and includes the interstate safe harbor of 64.9% for allocating the interstate revenue for the VoIP line per FCC allowance. *See,* John Sarkis, "USF Safe Harbor Rate is Costing Carriers Money," Advanced Technologies and Services, Inc., August 10, 2021, accessed August 18, 2023, https://blog.atso.com/usf-safe-harbor-rate-is-costing-carriers-money.

77 $0.72 = $3.79 – ($2.59 + $0.48).

78 In this example, we have examined mobile plans for data and voice separately as it is difficult to decompose the price of a bundled plan into its constituent parts.

79 Maxwell Shukuya, "Do You Pay for Unlimited Data? You're Probably Wasting Your Money, According to a New Survey," June 26, 2023, accessed August 18, 2023, https://blog.cheapism.com/why-you-dont-need-unlimited-data-survey/.

80 $1.53 = 15GB x $2.75/GB x 3.7%. This calculation is conservative as we take the high end estimate of usage.

81 Google Fi Wireless, "Flexible," accessed August 23, 2023, https://fi.google.com/about/plans/flexible?numpeople=4. Interstate safe harbor of 37.1% for allocating the interstate revenue for the wireless service per FCC allowance. *See,* John Sarkis, "USF Safe Harbor Rate is Costing Carriers Money," Advanced Technologies and Services, Inc., August 10, 2021, accessed August 18, 2023, https://blog.atso.com/usf-safe-harbor-rate-is-costing-carriers-money.

82 $2.17 = $20 x 37.1% x 29.2%. Calculations are based on an assumption of complete pass through to the consumer and includes the interstate safe harbor of 37.1%.

single wireless voice line.[83] A consumer with mobile voice and data would save, on average, $0.37 per month.[84]

In summary, with a contribution factor of 3.7% after broadband service revenues are added, for a single consumer, they save a total of $5.21 per month on voice (fixed and mobile).[85] Adding broadband, their mobile and fixed services would have a new fee of $4.12 per month.[86] Including broadband revenues saves consumers money even in the unlikely amount of 100% pass-through.[87]

To the extent price increases from pass-through fees to broadband customers do materialize, given the broad base and consequently small contribution factor, the price impact is likely to be small.[88] Even so, the inelasticity of broadband demand implies that there is not going to be a large decrease in broadband demand as supported by recent studies of broadband demand elasticity.[89] In addition, the inclusion of broadband will automatically require high-income users with on average more expensive broadband plans to pay more into the contribution. Low-income users will on average pay less into the contribution. While it is true that this may also induce high-cost customers with costly plans to pay more into the USF, they are the primary beneficiaries and will benefit more than this in subsidies back from the fund.

V. Assessment of the Alternative Proposals for Expanding the Contribution Base

In August 2022, the Commission published its Future of USF Report to the Congress.[90] One of the most extensively debated subjects in the record was the possibility of modernizing the USF contributions system. Among others, there were two broad proposals that were advanced – (1) expanding the contribution base to include revenues from broadband internet access service, and (2) "broadening the

[83] $0.27 = $20 x 37.1% x 3.7%.

[84] $0.37 = $1.90 - $1.53.

[85] $5.21 = $1.90 + $3.31.

[86] $4.12 = $1.53 + $2.59.

[87] Similar exemplary calculations can be carried out for family plans and the argument would hold for reasonable assumptions for plan prices.

[88] Note that increases could be experienced by consumers who don't have fixed voice service. Based on our example, they would be paying $2.17 in USF fees on mobile voice today, but would pay an additional $4.39 on fixed broadband, mobile voice, and mobile broadband, an increase of $2.22. FCC recent data indicates that over 40 million households purchase fixed (wireline) voice service; thus for these households there is a likelihood of savings arising from the decrease in fees on voice service. *See,* FCC, "Voice Telephone Services: Status as of June 30, 2022," Office of Economics and Analytics, August 2022, p. 3, https://docs.fcc.gov/public/attachments/DOC-396138A1.pdf.

[89] *See,* Section IV.B.b.

[90] FCC USF Report 2022.

USF contribution base to include entities including 'edge providers' such as streaming video providers, digital advertising firms, and cloud services companies."[91] The former is consistent with our support for the proposal to expand the contribution base to include revenues from broadband internet access services (discussed in Section IV). However, the proposal to include new entities, such as edge services providers, comes in various forms and is not consistent with sound economic principles. It also ignores the institutional background and history of the USF which is important from an ease of administration of expansion and existing social compact (revenue from all services supported pay in, see Section IV.A).

The proposals in support of the inclusion of edge providers that we have examined fall under two related but economically distinct categories. First, proposals attempting to justify the inclusion of arbitrary edge provider entities; and second, proposals attempting to justify inclusion of edge entities with an internalization of externality narrative.[92] Both categories stray away from sound economic principles and only provide selective assessments of whether the proposals being described are welfare improving. The proposal to charge edge providers suggests that charging digital advertisers a service fee for USF is an optimal way to expand the USF contribution base;[93] and another suggests that a plethora of large edge providers should be considered for assessing the contribution base,[94] and that certain streaming companies[95] should pay for broadband infrastructure needs of the rural broadband providers.[96] We discuss each of these categories in further detail below.

A. Assessment of Arguments for Expansion through Inclusion of Additional Entities

The arguments asserted in support for expanding the USF contribution base by adding additional entities and sectors are two-fold:

- Fees levied on new entities will not be passed through to downstream consumers.[97]
- Fees levied on new entities will improve market efficiency by aligning incentives without causing any market distortions.[98]

---

91 FCC USF Report 2022, ¶¶ 98-106.

92 Roslyn Layton and Petrus Potgieter's submission suggests that "Big Streamers" should pay for the broadband infrastructure needs of the rural broadband providers. *See,* Layton and Potgieter Report, p. 27.

93 Singer and Tatos Report.

94 Strand Consult, "Broadband Cost Recovery: A Study of Business Models for 50 Broadband Providers in 24 US States," June 2023, https://strandconsult.dk/broadband-cost-recovery-a-study-of-50-broadband-providers-in-24-us-states-new-report-from-strand-consult/, ("Strand Consult Report").

95 The Layton and Potgieter Report considers Alphabet, Netflix, Amazon Prime Video, Disney+/Hulu, Xbox Live, and YouTube Premium as the set of "Big Streamers."

96 Layton and Potgieter Report, p. 27.

97 Singer and Tatos Report, pp. 37-40; Stand Consult Report, p. 36; Layton and Potgieter Report, p. 27.

98 Singer and Tatos Report, pp. 41-42; Layton and Potgieter Report, pp. 26-27.

However, the evidence provided to support these claims does not actually support them. In fact, a more comprehensive economic assessment suggests the opposite. In contrast to the assertions that consumers will not pay USF fees if edge providers are included, it appears likely that the costs will be passed through to consumers, and the incentives of the considered edge providers, users of edge services, and the beneficiaries of the USF will be far from aligned. The set of edge providers explicitly being proposed to be included to the USF contribution base include Meta, Google, Amazon, and ByteDance as examples of digital advertisers,[99] and also a slew of cloud computing service providers such as AWS (Amazon), Microsoft Azure, Oracle Cloud, and Alibaba Cloud.[100]

Any claims that levied fees will not be passed through to end consumers imply that the demand for that product is elastic.[101] Economic theory states that cost pass through is low for goods that have elastic demand.[102] This is because with elastic demand, if costs are attempted to be passed through via higher downstream prices, consumers will react by reducing consumption by proportionately more than the price increase, implying that passing through a bulk of any cost increases could likely reduce profits. Given this well-established economic fact, for the claims made in these proposals to be true, it must be that all of the edge providers mentioned must have very elastic demand and/or supply. That is, in the context of digital advertising, it must be that businesses that purchase digital ads consider digital ads to be very substitutable with other forms of ads. Some commenters, however, claim that the two largest digital advertisers have seen "near exponential growth."[103] This is more indicative of the increasing importance and necessity of digital advertising to businesses, which implies that demand for digital advertising will become more inelastic overtime, increasing pass through of the fees to downstream consumers.[104] The internet's ability to give businesses access to a large number of ad impressions for relatively little cost could have lowered prices, and perhaps greatly increased the quality of matches between buyer and seller.[105] In general, firms decide on a mode of advertising to attain consumer attention, market share,

---

99 Strand Consult Report, p. 40; Singer and Tatos Report, p. 45. Singer and Tatos only identify Meta and Google as digital advertisers to target for funding USF. *See,* Singer and Tatos Report, p. 42.

100 Strand Consult Report, p. 42.

101 For example, Singer and Tatos Report, pp. 37-40; Strand Consult Report, p. 36.

102 Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Seventh Edition (Pearson, 2009), pp. 338-339. Note that this is why we proactively discuss pass through induced price increases in our proposal. There is an inherent tension in discussing optimal taxation. As discussed above, taxing an inelastic base minimizes distortions, however, there is potential for a larger pass through.

103 Singer and Tatos Report, p. 31.

104 Levying taxes arbitrarily on digital advertisers could encourage digital ad providers to move from ad-supported content to subscription content. This would likely disproportionately impact low-income consumers.

105 IAB, "Internet Advertising Revenue Report," April 2022, https://www.iab.com/wp-content/uploads/2022/04/IAB_Internet_Advertising_Revenue_Report_Full_Year_2021.pdf; Hochman Consultants, "The Cost of Pay Per Click Advertising – PPC Trends and Analysis," accessed August 15, 2023, https://www.hochmanconsultants.com/cost-of-ppc-advertising/; Gabriel Shaoolian, "Digital Marketing Can Generate a Lower Cost-per-Acquisition than Offline Advertising," MarketingDive, accessed August 15, 2023, https://www.marketingdive.com/ex/mobilemarketer/cms/opinion/columns/23700.html.

and differentiate their products. This is economically beneficial and should be encouraged, not discouraged, through government fees. Note that this is an example of a sector specific positive externality (discussed in Section III.A) and if you follow the logic through to consider aligning these incentives through the USF, you would reach the conclusion that digital advertisers should receive subsidies to continue providing these services. Similar arguments apply to the other sectors and edge providers proposed as well. In other words, the well reported growth in all of these sectors imply that demand for these edge provider services is becoming more inelastic, not less.[106]

Moreover, pointing to the recent booms in the innovative edge provider sector illustrates the volatility in this base and is not an argument for why these sectors should be levied a fee.[107] During a boom for a given industry sector, it may myopically appear as if that sector makes for a good contribution base for subsidy programs, but it is important for policy makers and economists to consider the long-run perspective. For example, many industry observers believe that the rise of generative AI will bring disruptive changes in the keyword and syndicated digital ads industry. [108] Potential disruptions such as these make it difficult to predict what the contribution base will look like in the future. In contrast, by including broadband internet access services in the USF contribution base, the USF will be more stable and predictable as any medium to long-term changes in how consumers may use the internet will not cause volatility in the contribution base.[109]

Imposing a fee on specific uses of broadband to fund the USF will not align the interests of edge providers and USF beneficiaries. The first order impact of a fee imposed on such a specific use case for broadband will be to cause economic distortions.[110] Tech companies invest heavily in research, development, and

[106] "Projecting the global value of cloud: $3 trillion is up for grabs for companies that go beyond adoption," McKinsey Digital, November 28, 2022, accessed August 17, 2023, https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/projecting-the-global-value-of-cloud-3-trillion-is-up-for-grabs-for-companies-that-go-beyond-adoption.

[107] Singer and Tatos Report, p. 53; Strand Consult Report, p. 36.

[108] Matt Levin, "As Search Engines Race to Incorporate ChatGPT Technology, Where Does That Leave Digital Advertiser?," Marketplace, February 7, 2023, accessed August 15, 2023, https://www.marketplace.org/2023/02/07/as-search-engines-race-to-incorporate-chatgpt-technology-where-does-that-leave-digital-advertisers/; Nico Grant and Cade Metz, "A New Chat Bot Is a 'Code Red' for Google's Search Business," December 21, 2022, accessed August 15, 2023, https://www.nytimes.com/2022/12/21/technology/ai-chatgpt-google-search.html.

[109] Cisco, "Cisco Broadband Index: Workforce Insights on Access to Internet Services," 2022, https://www.cisco.com/c/dam/m/en_us/solutions/broadband/broadband-index/reports/Cisco_Broadband_Index_2022.pdf; Statista, "Mobile Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/mobile-data/united-states?currency=USD; Statista, "Fixed Data – United States," accessed August 14, 2023, https://www.statista.com/outlook/tmo/communication-services/fixed-data/united-states?currency=USD.

[110] The three examples that they offer for incentives being aligned are highly selective and are at best second-order effects. The examples of "aligned" incentives in the Singer and Tatos Report are: more connected underserved customers implies a larger audience base for digital ads, higher speed internet in underserved geographies mean that video ads can be played and keyword bids can be submitted without latency, and that

infrastructure to enhance their services and contribute to the adoption of broadband by enhancing the value of the service to the consumer.[111] The U.S. tech industry has been in the forefront of innovation with numerous start-ups contributing to technological advancements. Charging fees on specific use cases will distort these incentives and policymakers must be mindful to minimize such distortions. Recall that the FCC has explicitly concluded that any contribution methodology should be competitively neutral.[112] For example, a traffic-based contribution requirement on a streaming company can distort the market and skew the competitive landscape for video services. Streamers compete with traditional MVPDs (such as cable and satellite), and we have seen in an increase in consumers who are actively choosing to "cut the cord."[113] This is because streamers are providing a service that some consumers prefer over traditional MVPDs, and any distortion in relative prices that may revert this choice is an explicit harm to consumers who have cut the cord for streaming. In the long run, such distortion could result in streamers reducing investment, leading to less competitive video options for all consumers. In addition, there are traditional MVPDs who now only offer a streaming product—for example, WideOpenWest (WOW) no longer provides its own video service, and it now relies on YouTube TV as a video option for its subscribers. If the USF fee applies to streaming, these providers would be competing on an unequal footing with services that are substitutable to the consumer. In contrast, expanding the contribution base to include broadband internet access service revenues retains the relative price across various uses for broadband. Hence little market distortion is created in resource allocation.

In fact, the edge providers considered are digital advertisers, cloud computing, and streamers, and they all imply the type of market distortions that arise from having a narrow revenue base. A USF fee on some online uses and not others could distort how consumers use their broadband as they are incented through higher prices to choose services without the fee. For example, if there is a USF fee on streamers, but not on cloud providers, this could reduce the number of consumers who switch to streaming as a more affordable alternative to cable. Should the fee apply to cloud, but not gaming, then you would see a similar result—harms to the development, innovation, and investment in the cloud.

---

urban dwellers can take advantage of work from home opportunities and work in rural areas to benefit the local rural economy. *See*, Singer and Tatos Report, pp. 41-42.

[111] David Abecassis *et al.*, "The Impact of Tech Companies' Network Investment on the Economics of Broadband ISPs," Analysis Mason, October 2022, p. 4, https://www.incompas.org/Files/2022%20Tech%20Investment/FINAL%20Analysys%20Mason%20Report%20-%20Impact%20of%20tech%20companies'%20network%20investment%20on%20the%20economics%20of%20broadband%20ISPs.pdf.

[112] FCC, "In the Matter of Universal Service Contribution Methodology…" WC Docket Nos. 06-122 and 04-36, CC Docket Nos. 96-45, 98-171, 90-571, 92-237, 99-200, 95-116, and 98-170, NSD File No. L-00-72, Report and Order and Notice of Proposed Rulemaking, FCC 06-94, June 27, 2006, ¶ 6, https://docs.fcc.gov/public/attachments/FCC-06-94A1.pdf.

[113] Tom Butts, "Cord-Cutting Accelerates, Hitting Record High in Q1 2023," May 16, 2023, accessed August 15, 2023, https://www.tvtechnology.com/news/cord-cutting-accelerates-hitting-record-high-in-q1-2023; Daniel Frankel, "Cord-Cutting Spiked 60% in 2022 for the Five Biggest Remaining Publicly Transparent Operators in the U.S.," February 8, 2023, https://www.nexttv.com/news/cord-cutting-spiked-60-in-2022-for-the-five-remaining-publicly-transparent-operators.

From an economic perspective, it is also the case that bringing in these edge providers to fund the USF directly is completely arbitrary as there are no externalities relevant to the USF (*i.e.*, providing connectivity to low-income consumers and/or high-cost areas) that need to be internalized from these edge providers. There are externalities unrelated to USF involved here. The edge providers mentioned in the above-referenced proposals (*e.g.*, streaming platforms, digital advertisers, and cloud computing services) can, and do, generate positive externalities for broadband networks and the internet ecosystem as a whole. These positive externalities increase broadband usage and increase the value of the network. However, it would be historically inconsistent and politically unprecedented for the USF to disburse subsidies to edge providers for popularizing and normalizing use cases of broadband and vice versa, even though it is inarguable that positive externalities were generated. Hence, going down the path of accounting for these sector specific externalities would be straying away from both economic principles and the historical and institutional construct of the USF.

B. Assessment of Arguments Claiming an Internalization of an Externality

We emphasize that consumers already pay for broadband infrastructure through their broadband subscription fees, and the USF already provides support for both the consumer and provider such that consumers are served. Thus, assessing edge providers would be tantamount to a double payment for an externality that consumers did not cause (*i.e.*, the externality here is that the geography is high cost to deploy resulting in difficult to achieve economies of scale required for efficiency, potentially in middle mile infrastructure). An additional fee on streaming could potentially discourage use, causing market distortions.

Despite this, some proposals suggest that certain streamers are imposing a congestion externality and causing rural broadband providers to face increasing capital and operating expenditures, and hence should be made to pay into the USF.[114] However, notwithstanding the lack of support for this assertion, congestion issues do not necessitate government intervention by their nature.[115] Indeed, there are private Coasian bargaining solutions to these problems as illustrated by the propagation of Content Delivery

[114] Layton and Potgieter Report and Strand Consult Report.

[115] It is not within the scope of this paper to criticize the survey methods and data collected by the Strand Consult Report. But it is worth noting that there are some clear inconsistencies with how the data was collected and used. For example, the report's definitions of revenues and expenditures seem inconsistent and incompatible for comparison by using revenue data for just home subscribers but using expenditure data for home and business subscribers. To this extent, we are skeptical of the quality and relevance of the data. However, the proposals laid out in the Strand Consult report are flawed at a conceptual level, even if one were to take the data as given.

Networks ("CDN") owned by online content providers in recent years.[116] Coasian bargaining describes an economic theory which states that with well established and enforced property rights, if parties are able to negotiate freely, externalities can be internalized by the parties privately contracting, without government intervention.[117] These deals between streamers and internet service providers to effectively have the streamers pay for the incremental network infrastructure required to provide streaming services are a classic example of a Coasian bargain at work. Both parties realize that there is a benefit (in this context, streamers get more subscribers as the quality of their stream improves, internet providers get a less congested network for non-streaming users while also allowing subscribers to stream as much as they like) to coming to a deal that internalizes these negative externalities. Coasian bargaining implies that these parties will be able to figure out a contract to split the combined benefit. The split is facilitated by the streamer providing the sector with CDNs.

Congestion externalities in the context of streaming are only a potential problem in high-cost areas, and in most other geographies, as discussed above, they can be, and have been, resolved through private negotiations and contracting.[118] The sub-segment of the market where these issues are suggested to be prevalent is just a small segment of the industry (e.g., incumbent telephone companies providing broadband in rural areas).[119] For example, even in the proposal where this issue is brought up, the analysis only looks at rural broadband providers that are offering fiber to the home services,[120] and even of this sub-segment of the market, only examine four networks.[121] Furthermore, given this analysis, there is no way to conclude if the increasing expenditures asserted in this analysis are just reflecting the natural lumpiness in capital expenditures or indicative of an on going problem due to purported externalities imposed by the consumption of streaming services.[122]

This demonstrates that it is not an inherent issue between consumer demand for streaming services, streamers, and broadband provision. It is an issue of market failure from economies of scale and high-cost deployment, not broader sector specific negative externalities imposed by the consumption of streaming services. To the extent that the USF High-Cost programs may need to be modified to address market failures (*e.g.*, allowed to cover middle-mile costs as currently USF funds for deployment are earmarked

[116] Layton and Potgieter Report, pp. 5, 8; Optimal CDN, "Web Performance Optimization," accessed August 15, 2023, https://www.optimalcdn.com/en/content_what-is-a-CDN.php; Mark Hoelzel, "Here's Why Netflix And Google Are Pouring Resources Into Their Own Content Distribution Networks," June 3, 2014, accessed August 15, 2023, https://www.businessinsider.com/netflix-and-google-are-building-out-their-own-content-distribution-networks-2014-6.

[117] Hal R. Varian, "Intermediate Micro Economics," Seventh Edition (Norton, 2006), pp. 630-632.

[118] Even the Strand Consult Report states that rural providers' economies of scale is the reason that CDN services cannot be purchased. This is not a streamer specific issue and the inclusion of streamers would be completely arbitrary. *See,* Strand Consult Report, pp. 17-18.

[119] Layton and Potgieter Report, pp. 8-9.

[120] Strand Consult Report, p. 11.

[121] Strand Consult Report, pp. 19-20.

[122] Note the authors themselves point out that "Capital expenditure (capex) is somewhat irregular (and this can be attributed to the cyclical nature of investment)." *See,* Strand Consult Report, p. 23.

for last-mile support) that should be the focus of the discussion and further research. Discussions around the technical specifics of how the USF can be spent to achieve its mandate raise wholly separate issues; in this case they are not relevant to how USF should be funded. Even taking the claims about the consumption of content provided by certain edge providers creating negative externalities on a handful of rural broadband providers on its face, it does not make economic sense to require new entities and sectors to start contributing to the USF, which has a much broader, society-wide mandate.

VI. Conclusion

We find the current USF contribution base is narrow and distortionary. This is because over the last two decades there has been a broad and general shift in the industry from voice-based services to internet-based communication, simultaneously shrinking the contribution base and only covering a narrow segment of the market (*i.e.,* mostly voice services) in terms of who pays into the fund. Given this issue, sound economic principles state that the modernization of the USF should strive to make the contribution base broader, less distortionary, and predictable to improve economic efficiency and sustainability over time.

We find that expanding the contribution base to include revenues from broadband internet access service will achieve these goals. Broadband internet access service is ubiquitous and is an input to all specific uses of the internet, making it a broad and non-distortionary base. For this same reason, it is also stable and predictable in the medium to long-term, resisting fluctuations in specific internet industry trends.

We also find that, under plausible assumptions for service plan prices, consumers will not face a significant price increase and could potentially experience savings due to the decrease in the contribution factor on voice service. And to the extent any additional fees levied are passed onto downstream consumers, the burden will be increasingly borne by relatively more by high-income consumers.

We have also examined alternative proposals to include various edge providers in the USF contribution base. We find that these proposals are arbitrary and inconsistent with sound economic principles. We have not found any economically consistent reason that a particular edge provider industry should be included to fund the USF as the market failures and externalities generated by these providers are not society-wide, but are sector specific. Internalizing sector specific externalities has never been part of the USF mandate. In addition, singling out any sector to be included into the contribution base will necessarily cause a reshuffling of resource allocation, for consumers, businesses, and entities paying into the USF — imposing arbitrary distortions on the market. We find that arguments claiming that the fees will not be passed through to consumers are unfounded and contrary to empirical fact patterns, which show that edge provider services such as digital advertising and cloud computing are becoming more necessary and important, which sets the stage for increasingly inelastic demand and high pass-through rates to consumers.

CONSORTIUM FOR CONSTITUENTS WITH DISABILITIES

July 26, 2023

The Honorable Brian Fitzpatrick, Co-Chair
Congressional Bipartisan Disabilities Caucus
U.S. House of Representatives
271 Cannon House Office Building
Washington, DC 20515

The Honorable Debbie Dingell, Co-Chair
Congressional Bipartisan Disabilities Caucus
U.S. House of Representatives
102 Cannon House Office Building
Washington, DC 20515

Re: Letter Urging Congress to Support Additional Funding for the Federal Communications Commission's Affordable Connectivity Program.

Dear Representative Fitzpatrick and Representative Dingell:

The under-signed members of the Consortium for Constituents with Disabilities (CCD) Technology & Telecommunications Task Force write to express our strong support for the Federal Communications Commission's (FCC) Affordable Connectivity Program (ACP) and to urge Congress to allocate additional funding to this crucial initiative. By investing in the FCC's Affordable Connectivity Program, we can address the existing digital disparities faced by people with disabilities and promote a more inclusive and equitable society. As the Co-Chairs of the Congressional Bipartisan Disabilities Caucus, we appreciate your leadership in ensuring that the ACP continues to close the digital divide for people with disabilities and millions of eligible households across our nation.

The CCD is the country's largest coalition of national organizations working together to advocate for federal public policy that ensures the self-determination, independence, empowerment, integration and inclusion of children and adults with disabilities in all aspects of society free from racism, ableism, sexism, and xenophobia, as well as LGBTQ+ based discrimination and religious intolerance.

Access to affordable and robust broadband connectivity is a fundamental necessity in our increasingly digital world. Unfortunately, many people with disabilities face significant barriers when it comes to accessing affordable broadband services. Broadband is no longer just a convenience; it is a vital tool that enables individuals to access educational resources, healthcare services, employment and job opportunities, as well as civic, community, and social engagement:

Access to Education – Reliable Internet access is crucial for students with disabilities to participate in remote learning, access online educational materials using their assistive

technology, and engage with their peers and teachers. By ensuring the longevity of the ACP, more students will have the opportunity to succeed academically and develop essential skills for the future.

Healthcare Services – Many individuals with disabilities rely on telehealth services to receive specialized medical care, consultations, and therapies. Adequate funding for the program will enable people with disabilities to access healthcare professionals and services remotely, reducing barriers to care, such as timely and independent access to transportation, while improving their overall health outcomes.

Economic, Employment, and Job Opportunities – Broadband has become a vital platform for finding employment, accessing job training resources, starting online businesses, and working remotely. By ensuring affordable connectivity, people with disabilities can explore, pursue, and participate in various economic opportunities, promoting and ensuring financial independence and inclusivity.

Civic, Community, and Social Engagement and Inclusion – Access to broadband allows people with disabilities to connect with others, fulfill civic and community responsibilities, participate in social networks, and engage in recreational activities. Additional funding for the ACP would empower more people with disabilities to overcome isolation and build meaningful relationships as integrated and engaged members of their communities and beyond.

As you are acutely aware, while the ACP has made great strides in making broadband services more affordable to low-income households, not only must the progress we have made be sustained, much more outreach and household inclusion remains to be done. In fact, the FCC's work to engage with community and disability outreach partners has barely begun. These organizations and grant recipients are only now receiving the necessary support from the Commission for their outreach and enrollment efforts. If the Program funding were to lapse, millions of households would be left behind and these government-supported outreach efforts will have been for nought. By providing additional funding to this program, Congress can maintain its commitment to the more than 19 million households already served by the ACP and expand the reach of the program to the projected 51.6 million eligible households across our nation.

For these reasons, the under-signed member organizations of the CCD Technology and Telecommunications Task Force pledge our support to work with you to secure additional funding for the ACP. With a sustained, adequate federal investment, we can ensure that affordability is not a barrier to people with disabilities having the necessary tools to live healthier lives, fuller access to work, and to fully engage with their communities in the digital age. If you have any questions or would like to discuss the importance of the ACP for people with disabilities in more detail, please contact the CCD Technology and Telecommunications Task Force Co-Chairs: Audrey Busch-Treussard (audrey.busch-treussard@ataporg.org); Laura Kaloi (lkaloi@stridepolicy.com); & Clark Rachfal (crachfal@acb.org).

Sincerely,
Access Ready
American Association of People with Disabilities
American Council of the Blind

American Foundation for the Blind
American Printing House for the Blind
Association of Assistive Technology Act Programs
Autistic Women & Nonbinary Network
Family Voice
National Consumer Law Center, on behalf of its low-income clients
National Disability Rights Network (NDRN)
Perkins School for the Blind
United Spinal Association

Cc: The Honorable Cathy McMorris Rodgers, Chair, House Energy and Commerce Committee; The Honorable Frank Pallone, Ranking Member, House Energy and Commerce Committee.

September 21, 2023

RE: Additional Funding for the Affordable Connectivity Program

The Honorable Cathy McMorris Rodgers
Chair, House Committee on Energy and Commerce
2188 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Frank Pallone
Ranking Member, House Committee on Energy and Commerce
2107 Rayburn House Office Building
Washington, D.C. 20515The Honorable Bob Latta
Chair, Subcommittee on Communications and Technology
2467 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Doris Matsui
Ranking Member, Subcommittee on Communications and Technology
2311 Rayburn House Office Building
Washington, D.C. 20515

ACLU
AMERICAN CIVIL LIBERTIES UNION

National Political Advocacy Department
915 15th Street, NW, 6th Floor
Washington, DC 20005-2112
aclu.org

Deirdre Schifeling
National Political Director

Anthony D. Romero
Executive Director

Deborah N. Archer
President

Dear Chair McMorris Rodgers, Ranking Member Pallone, Chair Latta, and Ranking Member Matsui:

The American Civil Liberties Union strongly urges you to continue funding the Affordable Connectivity Program (ACP), because of its critical importance for systemic equality. Broadband is necessary for everyone in the United States to access their full potential. It offers the tools needed to work, learn, access healthcare, keep up with loved ones, find critical information during an emergency, and even look up information about candidates for elected office. Unfortunately, broadband has been out of reach for the most marginalized communities for too long. This is in large part because the cost of broadband far exceeds what many low-income, Black, Latinx, Indigenous, and rural households can afford.

The ACP has been an extraordinarily successful program that has made a fundamental difference in the lives of tens of millions of Americans. To date, it has helped nearly 21 million

households connect to the internet, some for the first time.[1] But, when the program runs out of funding, as early as March of next year[2], some households will have to disconnect from the internet altogether, while others will have to forgo other necessities, like adequate food and electricity, in order to stay connected.

Our nation cannot let the high cost of broadband be the reason that members of marginalized communities cannot connect. Congress must promptly appropriate the funding necessary to keep the ACP afloat for at least the next two years.

We look forward to working with Congress to prevent this catastrophic outcome. If you have any questions, please do not hesitate to reach out to Jenna Leventoff, jleventoff@aclu.org.

Sincerely,

Christopher Anders
Federal Policy Director

Jenna Leventoff
Senior Policy Counsel

ACLU
AMERICAN CIVIL LIBERTIES UNION

National Political Advocacy Department
915 15th Street, NW, 6th Floor
Washington, DC 20005-2112
aclu.org

Deirdre Schifeling
National Political Director

Anthony D. Romero
Executive Director

Deborah N. Archer
President

[1] Universal Service Administrative Company, *ACP Enrollment and Claims Tracker*, https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/.

[2] Letter from Reps. Gottheimer, Fitzpatrick, et. all to House and Senate Leadership regarding extended funding for the Affordable Connectivity Program (August 17, 2023), https://d12t4t5x3vyizu.cloudfront.net/gottheimer.house.gov/uploads/2023/08/8.17.2023-Reps.-Gottheimer-Fitzpatricks-Letter-to-Leadership-on-ACP-Broadband.pdf.

Closing the Digital Divide Benefits Everyone, Not Just the Disconnected

An analysis of how universal connectivity benefits education, health care, government services, and employment

common sense® + BCG

Closing the Digital Divide Benefits Everyone, Not Just the Disconnected

An analysis of how universal connectivity benefits education, health care, government services, and employment

This report was developed by Boston Consulting Group (BCG) in partnership with Common Sense.

Common Sense is the nation's leading nonprofit organization dedicated to improving the lives of all kids and families by providing the trustworthy information, education, and independent voice they need to thrive in the 21st century.

Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities in order to unlock the potential of those who advance the world.

This report was funded by Endless, Carnegie Corporation, and the Walton Family Foundation.

AUTHORS

Kelsey Clark, BCG

Amina Fazlullah, Common Sense

Drew Garner, Common Sense

Sima Golnabi, BCG

Hannah Hill, BCG

Matt Kalmus, BCG

Meghan McQuiggan, BCG

Erica Salmirs, BCG

Suggested citation: Clark, K., Fazlullah, A., Garner, D., Golnabi, S., Hill, H., Kalmus, M., McQuiggan, M., and Salmirs, E. (2022). *Closing the digital divide benefits everyone, not just the disconnected: An analysis of how universal connectivity benefits education, health care, government services, and employment.* San Francisco, CA: Common Sense.

Table of Contents

Abstract 1

Introduction 2

Section 1: How Institutions Use Connectivity 4

Section 2: The Infrastructure Required to Innovate Essential Services 16

Section 3: How Federal Funds Can Close the Digital Divide and Ensure Equitable Access to Essential Services 20

Conclusion 33

Appendix A: Support Analysis 35

Appendix B: Case Studies 36

Appendix C: Interviewees 40

Abstract

Institutions, including schools, hospitals, and governments, have a duty to make their services universally accessible. This duty means that these institutions are unable to fully integrate internet-based technologies into their services because doing so would effectively deny service to people who cannot access the internet.

However, if states can ensure that all people have access to the internet, then institutions will be able to integrate internet-based technologies into their services, improving them for the benefit of all. In this way, closing the digital divide benefits everyone, even households that already have connectivity. Moreover, by shifting the majority of their users online, institutions will be able to specialize their remaining offline services to the unique needs of their most vulnerable and disconnected users.

Closing the digital divide benefits everyone, even households that already have connectivity.

This report explores how this dynamic affects four institutional services: education, health care, government services, and employment. Specifically, the report examines how these services are improved through the integration of internet-based technologies; which types of internet infrastructure result in the greatest improvements to institutional services; and how universal access to high-quality internet—the precondition to allow integration of internet-based technologies—can be achieved using recent federal funding opportunities.

The passage of the American Rescue Plan Act and Infrastructure Investment and Jobs Act has given state governments the opportunity to close their digital divides once and for all. If states are successful, they will not only bring connectivity to the disconnected, they will allow institutions to improve the services that are central to much of our lives. This report is designed to give state governments the information they need to make this a reality.

Introduction

The internet is valuable because of what it enables

Imagine you're the administrator of a school district. Your goal is to help students recover from pandemic-era learning loss and prepare them for success in the modern, digital world. You've identified a promising new curriculum that uses online modules to tailor lessons to individual student needs. This curriculum has proven very successful in other districts—students find it engaging and educational, administrators find it easy to use and customize, and teachers find that it lessens their workloads, allowing them to spend more time with students who need individual attention. However, research has shown that at least 16 million students are caught in the persistent digital divide,[1] including nearly a quarter of the students in your district. These students don't have access to home internet service, which is needed to use this curriculum's online assignments, modules, and other internet-based features. What do you do?

If you use the curriculum, the majority of students will benefit. Average scores will improve, family satisfaction will increase, and the need for tutoring and summer programs will decline. However, the benefits will not be equitably distributed, and students without home internet will struggle. These students will have to use their parents' or caregivers' phones as an internet hotspot, which can be prohibitively expensive; find free public Wi-Fi, which can mean hours spent in libraries or parking lots; or simply resign themselves to missing parts of the curriculum. These students will fall behind while their more connected peers make rapid progress.

On the other hand, if you don't use the curriculum, then all students will suffer from the missed opportunity. Your district may fall behind others that adopt the curriculum, your teachers will struggle to meet the disparate impact of learning loss, and your students will spend their time learning to use textbooks rather than computers. In short, all students will be denied the best education available at a time when it is needed most.

Both options have downsides, and yet these are the choices many school administrators face because the best educational tools require the internet.

Luckily, there is now a third option: give every student home internet access. Challenging as it may sound, this option is now possible because of a series of federal laws passed in 2021. These laws have the potential to ensure that every single student has access to high-quality internet at home. If this is achieved, school administrators can implement the best and most cutting-edge curricula available without leaving any students behind.

This report explores how to make this third option a reality. The central point of the report is that, by ensuring every household is connected to high-quality internet, public institutions—like schools, but also health care providers, governments, and employers—can make full use of internet-based technologies, improving both online and offline services for the benefit of everyone.

1. Common Sense Media and Boston Consulting Group. (2020). *Closing the K–12 digital divide in the age of distance learning.* https://www.commonsensemedia.org/sites/default/files/featured-content/files/common_sense_media_report_final_7_1_3pm_web.pdf.

The report is separated into three sections:

Section 1: How Institutions Use Connectivity

In the first section, we highlight how the digital divide affects four essential services—education, health care, government services, and employment—and the institutions that provide them. We find that, despite the potential for service improvements and cost savings, institutions do not make full use of internet-based technologies because institutions cannot expect the populations they serve to have universal access to high-quality internet. Conversely, when institutions are confident that their populations have internet access, they improve their services using internet-based technologies. In this way, closing the digital divide benefits everyone, not just the disconnected.

Institutions do not make full use of internet-based technologies because institutions cannot expect the populations they serve to have universal access to high-quality internet.

Section 2: The Infrastructure Required to Innovate Essential Services

In the second section, we analyze how government decisions about the infrastructure of the internet affect the services offered by institutions. When the physical infrastructure of the internet—wires, switches, and towers—are of low quality, then the services carried by this infrastructure suffer. **We find that fiber infrastructure delivers the highest-quality services at a level of scale, consistency, and affordability that ensures institutional services remain universally accessible**. Fiber should be the first choice for deployment where it is not cost prohibitive. If fiber cannot be deployed, cable should be used. Only when neither is viable should fixed wireless be considered. In general, wired technologies, such as fiber and cable, have better reliability, lower ongoing operating costs, and faster latency than fixed wireless technologies.

Fiber should be the first choice for deployment where it is not cost prohibitive.

Section 3: How Federal Funds Can Close the Digital Divide and Ensure Equitable Access to Essential Services

In the third section, we explain how recent federal laws make it possible for states to give all households access to high-quality internet services. We focus on the two most prominent laws: the American Rescue Plan Act (ARPA) and the Infrastructure Investment and Jobs Act (IIJA). **We find states can best implement these acts' more than $80 billion in broadband funding by taking five key actions.** States should 1) build state administrative capacity in preparation for the programs; 2) collect data on the size, locations, causes, and consequences of the state's digital divide; 3) incorporate community stakeholders and institutions into the broadband planning process; 4) promote benefit programs that enable lower-income and digitally divided households to get online; and 5) ensure the state's legal and regulatory systems are conducive for sustainable broadband adoption.

Recent federal laws make it possible for states to give all households access to high-quality internet services.

Section 1: How Institutions Use Connectivity

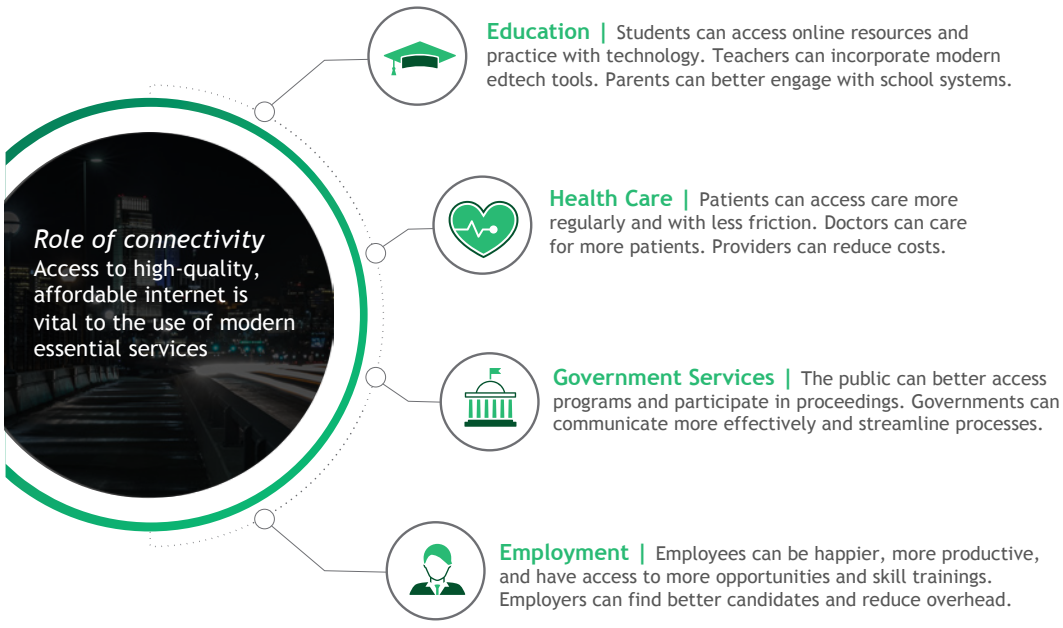
The internet at its best

From the perspective of governments, there are strong equity and economic reasons to close the digital divide, and the long-term financial returns of connectivity far exceed the cost to provide it. At the national level, addressing the digital divide would increase labor productivity by 1.1%—a $160 billion boost to annual GDP.[2] Locally, broadband deployment can generate three- to four-fold economic returns over the initial cost of investment.[3]

At the institutional level, universal access to affordable, high-speed internet can allow governments and institutions to modernize essential public services while also ensuring equitable access throughout a community, city, or state. The central benefit is that internet-based services facilitate human-to-human interactions. Whether through video calls, collaborative software, VR, or other applications, high-quality internet makes it easier for people to connect with those who can provide essential services. As highlighted in Figure 1, this section explores how connectivity affects four such services:

1. Education
2. Health Care
3. Government Services
4. Employment

FIGURE 1. The four essential institutional services



2. National Bureau of Economic Research. (2021). *Internet access and its implications for productivity, inequality, and resilience.* https://www.nber.org/papers/w29102.
3. Grant, A., Tyner, W. & DeBoer, L. (2018). *Estimation of the net benefits of Indiana statewide adoption of rural broadband.* Purdue University and Center for Regional Development. https://pcrd.purdue.edu/wp-content/uploads/2018/12/006-RPINsights-Indiana-Broadband-Study.pdf.

Education. Students have better access to teachers, tutors, information sources, platforms for content creation and sharing, and collaborative workspaces. Teachers can employ edtech tools and advanced technology (AR/VR), individualized curricula, and comprehensive grading and feedback systems, and they can better collaborate with parents and caregivers. Schools can better accommodate computers and modern student data systems, student mobility, disability access, and disruptions during emergencies.

> *"Achieving universal broadband coverage will make communities more competitive economically, make them healthier, and improve educational access. If we are serious about competing in today's global economy and recruiting the best talent to come to our state and keeping our children where they grew up, then we must do everything in our power to end the digital divide."*
>
> — Governor Laura Kelly of Kansas

Health Care. Patients have better access to services, telemedicine, medication maintenance, and appointment scheduling, and these conveniences increase health care usage. Doctors, particularly mental health specialists, are able to see more patients, serve more remote areas, and interact with patients on a more regular basis. Clinics and hospitals can integrate remote health monitoring technologies, reduce costs, increase likelihood of early diagnosis, and decrease wait times.

Government Services. Households can more easily use benefit programs, submit service requests, and participate in government proceedings. Governments can improve the speed and efficiency of their services, improve mass communication and program awareness, and reduce reliance on costly in-person infrastructure. These improvements increase trust in government.

> *"In today's world, reliable broadband is as essential as water and electricity. This expansion will be transformative for Tennessee families and businesses by removing barriers to commerce, health care, and educational opportunities, as well as other necessities of modern life."*
>
> — State Representative Patsy Hazlewood

Employment. Remote workers are more satisfied and productive, and easier to retain. Job seekers have more opportunities, and employers can find better candidates. Connectivity has been shown to increase employment rates, earnings, job skills, and corporate diversity.

> *"This round of improvements will help people who need high-speed internet to work remotely, allow students to do their homework, give our seniors access to the telehealth options they need, and businesses the ability to compete on the world stage. The possibilities go on and on, and West Virginians everywhere deserve the best access possible."*
>
> — Governor Jim Justice of West Virginia

The Role of Offline Solutions

The transition to universal internet service will take time, and during this period, institutions must continue to offer robust offline services to ensure equitable access. But even if every home eventually gets access to high-quality internet, persistent income inequality and barriers to acquiring digital skills will mean that there will always be some portion of the population that needs offline services (see Figure 2).

However, if institutions can shift the majority of their users to online services, then they can specialize their offline services to the unique needs of this persistently offline population, which often has additional challenges beyond a lack of connectivity. In this way, universal connectivity allows institutions to improve both their online and offline services by more efficiently allocating resources.

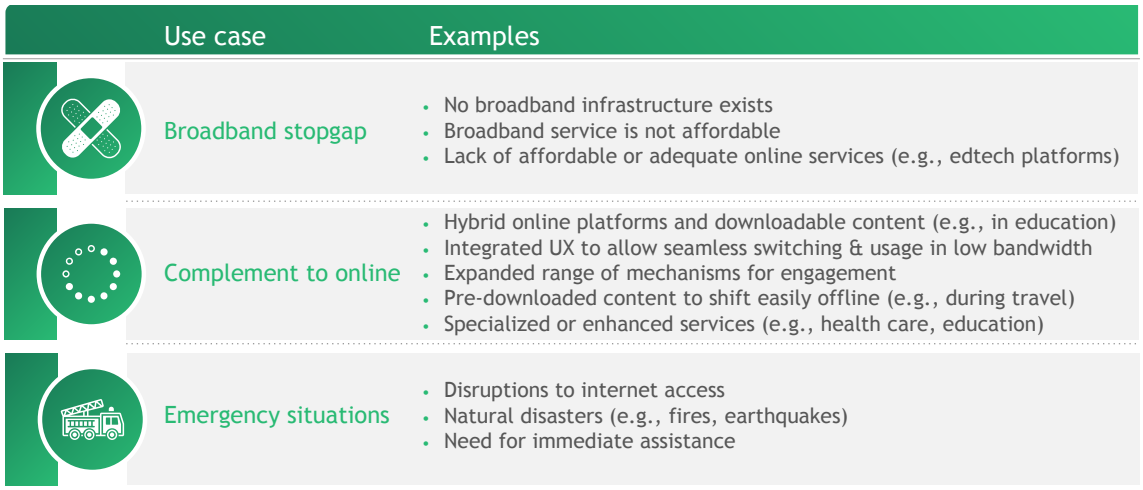
In this way, universal connectivity allows institutions to improve both their online and offline services by more efficiently allocating resources.

Additionally, institutions may encounter disruptions in internet service that require them to use offline services. For example, internet service may be disrupted due to natural disasters, requiring students to quickly shift to offline learning. In such cases, the offline options should have a similar user experience to the online option to ensure that students can easily continue their studies without requiring training in a new system.

Similarly, an inability to afford service can disrupt a home's connectivity. Educators know that the rising cost of internet service and fluctuations in a home's income can mean that some families will not be able to consistently afford a level of service that supports online education. New federal programs will reduce this possibility, but until these programs are fully implemented, any online curricula should be supplemented with offline or low-bandwidth material. This alternative should be downloadable while on a school or library network or by distributing laptops with preloaded content.

It is important to stress that institutions have a strong preference for online solutions, as they are more flexible, effective, and enable multidirectional communication between the institutions and their audience. However, even in a fully connected world, offline solutions will have a role to play, but they will evolve from their current role as a generalized stopgap for anyone in the digital divide and instead become specialized services for those with low digital literacy and as emergency alternatives when internet disruptions occur.

FIGURE 2. Offline solutions will continue to play a role in ensuring equitable access



Education

Long before the pandemic, classrooms had increasingly embraced the role of technology. By 2019, investments in global edtech were nearly $19 billion, and they are projected to reach $350 billion by 2025.[4] Pre-COVID-19, one-fifth of U.S. public schools already offered courses entirely online.[5]

The growth of online education in K–12 is expected to continue and become a permanent fixture in many schools. Between 20–30% of parents have expressed interest in continuing remote learning for their children post-COVID,[6] and 30% of school districts and charter management organizations are considering or in the process of implementing an online or hybrid approach post-pandemic.[7] **Even for students who are returning to traditional in-person classrooms, the use of online curricula and edtech tools will necessitate high-quality connectivity at home.**

This increased interest in online curricula is warranted, given the potential to positively impact student outcomes, particularly in core reading and numeracy skills.[8] Online curricula are effective because they adapt lessons to individual student needs, integrate one-on-one tutoring, and improve student engagement through interactivity and gamification.[9] Moreover, the tools of online curricula are computers and the internet, not paper and textbooks, and so students develop skills with technology and digital citizenship that will benefit them for the rest of their lives.[10] Online curricula also expand access to teachers and can address teacher shortages. For example, Tucson, Arizona, may hire remote math instructors to teach students in online classrooms for part of the day.[11] While not an optimal solution, this would allow the city to continue education until in-person teachers become available.

Online curricula also allow schools to respond to emergencies. This was exemplified prominently during the pandemic, but it can happen for numerous reasons. In New Jersey, schools went online in response to long-term storm damage to the school buildings;[12] in Philadelphia, they went online due to heat; and, in Jackson, Mississippi, they went online during a water crisis. When schools know their students have home internet access, they can be more adaptable.

From an administrative perspective, universal connectivity allows schools to achieve a number of benefits. By purchasing at scale, districts can benefit from the cost efficiencies of bulk procurement and invest in enhanced procurement systems.[13] For example, when the Maine Learning Technology Initiative (MLTI) conducted a procurement to connect all students, they established service-level agreements that included maintenance and repairs, ensuring greater sustainability of results and a provider focus on performance. Connecting all students through the same hardware and software enables better systems integration, better data-tracking of student usage and technology needs, and better student mobility between

4. Li, C. & Lalani, F. (2020). *The COVID-19 pandemic has changed education forever.* This is how. World Economic Forum. https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/.
5. National Center for Education Statistics. (n.d.). *Fast facts: Distance learning.* https://nces.ed.gov/fastfacts/display.asp?id=79.
6. Torchia, R. (2021). *Is virtual learning here to stay for K–12?* EdTech Magazine. https://edtechmagazine.com/k12/article/2021/04/virtual-learning-here-stay-k-12-perfcon.
7. Congressional Research Service. (2021). *Remote learning for K–12 schools during the COVID-19 pandemic*. https://sgp.fas.org/crs/misc/R46883.pdf.
8. Ganimian, A., Vegas, E. & Hess, F. (2020). *Realizing the promise: How can education technology improve learning for all?* Center for Universal Education at Brookings. https://www.brookings.edu/essay/realizing-the-promise-how-can-education-technology-improve-learning-for-all/.
9. Vegas, E. (2022). Education technology post-COVID-19: *A missed opportunity?* Brookings. https://www.brookings.edu/blog/education-plus-development/2022/03/11/education-technology-post-covid-19-a-missed-opportunity/.
10. PowerSchool. (2021). *The classroom guide to digital literacy in K–12 education.* https://www.powerschool.com/blog/the-classroom-guide-to-digital-literacy-in-k-12-education.
11. Natanson, H. (2022). *'Never seen it this bad': America faces catastrophic teacher shortage.* Washington Post. https://www.washingtonpost.com/education/2022/08/03/school-teacher-shortage/.
12. Grom, C. (2021). *1 of N.J.'s largest school districts to delay start after Ida flooding.* NJ.com. https://www.nj.com/news/2021/09/1-of-njs-largest-school-districts-to-delay-start-after-ida-flooding.html.
13. Bazzaz, D. (2020). *Washington is buying $24M worth of computer technology for students.* Seattle Times. https://www.seattletimes.com/seattle-news/education/washington-is-purchasing-24-million-worth-of-computer-technology-for-students/.

schools in the system. Technology integration even extends to student transportation—Wi-Fi-enabled school buses contribute to fewer behavioral incidents, safer bus rides, and lower driver turnover for student transportation.[14] However, without universal connectivity, schools cannot reap these benefits.

This loss is particularly acute in the present climate, where many schools are implementing rigorous programs for learning recovery and remediation. Students in some districts may have lost the equivalent of 22 weeks of instruction,[15] and this is expected to decrease their lifetime earnings by 2.5% per year. Given the number of affected students, this equates to nearly 13% of annual GDP.[16] Therefore, helping students catch up on instruction and critical academic skills is essential, and internet connectivity can help students access online learning and tutoring tools.

Lack of universal connectivity also inhibits schools from exploring cutting-edge educational technologies, such as those that tailor instruction and assessment through AI and use virtual simulations. Schools and universities have used VR in role-playing education exercises involving negotiation, as well as virtual labs to engage students in hands-on learning environments, and virtual campus spaces for students around the world to interact. There are also ways to leverage these technologies to help teach students with functional needs; some districts, for example, are beginning to use VR to help students with functional needs transition to new school environments more easily by allowing them to tour these spaces online ahead of time.[17]

Over 40% of Title I teachers do not assign work that requires internet access because they fear that doing so would exacerbate inequalities.

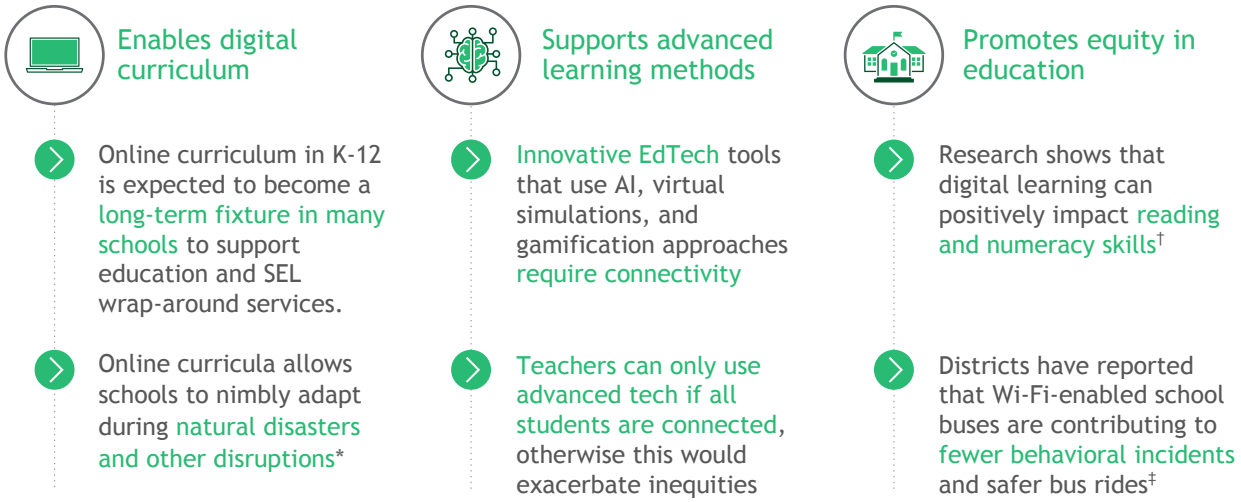
Far from cutting-edge technologies, schools will struggle even to implement simple online applications when they aren't confident that all of their students have home internet service. Over 40% of Title I teachers do not assign work that requires internet access because they fear that doing so would exacerbate inequalities, and nearly 60% report that a lack of home internet and computers limits student learning.[18] This hesitancy, though necessary to ensure fairness among students, prevents all students from using one of the best educational resources ever created: the internet.

Spotlight: Washoe County School District

This Nevada district provides another example of the benefits of widespread connectivity in education settings. The district conducted a technology readiness survey and purchased 17,000 laptops and 6,000 hotspots for the disconnected families the survey identified. This widespread technology distribution unlocked substantial collaboration across the district; as classes shifted back to hybrid and in-person formats in 2021, students and teachers continued using the devices to access communication portals and digital learning materials. In addition, the district implemented a long-term Laptop Refresh Program, which aims to standardize district-wide technology and enable bulk device purchasing, creating pricing efficiencies. For students, standardization also means that families need to be familiarized with fewer devices and applications, which is proving especially helpful in non-English-speaking homes.

14. School Transportation News. (2022). *Recorded webinar: Decrease behavior incidents & improve driver retention with school bus Wi-Fi.* https://stnonline.com/multimedia/free-webinar-decrease-behavior-incidents-improve-driver-retention-with-school-bus-wifi/.
15. Kane, T. (2022). *Kids are far, far behind in school.* The Atlantic. https://www.theatlantic.com/ideas/archive/2022/05/schools-learning-loss-remote-covid-education/629938/.
16. Psacharopoulos, G., Patrinos, H., Collis, V. & Vegas, E. (2020). *The COVID-19 cost of school closures.* Brookings. https://www.brookings.edu/blog/education-plus-development/2020/04/29/the-covid-19-cost-of-school-closures/.
17. Lynch, M. (2021). *Virtual reality matures in the K–12 classroom.* The Tech Advocate. https://www.thetechedvocate.org/virtual-reality-matures-in-the-k-12-classroom/.
18. Fazlullah, A. & Ong, S. (2019). *The homework gap: Teacher perspectives on closing the digital divide.* Common Sense Media. https://www.commonsensemedia.org/sites/default/files/featured-content/files/homework-gap-report-2019.pdf.

FIGURE 3. Education: Benefits of widespread broadband adoption



*Congressional Research Service, "Remote Learning for K-12 Schools During the COVID-19 Pandemic"

†Brookings

‡School Transportation News

Health Care

Like education, health care is similarly undermined by a lack of universal, high-quality connectivity. Before the pandemic, less than 1% of outpatient appointments were held remotely. More recently, that number has climbed to 8%.[19] The share of Medicare visits conducted through telehealth increased from less than one million in 2019 to over 50 million in 2020.[20] This trend continued with patients with disabilities and dually eligible for Medicare and Medicaid as more likely to use telehealth in 2021.[21]

While this surge is due largely to the pandemic, telehealth participation remains high, in 2021 rates of telehealth utilization remained 40% higher than pre-pandemic levels.[21] In a recent survey, 68% of physicians said they would like to further increase the use of telehealth in their practice.[22] Among patients who recently used telehealth, 73% reported they would continue to use telehealth services in the future, and **41% reported they would have chosen telehealth over an in-person appointment, even if both required a co-pay**.[23]

Telehealth is especially prominent for particular disciplines, such as mental health. In 2020, telehealth visits comprised a third of total visits to mental health specialists, compared to 8% of visits to primary care providers and 3% of visits to other

19. Rae, M., Amin, K., Cox, C., Panchal, N. & Miller, B. (2022). *Telehealth has played an outsized role meeting mental health needs during the COVID-19 pandemic*. Kaiser Family Foundation. https://www.kff.org/coronavirus-covid-19/issue-brief/telehealth-has-played-an-outsized-role-meeting-mental-health-needs-during-the-covid-19-pandemic/.
20. U.S. Department of Health & Human Services. (2021). *New HHS study shows 63-fold increase in Medicare telehealth utilization during the pandemic.* https://www.hhs.gov/about/news/2021/12/03/new-hhs-study-shows-63-fold-increase-in-medicare-telehealth-utilization-during-pandemic.html.
21. Citation: Bipartisan Policy Center. (2022). *The Future of Telehealth After COVID-19.* https://bipartisanpolicy.org/download/?file=/wp-content/uploads/2022/09/BPC-The-Future-of-Telehealth-After-COVID-19-October-2022.pdf.
22. Charleson, K. (2022). *Telehealth statistics and telemedicine trends 2022*. SingleCare. https://www.singlecare.com/blog/news/telehealth-statistics/.
23. Henry, T.A. (2021). *Patients, doctors like telehealth. Here's what should come next*. AMA. https://www.ama-assn.org/practice-management/digital/patients-doctors-telehealth-here-s-what-should-come-next.
24. U.S. Department of Health & Human Services. (2021). *New HHS study shows 63-fold increase in Medicare telehealth utilization during the pandemic.* https://www.hhs.gov/about/news/2021/12/03/new-hhs-study-shows-63-fold-increase-in-medicare-telehealth-utilization-during-pandemic.html.
25. U.S. Department of Health & Human Services. (2022). *Fact sheet: Surgeon general to speak at Youth Mental Wellness Now! Summit and applaud commitments in response to his call to action on youth mental health crisis.* https://www.hhs.gov/about/news/2022/06/17/fact-sheet-surgeon-general-to-speak-at-youth-mental-wellness-now.html.

specialists.[24] In 2021, according to a report from the Bipartisan Policy Center, 44% of all telehealth visits were for behavioral health services.[21] According to the surgeon general, COVID-19 has exposed a youth mental health crisis,[25] and telehealth can help families access providers.

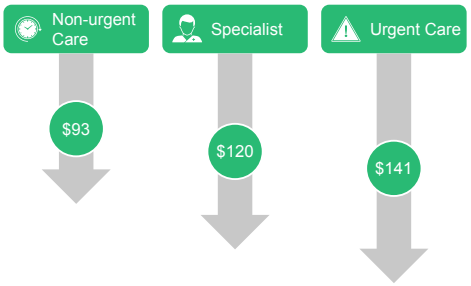
Telehealth also enables remote patient monitoring for patients with chronic health conditions or those using controlled substances, which improves disease management and decreases misuse of medication and unnecessary emergency room visits.[26] Telehealth can also improve ongoing care by reducing the chance of missed visits.[21]

Research also shows that telehealth may expedite speed of care. Telehealth appointments via phone and video have shorter wait times than in-person options (from scheduling to appointment).[27] The reduced wait time not only means that more people are likely to visit physicians, it also allows for earlier diagnoses and treatment, which improves patient outcomes.

Telehealth could impact costs. Cigna data shows that the average cost of a nonurgent virtual care visit is $93 less than the average cost of an in-person visit (see Figure 4). The cost to see a specialist was $120 less for a virtual visit than an in-person visit, and a virtual urgent-care visit was $141 less than an urgent-care clinic.[28]

Telehealth also expands the reach of medical professionals. One-quarter of Americans live in rural areas, but less than 10% of physicians practice in rural communities.[29] Telemedicine offers a way to bridge this distribution. A recent large-scale survey found that 45% of adults believe that inadequate access to technology, including broadband and computers, is a barrier to telehealth, and this was especially prominent among rural residents and adults over the age of 65.[30] This underscores the need not only for connectivity and device access, but also for digital literacy programs that can maximize the effectiveness of digital health care for certain populations.

FIGURE 4. Cost savings from virtual health care visits, by type of visit



Source: Cigna Report. *Does virtual care save money?*

Spotlight: Together Growing Strong

Due to the enormous benefits for patients and health care providers, some institutions have even begun investing in digital inclusion and digital skills training to help their patients take better advantage of telehealth. Together Growing Strong (TGS), an NYU Langone initiative in Sunset Park, New York, conducted surveys to understand the broadband needs of their community, developed technology literacy workshops, and established a digital equity working group. They also added in-person digital skill training as part of their pilot program for postpartum depression prevention, providing the participating women with the skills needed to access and use platforms for telehealth delivery. Given the maternal health crisis in the U.S., such applications of telehealth to maternal care can have a profound impact on maternal health outcomes.[31] These investments, innovative for a health care institution, are a testament to how essential broad adoption of telehealth is for the future of the health care system.

26. Gajarawala, S. & Pelkowski, J. (2020). *Telehealth benefits and barriers.* The Journal for Nurse Practitioners. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7577680/.
27. Diaz, N. (2022). *Telemedicine grants quicker access to primary care: study.* Becker's Hospital Review. https://www.beckershospitalreview.com/telehealth/telemedicine-grants-quicker-access-to-primary-care-study.html.
28. Cigna. (n.d.). *Convenient, cost-effective, and high-quality virtual care is here to stay.* https://newsroom.cigna.com/convenient-cost-effective-and-high-quality-virtual-care-is-here-to-stay.
29. Landi, H. (2019). *Poor broadband access in rural areas limits telemedicine use: study.* Fierce Healthcare. https://www.fiercehealthcare.com/tech/poor-broadband-access-rural-areas-limits-telemedicine-use-study.
30. Bailey, V. (2021). *Limited broadband poses a significant barrier to telehealth access.* MHealthIntelligence. https://mhealthintelligence.com/news/limited-broadband-poses-a-significant-barrier-to-telehealth-access.
31. Gregory, B. (2022). *Changing our (virtual) reality: Telehealth the United States maternal health crisis.* https://nextcenturycities.org/wp-content/uploads/2021/05/Changing-Our-Virtual-Reality-Telehealth-the-US-Maternal-Health-Crisis-by-Brittany-Rae-Gregory-.pdf.

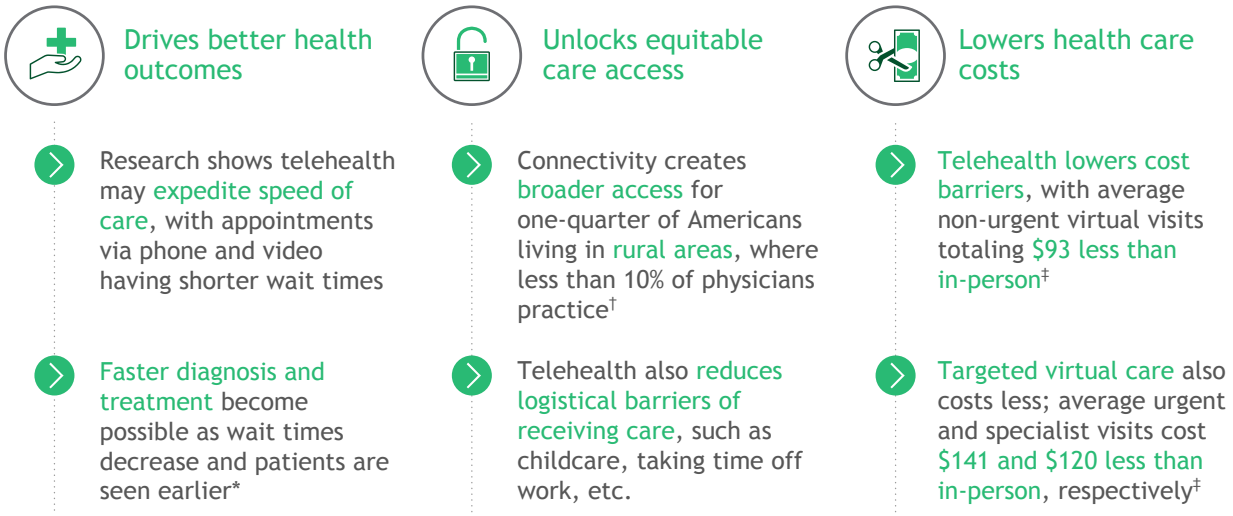
Spotlight: University of North Carolina Chapel Hill School of Medicine

UNC Chapel Hill School of Medicine offers patients comprehensive psychiatric care. In 2021, it completed 120,000 video visits, 30,000 telephone visits, and 8,000 in-person visits. While North Carolina is the ninth most populous state, it ranks 42nd in pediatric behavioral health care access, with clinicians spread across only ~30 of the state's 100 counties. Telehealth can help close that gap. However, there are inequities in telehealth access across patient populations, with psychiatrically vulnerable and Black patients less likely to have the required devices or services to participate.

UNC Chapel Hill School of Medicine partnered with a local managed care organization to deliver ~50–100 smartphones to its most vulnerable patients and offer on-site digital literacy training for device telehealth. They used $2 million in grant funding to deploy a three-year, school-based psychiatric virtual care program. This program provided appointments to over 10,000 children, including devices and tech support. They also used an additional $1 million in grant funding to deploy a three-year rural psychiatric virtual care program, which will establish community broadband access points, including devices for ~1,000–5,000 children.

Telehealth offers vulnerable patient populations an option for care when access to in-person visits is limited. However, continued reimbursement to health care providers is the largest barrier to future delivery if grant funding does not fully support long-term project operations. Furthermore, expanded virtual care access will require that state programs address literacy and training in addition to device and service access.

FIGURE 5. Health Care: Benefits of widespread broadband adoption



*Becker Hospital Review

†Fierce Healthcare

‡Cigna

Government Services

Online services enable individuals to access the government at all hours of the day and with fewer barriers (e.g., taking time off, finding transportation, obtaining child care). This, in turn, makes government services more useful and accessible to underserved communities. Not only do a majority of Americans expect services to be offered online, nearly nine in ten say that a great online experience can increase their trust in government overall.[32]

Online services are also more cost effective and allow governments to more efficiently allocate existing labor and resources. The U.K. government, for example, estimated that by shifting 80% of public services online, $2.2 billion per year could be saved, with the cost of digital transactions 20 times lower than by phone and 50 times lower than face to face.[33] Other projects, including an online birth-certificate initiative in Mexico and a public data exchange system in South Korea, have resulted in increased service adoption, higher customer satisfaction, savings in cost and staff time, and economic benefit to industry.[34]

Online government services can also spur job creation and economic growth. For example, when new businesses have a simple path for filing documents and obtaining licenses, barriers to entry are lowered and growth increases.[35] The same can be true for individuals navigating major life events, such as the birth of a child or retirement, which often require services across multiple agencies in an arduous process that takes up both time and energy.

Oklahoma, for example, has prioritized taking a customer-centric approach to government services. During the COVID-19 pandemic, the state revamped its unemployment system and set up a digital portal for residents to apply and track their unemployment benefits. **This initiative resulted in the state being able to process 30,000 claims per week and deliver more than $2 billion in unemployment checks.** Individuals were able to receive benefits quicker and the state was able to save money by not needing to hire additional customer service representatives.[36]

Many local government proceedings (e.g., council and neighborhood meetings) have gone online, which has the potential to increase resident participation and engagement. Several states and cities are considering measures to require remote options for government hearings, even after the pandemic, citing the benefits for older Americans, people with disabilities, those who lack transportation, and those with family obligations that prevent them from attending in person.[37] In this way, virtual proceedings have the potential to diversify and democratize local government.[38]

Online solutions have become so ubiquitous that there is significant risk if governments fail to shift services online. When the COVID-19 pandemic began, governments with strong digital infrastructures were able to rapidly adapt. The state government of California, for example, was able to leverage its early efforts to pursue cloud solutions to enable 90% of its state employees to seamlessly switch to telework.[39] **Without digitization, governments will struggle to remain effective and flexible when faced with future crises.**

---

32. Boston Consulting Group. (2020). *2020 digital government benchmark survey.* https://www.bcg.com/en-us/industries/public-sector/digital-government.
33. Government of the United Kingdom. (2012). *Digital efficiency report.* https://www.gov.uk/government/publications/digital-efficiency-report/digital-efficiency-report.
34. Red GEALC. (2018). *The value of digital government.* https://www.redgealc.org/site/assets/files/7743/digital_government_english.pdf.
35. Awad, N., Brice, J., Ferrer, S., Kim, H. & Stuart, T. (2022). *Delivering government services like a digital native.* Boston Consulting Group. https://www.bcg.com/publications/2022/delivering-customer-centric-digital-government-services.
36. Goldstein, P. (2020). *Governments embrace digital services amid the pandemic.* StateTech. https://statetechmagazine.com/article/2020/09/governments-embrace-digital-services-amid-pandemic.
37. Altimari, D. (2022). *States and cities are moving to make virtual hearings permanent.* Route Fifty. https://www.route-fifty.com/management/2022/04/pandemic-changed-way-americans-interact-government-now-some-states-want-make-those-changes-permanent/366276/.
38. CivicPlus. (n.d.). *Virtual meetings and the online imperative of local government.* https://www.civicplus.com/blog/am/virtual-meetings-and-the-online-imperative-of-local-government.
39. Canning, M., Eggers, W., Mader, D. & Sullivan, M. (2021). *Propelled by the pandemic, digital government logs on.* Deloitte. https://wsj.com/articles/propelled-by-the-pandemic-digital-government-logs-on-01625079725.

Spotlight: Oregon Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Program

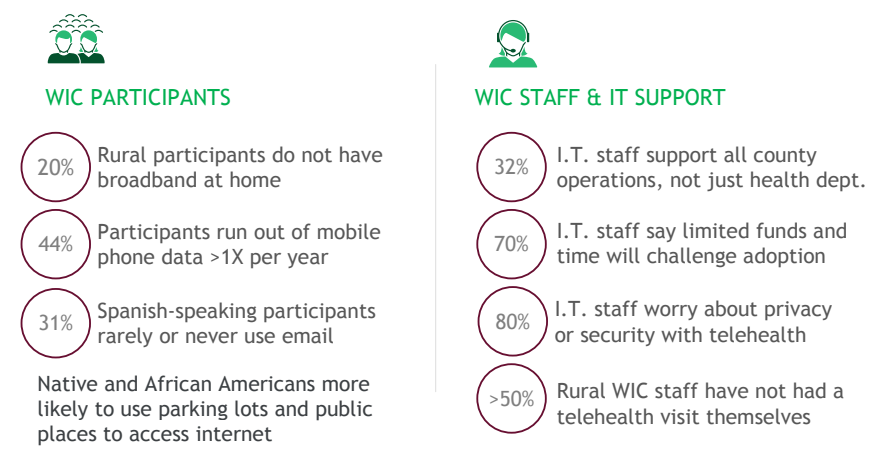
WIC is a prevention-focused public health nutrition program serving lower-income pregnant, postpartum, and breastfeeding individuals, as well as infants and children under the age of 5.

In response to COVID-19, Oregon's WIC program transitioned from in-person appointments to telephone-based appointments for its 80,000 participants. Alongside this transition, Oregon WIC also used surveys to understand readiness for video-based tele-WIC appointments. These surveys, conducted in collaboration with the Language, Literacy, and Technology Research Group at Portland State University, evaluated three populations: WIC participants, WIC staff, and information technology (IT) support staff.

WIC participants were sent a text message inviting them to complete a survey, which was available online and over the phone, and in English, Spanish, and Russian. Respondents were asked about access to broadband internet; device ownership; current interaction with technology for work, family, and personal tasks; experience with and feelings about telehealth; and comfort with video-based WIC appointments. More than 9,500 WIC participants responded, with key results highlighted in the first column of Figure 6. Notably, 300 mostly Spanish speakers completed the survey by phone, with most indicating a lack of internet access or digital skills needed to complete the online survey.

WIC staff were asked about their own telehealth experiences; perceived readiness for adoption of video-based telehealth in their WIC clinic; and advantages and disadvantages for WIC participants. IT support staff were asked about their current scope of responsibility; number of programs and staff supported; and barriers and supports in adopting video-based visits. Findings are featured in the second column of Figure 6.

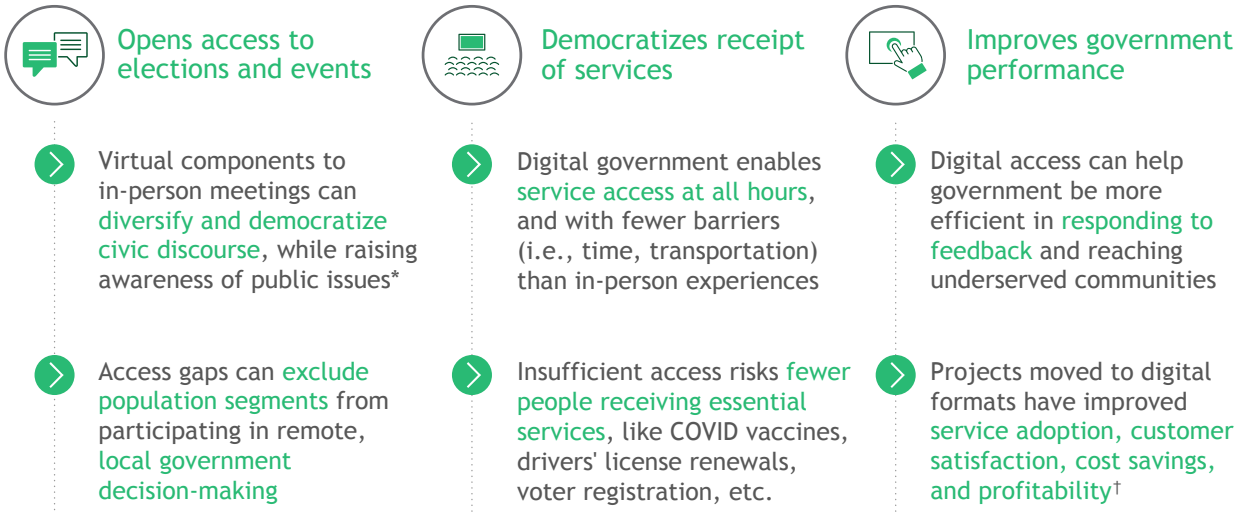
FIGURE 6. Oregon WIC survey takeaways



Source: Oregon Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Program

The results indicate that there is a significant variability in the readiness and capacity among WIC participants, WIC staff, and IT support to implement tele-WIC visits. To ensure equitable implementation of tele-WIC, investments must be made to expand reliable, affordable broadband access; connect people to devices that match their technology needs; and provide education to improve digital literacy, privacy, and security. In addition, dedicated funding is needed to increase staffing, capacity, and acquisition of technology at the local health departments and community nonprofits that deliver the WIC program.

FIGURE 7. Government services: Benefits of widespread broadband adoption



*Inter-American Development Bank

†Grancius

Employment

COVID-19 sparked a fundamental change in the nature of work. Before the pandemic, fewer than 5% of workers worked remotely. During the pandemic, that number grew to over 60%. Now, it is stabilizing around 30%.[40] That is a sixfold increase from pre-pandemic levels.

From an employee's perspective, remote workers are happier and have a better work-life balance despite working more hours.[41] Forty-one percent feel more productive when working from home, compared to 14% who feel less productive.[42] In fact, four in ten remote workers would look for another job if their employer required a full return to the office.[43]

From an employer perspective, remote work gives access to a broader talent pool, which can result in more qualified hires and support a company's diversity and inclusion goals. Job listings that allow remote work draw seven times more applicants,[44] and remote work flexibility reduced employee attrition by more than one-third.[45] In one study, 78% of respondents said that a remote work option was the most effective nonmonetary way to retain employees.[46] These advantages, coupled with lower real estate and operating costs, suggest that the shift to remote work may improve company profits.

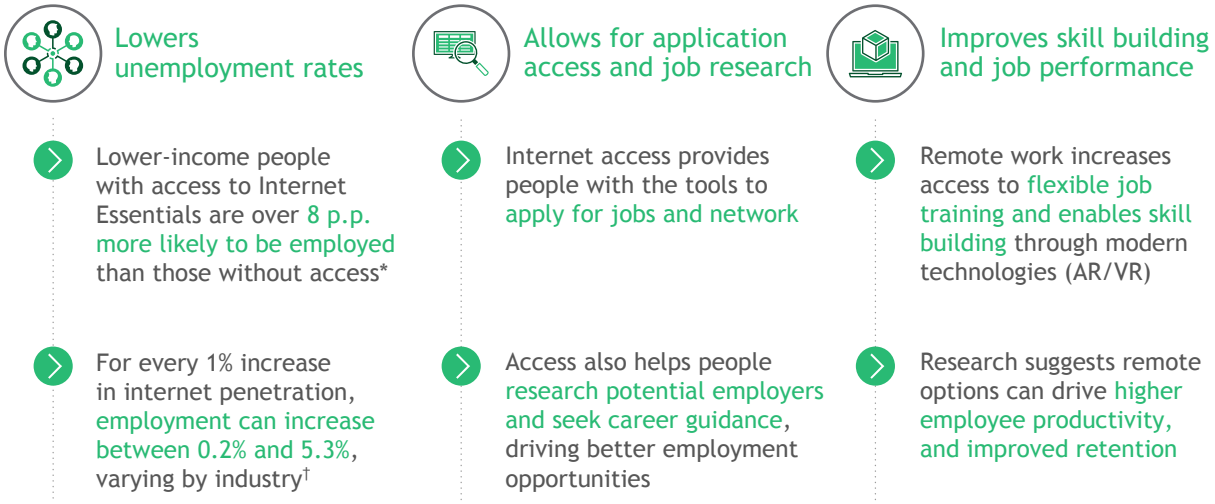
40. Barrero, J.M., Bloom, N. & Davis, S. (2022). *SWAA August 2022 updates*. WFH Research. https://wfhresearch.com/wp-content/uploads/2022/08/WFHResearch_updates_August2022.pdf.
41. Apollo Technical. (2022). *Statistics on remote workers that will surprise you* (2022). https://www.apollotechnical.com/statistics-on-remote-workers/.
42. Barrero, J.M., Bloom, N. & Davis, S. (2021). *Internet access and its implications for productivity, inequality, and resilience*. National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w29102/w29102.pdf.
43. Barrero, J.M., Bloom, N. & Davis, S. (2021). *Let me work from home, or I will find another job*. Becker Friedman Institute. https://bfi.uchicago.edu/wp-content/uploads/2021/07/BFI_WP_2021-87.pdf.
44. Smith, M. (2022). *Remote and hybrid jobs are attracting 7 times more applicants than in-person roles*. CNBC. https://www.cnbc.com/2022/03/04/flexible-jobs-are-attracting-7-times-more-applicants-than-in-person-jobs.html.
45. Bloom, N., Han, R. & Liang, J. (2022). *How hybrid working from home works out*. National Bureau of Economic Research. https://www.nber.org/papers/w30292.
46. Crain's Content Studio. (2019). *Work-life integration: the customized approach*. https://www.crainsnewyork.com/sponsored-future-work/work-life-integration-customized-approach.

Beyond remote work, connectivity also improves an individual's ability to find a job. For lower-income individuals, the introduction of home internet service increases their likelihood of employment by 14%. Among these newly connected households, 62% cited the internet as having helped them or a family member successfully find employment.[47] Similarly, a research synthesis by the World Bank finds that the relationship between internet and employment is positive—for every 1% increase in internet penetration, employment increases between 0.2% and 5.3%, with variation by study and by industry.[4]

"It's nearly impossible to both recruit new businesses and in many cases keep existing businesses in areas that do not have stable high-speed internet."

— Governor Laura Kelly of Kansas

FIGURE 8. Employment: Benefits of widespread broadband adoption



*American Economic Journal

†World Bank Group

47. Zuo, G. (2021). *Wired and hired: Employment effects of subsidized broadband internet for low-income Americans*. American Economic Journal: Economic Policy. https://www.aeaweb.org/articles?id=10.1257/pol.20190648

48. World Bank Group. (2012). *Broadband strategies toolkit*. https://ddtoolkits.worldbankgroup.org/broadband-strategies/driving-demand/broadband-firms-and-employment#:~:text=According%20to%20this%20research%2C%20the,increase%20in%201%25%20of%20penetration.

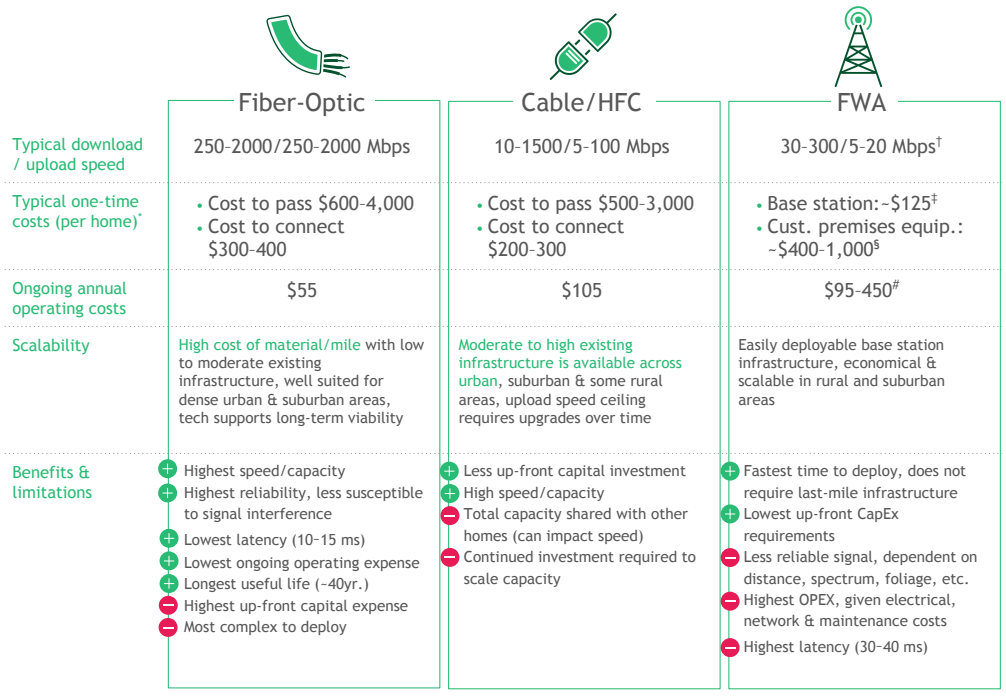
Section 2: The Infrastructure Required to Innovate Essential Services

Decisions made today will affect the internet for generations

There are many different types of infrastructure that can be used to build internet networks, and the type of infrastructure used will affect the type of online services that institutions can offer. For institutions to offer the best online services, internet infrastructure must support internet service that is fast, stable, scalable, affordable, and universally available. When this is achieved, institutions can confidently invest in their online services, knowing they will be of high quality and available to all.

As states receive unprecedented broadband funding, understanding the advantages and use cases for each type of infrastructure is imperative. In this section, we provide an overview and analysis of three types of broadband infrastructure, summarized in Figure 9. First, we discuss two wireline solutions, fiber-optic infrastructure and hybrid fiber-coaxial (HFC) infrastructure (commonly called "cable internet"), both of which use physical wires to connect premises to the internet. Second, we discuss fixed wireless access (FWA) infrastructure, which is a wireless, cellular-based technology that transmits internet through radio waves from an off-site access tower to individual receivers installed on-premises.

FIGURE 9. Assessment of broadband infrastructure deployment paths



* Cost to past variable based on household density, with lower cost figures associated with urban areas; estimates based on MoffettNathanson, Fiber Broadband Association & BCG analysis.

† Download speeds based on current T-Mobile and Verizon offerings; upload speeds provided by 10,000-participant survey conducted by Evercore Research and reflect 5G service; Evercore survey results also show download speeds of on average >100 Mbps.

‡ Electronic Frontier Foundation.

§ Based on T-Mobile & Verizon FWA offerings.

Based on Macrocell CAPEX of $250,000, serving ~2,000 homes; homes reached varies by spectrum, base tower infrastructure, population density, etc.

The Pros and Cons of Broadband Infrastructure Technologies

Wired Technologies

Generally, infrastructure built with wired technology is faster and more reliable, has lower latency and operating costs, and can accommodate more users. However, wired infrastructure can also cost more to build per mile.

Wired Technologies: Fiber-Optic Infrastructure

Fiber-optic technology uses physical cables that contain up to a few hundred bundled strands of glass to carry data to a premises in the form of light pulses. Fiber is recognized as a future-proof, technologically superior infrastructure compared to alternatives, driven by its fast speed, low latency, unconstrained capacity, and limited susceptibility to signal noise. Fiber is the fastest broadband infrastructure available, with typical symmetrical speeds of approximately 250–2,000 Mbps. While this represents an average speed, world-record fiber transmissions have reached 319 Tbps.[49]

The Electronic Frontier Foundation estimates that typical fiber-optic cable has approximately 10,000 times more usable bandwidth than a standard coaxial cable.[50] While cable captures the majority market share, fiber (20% market share) continues to eat into this figure.[51] As advanced technologies are developed and internet usage grows, fiber will be positioned to support vastly higher speeds per premise with upgrades to existing infrastructure. Fiber also has the lowest latency (10–15 ms compared to alternative types of infrastructure), making it best positioned to support technologies like AR/VR.[52] Unlike HFC networks, where speeds are determined by local network congestion, fiber networks are scalable and have nearly unconstrained capacity, with speeds independent of consumption across other premises. **Fiber has the strongest technological capability relative to all other broadband technologies.**

Fiber's structural advantage has spurred an explosion of infrastructure deployment across the U.S. over the past few years. Despite accelerated adoption, cable captures the lion's share of existing infrastructure in the U.S., making fiber most economically suitable for greenfield network build-outs. Fiber networks also have the longest time to market and highest up-front capital costs per mile, though elevated up-front costs are offset by fiber's scalability and lower ongoing operating costs compared to alternative types of infrastructure. These cost reductions are driven largely by fiber's superior performance compared to other networks, as this yields higher customer satisfaction and lower ongoing maintenance expense relative to other technologies. Given this, fiber is best suited for denser urban and suburban environments, where up-front capital costs are mitigated by higher population density.

It is important to note that fiber's main downside—its high up-front cost—can be offset or even eliminated entirely by recent federal funding programs. This is discussed further in Section 3.

> ***"Fiber is what you want, no matter what. If we have that, we have unlimited capacity to increase speeds. If we are building something over wireless, or copper or even cable, none of those can be future-proofed the way fiber can."***
>
> — Deb Socia, President and CEO, The Enterprise Center

49. Sakharkar, A. (2021). *World record: Internet speed of 319 Tb/s over 3,001 km.* Tech Explorist. https://www.techexplorist.com/world-record-internet-speed-319-tb-s-over-3001-km/40257/.
50. Cyphers, B. (2019). *The case for fiber to the home, today: Why fiber is a superior medium for 21st century broadband.* Electronic Frontier Foundation. https://www.eff.org/wp/case-fiber-home-today-why-fiber-superior-medium-21st-century-broadband.
51. Goovaerts, D. (2022). *FBA report: 43% of U.S. households now have access to fiber.* Fierce Telecom. https://www.fiercetelecom.com/broadband/fba-report-43-us-households-now-have-access-fiber.
52. Federal Communications Commissions. (2020). *A report on consumer fixed broadband performance in the United States.* https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-ninth-report.

Wired Technologies: Cable Hybrid (Fiber-Coaxial) Infrastructure

Cable uses a hybrid of fiber-optic and coaxial cables (HFC) to connect premises to broadband. This technology gained rapid adoption in the early 1990s and has since become the most extensively deployed broadband infrastructure. Cable accounted for ~50% of broadband market share in 2021. Given the high volume of legacy HFC infrastructure, cable is best suited for brownfield edge-outs, where upgrading existing cable avoids the high up-front capital costs associated with new network builds.

From a technological perspective, HFC first delivers signals through fiber cables, which are connected to a node. Traditional coaxial cables then connect to the node and provide the final transmission to about 50 to 200 homes on average. Today, HFC offers typical speeds of 10-1,500/10-100 Mbps. While this speed is generally sufficient to meet typical household usage today, it is dependent on local network specific congestion, and lacks the symmetry of fiber. Symmetry becomes increasingly important as interactive services become more prevalent. Such services, which include health care, education, and work, rely on video streaming and data uploads, which require fast, symmetrical download and upload speeds. To illustrate the importance of symmetry, consider how during a telehealth appointment it is just as important for the doctor to have a clear view of the patient as it is for the patient to have a clear view of the doctor.

To illustrate the importance of symmetry, consider how during a telehealth appointment it is just as important for the doctor to have a clear view of the patient as it is for the patient to have a clear view of the doctor.

Cable is also more susceptible to signal noise than fiber, meaning it is more likely to experience unintended signal modifications. Overall, fiber's technological superiority makes it a more future-proof option compared to HFC as internet usage continues to accelerate. However, HFC is anticipated to migrate to an upgraded operating standard beginning in 2022. This specification is expected to have measurably faster latency and speeds, but will likely take a few years to be fully tested and scaled.

While cable also has generally lower average annual operating costs per home than FWA, these average costs of $105 are approximately double that of fiber.[53] Operating costs are higher for two primary reasons. First, cable networks have a larger volume of network-issue calls to operators than fiber-optic networks, which adds incremental expense per user. Secondly, cable users have historically been less satisfied with the technology's performance compared to fiber, which drives a higher churn rate for cable.

Ultimately, cable could be well suited for brownfield edge-outs of existing network infrastructure in denser urban and suburban environments, where up-front capital costs are mitigated by higher population density.

Wireless Technologies: Fixed Wireless Access Infrastructure

Fixed wireless access (FWA) is a cellular-based connection that transmits internet to premises through radio waves, making the technology independent of cable. A lack of cable means that FWA can be deployed across rougher terrain and at vastly accelerated speeds relative to fixed wired technologies, particularly in suburban and rural areas where existing fixed wired infrastructure is either limited or nonexistent. Rather than digging into the ground and laying cable, FWA relies on the implementation of a base tower to transmit radio signals. This drives lower up-front capital costs of approximately $525-1,125 per household compared to competing technologies.[54] This cost accounts for an average macro cell deployment and includes base tower infrastructure and

53. Fiber Broadband Association. (2020). *Access Network OpEx Analysis white paper.* https://www.fiberbroadband.org/page/fiber-research.
54. Analysis assumes deployment of a $250,000 macrocell, serving on average 2,000 households. This is subject to change based on base tower technology, household density, etc.

customer premises equipment (CPE) expenses. Today, the majority of up-front capital is typically composed of CPE costs, which are anticipated to decline in the coming years as FWA undergoes further technological innovation. Costs per household also vary based on a range of factors, such as the size of the base tower, spectrum availability and interference, average usage per household, and population density within the coverage area.

While FWA has notable advantages in time to market and cost of initial deployment compared to fixed wired technologies, the infrastructure has higher ongoing operating costs and is typically relatively limited in terms of network capacity, signal reliability, speed, and latency. Higher costs for network upgrades, maintenance, and electrical usage yield increased ongoing operating costs for FWA compared to competing technologies. These ongoing costs can range from ~$95–450 per household.[55] Meanwhile, signal reliability and consistency continue to be a hurdle for FWA technology compared to fixed wired solutions. Line-of-sight connection between the base tower and an on-premises antenna is necessary to ensure a strong signal. Foliage, inclement weather, and less porous building materials at the end premise can all interfere with signal transmission. Signal quality is a function of a premise's distance to the base tower, and weaker signals can be expected at more distant premises or those lacking line of sight to the base tower. Capacity is also dependent on available spectrum, network density, and others' consumption within the network area. If household density within the coverage area is high and a large volume of consumers use the network at the same time, network capacity may be impeded.

In terms of typical speed, FWA is the lowest at 30–300/5–20 Mbps, making it a less suitable option for high-usage households and more poorly positioned to accommodate increased usage per household over time, barring further innovation. Latency is also the longest for this technology, at 30–40 ms. This makes FWA the least suitable option for applications like VR/AR and gaming that rely on low latency for operation. **When service is unstable and prone to disruption, education lessons can be derailed and learning is lost; health care delivery can be interrupted; or government services may not be used. A stable, uninterrupted online experience is critical to incentivizing investment in and adoption of essential services.**

Ultimately, FWA is best positioned for use cases in rural and suburban geographies where low infrastructure requirements position the technology as an economical and quickly scalable solution, or in urban areas where it can be used for supplementary coverage in addition to existing fixed wired infrastructure. Additionally, it should be noted that the Broadband Equity, Access, and Deployment program (BEAD), which is the largest of the upcoming federal funding opportunities, considers most forms of FWA technologies to be unreliable and therefore ineligible for BEAD outside of extreme circumstances.[56]

Summary

Fiber's superior capacity, speed, scalability, and reliability relative to alternative types of infrastructure position it as the most future-proof technology. For this reason, **fiber should be the first choice for deployment where it is not cost prohibitive. It should also be noted that the BEAD Notice of Funding Opportunity is written such that states must consider fiber projects as "priority projects."**

As a category, fixed wired broadband is recognized for increased signal reliability, lower ongoing operating costs, and faster latency than FWA. If fiber cannot be deployed because the economic or logistical case is restrictive, cable could be used. Where these options are not viable, FWA can then be considered. FWA's lower up-front capital requirements and faster time to market have driven increasing adoption in rural and suburban areas where wired infrastructure either does not exist or cannot sufficiently support local communities. While FWA's less capital intensive and easily deployable base station infrastructure makes it well suited for these use cases, lack of signal reliability, reduced speed, and slower latency compared to fixed wired options make it a technologically inferior option, particularly for higher-density use cases.

55. Estimate from current industry experts.
56. Broadband Equity, Access, and Deployment Program. (2022). *Notice of funding opportunity.* https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf.

Section 3: How Federal Funds Can Close the Digital Divide and Ensure Equitable Access to Essential Services

The once-in-a-generation opportunity

In 2021, Congress committed more than $80 billion for broadband through two major federal laws: the American Rescue Plan Act (ARPA) and the Infrastructure Investment and Jobs Act (IIJA). The programs these laws created are unique for five main reasons:

- *Large size*—they are the largest single investment in broadband in America's history;
- *Strong infrastructure requirements*—recipients must prioritize high-quality, fiber networks;
- *Focus on affordability*—subsidizes internet service for low-income households and requires networks to offer affordable internet service;
- *Support for inclusion*—the funds prioritize digital equity initiatives and stakeholder engagement;
- *Administrative processes*—individual states, rather than federal agencies, are in charge of implementation.

See Figure 10 for a comprehensive look at funding amounts, uses, and timelines.

FIGURE 10. Federal funding guide

Primary impact Secondary impact

	Program name	Agency	Type	Amount	Timing	Access	Afford-ability	Adoption/ Awareness	Planning
IIJA	Broadband Equity, Access, and Deployment Program (BEAD)	NTIA	Formula allocation	$42.5B	Letter of intent due 7/18/22	●	○	○	○
	State Digital Equity and Capacity Grant Program	NTIA	Formula allocation	$1.5B	Planning application due 7/12/22		○	●	○
	Digital Equity Competitive Grant Program	NTIA	Competitive grant	$1.3B	Estimated mid 2024		○	●	
	Middle Mile Broadband Infrastructure Grant Program (MMBI)	NTIA	Competitive grant	$1B	Application due 9/30/22	●			
	Affordable Connectivity Program (ACP)	FCC	Consumer subsidy	$14.2B	Transition from EBB 12/21; lasts until funds exhausted		●	○	
	Affordable Connectivity Program Outreach Grants (ACP)	FCC	Competitive grant	$100M*	Undefined; proposed multi-year program with annual grant cycles			●	
	Private Activity Bonds (PAB)	IRS	Tax-exempt bond	$335M†	Vary by state and locality	●			
ARPA	Coronavirus Capital Projects Fund	Treasury	Formula allocation	$10B	Funding request due 12/27/21	●	○	○	○
	Coronavirus State and Local Fiscal Recovery Fund (SLFRF)	Treasury	Formula allocation	$350B	Treasury accepting requests	●	○	○	○
	Emergency Connectivity Fund (ECF)	FCC	Competitive grant	$7.2B	Application window closed 5/13/22	●	●	○	

* IIJA allows the FCC to spend up to $100M on this program, but the amount has not been finalized.

† The limit for each state is the greater of either (i) $110 multiplied by the state's population or (ii) $335,000,000. Publicly owned projects do not count against the limit; privately owned projects do (but only 25% of their amount).

The Infrastructure Investment and Jobs Act

The Broadband Equity, Access, and Deployment Program

The bulk of the IIJA's broadband funding comes through the Broadband Equity, Access, and Deployment program (BEAD), which is designed to deploy (i.e., build) broadband infrastructure in areas that lack it. Critically, networks built with BEAD money must prioritize fiber infrastructure, offer speeds of at least 100/20 Mbps, meet affordability standards, and provide service to all households in a funded area. **If BEAD's requirements are met, the resulting networks will likely be sufficient for institutions to confidently invest in internet-based technologies.**

BEAD funds will be allocated to each state based on the size of their digital divide, as measured according to the Federal Communications Commission (FCC)'s broadband availability map. BEAD requires states to sequence projects in a series of tiers, and a state must complete (or have a plan to complete) each tier before progressing to the next. Tier 1 consists of deployment in "unserved" areas where residents lack service of at least 25/3 Mbps. Tier 2 consists of deployment in "underserved" areas where residents lack service of at least 100/20 Mbps. And Tier 3 includes both deployment to community anchor institutions with service below 1/1 Gbps and/or other connectivity projects, like device programs. For most states, the majority of BEAD funds are expected to be absorbed by Tiers 1 and 2.

The Digital Equity Act Programs

The IIJA created a suite of first-of-their-kind programs to fund digital literacy and inclusion initiatives. These programs—the State Digital Equity Planning and Capacity Grant Program and the Digital Equity Competitive Grant Program—fund non-infrastructure initiatives like digital navigators and digital skill training. The State Digital Equity Planning and Capacity Grant Program, like BEAD, allocates money to states based on the size of their digital divide, and states then use this money to create and implement Digital Equity Plans. Conversely, the Competitive Grant Program awards funds directly to nonstate entities, like nonprofits and local institutions, through a competitive grant process.

From an institutional perspective, these programs are important because many disconnected individuals are unfamiliar with technology, and this can prevent them from using an institution's online services. Access to the internet and devices, by itself, is not sufficient; people must also be trained in the use of these technologies. Helping vulnerable populations develop these skills is the purpose of Digital Equity Act programs.

The Affordable Connectivity Program

The Affordable Connectivity Program (ACP) is a consumer subsidy to help individual households afford internet service and devices. It is a continuation and modification of the Emergency Broadband Benefit, which was created during the pandemic. The ACP gives eligible households $30 per month for internet service ($75 for households on tribal lands) and a one-time $100 discount for a device. Critically, the monthly discount can result in free internet service when combined with ISPs' low-cost (i.e., $30 or less) plans. Approximately 48 million households (40% of U.S. households) qualify. Qualification requires a household income below 200% of the federal poverty line and/or participation in certain government assistance programs, such as SNAP, Medicaid, and Free and Reduced-Price School Lunch.

Research has shown that, among un- and under-connected households, cost is cited as one of, if not *the* main barriers to internet adoption.[57, 58] The ACP can help these households overcome this barrier. Institutions can leverage the ACP by raising awareness and helping households enroll. Notably, the ACP does not currently have a permanent source of funding, and, unless additional funding is secured, the ACP will exist only until its original appropriation is depleted, which may be as early as 2024 or 2025.[59] Given the importance of affordable connectivity, institutions should consider advocating for additional ACP funding or an equivalent state program.

57. California Emerging Technology Fund and University of Southern California. (2021). *Statewide Survey on Broadband Adoption 2021.* https://www.cetfund.org/wp-content/uploads/2021/03/Annual_Survey_2021_CETF_USC_Final_Summary_Report_CETF_A.pdf#page=20.
58. Pew Research Center. (2021). _Mobile Technology and Home Broadband 2021. _https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2021/06/PI_2021.06.03_Mobile-Broadband_FINAL.pdf.
59. Institute for Local Self-Reliance. (2022). *Affordable connectivity program* dashboard. https://apps.communitynets.org/acpdashboard/.

The American Rescue Plan Act

The Capital Projects Fund

The Capital Projects Fund (CPF) is the most flexible of all the available broadband programs. Like BEAD, it is allocated to states according to a formula,[60] and states are in charge of implementation. Unlike BEAD, it does not prioritize deployment in unserved areas. Rather, it can be used in a wider range of locations and on a variety of initiatives, such as devices programs, affordability programs, and community centers. Moreover, where it is used for deployment, the resulting networks should offer 100/100 Mbps where feasible, which is a higher standard than BEAD. As of early September 2022, the U.S. Department of Treasury had announced approval of grants for 13 states and over 50 tribal plans.[61]

States should consider how they coordinate CPF with BEAD and other funds. Due to its flexibility, CPF is a good program for connecting areas that do not meet the technical definition of "unserved" (which is BEAD's focus). Similarly, CPF is a solution for non-deployment issues, such as a lack of devices. Certainly, access to internet infrastructure is critical, but individuals must also be able to afford internet service, have a device capable of running key applications, and have the skills to use these technologies. CPF is capable of addressing all of these needs.

Finally, as the deadline for CPF grant plans was September 24, 2022, state policymakers should consider replicating the structure and the rules of the CPF at the state level. Once funding through BEAD is allocated to projects, states will have a clearer picture of which communities require additional support. The CPF program, with its strong requirements and flexibility, offers a good template for how to design a post-BEAD state grant program because it can address the majority of expected broadband costs, like expanding or upgrading infrastructure networks, making home connectivity and devices more affordable, and sustaining digital inclusion programming.

The Emergency Connectivity Fund

The Emergency Connectivity Fund (ECF) was created to ensure continuing access to education despite pandemic induced disruptions to learning. It did this by giving schools and libraries funds to purchase internet service and devices for students and teachers to use at home—a use not covered by existing federal programs.

The ECF has proven incredibly effective. As of September 2022, it has enabled schools and libraries in every U.S. state and territory to purchase a combined 11.5 million devices and 7.5 million internet service connections. Moreover, it has done this in a way that ensures quality and cost efficiency. It allows institutions to:

- Engage in bulk purchasing, lowering the average price per device;
- Choose which technologies are procured (for both devices and internet service), ensuring the technologies can support the curriculum, are suitable for student connectivity needs, and integrate with existing technology and tech support;
- Ensure that all students and teachers have connectivity and devices, enabling institutions to incorporate internet-based technologies into their standard educational services without leaving anyone behind.

However, the ECF's funding will soon be depleted, and when it is, the 13 million students it is connecting will be at risk of falling back into the digital divide. States and their institutional partners can prevent this by using state resources, such as the CPF or other funding sources, to implement state versions of the ECF. This would allow the state to maintain connectivity afforded by ECF and potentially improve the program to incorporate teacher training, IT resources, and digital inclusion programming.

60. U.S. Department of the Treasury. (2021). *Coronavirus capital projects fund allocations for states, District of Columbia, and Puerto Rico.* https://home.treasury.gov/system/files/136/Allocations-States.pdf.
61. U.S. Department of the Treasury. (2022). *Capital projects fund.* https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/capital-projects-fund.

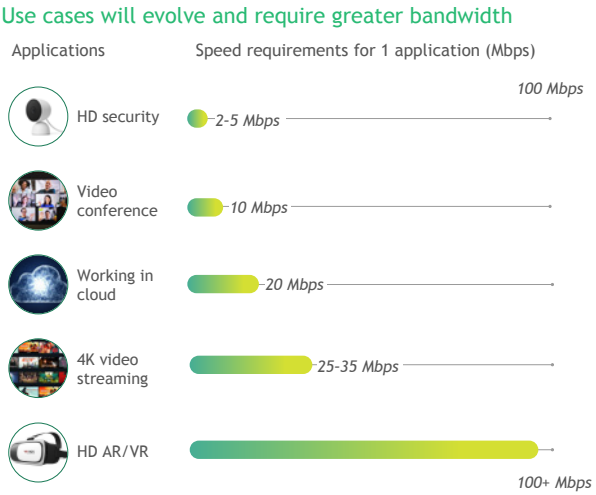
What families can accomplish with 100/20 Mbps broadband speeds

As detailed above, federal programs are designed to deploy broadband infrastructure that meets or exceeds speeds of 100/20 Mbps. 100/20 Mbps is sufficient for many current uses, but it may struggle to support future applications and/or multiple simultaneous users. States should therefore build infrastructure with the understanding that 100/20 Mbps is the minimum speed that households need for current uses, but future uses may require higher speeds. As explained in Section 2, fiber infrastructure has the advantage of being able to easily meet higher speed requirements.

In 2015, the FCC set 25/3 Mbps as the minimum speed required to be considered "served" by broadband.[62] However, usage has since increased, especially as a result of the pandemic. And this usage is not expected to wane; online activities have become a routine part of everyday life, and adoption of AR/VR and data streaming technologies will demand increased speeds. See Figure 11 for examples of the bandwidth requirements and applications.

States should therefore build infrastructure with the understanding that 100/20 Mbps is the minimum speed that households need for current uses, but future uses may require higher speeds.

FIGURE 11. Examples of speed requirements by application



Several applications for HD AR/VR across sectors

Non-exhaustive

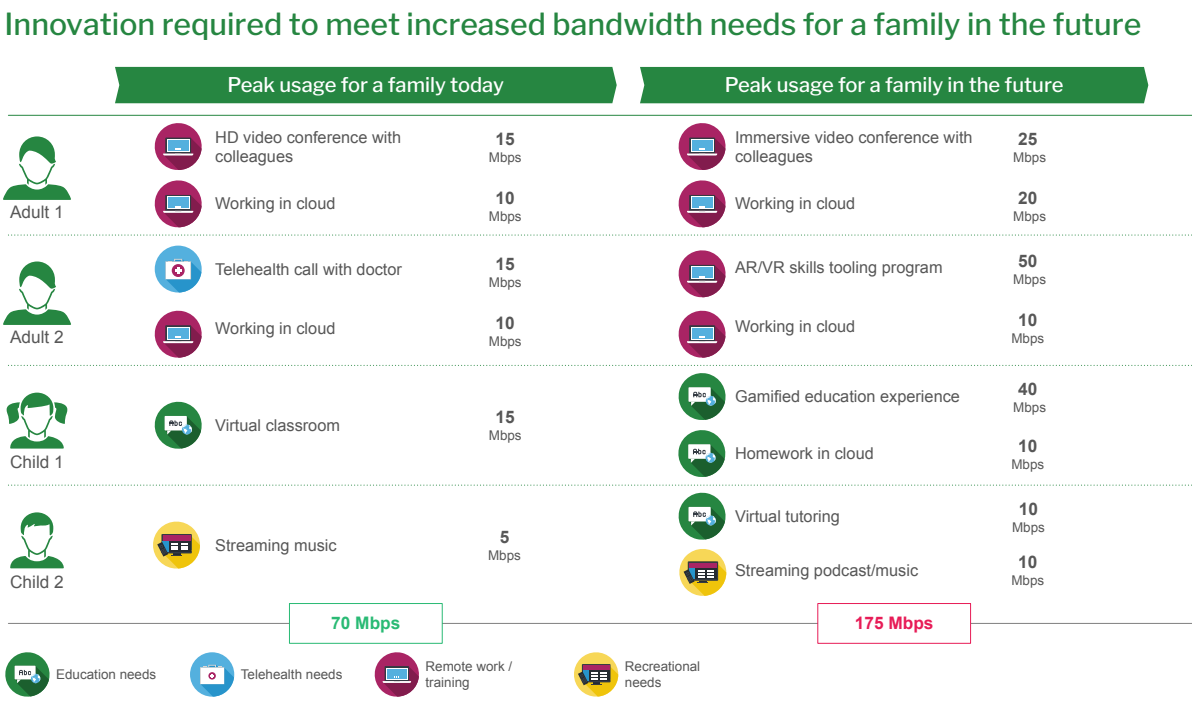
Sector	Examples
Education	• Workforce training • Role-playing education exercises, labs • Virtual campus spaces for students around the world to interact
Health Care	• Visualization aids to explain medical ailments to patients • Treatment of certain conditions (e.g.,phantom limb pain) • Training and simulation
Military & Defense	• Control and navigation for pilots • Understanding of war field • Virtual training and complex simulations
Automotive	• Preview product at all stages of manufacturing and design • Incorporated in testing products (e.g., crash simulation, immersive vehicle environment)

Sources: Cisco Annual Internet Report, 2018–2023; company websites; BCG Megatrends Overview of Augmented Reality, Virtual Reality, and Mixed Reality; BCG analysis

62. Fung, B. (2015). *The FCC has set a new, faster definition for broadband*. Washington Post. https://www.washingtonpost.com/news/the-switch/wp/2015/01/29/the-fcc-has-set-a-new-faster-definition-for-broadband/.

Figure 12 shows typical broadband usage of a four-person family both now and in the future. Households require access to at least 100/20 Mbps to seamlessly complete everyday tasks. While this is the minimum speed required today, the use of AR/VR and similar applications will quickly push speed demands beyond a 100/20 Mbps standard. As public entities think about future broadband infrastructure, this growth needs to be considered. This finding underscores the conclusion of Section 2: Fiber's superior capacity, speed, and reliability position it as the most future-proof technology. Fiber should thus be the first choice for deployment where it is not cost prohibitive.

FIGURE 12. A day in the life of a family (2 adults, 2 kids)



Source: Bandwidth requirements based on industry averages

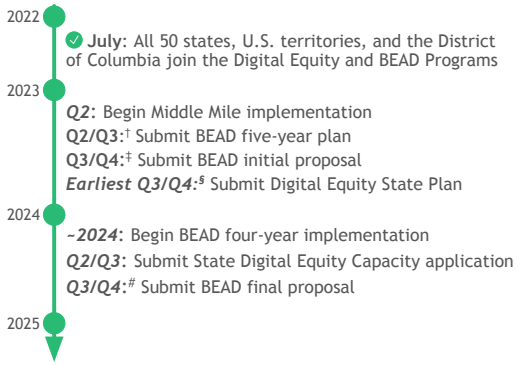
How States Should Use Federal Funds

To reach universal connectivity and ensure that all households have access to the internet with speeds of at least 100/20 Mbps, states should take action to effectively deploy the funds. Doing so ensures the highest return on investment and sets states up for continued investment and adoption of essential services. Prior Common Sense reports have discussed high-level policy actions that states can take to invest in closing the digital divide.[63] As summarized in Figure 13, this section builds on that work with more in-depth steps and recommendations for states in light of the recent legislation and influx of funding.

1. Build State Capacity

First, states should work to understand the funding and technical requirements of the IIJA. The IIJA's programs are complicated and require states to comply with rules that cover a range of subjects, from labor laws to climate impact and cybersecurity. An approximate time line of next steps follows in Figure 14. For up-to-date guidance on submission requirements, see the NTIA's Internet for All website.[64]

FIGURE 14. Funding timelines



* EEs that receive Initial Planning Funds must submit Five-Year Action Plans.

† Due 270 days after planning funds received.

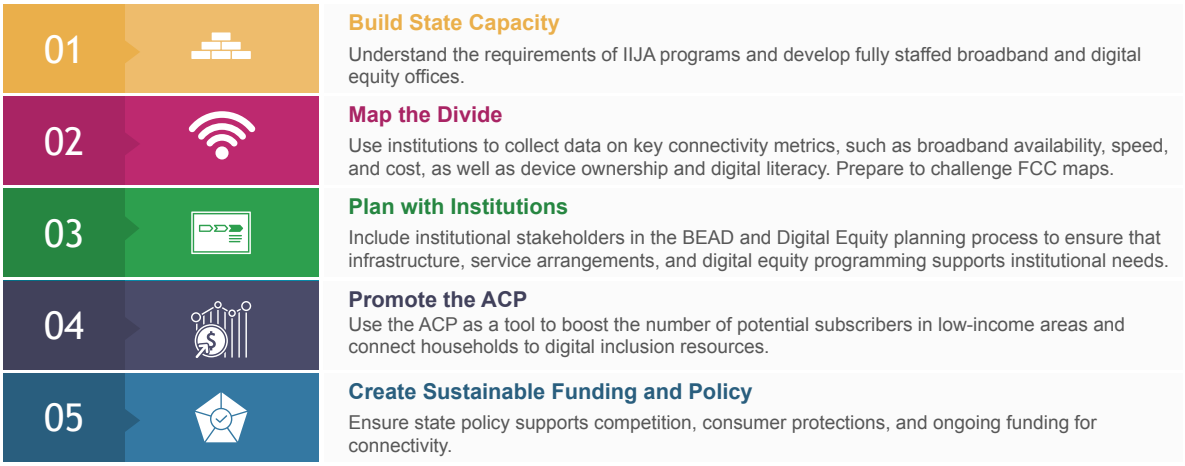
‡ Due 180 days after new DATA maps and notice of funding amounts issued.

§ Due within one year of the date on which a state is awarded DE Planning Grant Program funds.

Due 365 days after initial proposal approval.

Note: Estimated timelines based on information provided in NTIA overviews.

FIGURE 13. Actions states should take to maximize impact



63. Ali, T., Chandra, S., Cherukumilli, S., Fazlullah, A., Galicia, E., Hill, H., McAlpine, N., McBride, L., Vaduganathan, N., Weiss, D. & Wu, M. (2021). *Looking back, looking forward: What it will take to permanently close the K–12 digital divide*. Common Sense Media. https://www.commonsensemedia.org/sites/default/files/featured-content/files/final_-_what_it_will_take_to_permanently_close_the_k-12_digital_divide_vfeb3.pdf.

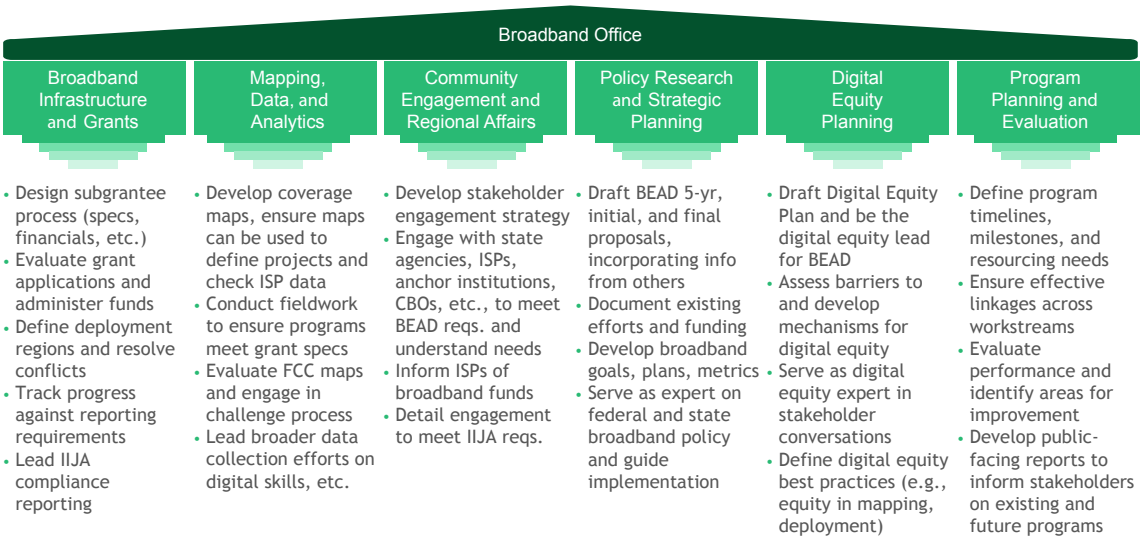
64. National Telecommunications and Information Administration (NTIA) Internet for All website. https://www.internetforall.gov/programs.

Successful implementation of these programs will require a dedicated and fully staffed broadband office. In addition to program implementation, offices will serve as central hubs to share best practices and technical assistance, convene stakeholders, and hold forums for sharing ideas with other regions. An ideal broadband office requires expertise that spans a range of roles, as demonstrated in Figure 15. These roles are illustrative of the practices and responsibilities of an ideal broadband office, but they should be adapted to the unique needs of each state.

The roles and responsibilities within an ideal broadband office include:

- **Broadband Office Director.** Acts as a central resource hub and strategy coordinator, overseeing all director and manager roles within the broadband office. Institutes working groups across stakeholders to facilitate discussions that can inform policy, strategy, and planning. Builds the office's capabilities and capacity, and supervises the launch, pilot, and expansion of major broadband programs.
- **Broadband Infrastructure and Grants Manager.** Identifies geographies for broadband infrastructure projects. Oversees the design of a subgrantee and grants management process, understanding that grants evaluation will require technical, financial, and legal expertise to expertly vet grantees for award. Leads the grants evaluation team and administers funding according to the principles established by the office's broadband strategy. Establishes internal reporting requirements against which grant performance will need to be tracked, and leads federal funding reporting to ensure successful program delivery and compliance.
- **Community Engagement Manager.** Designs a strategy to engage with stakeholders across the full digital equity ecosystem, including public entities, ISPs, anchor institutions, and CBOs. Understands the needs and local expertise of these stakeholders, which will be critical in ensuring successful broadband program delivery. Prepares proposals for the use of BEAD funds in collaboration with these stakeholders, as collaboration is a requirement of the BEAD application process. Leads technical assistance with the implementation of community-level digital equity plans, and acts as a point of state support for local leaders. Participates in stakeholder program planning; helps stakeholders understand how they are impacted by the digital divide, where they have programmatic or funding needs, and what goals need to be established to ensure shortfalls are addressed. Helps build capacity to ensure broadband projects are successfully delivered at the local level.
- **Strategic Planning Director.** Spearheads the development of statewide broadband plans, which should incorporate clear metrics, KPIs, and time lines to ensure successful delivery. Serves as an expert on federal developments in broadband policy, while also analyzing

FIGURE 15. Six key role archetypes of the ideal broadband office



developments in the programs and policies of peer states to ensure continued implementation of best practices. (This will be critical in ensuring that best practices are incorporated in the planning process.) Uses expertise to inform and write BEAD and other funding proposals, while documenting existing funding and program efforts across the state.

- **Digital Equity Planning Director.** Spearheads and builds long-term digital equity plans, programming, and capacity. Establishes clear goals and KPIs for programs to ensure continued year-over-year measurement. Serves as a strategy and policy expert for ongoing digital equity projects and engages stakeholders across the full ecosystem to ensure expertise represents various perspectives. Works closely with the Strategic Planning Director to build programming, and sets best practices related to digital equity across the broadband office. NDIA provides a list of suggested activities for digital equity offices,[65] including coordinating digital inclusion activities; developing digital equity policy; coordinating funding; strengthening digital equity ecosystems; educating policymakers, local governments, and stakeholders on digital equity and inclusion; guiding digital equity research and data use; and piloting scalable digital inclusion models.
- **Program Planning and Evaluation Director.** Serves as a leader in ensuring that the state's broadband plan is adopted and implemented. Evaluates the performance of the program against predetermined goals and identifies areas to refine and build out future programs. Collaborates with other directors and managers within the office based on findings to ensure that their respective initiatives are lean and on track for success. Prepares public-facing reports in concert with this evaluation to inform stakeholders of existing program progress and include plans for future program development.

North Carolina offers an example of a broadband office that is investing in helping counties with their own digital equity efforts. The state established the nation's first state Office of Digital Equity and Literacy, which is housed within the Department of Information Technology, Division of Broadband and Digital Equity (DBDE). In addition to investing substantially in digital infrastructure, the state allocated $50 million in a digital literacy awareness campaign. It is also providing an important technical assistance role, helping 18 counties in the state to develop their own digital equity plans and providing a digital inclusion plan template to guide county-level digital inclusion planning.[66]

Governor Kelly of Kansas also created an Office of Broadband Development housed in the Kansas Department of Commerce to deliver a coordinated statewide approach to broadband strategy. In the creation of this office, the governor emphasized the importance of connectivity for economic development, education, and healthcare. The governor also noted that the promise of telemedicine to transform health care would be undermined without sufficient internet.[67]

2. Map the Divide

In late 2022, the FCC is expected to release new broadband maps that will show, down to the address level, where broadband is available and where it is not. The NTIA will then use these FCC maps to do two things: allocate BEAD funding to each state based on the relative size of their digital divide, and determine where a state should prioritize BEAD deployment. However, the existence of these FCC maps does not negate the need for states to create their own state maps. In fact, the need for state maps is perhaps greater than ever.

State maps have several uses that will be vital to the success of federal programs. First, state maps can help verify the accuracy of the FCC's maps. The FCC maps, like all new maps, will have flaws, and so the FCC will open a challenge process by which states and the general public can suggest corrections. If a state has its own maps and data, it will be more effective in the challenge process and thereby ensure a better implementation of BEAD. Second, state maps can capture details which will not be included in the FCC maps, such as broadband access within multi-dwelling units (e.g. apartment buildings), the cost of

65. Huffman, A. (2021). *Defining a state digital equity office.*National Digital Inclusion Alliance. https://www.digitalinclusion.org/defining-a-state-digital-equity-office/
66. Bergson-Shilcock, A. (2022). *States are leading the way on digital equity.* National Skills Coalition. https://nationalskillscoalition.org/blog/digital-equity/states-are-leading-the-way-on-digital-equity/.
67. Carpenter, T. (2020). *Gov. Laura Kelly signals new wave of broadband development in Kansas.* Kansas Reflector. https://kansasreflector.com/2020/10/08/gov-laura-kelly-signals-new-wave-of-broadband-development-in-kansas/.

available internet services, the prevalence of digital skills and devices, and other such barriers to adoption. These additional metrics will be useful to understand all aspects of the digital divide and inform Digital Equity Act goals. Third, the state mapping process can provide a venue for states, ISPs, and community organizations to build a shared vision of the digital divide and align on priority projects. Finally, state maps will help states to independently anticipate project costs, evaluate the progress, and hold grantees accountable.

We recognize that obtaining household-level connectivity data can be difficult. To collect community-level data, states should enable and partner with community institutions that have a close relationship with households (e.g. schools, public housing, and public health).One of the simplest ways to do this is by incorporating questions about connectivity into existing surveys. Such questions, also known as digital needs assessments (DNAs), can provide a snapshot of a community's connectivity. DNAs should measure a variety of metrics, including the availability, quality, and price of devices and internet service; an individual's comfort and skills with technology; and an individual's reliance on public Wi-Fi.[68] DNAs should also be conducted on a recurring basis and, where possible, tied to location and demographic information.

As an example, in 2022 Virginia passed S.B. 724,[69] which requires schools to add questions about home connectivity to their existing student surveys. **Schools already routinely survey their students, and so, by adding questions about household connectivity, Virginia has found a simple way to collect broadband data.** This will be useful for communities looking to unlock federal funds. Similarly, the Colorado Office of the Future of Work collaborated with the Department of Public Health & Environment to include questions on digital skills in a health survey.[70]

Beyond DNAs, states can collect data using more specialized institutional tools.[71] In California, the nonprofit California Emerging Technology Fund (CETF) administers a "Statewide Survey on Broadband Adoption." This helps California understand statewide trends in adoption among vulnerable communities.[72] Similarly, North Carolina has a set of visual dashboards that track a range of connectivity indicators, including fixed and cellular coverage, service cost, and upload and download speeds. The dashboards are updated daily and can be disaggregated by county to show areas of specific need.[73]

3. Plan with Institutions

To unlock their full funding, the BEAD program and the State Digital Equity and Capacity Grant program both require states to develop detailed plans and submit them for federal approval. Each of these plans will require states to describe planned uses of the funds and establish measurable goals.

One of the major requirements of these plans is that states collaborate with community stakeholders. Specifically, BEAD's Five-Year Action Plan and State Digital Equity Plans must describe a comprehensive community engagement process, showing collaboration with local, regional, and tribal entities. NTIA has released guidance on Setting Up Initial Stakeholder Engagement[74] and Planning a Stakeholder Engagement Strategy.[75]

These plans should also incorporate a vision for how broadband infrastructure and digital equity initiatives will enhance institutional services. To ensure plans meet institutional needs, states should include institutional stakeholders in the planning process as early as possible. For example, a state broadband office might collaborate with the state's Department of Education to understand connectivity

68. Council of Chief State School Officers. (2020). *Home digital access data collection: Blueprint for state education leaders.* https://ccsso.org/sites/default/files/2020-07/7.22.20_CCSSO%20Home%20Digital%20Access%20Data%20Collection%20Blueprint%20for%20State%20Leaders.pdf.
69. Text of Virginia State Bill 724. https://lis.virginia.gov/cgi-bin/legp604.exe?221+ful+SB724.
70. Bergson-Shilcock, A. (2022). *States are leading the way on digital equity.* National Skills Coalition. https://nationalskillscoalition.org/blog/digital-equity/states-are-leading-the-way-on-digital-equity/.
71. Ritzo, C., Rhinesmith, C., & Jiang, J. (2022). *Measuring library broadband networks to address knowledge gaps and data caps.* Information Technology and Libraries, 41(3). https://doi.org/10.6017/ital.v41i3.13775.
72. California Emerging Technology Fund. (n.d.) *Statewide surveys: California broadband adoption by the numbers.* https://www.cetfund.org/action-and-results/statewide-surveys/#:~:text=CETF%20developed%20and%20sponsors%20the,from%2055%25%20to%2090%25.
73. North Carolina Department of Information Technology. (n.d.) *Broadband survey dashboards.* https://www.ncbroadband.gov/broadband-survey/broadband-survey-dashboards.
74. National Telecommunications and Information Administration (NTIA). (2022). *Setting up initial stakeholder engagement.* https://broadbandusa.ntia.doc.gov/sites/default/files/2022-04/Initiating%20Stakeholder%20Engagement.pdf.
75. NTIA. (2022). *Planning a stakeholder engagement strategy.* https://broadbandusa.ntia.doc.gov/sites/default/files/2022-04/Planning%20a%20Stakeholder%20Engagement%20Strategy.pdf.

requirements for online learning in the state.[76] Similarly, the state could work with the Department of Health to understand the connectivity requirements for innovations in public health. States can also connect with nonprofit organizations, like the School, Health, and Libraries Broadband Coalition (SHLB)[77] and the National League of Cities (NLC),[78] to understand the unique needs of their institutional members and the communities they serve.

Institutions can help build state broadband plans in a variety of ways, including but not limited to:

- Defining technical requirements (e.g. broadband speeds, latency, jitter, and device capabilities) needed for current and future internet-based services;
- Articulating the digital skills needed to use internet-based institutional services. Clearly defined skills will help states create comprehensive digital equity plans;
- Including local communities in digital divide efforts. For example, by distributing resources and surveys (as detailed above), promoting ACP adoption (as detailed below), or encouraging public participation in the planning process;
- Conducting research on the impact of broadband connectivity on education, healthcare, and other essential services.

Once stakeholders align on strategy, states should develop public-facing documentation of the goals and road map. This will increase transparency, allow for more informed public feedback, and promote accountability. New York,[79] North Carolina,[80] Texas,[81] and other states[82] offer good examples of a comprehensive, transparent planning process.

4. Promote the ACP

Historically, ISPs have prioritized investments in areas with a high concentration of potential customers. These areas, typically populous and/or affluent, are more likely to generate return on investment (ROI), an important consideration when building something with high up-front cost like a broadband network. However, this pursuit of reliable ROI has meant that ISPs neglect lower-income and rural areas, which have unreliable ROI.

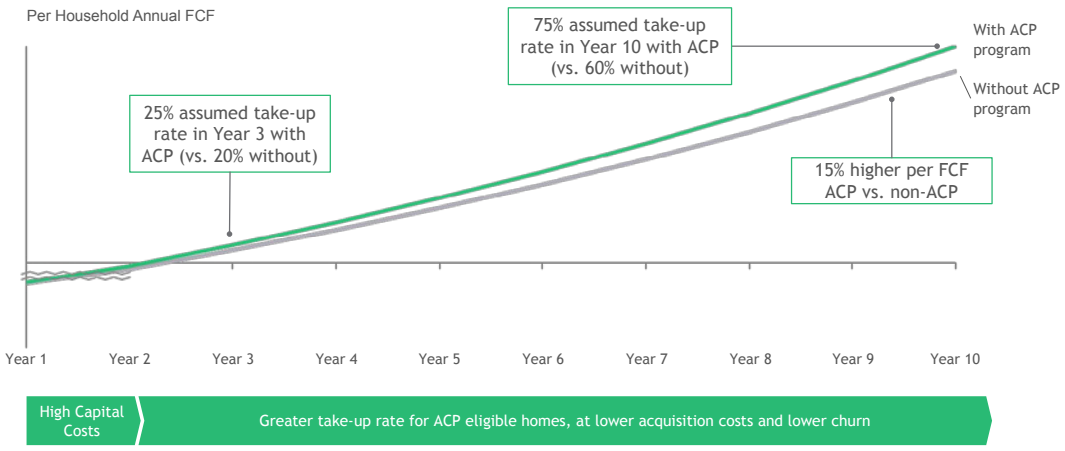
The ACP can change this calculation. With widespread enrollment, the ACP could turn lower-income communities into a reliable source of ROI. This would make them attractive to existing ISPs and could even support the development of new ISPs. By doing so, the ACP could bring connectivity to digitally redlined communities and potentially foster competition in the broadband market (see Figure 16, page 31).

However, research shows that there is a general lack of awareness of the ACP, and the application processes can discourage enrollment, especially among individuals with low digital literacy.[83] **Therefore, states should support institutions and other community-based organizations to promote enrollment in the ACP as a means of incentivizing infrastructure investment in digitally redlined communities.** This will be especially important in the coming years as ISPs decide where to apply for BEAD grants.

Figure 17 (see page 31) shows how the ACP improves ROI calculations for ISPs. **Our analysis finds that the ACP reduces the per-household subsidy required to incentivize ISP investment by $500.**

76. Common Sense Media's prior report, *Closing the K–12 digital divide in the age of distance learning*, provides a guide on technical requirements for various elements of digital learning. https://www.commonsensemedia.org/sites/default/files/featured-content/files/common_sense_media_report_final_7_1_3pm_web.pdf
77. School, Health, and Libraries Broadband Coalition (SHLB) website. https://www.shlb.org/.
78. National League of Cities website. https://www.nlc.org/topic/technology/.
79. New York State ConnectALL Initiative website. https://broadband.ny.gov/.
80. North Carolina Department of Information Technology. (n.d.) *North Carolina's digital divide*. https://www.ncbroadband.gov/digital-divide.
81. Texas Broadband Development Office. (2022). *Texas broadband plan*. https://comptroller.texas.gov/programs/broadband/plan.php.
82. A full list of state broadband plans is available on the NTIA website: https://broadbandusa.ntia.doc.gov/resources/states.
83. Goodchild, C., Hill, H., Kalmus, M., Lee, J. & Webb, D. (2022). *Boosting broadband adoption and remote K–12 education in low-income households*. Boston Consulting Group. https://mkt-bcg-com-public-pdfs.s3.amazonaws.com/prod/accelerating-broadband-adoption-for-remote-education-low-income-households.pdf.

FIGURE 16. Network deployments in regions with ACP-eligible homes realize higher cash flows, faster



Note: See economic case for full details on model structure and assumptions.

Sources: Expert and ISP interviews, Benton Institute; BCG analysis

FIGURE 17. Existence of ACP reduces by 25% the per-household subsidy needed to incentivize providers to build in rural areas

Greenfield rural opportunity economics, in a world…

	…Without ACP	…With ACP		Rationale *(for figures in a world with ACP)*
	Total	Total[1]	ACP Segment*	
% take-up†	+5% (Y1) +20% (Y3)	+7% (Y1) +25% (Y3)	+2% (Y1) +5% (Y3)	**Higher** due to lower cost to consumer and additional adoption support
Monthly churn	2%	1.5%	1%	**Lower** given lower involuntary churn and less price-driven churn at lower cost to consumers, coupled with additional barriers to switching (e.g., new forms)
ARPU	$70	$60	$35	**Lower** given limited spend above subsidy (e.g., those w/large adoption barriers on <$30 plan; others w/greater digital literacy pick a higher plan w/$30 subsidy)
Ancillary margin	$10	$10	$10	**Equivalent** ancillary margin given equivalent likelihood to need hardware, etc.
Operating costs‡	$140	$130	$100	**Lower** operating costs as some costs are borne by community organizations (e.g., marketing and promo) and somewhat lower cost to serve (e.g., help desk)
Cost to pass§	$5,500	$5,500	$5,500	**Equivalent** in line with cost to pass fiber in a rural area
Cost to connect#	$800	$800	$800	**Equivalent** in line with customer installation costs in a rural area
Per-household FCF in year 10^	$435	$495		**Higher** given larger subscriber base, lower acquisition and lower churn; somewhat offset by lower ARPU
Per-household passed break-even subsidy@	**$2,200**	**$1,700**		

*The existence of ACP, which **subsidizes subscriber service fees up to $360 per year**, reduces the **per-household subsidy required to incentivize ISP investment by $500**, generating benefit for the government and increasing the market attractiveness for new entrants and incumbent providers.*

* Estimates 30% of subs are ACP enrollees.

† Percent of households that subscribe to broadband (net of churn); estimates 60% take-up in year 10 in the world without ACP, 75% in the world with ACP.

‡ Includes one-time acquisition costs and ongoing cost to serve equivalent to 35% of ARPU.

§ Cost of construction, design, and electronics; "low" rural costs, per Benton.

Cost of customer installation; "low" rural costs, per Benton.

^ FCF in year 10 represents perpetuity CF; estimates 4% inflation YoY.

@ NPV based on 20% WACC and 4% perpetuity growth. Note: Some numbers rounded for ease of reading.

Sources: Expert and ISP interviews, Benton Institute; BCG analysis

The ACP improves the economic case for deployment for several reasons:

1. It effectively lowers the cost of service and thereby increases the take-up rate (i.e., the percentage of households that subscribe to internet service).
2. ACP subscribers have lower churn (i.e., fewer cancellations per month). Because their bill is subsidized by the government, an ACP household's ability to subscribe is less contingent on income and employment. For similar reasons, ACP households are also less likely to voluntarily churn because some price sensitivity is removed. Moreover, ACP customers are less likely to switch service providers because the burden of signing up with a government benefit is higher.
3. ACP subscribers are easier for ISPs to acquire. Governments and philanthropies are funding awareness campaigns, and community organizations are assisting with enrollment. These activities reduce the marketing costs needed to acquire ACP subscribers.[84]

States should work with institutions to promote enrollment in the ACP. Common Sense, in partnership with the Digital Equity Institute and Arizona State University (ASU), demonstrates one way this can be done. Together, these partners are running an ACP marketing campaign in Phoenix, Arizona, that is designed to overcome the three main barriers to ACP adoption:[85]

1. Lack of awareness of and trust in the ACP;
2. The ACP's complicated enrollment process, particularly for disconnected households;
3. Lack of digital skills among the ACP's target population.

The campaign uses traditional marketing (e.g., TV, radio, digital, physical) to raise awareness in high-eligibility areas. The marketing highlights the potential for free internet and/or cost savings. The marketing is co-branded with trusted local organizations to differentiate the ACP from similar sounding but less trusted ISP offers. It also emphasizes the ACP's status as a new federally guaranteed benefit and highlights the potential to get free internet service.

Interested individuals are offered two methods to enroll: a website and a phone hotline. The website allows individuals to quickly and easily enroll themselves. But, being an online website, it requires an internet connection and digital skills to access, which the ACP's target population may not have. The hotline is designed to provide an offline alternative. It allows callers—both those without connectivity and those who simply need extra help—to get customized, one-on-one guidance from an ACP enrollment specialist. This level of support can be critical to overcoming the myriad issues that can arise during the enrollment process. Finally, both the website and the hotline offer users digital inclusion resources, which help newly connected individuals successfully use the internet. In this way, the ACP can be used to attract disconnected and low-income households into the digital inclusion ecosystem.

The California Emerging Technology Fund (CETF) is leading a similar campaign in California.[86] CETF's goal is to achieve 90% enrollment, and they are tracking their progress through a partnership with the University of Southern California (USC). CETF and USC have built a data dashboard that calculates ACP eligibility and enrollment at the county and ZIP code level,[87] which allows CETF to precisely target its outreach and better coordinate with local partners.

84. Kalmus, M., Hill, H., Lee, J., Goodchild, C. & Webb, D. (2022). *A human approach to closing the digital divide*. Boston Consulting Group. https://www.bcg.com/publications/2022/how-to-close-digital-divide-with-human-approach.
85. Common Sense Media. (2022). *Common Sense Media launches campaign in Arizona to help families apply for free internet.* https://www.commonsensemedia.org/press-releases/common-sense-media-launches-campaign-in-arizona-to-help-families-apply-for-free-internet.
86. Walters, S. (2022). *How Los Angeles county is boosting broadband subsidy enrollment*. California Emerging Technology Fund. https://www.cetfund.org/how-los-angeles-county-is-boosting-broadband-subsidy-enrollment/.
87. *California Affordable Connectivity Program (ACP) Enrollment* dashboard. https://www.arcgis.com/apps/dashboards/8c0249a9de8d404a9b49966fb824b728.

These campaigns demonstrate how institutions can play a key role in promoting the ACP. ASU is using its tech support center as a hotline to provide the community with digital navigator services, and USC is using its capacity for data analysis to monitor and refine ACP outreach. **By promoting enrollment in the ACP, states and institutions can help connect low-income communities and potentially incentivize deployment in the areas that need it most.**

5. Create Sustainable Funding and Policy

To ensure the current broadband opportunity results in lasting progress, states should create policy ecosystems that incentivize competition, sustainable funding, and consumer protections.

States can encourage competition by making nontraditional broadband providers (e.g., community broadband providers, electric cooperatives, and public-private partnerships) eligible for current and future broadband programs.[88] While their eligibility will not guarantee that communities build their own networks, it will allow the possibility where communities are interested. And often, the simple act of allowing robust competition and new market entrants is enough to result in higher-quality projects from existing providers.

States should also ensure that they have sustainable sources of funding for local broadband initiatives. To date, funding for such initiatives has been insufficient to close the digital divide.[89] One reason is that funding opportunities, including recent federal programs, are often time limited. While the upcoming funds provide an unprecedented amount of support, states should also identify and/or create more long-term sources that are not reliant on stimulus or short-term grants. In addition, states should seek to maximize available funding. For example, combine Capital Project Funds with BEAD funds to achieve more comprehensive projects.

One example is the Connect Illinois program, which is making an over $400 million investment to bring universal broadband access to the state by 2024. It is doing this by leveraging a combination of public, private, nonprofit, and philanthropic funding opportunities. Similarly, the California Department of Education raised over $18 million from 138 donors, enabling the state to distribute 1.1 million devices and 100,000 hotspots to students across 97% of counties.[90] Finally, the New York Digital Inclusion Fund, which is funded by Schmidt Futures and managed by NDIA, will support digital inclusion coalitions and innovative partnerships to increase connectivity.[91]

States should also expand digital consumer protections to ensure that, as broadband expands and online activities become increasingly common, individuals' data and welfare is protected. To do this, states should empower existing consumer protection agencies, such as public utility commissions (PUCs) and offices of the attorney general (AG), to track and audit broadband service offered by ISPs. This will help states consider future broadband projects and identify ISPs that fail to meet promised service obligations. Similarly, states should pass and enforce measures to prevent ISPs from exploiting market dominance. For example, the California Public Utilities Commission (CPUC) mandated, by way of executive order, the elimination of data caps and overage charges by ISPs. Additionally, to ensure privacy-protective practices for data, state policymakers should provide clear guidance to ISPs, schools, and other institutions as to how they should collect and share data for government purposes (e.g., mapping, DNAs).[92] Examples include privacy protections such as those found in the California Consumer Privacy Act[93] and the Illinois Biometric Information Privacy Act,[94] and platform accountability legislation like the California Age Appropriate Design Code Act,[95] which will protect vulnerable new users from predatory online practices.

88. Weng, S. (2022). *Could investments in community broadband bridge the digital divide?* Urban Institute. https://www.urban.org/urban-wire/could-investments-community-broadband-bridge-digital-divide.
89. Ali, T., Chandra, S., Cherukumilli, S., Fazlullah, A., Galicia, E., Hill, H., McAlpine, N., McBride, L., Vaduganathan, N., Weiss, D. & Wu, M. (2021). *Looking back, looking forward: What it will take to permanently close the K–12 digital divide*. Common Sense Media. https://www.commonsensemedia.org/sites/default/files/featured-content/files/final_-_what_it_will_take_to_permanently_close_the_k-12_digital_divide_vfeb3.pdf.
90. CDE Foundation. (n.d.). *CA digital divide fund*. https://cdefoundation.org/digitaldividesupport/.
91. Benjamin, G.C. (2021). *New York Digital Inclusion Fund opens requests for proposals*. National Digital Inclusion Alliance. https://www.digitalinclusion.org/blog/2021/09/16/new-york-digital-inclusion-fund-opens-requests-for-proposals/.
92. Common Sense Media. (2022). *Maximizing federal funding to close the K–12 digital divide*. https://www.commonsensemedia.org/sites/default/files/featured-content/files/homework_gap_state_policy_primer.pdf.
93. California Consumer Privacy Act. https://ccpa-info.com/california-consumer-privacy-act-full-text/.
94. Illinois Biometric Information Privacy Act. https://www.ilga.gov/legislation/fulltext.asp?DocName=09500SB2400&GA=95&SessionId=51&DocTypeId=SB&LegID=&DocNum=2400&GAID=9&SpecSess=&Session=.
95. California Age Appropriate Design Code Act. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB2273.

Conclusion

For decades, leaders in education, health care, workforce development, and government have been cautious about integrating internet-based technologies into institutional services, in part because the benefit of these technologies—cost savings, service improvement, expanded access—cannot be fully realized without causing harm to those caught in the digital divide. Now, by making it possible to close the divide, the IIJA and ARPA could unlock innovation within these institutions for the benefit of all.

To take advantage of this opportunity, state leaders should:

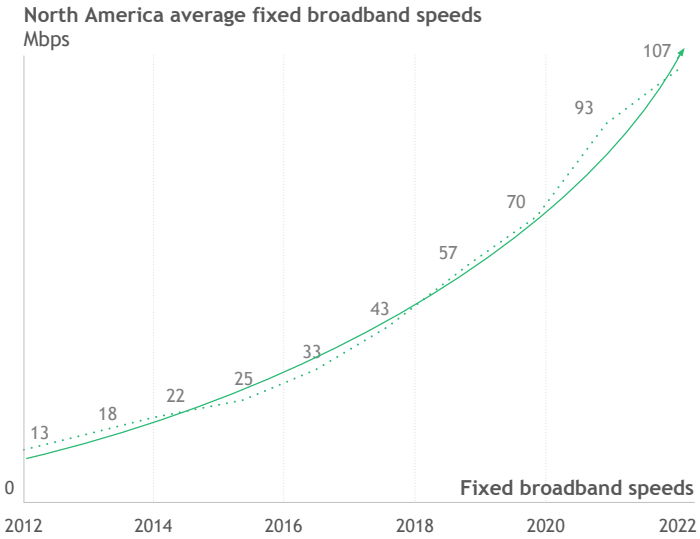
- **Ensure that populations served by institutions are fully connected.** This means universal home access to fast, reliable, and affordable internet service and high-quality devices as well as training in the skills to use them. If these conditions are not met, then institutions will not be able to comprehensively integrate internet-based technologies into their services, and the entire public will suffer from the missed opportunity.
- **Include institutions responsible for essential services in the planning process for BEAD and the Digital Equity Act.** To ensure these plans meet the requirements of institutional services, states should specifically include schools, health care providers, local governments, business, and related community organizations in their broadband planning processes. These institutions can help define the technical specifications (e.g., speeds, reliability, cost, device capabilities) and technical skills needed to use their services.
- **Consider both online and offline services when drafting plans.** Plans that enable and encourage institutions to shift to online services should also ensure that offline services remain accessible, have similar functionality, and are specialized for the needs of offline users. Moreover, consider designing offline and low-bandwidth services so that they can be used during emergencies and major internet disruptions.
- **Prioritize fiber.** The largest downside of fiber networks—their cost—can be offset by current federal funding programs. Leverage this opportunity to build fiber networks that will last for generations. Fiber networks provide the fastest and most reliable service of any technology available; they have the lowest operating costs; they are simpler and relatively inexpensive to upgrade; and they are the most resilient to usage increases, signal interference, weather, and natural disasters.
- **Create broadband and digital equity funding programs at the state level.** Many current sources of funding are temporary. Programs tied to emergency designations, like the ECF, may end, and when they do, the connectivity they established could be lost. Similarly, the recent federal funding programs, big as they are, are scheduled to end after five years. To maintain universal connectivity in the absence of federal funding, states will need to create their own sources of state-level funding. The CPF and ECF provide good models for such funding programs. By funding devices, affordable service, flexible deployment, and digital inclusion, these programs cover the main ongoing costs of universal service.
- **Implement digital needs assessments through existing institutional networks.** Many institutions already collect data on their community. By adding DNAs to these existing surveys, states can easily collect data on connectivity, which can be used to challenge FCC maps, target broadband deployment, and measure the effectiveness of connectivity initiatives.
- **Use the ACP to incentivize deployment and competition.** High rates of ACP enrollment can make lower-income communities more attractive to ISPs, driving deployment and new market entrants. By promoting ACP enrollment, states can help to bring service to historically underserved communities, creating more service options and driving down prices for the whole community.

- **Use the ACP to drive high-quality, inclusive, and effective use of connectivity.** Use ACP awareness and enrollment campaigns as a way to encourage lower-income households to adopt high-quality internet service and connect them to relevant digital inclusion resources.
- **Update consumer protections as more people and services move online.** Consumer protections should encompass data privacy and protect against abusive online practices. Empower existing consumer protection agencies (e.g., public utility commissions and the offices of the attorney general) to monitor, audit, and respond to unfair or deceptive practices undertaken by providers and other technology companies.

Appendix A: Support Analysis

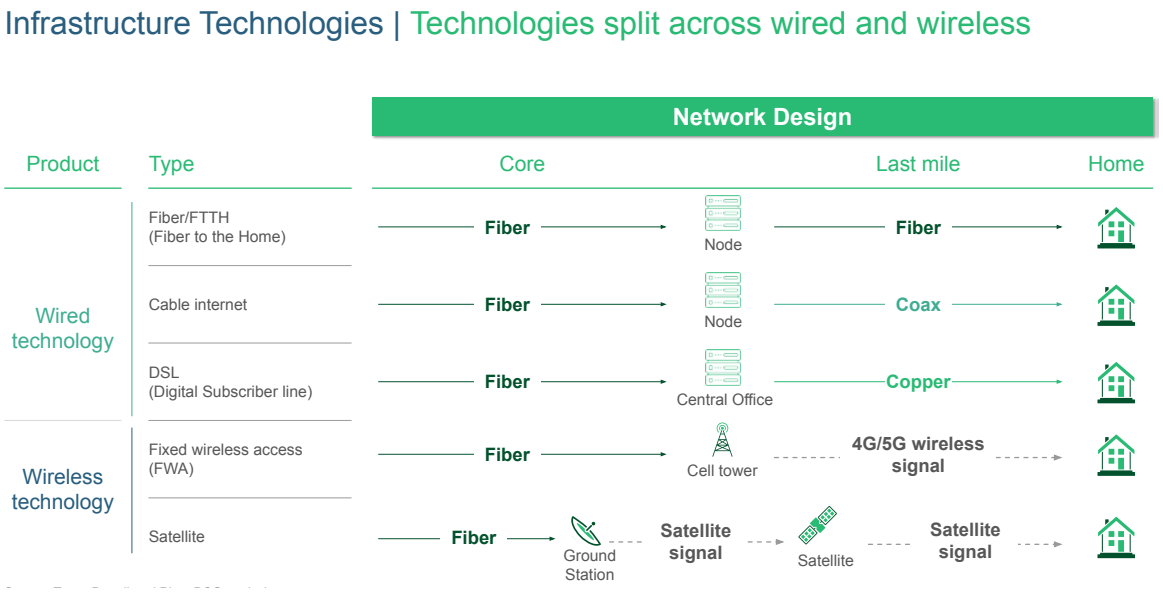
FIGURE A1. Growth in average broadband speed over time

Average speeds have grown by over 8x since 2012



Sources: Cisco; BCG analysis

FIGURE A2. Types of network design



Sources: Texas Broadband Plan; BCG analysis

Appendix B: Case Studies

FIGURE B1. Insure the Uninsured Project (ITUP):
Connecting and providing education to stakeholders is critical in bridging the digital divide

Objective: Educate and connect stakeholders

Overview I ITUP is a health policy organization working to promote innovative and workable policy solutions that expand health care access in California

Problem I Public and private entities are unaware of best practices to improve telehealth access and communities are unaware of resources at hand

Objective I Improve virtual telehealth access through education, delivered through trusted messengers, that uses actionable messaging and addresses the entire stakeholder funnel

Activities: Policy advocacy enabled by education

ITUP has pursued an array of initiatives, including:

- Annual conference for elected officials, policy experts, researchers, providers, health plans, etc. to discuss policies and actions that help bridge the digital telehealth divide
- Fact sheets that speak to telehealth policy, broadband 101, etc.
- Targeted presentations & workshops about policies, funding & etc. for stakeholder entities & digital access for individuals

Impact: Train and inform with program and policy

PROGRAM (2021)

- Virtual conference with over 700 attendees
- 10 regional workgroups and listening sessions across the state on telehealth, digital equity, etc.
- 2 policy forums on health information exchange and broadband and connectivity policy with over 200 perspectives shared
- 2 LA health collaboratives

POLICY (2021)

- Regional geographic profiles highlighting key coverage facts for all counties in CA
- 6 quick read fact sheets on key healthcare topics
- 8 ITUP blogs spotlighting legislative bills and budget summaries

Takeaways: Health entities have a key role in broadband conversations

Access to telehealth is critical…

> *"Money for broadband is new in the budget for California - we have a social need for telehealth because of COVID but need to build towards a social expectation and desire."*
> ***- Executive Director, ITUP***

Key stakeholder knowledge gaps present challenges:

- Lack of understanding around anchor institution qualifications, etc.
- Entities unaware of existing funds available (i.e., ACP, CA $6B Middle-Mile funding), often due to eligibility knowledge gap
- Policymakers do not understand potential local level impact (i.e., existing need, individuals affected), preventing action

Sources: Market participant interviews, BCG analysis

FIGURE B2. Oregon's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC):
Survey to WIC community shows need for devices and connectivity in telehealth delivery; internally, IT lacks training and funding

Objective: Assessed telehealth visit feasibility

Overview I Oregon WIC provides wellness screenings for children <5 years old, pregnant and postpartum women, and lactation consultations

- Local agencies: 32
- Individuals served: 80k
- Avg. visits / year: 4

Need I Lack of existing video infrastructure drove consultations to move from office visits to mobile calls in response to COVID, leading to:

- Less comprehensive visits
- Poorer health tracking

Response I Survey designed in partnership with Portland State University for WIC participants and IT staff to assess the feasibility and equitability of creating infrastructure for video visits

Activities: Deployed survey to gauge reach and equity

Separate online surveys delivered to WIC participants and Local Agency IT staff who support the WIC program:

1. Survey designed to assess…
   - Participant feasibility
     - Comfort with video
     - Device availability
     - Access to stable broadband
   - Internal IT resources
2. Survey distributed
   - Rollout: January 2021
   - Text with survey link sent to participants in English, Russian, and Spanish
3. Survey collected across:
   - WIC participants: 9,503
     - 350 completed via call
   - IT Staff: 22 dept. reps

Impact: Data shows tech equity and IT support gaps

EXTERNAL: PARTICIPANTS

- 60% Interested in engaging in video visits
- 31% Spanish speaking participants lack email
- 15% Lack monthly internet service plan
- 44% Run out of mobile data used for internet >1x annually

INTERNAL: IT SUPPORT

Dedicating existing, fragmented IT resources represents roadblock

- 7 out of 22 offices support all county IT support, not just WIC
- ~70% of respondents expect competing priorities for funds and time to challenge adoption

Takeaways: Lack of feasible near-term path forward

Telehealth offers critical benefits…

- Flexibility for participants in isolated geos and with irregular work schedules
- Visibility of patients creates more comprehensive visit (can physically see lactation, child behavior, etc.)
- More traceability of health metrics via online systems vs. cellular calls
- Expanded program access, i.e., virtual new mom support services (dieticians, parenting support, etc.)

State execution is complex & requires…

- Adoption across participants incl. those lacking dig. literacy and devices
- State-level infrastructure to support and develop technology
- Agency-level IT access to use and support for tech., including IT staff
- Stakeholder coordination across local entities (i.e., WIC, County health dept.)

Sources: Market participant interviews, BCG analysis

FIGURE B3. Washoe County School District:

Tech standardization creates student learning and administrative efficiencies, narrowing the homework gap

Objective: Close the homework gap

Overview I Washoe County School District (WCSD) serves 62k students across ~100 schools in Nevada

Problem I COVID left students that had insufficient devices and internet service unable to engage in remote learning
- Initial paper packet program response was complex and inefficient

Objective I Close the homework gap amid an increasingly virtual environment by:

- Standardizing student devices across schools
- Providing broadband service to families via hotspots and Comcast Internet Essentials participation
- Enabling teacher access to equitable tools for program delivery and student comms.

Activities: Standardize student technology

WCSD pursued a multi-pronged approach to assess connectivity gaps and implement sustainable programs:

1. **Identified funds**
   Received $2M in FCC ECF funding and reallocated internal general funds
2. **Distributed tech readiness survey**
   Deployed to families in 2020 to assess device and service gaps amid remote environment
3. **Administered devices**
   Delivered hotspots (in partnership with T-Mobile) and laptops to families in need
4. **Implemented long-term program**
   Installed 'Laptop Refresh Program' offering ~15k students new laptops annually

Impact: Measure students connected

- 6k — Hotspots provided to families with insufficient internet service
- 17k — Laptops acquired and distributed to students lacking devices
- ~10 — Hotspots provided to teachers without connectivity
- 25% — Of student laptops replaced annually via Refresh Program

IMPACT OF STANDARDIZATION
- Equitable device and service access across schools; 50% underserved (no Title One funding, or obsolete tech.)
- Increases ease of use at home; device and app consistency most important in non-English homes
- Implementation efficiency for district admin. (regulations, etc.)
- Bulk purchasing across districts creates pricing advantages

Takeaways: Digital inclusion critical long term

Districts are becoming increasingly digital in a post-COVID environment
- Standardization of tech in the classroom will increase with digital textbooks, and online comms.
- Tech support is critical in enabling students and admin
  - WCSD leveraged grant funds for dedicated IT student support rep. through 2024
  - WCSD lacks tech. support resources for admin., with a 1:1,000 staff to IT tech. ratio

To ensure digital program feasibility, states must offer expanded resources…
- Continued funds beyond time horizon of existing FCC, ECF availability
- Broadband infrastructure to students without access to internet service
- Grants that assist districts in scaling IT support services (internally and student-facing) and IT security

Sources: Market participant interviews, BCG analysis

FIGURE B4. New York University (NYU) Langone Health, Together Growing Strong Initiative:

Residents are connected, but data demonstrates extensive digital literacy and service quality gaps

Objective: Improve digital literacy and connectivity

Overview I Together Growing Strong is an NYU Langone initiative that assists families with children in Sunset Park, Brooklyn, from pregnancy through age 5 via health care and education services

Problem I COVID left participants that did not have devices or that had low internet speeds without:
- Telehealth access for standard care and postpartum support
- Digital literacy necessary for parents to help children in virtual classrooms
- Ability to apply for or renew social services benefits

Objective I Close the connectivity and digital literacy gap in Sunset Park, Brooklyn, through direct program assistance and policy advocacy

Activities: Policy advocacy enabled by data collection

Together Growing Strong has pursued an array of initiatives, including:

Digital literacy workshops
- Support ACP enrollment and tech training via events in partnership with Sunset Spark
- Tech training through postpartum prevention group

Deploy community surveys
- Tech Literacy Survey distributed across 49 citizens in English, Spanish, and Mandarin
- School Survey across 9 schools on student connectivity

Digital equity working group
Group of NYU faculty, teachers, and Sunset Spark reps. advocating for free Wi-Fi access and dig. literacy
- Position statement on Wi-Fi access to policy makers
- Meetings with local and state reps.

Impact: Survey data illustrates proof of gap

TECH LITERACY SURVEY

Broadband speeds are inadequate…
- 96% — Had access to Wi-Fi in their households
- 20% — Are not comfortable using technology
- 30% — Report internet speeds that are too slow
- 20% — Have frequent disconnections over home internet

SCHOOL SURVEY

Students are ill equipped to succeed…
- 600 — Students lacked devices for virtual schooling
- 56% — Of schools have >10 tech support requests per week
- 6 — Schools have families who live in Wi-Fi dead zones

Takeaways: Service must be available, sufficient, and usable

Data is critical to actionably shape policy:
- Survey data included in position statement shows that while Sunset Park citizens have internet access, current service has insufficient speed and signal and digital literacy is low
- Access to data collected is offered to other entities starting digital equity initiatives to support grant funding efforts, etc.

State governments can increase access to resources through:
- Continued funding to make digital access a utility
- More equitable solutions, i.e., ACP applications in expanded languages
- Implement free Wi-Fi programs, i.e., Wi-Fi kiosks in lower-income neighborhoods with poor connection

Sources: Market participant interviews, BCG analysis

FIGURE B5. Institute for Local Self-Reliance:

Funding and infrastructure access limit digital equity for tribal nations, but bootcamps facilitate network builds

Objective: Empower tribal broadband networks

Overview I Institute for Local Self-Reliance is a national research and advocacy organization that conducts studies on tribal broadband issues across the U.S.

Problem I Tribal lands lack access to broadband infrastructure, and communities do not have technical knowledge or economic resources to build independent networks

- Federally recognized tribes: 530
- Telcos established: 12

Objective I Increase awareness of broadband solutions to assist tribal nations in scaling broadband deployment and conduct research to shape more equitable policies

Activities: Inform with research, train in workshops

ILSR promotes tribal broadband access through two core initiatives:

Research on broadband efforts

- Interviews conducted across eight tribes with mix of broadband expertise conducted
- Website under construction will showcase challenges, investment opportunities, etc. based on case studies

Offer tribal broadband bootcamps

- Series of three-day intensive events across ~50 participants offering hands-on support and instruction for broadband network development
- Funded by Google, Connect Humanity, Tribal Research Center, etc.

Impact: Raise awareness, inspire action

RESEARCH PROVES CHALLENGES

- Tribal lands cannot be collateralized, making even low CAPEX builds prohibitive
- Fragmentation of native lands across U.S. and historically poor data collection prevent accurate mapping
- Middle mile infrastructure is limited
- Physically complex (i.e., not on electric grid, weather, terrain) and reservations are bifurcated

BOOTCAMP EMPOWERS ADOPTION

- Knowledge sharing on technical buildout requirements
- Long-term relationships established (Discord channels, etc.), driven by trust
- Infrastructure collaboration has occured across tribal communities in geographic proximity

Takeaways: Adoption requires gov't engagement

Investment is critical, but increasingly limited and prohibitive to tribal nations:

> *Governments received requests for five times the amount of funding that was available. Funding is oversubscribed."*
> - ***ACLS Leading Edge Fellow, ILSR***

> *There needs to be more flexibility in how grant funding is structured. Tribes can't connect to middle mile, so you can't penalize them when they don't get 100[Mbps] download speeds."*
> - ***ACLS Leading Edge Fellow, ILSR***

Sources: Market participant interviews, BCG analysis

FIGURE B6. McLaughlin School District:

Offline use case is limited, and should only be viewed as supplemental option if students attend in-person classes

MSD drove infrastructure deployment to address student connectivity gaps

Overview I McLaughlin School District serves 470 rural students, 98% of which are Native American, over 800 square miles of South Dakota

Problem I Broadband infrastructure gaps prevented students from accessing internet service amid a remote learning environment

Activities I Partnered with local ISP, West River Telecommunications (WRT), to deploy fiber edge-outs that covered the student population, while assisting families with low-cost internet enrollment (EBB, ACP, etc.)

- Partnered with WRT and covered 2 years of payments, making fiber buildout to remaining homes viable
- Created physical site for ACP enrollment; assistance from in-person representative made signups easier than when done independently, driving ~100 new enrollments

~100% — Broadband accessibility achieved across student population, from 60% prior to infrastructure build

Broadband is strongly preferred, as offline solutions only allow for unidirectional communication between students and teachers

Broadband allows for back-and-forth interaction between students and teachers unlike unidirectional offline communications; offline solutions can be helpful where affordable infrastructure does not exist, and students attend classes in-person, daily:

Unidirectional communication	• Offline content is static, and does not allow students to communicate back with their teachers or submit work online, meaning students must be in-person daily to submit work
Wireless tech expansion	• While coverage is less stable and more expensive than wired tech, satellite and FWA will continue to become more readily available; this limits infrastructure gaps that necessitate supplemental offline access
Low-cost service availability	• Broadband affordability issues continue to be abated by low-cost programs (i.e., EBB and ACP), reducing the value-add of affordable offline solutions, particularly when considering the tech advantages of broadband

> For a school district, [offline] is not best practice for serving our customers. There is no back and forth… It is a great supplemental piece as long as you are in class with the teacher Monday through Friday. ”
> - Superintendent, McLaughlin School District

Sources: Market participant interviews, BCG analysis

FIGURE B7. Information Equity Initiative (IEI):

Offline datacasting offers digital content delivery alternative where infrastructure and affordability prohibit broadband

Objective: Inform the structurally unconnected

Overview I Founded in 2021, IEI is a nonprofit partnership of 3 PBS member entities that delivers offline digital content to unconnected homes via PBS broadcast spectrum typically used for TV

- PBS stations engaged: >12
- Coverage / station (sq. mi.): 10,000

Problem I Education is limited in school districts, health agencies, etc. where affordability and infrastructure gaps prohibit broadband access

Objective I Disseminate educational materials offline by:

- Datacasting, or transmitting videos, HTML files, and other digital resources to Wi-Fi enabled devices through TV airwaves
- Curating libraries of educational materials for distribution

Activities: Provide offline tech for information access

IEI delivers offline content via datacasting tech as follows for a school scenario:

1. User content creation
   - Educator curates tailored content, customizable by home
   - IEI offers cloud library of educational materials for use
2. Information dissemination
   - Content is uploaded to PBS station at click of a button
   - Integrated with Schoology, Google Classroom, and Canva
3. Data transmission
   - PBS station unidirectionally transmits data via TV airwaves
   - Home receives content through IEI-provided antenna and device
4. Materials received
   - Students receive homework packets and educational videos

Impact: Share information with unconnected end users

Datacasting services are being provided to various end users, including:

- >12 — School districts in PA and SC as of June 2022
- 300 — Federally qualified health care centers by October 2022
- 15 — Incarceration facilities by year end 2022

DATACASTING EFFICACY

- (+) Infrastructure gaps are abated, as 97% of U.S. homes are already covered by broadcast spectrum
- (+) Cost barriers are reduced, as IEI can deliver content at ~$200 per end user over a ~10-year lifetime
- (−) Unidirectional transmission prevents reciprocal exchange
- (−) Content remains limited to information provided by educator

Takeaways: Offer secondary alternative to broadband

Today, datacasting is most impactful in communities that have no affordable wired or wireless infrastructure access:

> "What it comes down to at the moment is the ubiquitous nature of what IEI has versus what everyone else has. It **costs very little for us to provide infrastructure** to offer information."
>
> - CEO, IEI

As broadband infrastructure is developed over the next 10 years, datacasting can offer support where cost remains the leading barrier:

> "**Long-term, it's a consideration of cost.** Once fiber is put in ground in 10 years, the question of affordability will remain and broadband subsidies become a political football."
>
> - CEO, IEI

Sources: Market participant interviews, BCG analysis

Appendix C: Interviewees

Arizona State Library

Arizona State University

Baltimore Public Schools

California Labor Federation Workforce and Economic Development Program

Charlotte Regional Business Alliance

City of Portland

Comcast

Connect Waukegan

EducationSuperHighway

Harvard Business School—Managing the Future of Work Project

HCS EdConnect & The Enterprise Center

Information Equity Initiative

Institute for Local Self-Reliance

Insure the Uninsured Project

Land O'Lakes

McLaughlin School District

New York University Langone Health

Oregon Employment Department

Oregon Health Authority

Purdue Center for Regional Development

University of North Carolina at Chapel Hill School of Medicine

Washoe County School District

World Education

+

www.commonsense.org **www.bcg.com**

THIS IS MEMBER-EXCLUSIVE CONTENT

OPINION

The Affordable Connectivity Program is helping to close the broadband gap

It is time to keep the funding permanent.

ore than 20 million U.S. households have now enrolled in this program. In Dallas, it's over 100,000 households. That makes this the largest broadband affordability effort in our nation's history, write Marc Veasey and Jessica Rosenworcel. (Getty Images)

By Marc Veasey and Jessica Rosenworcel
1:30 AM on Aug 23, 2023 CDT

Listen to this article now
Powered by **Trinity Audio**
1.0×
00:00
04:07

No matter who you are or where you live in this country, you need internet access to have a fair shot at 21st century success. The pandemic drove this reality home. As so much of our lives moved online, it became crystal clear that broadband has become indispensable for work, school, health care and so much more.

Yet too many people struggle to get connected because they struggle to pay for this essential service. Even though high-speed internet is available to 95.9% of residential units in Dallas county, according to the most recent American Community Survey Data, approximately 9.3% of households in Dallas County don't subscribe to any broadband. To close the digital divide in the Dallas-Fort Worth area and across the country, we will need to close the broadband affordability gap.

The good news is that Congress stepped up to meet this moment. On Aug. 15, a group of lawmakers and local stakeholders joined together in Dallas to discuss our work to support this unprecedented effort to provide affordable high-speed internet.

That work started in earnest in May 2020 with the introduction of a bill to create the Emergency Broadband Benefit Program to help people afford internet access during the pandemic. Seven months later, Congress provided $3.2 billion for this program, and the Federal Communications Commission had this new program up and running in record time. In November 2021, the Bipartisan Infrastructure Law provided an additional $14.2 billion in funding and we launched the Affordable Connectivity Program.

Thanks to this work, today eligible households can get discounts of up to $30 a month for broadband service, and up to $75 a month if that household is on qualifying tribal lands. And eligible households can also receive up to $100 to offset the cost of a desktop computer, laptop or tablet.

Earlier this month, the Affordable Connectivity Program reached a tremendous milestone. More than 20 million U.S. households have now enrolled in this program. In Dallas, it's over 100,000 households. That

makes this the largest broadband affordability effort in our nation's history.

One lesson we've learned is that trusted voices are the lifeblood of successful outreach and enrollment for the Affordable Connectivity Program. We have worked with local leaders to help spread the word, household by household, to help connect our friends and neighbors who have been shut off from the benefits of high-speed internet.

It's not enough to make sure everyone who could benefit from the Affordable Connectivity Program takes advantage of this opportunity. We need to make sure the millions of participating households don't have the rug pulled out from under them. While the funding that Congress provided for the Affordable Connectivity Program was unprecedented, it is not permanent.

Funding is set to run out next year. Without congressional action, millions of people could find themselves shut off from the broadband service they've come to rely on. The good news is there is bipartisan support for extending the Affordable Connectivity Program. This June, eight Republican senators wrote a letter calling for "sustainable funding" for the program. In the House, bipartisan lawmakers continue to urge congressional appropriators to support additional funding for the program.

With over 20 million subscribers, the Affordable Connectivity Program is an undeniable success. We've made too much progress in closing the digital divide to turn back now.

Jessica Rosenworcel is the FCC chairwoman, and Marc Veasey is the U.S. representative for the 33rd Congressional District of Texas and a member of the Energy and Commerce Committee. They wrote this column for The Dallas Morning News.

We welcome your thoughts in a letter to the editor. See the guidelines and submit your letter here. If you have problems with the form, you can submit via email at letters@dallasnews.com

Marc Veasey and Jessica Rosenworcel

From The Web

From the Office of the President & CEO

Fiber Broadband Association
3050 K Street NW, Suite 400
Washington, DC 20007, USA

September 21, 2023

The Honorable Bob Latta
Chair, Communications & Technology Subcomittee
U.S. House of Representatives
Washington, DC 20510-4105

The Honorable Doris Matsui
Ranking Member, Communications & Technology Subcomittee
U.S. House of Representatives
Washington, DC 20510-4105

The Honorable Cathy McMorris Rodgers
Chair, Energy & Commerce Committee
U.S. House of Representatives
Washington, DC 20510-4105

The Honorable Frank Pallone
Ranking Member, Energy & Commerce Committee
U.S. House of Representatives
Washington, DC 20510-4105

Re: Letter for the Record, September 21, 2023, Hearing on "Connecting Every American: The Future of Rural Broadband Funding."

Dear Chairman Latta and Ranking Member Matsui,

The Fiber Broadband Association (FBA) strongly supports increased coordination and funding for broadband deployment and adoption programs to ensure unserved and underserved locations in all areas, including rural communities, have access to high quality and affordable high-speed broadband services. For this reason, we applaud you and other members of the House Energy & Commerce Subcomittee on Communications & Technology for holding a hearing to examine the "Future of Rural Broadband Funding" and the federal programs that play a critical role in broadband deployment and adoption.

We are at a critical and historic moment in our nation's deployment of fiber broadband connectivity – the critical infrastructure for 21st Century communications. Not only is the private sector continuing to invest more than $75 billion annually overall in broadband facilities, but through the bipartisan leadership of Congress, the federal government is ensuring that all Americans will soon have access and can connect to reliable, high-speed broadband service. As a result of these combined efforts, we are on track to increase the number of U.S. homes that have access to fiber from approximately 65 million nearly half of U.S. homes – to well over 110 million homes by 2030.[1] To make this happen, broadband

[1] RVA, LLC. and Fiber Broadband Association, "2022 North American Fiber Status." December, 2022.

service providers, contractors, vendors, and government agencies must work together on all aspects of deployment. This is especially important for federal programs to guarantee taxpayer dollars are used most effectively to fill this "fiber gap".

Over the past decade, FBA has focused intensely on ensuring that unserved and underserved residents, businesses, and community anchor institutions have access to the same critical fiber infrastructure that has already been deployed or is rapidly being deployed in other areas of the U.S. Not having fiber connectivity is tantamount to being stranded on the wrong side of the digital divide for the straightforward reason that all-fiber networks have the greatest broadband performance capabilities, are reliable and secure, can be readily upgraded at low-cost, and are sustainable over decades. Further, this fiber investment is essential for the critical infrastructure for 5G/6G wireless deployment, smartgrid modernization, public safety, and absolutely imperative for future services such as Quantum Networks.

As evidence of this reality, Broadband Service Providers are investing tens of billions of dollars of their own capital annually to deploy all-fiber networks. In effect, the "market has spoken" to endorse the importance of fiber deployments, and in providing funding, government should follow this lead.

That is the course that the Federal Communications Commission (FCC), the Rural Utilities Service (RUS), and the National Telecomunications and Information Administration (NTIA) have already set. In 2014, the FCC adopted an order enhancing the E-rate program to facilitate access by eligible schools and libraries to fiber connectivity, including by setting gigabit speed targets, increasing the amount of funding available for connections and equalizing support for dark fiber leases.[2] Since 2019, the RUS has awarded more than $3 billion in ReConnect grants, loans and grant-loan combinations to reach hundreds of thousands of households, businesses, farms, and anchor institutions, and the "predominant number of applicants…are utilizing fiber to provide high-speed internet service."[3] In addition, the $40 billion Broadband Equity, Access, and Deployment (BEAD) program prioritizes fiber connectivity.[4] Thus, the precedent established by these federal agencies is clear: fiber connectivity will

---

2 "FCC Continues E-Rate Reboot to Meet the Needs of 21st Century Digital Learning," FCC News (Dec. 2014) available at https://docs.fcc.gov/public/attachments/DOC-330986A1.pdf.

3 "USDA Admin Berke talks broadband demand, Farm Bill, ReConnect," Fierce Telecom (Jan. 30, 2023) available at https://www.fiercetelecom.com/broadband/usda-admin-berke-talks-broadband-demand-farm-bill-reconnect.

4 Broadband Equity, Access, and Deployment Program, Notice of Funding Opportunity at 14, n. 9 (May, 2022) ("A project that will rely entirely on fiber-optic technology to each end-user premises will ensure that the network built

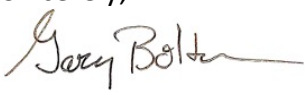
maximize use of limited government funding over the long-run and ensure no individual, business, or institution is left behind.

FBA recognizes the federal government for dedicating an unprecedented amount of funds to deploy broadband to unserved and underserved locations, and we believe it is important to evaluate the success of these efforts, especially before expanding or initiating new programs.

Finally, we urge the House Energy & Commerce Committee and Congress to explore how the Universal Service Fund and other federal broadband programs can help ensure all Americans are able to afford access to broadband. For example, the Affordable Connectivity Program (ACP) has played an instrumental role in helping achieve this goal, and it is on track to run out of funding next year. We encourage Congress to ensure the ACP is funded and that similar programs have the funding they need to keep all U.S. residents connected.

We look forward to working with the Committee and stand ready to support this shared goal in ensuring all Americans have access to fiber broadband networks.

Sincerely,



Gary Bolton
President and CEO
Fiber Broadband Association
(919) 349-1025
gbolton@fiberbroadband.org

by the project can easily scale speeds over time to meet the evolving connectivity needs of households and businesses and support the deployment of 5G, successor wireless technologies, and other advanced services.") available at https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf.

DR. EDWARD LONGE
DIRECTOR OF THE CENTER FOR TECHNOLOGY AND INNOVATION

CENTER FOR TECHNOLOGY AND INNOVATION

JUNE 20, 2023

For an organization with a mission to defend the principles of limited government and free markets, there will always be at the forefront of our fiscal analysis the question, "when is federal government spending both appropriate and valuable?" Article I, Section 8 of the U.S. Constitution, articulates where the limiting authority of Congress lands in this respect. As our 235-plus year experiment in self-governance continues, the question has become fraught with complexities that both of our major political parties have chosen fiscal paths that have drifted our federal balance sheet more than $30 trillion into the red.

Nevertheless, there are cases where federal investment, done strategically, wisely, and with appropriate guardrails, can promote markets, encourage innovation, and address issues needing large-scale solutions.

The Affordable Connectivity Program, commonly known as ACP, is illustrative of how when lawmakers in Washington orient programs around markets and consumers, not subsidies or crony capitalism, they can deliver real results for Americans in a cost-effective and efficient manner. The evidence shows that ACP has achieved these goals, which is why even fiscally conservative-minded individuals and groups see it as a bit of an anomaly – an example of the federal government performing its role in both an effective and efficient manner that promotes free market competition and growth, rather than encroaching on it.

As a direct result of ACP, 18 million mainly low-income households across the United States, the Affordable Connectivity Program (ACP) has become a lifeline, connecting some of the poorest Americans to high-speed broadband internet and opportunities to work remotely, receive virtual healthcare, and receive an education online. Without ACP, America's digital divide- the difference between those who can access the internet and those who cannot- would be far greater, hampering economic development, depressing job creation, undermining prosperity, and limiting social mobility.

Yet, despite the success of ACP in connecting America's poorest to broadband internet and making a significant contribution to closing the digital divide, these gains will vanish if Congress fails to fund the program beyond 2024. For a federal program that has been remarkably successful and enjoys broad bipartisan support, the demise of ACP could send America's poorest back to the digital dark age.

The end of ACP would be incredibly damaging to Florida. As of March 2023, the sunshine state had over 1.3 million enrollees and had the fourth most recipients behind California, Texas, and New York. If Congress fails to renew ACP, many of the gains the state has made over the past few years to close the digital divide would be undone, disconnecting the state's poorest residents and those who have the most to gain connectivity.

Congress must act, and given ACP's importance to Florida, the state's congressional delegation must lead the charge to appropriate the program beyond 2024. Doing so will supercharge economic development in the Sunshine State and keep Florida on its path to prosperity.

Created as part of the Infrastructure Investment and Jobs Act (IIJA), ACP "provides $30 per month to eligible households, as well a single $100 discount for the purchase of equipment such as laptops, desktop computers, and tablets." Congress appropriated $14.2 billion toward ACP, and these funds were designed to connect the 18 percent of households that do not subscribe to broadband services because of cost.

Unlike other federal connectivity programs, ACP acts as a voucher system instead of a direct subsidy, allowing participants "to shop around" for the best service and incentivizing private companies to compete for consumers and deploy broadband to underserved and unserved communities. Unlike a direct subsidy or establishment of a government-owned network, broadband voucher programs create market conditions by allowing consumers to choose their provider, select another if service and quality are poor, and, most importantly, force companies to compete for the vouchers.

ACP, in many ways, benefits low-income families in the same way that school choice benefits public school-children. Instead of creating a one-size fits all approach through, say, a government-owned network or subsidy that crowds out competition and investment, vouchers give consumers "choices over what service they want" while also driving competition among providers who have a larger base of potential subscribers. Such incentives ultimately push providers to deploy to more areas and lower prices. Just like school choice programs, which result in overall better educational outcomes, ACP has resulted in more Americans connected and tax dollars spent efficiently.

In Florida, the successes of ACP in creating market conditions is evident in the fact that around 50 companies participate in the program, providing discounted- or even free- broadband to those who meet certain eligibility criteria.

To qualify for ACP, prospective enrollees must meet specific criteria. To qualify, applicants must earn below 200% of the federal poverty guidelines based on household size or participate in federal assistance programs such as Medicaid, SNAP, or WIP. Such stringent requirements minimize the risk of fraud and ensure Congress sends taxpayer dollars where they are most needed.

Data from the Universal Service Administrative Company (USAC), a non-profit entity within the Federal Communications Commission (FCC), allows for a granular study of which regions of Florida would be most affected by the loss of ACP and which areas would likely see the greatest increase in lost connectivity. Miami-Dade County, for example, could see over 165,000 households lose access

to broadband if Congress fails to renew ACP. Similarly, Hillsborough County could see over 117,000 households cut off from broadband and the benefits it provides.

Top Five Florida Counties by ACP Recipients, May 1, 2023.

County	**ACP Recipients**
Miami-Dade County	165,947
Hillsborough County	117,141
Orange County	114,970
Pinellas County	72,053
Polk County	70,951

For a state that prides itself on its efforts to close the digital divide and ensure every resident can reap the economic prosperity of broadband connectivity, the prospect that Congress could kill a program that serves over 1.3 million Florida households is a serious concern for the state's elected representatives.

ACP has also been remarkably successful in targeting low-income communities and households that would struggle to meet the cost of service. As the table below outlines, the five counties with the highest percentage of ACP recipients in Florida all have a median household income well below the state's median income of $59,734 and well below the national median household income of $70,784. Citrus County, a rural county 70 miles north of Tampa has a median household income of just $48,664 and an ACP participation rate of 10.8. percent. Similarly, Putnam County, which lies between Gainesville and Daytona Beach has a median household income of just $48,664 and an ACP participation rate of 10.10 percent.

Conversely, counties in Florida that have the lowest percentage of ACP recipients have incomes well above the state's median household income and close to or above the national average. Monroe County, home to the wealthy Florida Keys,

has a median household income of $69,490 but an ACP participation rate of just 1.70 percent.

Taken together, this data demonstrates that while more work needs to be done to connect the poorest in Florida, ACP is remarkably efficient in targeting funds toward low-income communities and connecting those that would most likely find cost a barrier to connectivity.

Top Counties By Percentage of ACP Recipients, May 1, 2023:

County	ACP Recipients	Median Household Income (2020 Census)	Total County Population (2020 Census)	Percent of ACP Recipients
Citrus County	16,048	$42,661	43,826	10.80%
Putnam County	7,469	$48,664	153,843	10.10%
Gadsden County	4,593	$39,975	73,321	9.90%
Polk County	70,951	$55,099	725,046	9.90%
Hernando County	17,816	$53,301	194,515	9.30%

Florida Counties with Fewest Percent of ACP recipients, May 1, 2023:

County	Acp Recipients	Median Household Income (2020 Census)	Total County Population (2020 Census)	Percent Of Acp Recipients
Monroe County	1,360	$69,490	434,006	1.70%
St. Johns County	4,396	$69,769	158,431	1.70%

Collier County	7,018	$75,543	375,752	1.80%
Martin County	3,099	$73,153	82,874	1.90%
Sarasota County	8,755	$88,794	273,425	1.53%

It should be crystal clear to lawmakers in Washington, and for Florida's congressional delegation in particular, that the Affordable Connectivity Program is working to connect those who would otherwise be unable to afford broadband services. Despite the successes of ACP, its future remains uncertain, and a failure to fund the program beyond 2024 could send millions across the country and over 1.3 million Floridians back to the digital dark age.

In an era when broadband is a necessity, not a luxury, Congress and Florida's congressional delegation simply cannot let this happen.

The Leadership Conference
on Civil and Human Rights

1620 L Street, NW
Suite 1100
Washington, DC
20036

202.466.3311 voice
202.466.3435 fax
www.civilrights.org

June 23, 2023

The Leadership Conference

Dear Member of Congress,

On behalf of The Leadership Conference on Civil and Human Rights, a coalition charged by its diverse membership of more than 230 national organizations to promote and protect the rights of all persons in the United States, and the over 230 undersigned civil society organizations, municipal governments, and other interested groups, we write to request robust additional funding for the Affordable Connectivity Program (ACP).

Today, the ACP's current rate of expenditure is roughly $500 million per month. Based on this and projected growth, funding for the ACP could be exhausted by Q2 of next year, if not sooner.[1] Without adequate and sustained funding, millions of vulnerable Americans currently relying on the program would see their internet bill jump or be disconnected entirely, and Congress' bipartisan $42 billion investment in broadband deployment will not meet the goal of universal broadband deployment and adoption.

Broadband access at home is universally recognized as a necessity. It is the essential infrastructure of the 21st century, and the signers of this letter are committed to ensuring that all communities, particularly those who are underserved, gain and continue to have access to affordable, reliable, and high-quality advanced communications services. Lack of high-speed internet access among low-income people, communities of color, and other underserved communities is of particular concern, and the ACP has proven critical in getting households in these communities online.

The last three years demonstrate that broadband internet service is indispensable for employment, education, health care, commerce, community building, civic engagement, and government services. The high cost of service, however, prevents access for countless households across the United States.[2]

---

[1] "ACP Enrollment and Claims Tracker," Universal Service Administrative Company (last accessed Apr. 14, 2023), https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/#total-enrolled.

[2] Anna Read, "How Can the United States Address Broadband Affordability," Pew (Apr. 29, 2022), https://www.pewtrusts.org/en/research-and-analysis/articles/2022/04/29/how-can-the-united-states-address-broadband-affordability; Dr. Hernan Galperin, Annual Survey on Broadband Adoption 2021, California Emerging Technology Fund and University of Southern California (Mar. 2021), https://www.cetfund.org/wp-content/uploads/2021/03/Annual_Survey_2021_CETF_USC_Final_Summary_Report_CETF_A.pdf; "No Home Left Offline: Bridging the Broadband Affordability Gap," Education SuperHighway (2022), https://www.educationsuperhighway.org/wp-content/uploads/No-Home-Left-Offline-Report_EducationSuperHighway2021.pdf.

The Leadership Conference

Thanks to Congress' action, the ACP now helps more than 17 million households in America afford broadband internet, with enrollment continuing to increase steadily.[3] These households collectively save more than $500 million per month on internet expenses,[4] while the program drives economic growth, higher incomes, and lower unemployment.[5] The ACP is currently improving telehealth access for more than 3 million low-income seniors and 400,000 veterans, expanding access to education for more than 3 million students, and providing more economic opportunities to more than 1 million federal housing residents.[6] Broadband strengthens communities by creating immediate and long-lasting economic benefits and provides economic improvements for everyone — from rural areas that then become more attractive to businesses and workers, to cities facing aging and inadequate broadband infrastructure. For example, one study demonstrated the employment effects of subsidized broadband resulted in just over $2,200 of benefits per household through increased labor force participation.[7]

Failure to extend the ACP with new funding could result in the biggest loss of internet connectivity ever. Without action from Congress this year, millions of households could immediately lose service.[8] In addition, the loss of ACP would reduce the efficacy of Congress' groundbreaking $42 billion investment in the Broadband Equity, Access, and Deployment (BEAD) Program. A recent study concluded that the ACP reduces the size of the subsidy needed to incentivize broadband deployment in rural areas by 25 percent.[9] ACP makes BEAD program dollars go farther. Sustained funding is critical as broadband companies and others consider the level of public and private investment needed to fulfill Congress' goal of universal affordable broadband deployment and adoption.

Thank you for the work you have done already to make high-speed internet affordable and accessible across the country and for your attention to the critical concerns we have raised here. If you have any questions about the issues raised in this letter, please feel free to contact Anita Banerji, senior director of the media/tech program, at banerji@civilrights.org, or Jonathan Walter, media/tech policy counsel, at walter@civilrights.org.

---

[3] "ACP Enrollment and Claims Tracker," Universal Service Administrative Company (last accessed Apr. 14, 2023), https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/#total-enrolled.
[4] "Fact Sheet: Biden-Harris Administration Announces New Actions to Lower High-Speed Internet Costs," The White House (Mar. 15, 2023), https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/15/fact-sheet-biden-harris-administration-announces-new-actions-to-lower-high-speed-internet-costs/.
[5] Adie Tomer, Lara Fishbane, Angela Siefer, and Bill Callahan, "Digital Prosperity: How Broadband Can Deliver Health and Equity to All Communities," Brookings (Feb 27, 2020), https://www.brookings.edu/research/digital-prosperity-how-broadband-can-deliver-health-and-equity-to-all-communities/.
[6] "ACP Enrollment and Claims Tracker," Universal Service Administrative Company (last accessed Apr. 14, 2023), https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/#total-enrolled.
[7] George W. Zuo, 2021. "Wired and Hired: Employment Effects of Subsidized Broadband Internet for Low-Income Americans," 13 American Economic Journal: Economic Policy 447 (Aug. 2021).
[8] Blair Levin, "Washington May Be About to Take a Giant Step Backward in Closing the Digital Divide," Brookings (Mar. 13, 2023), https://www.brookings.edu/blog/the-avenue/2023/03/13/washington-may-be-about-to-take-a-giant-step-backward-in-closing-the-digital-divide/.
[9] Kelsey Clark, et al., "Closing the Digital Divide Benefits Everyone, Not Just the Disconnected: An Analysis of How Universal Connectivity Benefits Education, Health Care, Government Services, and Employment," Common Sense Media (2022), https://www.commonsensemedia.org/research/closing-the-digital-divide-benefits-everyone-not-just-the-unconnected.

Sincerely,

The Leadership Conference on Civil and Human Rights
#OaklandUndivided
18 Million Rising
Access Living
Advocates for Basic Legal Equality
AFT
AHIMA Foundation
All4Ed
Alliance for Community Media
Alliance for Digital Equity (Western Massachusetts)
Alternate ROOTS
American Association of People with Disabilities
American Civil Liberties Union
American Federation of Teachers
American Library Association
Americans for Democratic Action (ADA)
AR Designs
Asian Americans Advancing Justice-AAJC
Asian and Pacific Islander American Vote (APIAVote)
Asian Health Services
Asian Human Services
Astound Broadband
Austin Free-Net
Autistic Self Advocacy Network
Baltimore County Public Library
Baltimore Digital Equity Coalition
Baystate Health
BCAUSEICAN
Benefits Data Trust
Benton Institute for Broadband & Society
Bitwise Impact
BoomTown
Byte Back
California Emerging Technology Fund
CanCode Communities
Carroll Technology & Innovation Council
Center for Changing Lives
Center for Democracy & Technology
Center for Digital Equity at Queens University of Charlotte
Center for Independence
Center for Rural Strategies
Center for Work Education and Employment -CWEE
Chicago Jobs Council

The Leadership Conference

Chicago Urban League
City and County of Denver
City of Chicago
City of Cleveland
City of Philadelphia
City of Portland
City of San Antonio
City of San Jose
Civic Nation
Claris Healthcare
Clearinghouse on Women's Issues
CNMI Growers Association
Coalition on Human Needs
Color of Change
Colorado Community Action Association
Colorado Organization for Latina Opportunity and Reproductive Rights (COLOR)
Colorado State Library
Common Cause
Common Cause Delaware
Common Cause Georgia
Common Cause MN
Common Cause New Mexico
Common Sense Media
Communications Workers of America
Community Tech Network
Compudopt
Computer Reach
Computers 2 Kids
Congress Federal Communications Commission (FCC).
Connect Your Community Institute
Consumer Reports
Cuyahoga County
Demand Progress
Denver Public Library
Detroit Change Initiative
DigitalC
Digitunity
Diversity Cyber Council
Duluth Public Access Community Television
EAH Housing
East Baton Rouge Parish Library
EducationSuperHighway
Electronic Frontier Foundation
Empowering Pacific Islander Communities
Energy Outreach Colorado
Entrepreneur Success Program
EveryLibrary Institute NFP
EveryoneOn

Fair Count
Filipina Women's Network
Florida Nonprofit Alliance
Florida Philanthropic Network
Frederick County Health Care Coalition
Free Press Action
Fully Equipped 4 Life Training Solutions
Futures Without Violence
Goodwill Industries International, Inc.
GrowSmart Maine
GWI, Inc
HALOS
Hands to the Future
Hawaii Broadband and Digital Equity Offce
Hispanic Federation
Houston Information Technology Services
Howard County Department of Community Resources and Services
Human-I-T
IBSA, Inc.
Impact Fund
Institute for Local Self-Reliance
Insure the Uninsured Project (ITUP)
Japanese American Citizens League
Jewish Family Service of Colorado
Job Opportunities Task Force
JustLeadershipUSA
Kansas Office of Broadband Development
Kids First Chicago
Labor Council for Latin American Advancement
LatinxDLN
League of Women Voters of the United States
LGBT Technology Partnership
Libraries Without Borders US
LifeLong Medical Care
Link Oregon (Oregon Fiber Partnership)
Lit Communities Broadband, Inc.
Literacy Works
Local Initiatives Support Corporation
Long Beach Gray Panthers
Louisville Metro Government
Low Income Utility Advocacy Project
Lummi Indian Business Council
Lutheran Family Services Rocky Mountains
MACS 2030 - Minnesotans for the American Community Survey and 2030 Census
MakeIT Haverhill
MALDEF (Mexican American Legal Defense and Educational Fund)
Marconi Society
Massachusetts Law Reform Institute

The Leadership Conference

Media Alliance
MediaJustice
MMTC
Mobile Citizen
NAACP
National Action Network
National Asian/Pacific Islander American Chamber of Commerce and Entrepreneurship (National ACE)
National Association for State Relay Administration
National Association of Councils on Developmental Disabilities
National Association of Counties
National Association of Elementary School Principals
National Association of Housing Cooperatives
National Association of Telecommunications Officers and Advisors (NATOA)
National Black Justice Coalition
National Center for Lesbian Rights (NCLR)
National Center for Transgender Equality
National Coalition on Black Civic Participation and Black Women's Roundtable
National Community Action Partnership
National Consumer Law Center, on behalf of its low-income clients
National Consumers League
National Council of Asian Pacific Americans (NCAPA)
National Digital Equity Center
National Digital Inclusion Alliance
National Disability Rights Network (NDRN)
National Employment Law Project
National Fair Housing Alliance
National Hispanic Media Coalition
National League of Cities
National Organization for Women
National Skills Coalition
National Urban League
National Women's Law Center
NETWORK Lobby for Catholic Social Justice
New America's Open Technology Institute
Next Century Cities
Northwest Side Housing Center
NTEN
National Council of Asian Pacific Americans (NCAPA)
OCA - Asian Pacific American Advocates
Open MIC
Oregon State University Extension Service
Parents as Teachers
Partners Bridging the Digital Divide
PCs for People
Pennsylvania Utility Law Project
PFLAG National
PSTV - School District of Philadelphia
Public Advocacy for Kids (PAK)

Public Knowledge
PUENTE DE LA COSTA SUR
Pullman Public Schools
Right Here, Right Now Project
ROC United
Safer Foundation
Saving Our Sons & Sisters International- SOSSI
Schools, Health & Libraries Broadband (SHLB) Coalition
SETDA
Sikh American Legal Defense and Education Fund (SALDEF)
Sojourners
Sonoma County Library
South Central Alabama Broadband Cooperative District
Southeast Community Development Corporation
Southwest Organizing Project
Stewards of Affordable Housing for the Future
SUNY #EmTech
Tech Goes Home
Technology Learning Collaborative
The Arc of the United States
The Association for Rural & Small Libraries
The Charleston Metro Chamber of Commerce
The Children's Agenda
The Children's Partnership
The Community Builder's Inc
The Education Trust
The Greenlining Institute
The National LGBTQ Task Force Action Fund
The Public Utility Law Project of NY
The STEM Alliance
Touch Gift Foundation
Tri-County Cradle to Career Collaborative
TURN - The Utility Reform Network
UnidosUS
United Church of Christ Media Justice Ministry
United Steelworkers
Universal LLC
US Ignite
Valley Vision
Virginia Citizens Consumer Council
Virginia Society for Technology in Education
VOICES for Alabama's Children
Volunteers of America National Services
Voqal
Westchester Library System
Women Employed
YISD
YMCA of Metropolitan Chicago

Congress of the United States

Washington, DC 20515

August 17, 2023

The Honorable Kevin McCarthy
Speaker
U.S. House of Representatives
Washington, DC 20515

The Honorable Hakeem Jeffries
Minority Leader
U.S. House of Representatives
Washington, DC 20515

The Honorable Chuck Schumer
Majority Leader
United States Senate
Washington, DC 20510

The Honorable Mitch McConnell
Minority Leader
United States Senate
Washington, DC 20510

Dear Speaker McCarthy, Leader Schumer, Leader Jeffries, and Leader McConnell:

We are writing to urge you to extend funding for the Affordable Connectivity Program (ACP), which provides families with financial assistance for broadband access, to help bridge the digital divide. Congress has a role in ensuring that high-speed and reliable broadband is accessible to every household, nationwide. We urge you to include full funding for the Affordable Connectivity Program (ACP) in the upcoming government appropriations bill to ensure that households can access the broadband they desperately need.

In the Twenty-first Century, broadband connectivity is essential to maximizing educational opportunities, stimulating economic growth, lowering health care costs, investing in a skilled workforce, and connecting individuals with their loved ones. We saw during the pandemic how critical broadband access is to everything, from getting an education to health care to telemedicine to working from home. Unfortunately, one in five American households lack access to broadband.[1] Nearly 40 percent of eligible Americans rely on ACP to maintain internet access and that number is rapidly growing.[2] Current funding is expected to be depleted by 2024 creating an urgent need to extend funding.[3][4]

---

1 "Switched Off: Why Are One in Five U.S. Households Not Online?" *National Telecommunications and Information Administration*. 2022. Retrieved from: https://ntia.gov/blog/2022/switched-why-are-one-five-us-households-not-online.

2 "Affordable Connectivity Program." *Institute for Local Self-Reliance*. 19 Jun. 2023. Retrieved from: https://acpdashboard.com/.

3 "Understanding the Potential Reach of the Affordable Connectivity Program." *Center on Poverty and Social Policy at Columbia University*. 4 May 2022. Retrieved from: https://www.povertycenter.columbia.edu/publication/2022/affordable-connectivity-program

4 De Wit, Kathryn. "Closing the Digital Divide with the Affordable Connectivity Program." *The Pew Charitable Trusts*. 7 Jun. 2023. Retrieved from: https://www.pewtrusts.org/en/research-and-analysis/articles/2023/06/01/closing-the-digital-divide-with-the-affordable-connectivity-program

ACP provides financial assistance that enables families to access broadband so that no one in our society is left behind. It helps families, Pell Grant recipients, and veterans afford high-speed broadband services — from monthly internet bills to installation fees and computer expenses, which often create significant financial burdens. Specifically, ACP provides eligible households with up to $30 per month towards their internet bills, and a one-time subsidy of $100 towards desktops, laptops, or tablet computers for children and hardworking families.[5]

We cannot afford to let millions of Americans lose access to broadband. If funding for ACP is not extended, it would not only put the program's success at risk, but also impede the progress of other federal broadband investments and initiatives. Families and businesses across the country need broadband access, and ACP has become a vital tool in securing this access. It plays a critical role in connecting households, while also promoting digital literacy, device distribution, technical support, and online services training, resulting in its high enrollment and strong bipartisan support.

However, connecting every American to high-speed, affordable broadband requires a public-private partnership, and it is the federal government's responsibility to provide secure and reliable investments. With millions of families still lacking access to a service that has become essential for education, health care, and the economy, time is of the essence.

We have a unique window of opportunity to ensure that every family and child — rural, urban, and suburban — have access to affordable broadband, and can thrive in the digital age. ACP has become a lifeline for Americans, and we cannot afford to let it expire. We strongly urge you to prioritize the extension of funding for the Affordable Connectivity Program in the upcoming government appropriations bill. Failure to extend funding would not only leave millions of families without access to the internet but also hinder our long-term competitiveness as a nation.

Sincerely,

Josh Gottheimer
Member of Congress

Brian Fitzpatrick
Member of Congress

5 For households residing on qualifying Tribal Lands, ACP offers up to $75 per month. ("Affordable Connectivity Program." *Federal Communications Commission*. 2023. Retrieved from: https://www.fcc.gov/acp.)

James C. Moylan
Member of Congress

Daniel T. Kildee
Member of Congress

Brittany Pettersen
Member of Congress

David J. Trone
Member of Congress

David G. Valadao
Member of Congress

Steven Horsford
Member of Congress

Jimmy Panetta
Member of Congress

Haley M. Stevens
Member of Congress

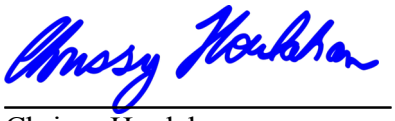
Debbie Dingell
Member of Congress

Salud Carbajal
Member of Congress

Jim Costa
Member of Congress

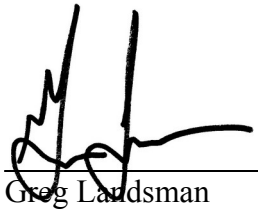
Scott H. Peters
Member of Congress

Elissa Slotkin
Member of Congress

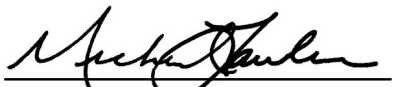


Chrissy Houlahan
Member of Congress

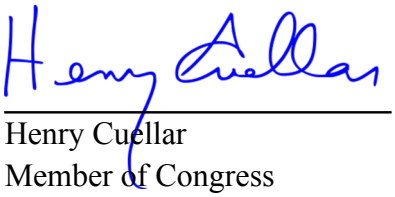
Susie Lee
Member of Congress



Greg Landsman
Member of Congress

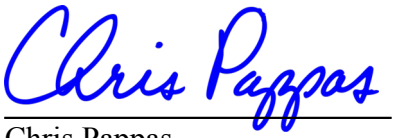


Michael V. Lawler
Member of Congress

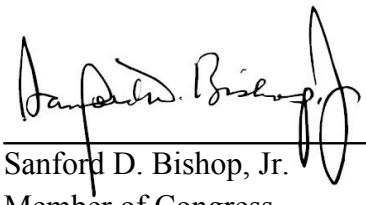


Henry Cuellar
Member of Congress

Young Kim
Member of Congress



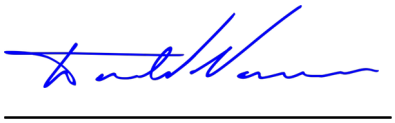
Chris Pappas
Member of Congress



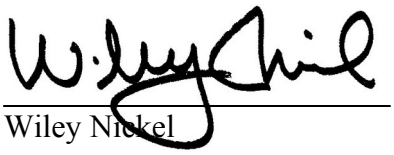
Sanford D. Bishop, Jr.
Member of Congress

Bradley Scott Schneider
Member of Congress

Marcus J. Molinaro
Member of Congress

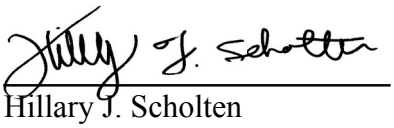


Donald Norcross
Member of Congress



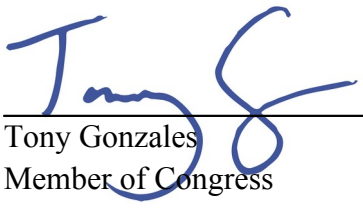
Wiley Nickel
Member of Congress

Donald G. Davis
Member of Congress



Hillary J. Scholten
Member of Congress

Angie Craig
Member of Congress

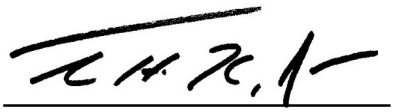


Tony Gonzales
Member of Congress

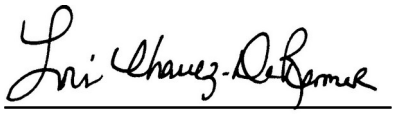
Jenniffer González-Colón
Member of Congress

Darren Soto
Member of Congress

Juan Ciscomani
Member of Congress



Thomas H. Kean, Jr.
Member of Congress

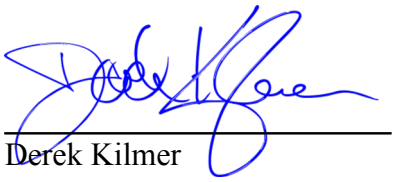


Lori Chavez-DeRemer
Member of Congress

Nick LaLota
Member of Congress

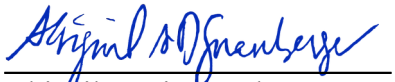
Nancy Mace
Member of Congress

Andrew R. Garbarino
Member of Congress



Derek Kilmer
Member of Congress

Dean Phillips
Member of Congress



Abigail Davis Spanberger
Member of Congress

Ed Case
Member of Congress

Don Bacon
Member of Congress

Anthony D'Esposito
Member of Congress

September 11, 2023

The Honorable Kevin McCarthy
Speaker of the House
United States House of Representatives
U.S. Capitol Building
Washington, D.C. 20510

The Honorable Hakeem Jeffries
Democratic Leader
United States House of Representatives
U.S. Capitol Building
Washington, D.C. 20510

The Honorable Chuck Schumer
Majority Leader
United States Senate
322 Hart Senate Office Building
Washington, D.C. 20510

The Honorable Mitch McConnell
Republican Leader
United States Senate
317 Russell Senate Office Building
Washington, D.C. 20510

Dear Leader Schumer, Leader McConnell, Speaker McCarthy, and Leader Jeffries:

On behalf of the nation's 3,069 counties, parishes and boroughs, the National Association of Counties (NACo) writes as intergovernmental partners to strongly urge Congress to make federal investments in crucial local government activities through the FY 2024 appropriations process.

With a professional workforce of nearly 3.6 million, we support over 1,900 local public health departments, almost 1,000 hospitals and critical access clinics, more than eight hundred long-term care facilities, 750 behavioral health centers and 91 percent of local jails. Additionally, counties own 44 percent of America's roads, nearly 40 percent of bridges, support a third of the nation's airports and 78 percent of public transit systems. County governments are responsible for emergency operations centers and 911 services, public safety and emergency response, protective services for children, seniors and veterans, and the "last of the first responders" with coroners and medical examiners, among other essential public services.

Annually, counties invest over $600 billion in our communities, including $134 billion in building, maintaining and operating public facilities, such as courthouses, dams and reservoirs, water purification systems, libraries, ports and sewage treatment facilities. We build our communities as intergovernmental partners, as these investments are through a mix of local revenue and federal funds.

Counties are uniquely positioned to implement and administer vital intergovernmental systems, facilitate cooperation of all levels of government, and deliver results and impact for our residents and businesses at the community level.

Urgently, the Federal Emergency Management Agency's (FEMA) Disaster Relief Fund (DRF) is on the cusp of running out of available funds. The DRF provides funding to support state and local efforts during the long response and recovery process after a disaster. Without the DRF being adequately funded, recovery projects

will halt as FEMA implements punitive measures stifling response efforts. Funding the DRF will ensure that communities affected by the wildfires in Hawaii, hurricanes in the south and numerous other disasters can continue critical recovery efforts. We implore you to act swiftly on a supplemental funding package for the DRF.

Seventy-five percent of the U.S. population relies on county-based behavioral health services, making us acutely aware that the mental health crisis is deepening. We also need continued investment in infrastructure, housing challenges and economic development. Therefore, if Congress does not reach an agreement to fund federal programs for FY 2024 in time, county officials are concerned that these key activities and more will be hampered.

- **Increase funding levels for key behavioral and mental health programs:** America's counties are integral to the nation's behavioral health system. Counties invest more than $80 billion annually in community health systems, including behavioral health services, as county-based behavioral health services exist in twenty-three states. Through 750 behavioral health authorities and community providers, county governments plan and operate community-based services for persons with mental illnesses and substance use conditions. As the demand for behavioral health services continues to outpace the availability of resources to meet the growing mental health crisis in our nation, we urge Congress to increase FY 2024 funding levels for key programs such as the Community Mental Health Services Block Grant (MHBG), the Substance Abuse Prevention and Treatment (SAPT) block grant, and the Behavioral Health Crisis Services and 988 programs.

- **Extend funding for core local health programs and services:** Counties are key administrators of public health services for residents- regardless of their ability to pay. Together, Community Health Centers, the National Health Service Corps (NHSC), and the Teaching Health Center Graduate Medical Education (THCGME) program help administer these services through over 15,000 service delivery sites in every U.S. state and territory, serving nearly 31 million patients in 2022. The Community Health Center Fund provides almost three-quarters of the federal funding for health centers, which is scheduled to expire on September 30. Continued federal funding for these programs is necessary to build the workforce development pipeline on which local health centers, healthcare providers and their patients rely.

- **Sufficiently fund the Community Development Block Grant Program (CDBG):** CDBG helps counties improve housing and living conditions and expand economic opportunities for low- and moderate-income individuals. Over two hundred entitlement counties receive almost $1 billion from this program to provide affordable housing for renters or homeowners or direct rental assistance to low-income households. Counties use the flexibility of CDBG funds to partner with the private and non-profit sectors to develop and upgrade local housing, water, infrastructure and human services programs. The CDBG program has faced drastic cuts in recent years, falling by over half a billion dollars since FY 2010. Funding for CDBG should, at a minimum, be funded at FY 2023 levels or increased to $4.2 billion in FY 2024.

- **Maintain funding level for HOME Investment Partnerships Program:** The HOME Investment Partnerships program builds upon the significant capacity and experience of county and other local and state governments to design and implement affordable housing programs for low and moderate-income residents, helping to improve their quality of life. HOME funds are allocated to 650 participating jurisdictions in counties and cities. It can be used for the acquisition, reconstruction and

rehabilitation of housing, which provides counties with the necessary flexibility to design policies and programs that address local affordable housing needs. Because of the program's success in providing critical affordable housing stock, we urge Congress to fund HOME at $1.5 billion in FY 2024.

- **Increase funding for the U.S. Economic Development Administration (EDA):** EDA programs are critical for county economic development activities, which ensure the delivery of essential services, support job growth and maintain a healthy revenue base. EDA's current authorized funding level does not accurately reflect the demonstrated need and demand for economic development across America's counties and regions. Congress should increase its annual investment in EDA to enhance the reach and impact of the agency. Counties implement local policies and intergovernmental initiatives that foster economic development, promote residential, commercial and industrial development, and support job creation and business retention. EDA is a crucial partner in that endeavor.

- **Ensure continued funding for key justice programs:** The Byrne Justice Assistance Grant (Byrne-JAG) Program, Community Oriented Policing Services (COPS) and the Justice and Mental Health Collaboration Program (JMHCP) all provide critical resources to counties to ensure we can identify and address the criminal justice needs of our communities. From recruitment and retention of law enforcement to assisting justice-involved residents with mental health needs, these programs are vital to improving local public safety and producing better outcomes for those entering the criminal justice system. Congress should provide at least level funding from FY 2023 for Byrne-JAG at $770.8 million, COPS at $662.9 million and JMHCP at $45 million.

- **Maintain critical investments in competitive transportation grant programs:** The IIJA (P.L. 117-58) authorized roughly $100 billion in competitive grant funding directly accessible by counties to improve local transportation and infrastructure assets. These programs provide key opportunities for county governments, who do not receive direct funding for most local infrastructure, including 45 percent of public road miles and 38 percent of the nation's bridges owned and operated solely by counties. Programs like the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants and Nationally Significant Multimodal Freight & Highway Projects (INFRA) are already oversubscribed. These programs have proven positive results in our communities, and Congress should robustly invest in these programs to meet local demand.

Counties' vast responsibilities for the vibrancy and safety of our communities put us in a unique position to observe challenges and opportunities for our residents. Intergovernmental investments for our land, water, economic prosperity and the administration of America's elections are pivotal.

- **Provide permanent funding for the Affordable Connectivity Program (ACP):** Millions of Americans in urban and rural counties still lack access to high-speed internet. Counties in several states have led the way in helping to close the digital divide in unserved and underserved communities across the country. The ACP is an essential tool in that effort. Without further appropriations from Congress, the ACP is set to expire at some time in 2024 – which will result in over twenty million households losing the ability to apply the ACP to their home broadband services and make broadband access less affordable for those who need it most. It is imperative that Congress permanently authorize and fund the ACP to ensure we do not undo years of bipartisan progress in shrinking the digital divide.

- **Fund the Help America Vote Act (HAVA) authorized election security grants in FY 2024:** America's 3,069 counties traditionally administer and fund elections at the local level, overseeing more than 100,000 polling places and coordinating more than 630,000 poll workers for every federal, state and local election. As part of this responsibility, county election officials are responsible for procuring, testing and safeguarding election equipment such as voting machines, ballot processors and tabulators. Preparation for the 2024 election is already underway, and state and local election officials rely on federal funds authorized by HAVA to ensure the election is administered securely, eligible citizens can cast their votes, and the results are accurate. We urge Congress to adequately fund election security grants in FY 2024.

- **Adequately fund the U.S. Election Assistance Commission (EAC):** The EAC was established as an independent federal agency by the Help America Vote Act of 2002 (HAVA) and is charged with making grants to states and local governments, establishing voluntary federal election standards and serving as the federal clearinghouse for election administration guidance and best practices. Counties strongly support the role and functions of the EAC, which is critical in coordinating collective efforts among local, state and federal officials in addressing issues associated with election administration. The EAC also recognizes and focuses on the security of critical election infrastructure by establishing standards and guidelines for the testing of voting equipment and brings together election experts and local election officials to develop guidelines and standards for voluntary equipment testing certifications. Counties urge Congress to adequately fund the EAC in FY 2024 to ensure the security and integrity of the upcoming 2024 federal elections.

- **Reverse proposed cuts to critical training and exercise programs:** County governments across America play a critical role in preparing for or recovering from major disaster events. With these major disasters' increasing frequency and severity, counties, states and the federal government must coordinate efficiently and effectively to serve our communities**.** Proposed cuts to the Center for Homeland Defense and Security, the National Domestic Preparedness Consortium and the Emergency Management Institute would harm local preparedness. Together, these programs provide crucial training and exercise programs for counties nationwide. Reductions to these programs would directly impact our capacity to prepare for and respond to natural or human-caused disasters. In 2022, 622 counties experienced at least one federally declared major disaster, 153 counties had at least one Emergency Declaration, and 562 counties had at least one Disaster Declaration. We urge the Senate to adopt the House proposal for these vital programs.

- **Ensure full funding of the Payments In-Lieu of Taxes (PILT) Program:** The PILT program provides critical payments to over 1,900 counties in forty-nine states and four territories to offset forgone tax revenues due to the presence of substantial federal land acreage within their jurisdictions. Sixty-two percent of all counties have federal public lands. Because local governments cannot tax the property values or products derived from federal lands, PILT payments are critically necessary to support essential local government services – which are mandated by law – such as education, emergency services, transportation infrastructure, law enforcement and health care. While the Senate and House continue

to discuss long-term legislative solutions for funding the PILT program, counties urge full funding for FY 2024.

- **Extend the Secure Rural Schools (SRS) Program:** Over 700 counties in forty-one states rely on SRS payments to provide numerous critical services, including infrastructure, conservation projects, search and rescue missions and fire prevention programs. Congress reauthorized SRS and removed the annual 5 percent funding reduction through FY 2023 in the Infrastructure Investment and Jobs Act (IIJA). The last round of SRS payments will be distributed in spring 2024. In 2016, the last year Congress failed to reauthorize SRS, revenue-sharing payments to national forest counties dropped 80 percent on average, meaning far fewer funds for necessary education, law enforcement, infrastructure maintenance and wildfire prevention programs that counties must provide.

- **Guarantee robust funding for wildfire prevention, mitigation and recovery:** Wildfires destroy public lands, endanger vital resources, decrease biodiversity, hinder economic opportunity, decimate watersheds, and negatively impact public health and safety. In recent years, Congress has substantially increased funding to reduce hazardous fuel loads, hire more federal wildland firefighters and mitigate the effects of wildfire, such as reforesting post-fire landscapes. As the threat of wildfire continues to grow, Congress must provide funding to help federal lands agencies meet their mission to improve landscape and watershed health, protect communities from wildfire and ensure access to public lands.

- **Adequately fund the U.S. Army Corps of Engineers:** As counties invest $11.4 billion in water utilities annually, we have long advocated for reliable, long-term and increased federal investment in water infrastructure, watershed protection and protecting water resources and facilities from physical and chemical security threats. Almost six hundred counties nationwide provide water services and have the authority to own and operate drinking water systems in thirty-seven states. As co-regulators and regulated entities, we also play a dual role in protecting the environment and providing public water services for our residents and businesses. Further, as owners, users and regulators of water resources and infrastructure, counties are directly impacted by the water resource studies and projects authorized in the Water Resources Development Act (WRDA).

- **Maintain funding levels for the Clean Water and Drinking Water State Revolving Funds (SRFs):** While the Infrastructure Investment and Jobs Act (IIJA) provided historic funding for the nation's water infrastructure, we are not certain that this funding is sufficient for local governments to improve the nation's public water systems. Further, local water systems will soon be required to comply with many new mandates, including removing lead pipes, adhering to risk management programs and monitoring and remediating per- and polyfluoroalkyl substances (PFAS). These future compliance costs will add to the growing affordability crisis facing counties and community ratepayers. It is, therefore, critical that Congress maintain FY 2023 spending levels for both the Clean Water and Drinking Water SRFs, including $1.64 billion for the Clean Water SRF and $1.13 billion for the Drinking Water SRF. Additionally, we are concerned that congressionally directed spending diverts funds from the annual base funding of the SRF programs. We urge that any funding appropriated for water infrastructure through congressionally directed spending should be in addition to the base annual appropriations amount.

- **Increase funding for the Child Care and Development Block Grant (CCDBG):** Recognizing that access to affordable, high-quality child care lays the foundation for healthy child development in young children while safeguarding local economies, county governments play a significant role in local childcare systems, including by administering CCDBG in eight states (Colorado, Minnesota, North Carolina, North Dakota, New York, Ohio, Virginia and Wisconsin) and contributing local dollars to efforts with cross-sector partners to build supply. The COVID-19 pandemic launched the already-struggling childcare industry into a full-fledged crisis from which it has yet to recover fully; even with an infusion of relief dollars, the sector has lost a net 48,500 jobs since 2020. With the looming September 30 expiration of emergency childcare funds, counties call on Congress to invest significantly in CCDBG to prevent an estimated 3.2 million children from losing access to care and protect counties and our residents from the associated economic fallout.

- **Sufficiently fund the Special Supplemental Nutrition Program for Women, Infants and Children (WIC):** WIC, which provides healthy foods, nutrition education, breastfeeding counseling and support, and healthcare and social service referrals to low-income, nutritionally at-risk pregnant and post-partum women and young children, is a vital support for more than six million county residents. Counties play an active role in supporting federal child nutrition programs like WIC, which is operated in 1,900 local agencies in 10,000 clinic sites across the nation. Nearly 50 percent of local WIC agencies are part of a local government, and clinic sites can also include county health departments and other county offices.

- **Extend the Temporary Assistance for Needy Families (TANF) program through 2024:** TANF provides essential funding to help state and local governments deliver benefits and services that help families experiencing poverty achieve economic mobility. Counties administer the TANF program in nine states - California, Colorado, Minnesota, New Jersey, New York, North Carolina, North Dakota, Ohio and Virginia. These county-administered states accounted for 55 percent of the national caseload and 52 percent of federal, state and local TANF expenditures. A full-year extension of TANF is essential to give these county governments the continuity needed to help people with barriers to employment meet their basic needs and access and contribute to the economic opportunity of our nation.

- **Adequately fund for Title I programs under the Workforce Innovation and Opportunity Act (WIOA):** WIOA is a vital funding source for workforce development that helps counties tackle and overcome the challenges facing job seekers and employers by providing the needed framework for a modernized, demand-driven workforce development system. WIOA Title I programs focus on workforce development activities at the state and local level and establish funding for three key formula grants – Adult, Dislocated Workers and Youth Programs. Federal workforce investments have declined over the past two decades while demand for high-quality services has drastically increased. Congress should provide at least level or increased funding for WIOA Title I programs in FY 2024.

- **Delay pending cuts to Medicaid Disproportionate Share Hospital (DSH) payments:** Medicaid is a vital source of revenue for county-supported hospitals that treat disproportionately large numbers of low-income and uninsured residents. Medicaid DSH payments support the continued operations of safety net hospitals in counties nationwide and are especially critical for rural hospitals, which often face additional fiscal burdens. The Consolidated Appropriations Act of 2021 delayed cuts to the DSH program until FY 2024, at which time approximately $32 billion in cuts to the program would be made

over four years. We urge Congress to repeal or delay these harmful statutory reductions set to take place in FY 2024.

Counties look forward to working with you as intergovernmental partners to secure and administer federal funding for the upcoming fiscal year. Taking action to pass appropriations for FY 2024, which include the above provisions, will ensure our citizens' health, safety and prosperity while protecting our nation's infrastructure and economy.

Thank you for your consideration of these requests.

Sincerely,

Matthew D. Chase
CEO/Executive Director

Economic Development And Revitalization Task Force Sends FY24 Appropriations Letter To Congress

Jun. 1, 2023

On behalf of the nation's Governors, we welcome the opportunity to provide Congress with our priorities as your respective committees continue to craft and consider the Fiscal Year 2024 (FY24) appropriations bills.

The Honorable Patty Murray
Chair
Senate Committee on Appropriations
Capitol Building S-146A
Washington, DC 20510

The Honorable Kay Granger
Chair
House Committee on Appropriations
1036 Longworth House Office Building
Washington, DC 20515

The Honorable Susan Collins
Vice Chair
Senate Committee on Appropriations
Capitol Building S-128
Washington, DC 20510

The Honorable Rosa DeLauro
Ranking Member
House Committee on Appropriations
1036 Longworth House Office Building
Washington, DC 20515

Dear Chair Murray, Chair Granger, Vice Chair Collins, and Ranking Member DeLauro:

As Co-Chairs of the National Governor Association's Economic Development and Revitalization Task Force, we welcome the opportunity to provide you with our priorities as your respective committees continue to craft and consider the Fiscal Year 2024 (FY24) appropriations bills.

In 2021, NGA adopted task forces as a more streamlined, Governor-driven approach to formulate and execute on federal policy matters that are priorities to Governors. The three task forces — Community Renewal; Public Health and Disaster Response; and Economic Development and Revitalization — work in a bipartisan fashion to coordinate NGA's work on federal policy issues.

The Economic Development and Revitalization Task Force has jurisdiction over issues in the areas of infrastructure, broadband, state stabilization, energy, environment, land management, and taxes. Congress has been an instrumental partner for states and territories in funding efforts to help support infrastructure, economic development, and environmental programs. Therefore, as you look toward Fiscal Year 2024's appropriations process, NGA requests that you prioritize the following funding efforts in support of:

- **Fully Funding Surface Transportation**: Governors request a continued strong commitment to our nation's transportation infrastructure, by providing full funding for core highway and transit programs included in the surface transportation program with the Infrastructure Investment and Jobs Act (IIJA). The historic funding certainty provided by the IIJA will be critical as states and territories develop long-term transportation plans and Governors applaud Congress for fully funding authorized levels of the surface transportation program over the past several years.
- **Transportation Grant Programs:** Rebuilding American Infrastructure with Sustainability and Equity (RAISE) discretionary grants, and Capital Investment Grants for transit are both critical tools for building our nation's infrastructure. Governors urge Congress to continue to prioritize and fund these vital infrastructure programs.
- **Broadband Deployment and Access:** As Governors, we understand the critical role that reliable and accessible internet connectivity plays in bridging the digital divide in our communities. Internet access is essential for telehealth, accessing education and workforce development programs, and connecting the 21st century economy. We strongly

support the wide range of federal programs through the National Telecommunications Information Administration, the U.S. Department of Agriculture, and the Federal Communications Commission, which support broadband deployment in unserved and underserved areas. Similarly, Congress should continue to prioritize the Affordable Connectivity Program (ACP) that helps low-income households access affordable internet service. Continued funding for the ACP is crucial in our efforts to ensure the adoption of services now available through the significant broadband infrastructure investments in our states and territories.

- **Community Development Block Grant (CDBG) Program:** Governors continue to support the critically important annual formula grants to states and local governments for a wide range of community and economic development purposes. CDBG grants expand affordable housing opportunities, create jobs, and stabilize neighborhoods across the country. The non-entitlement portion of CDBG, which is distributed through the States and Small Cities program, ensures that housing, public facilities, and economic development projects benefit persons of low and moderate income. Therefore, NGA requests Congress continue to provide consistent appropriations for the Community Development Block Grant Program in Fiscal Year 2024.
- **Economic Development Administration (EDA) Programs:** EDA is the only federal agency with a mission solely focused on private sector job creation in distressed areas. EDA is important to Governors because it serves as a catalyst in helping states and territories achieve long-term economic growth. EDA is designed to create jobs and stimulate the economy in areas of the country that need the most help — both rural and urban — and now plays a critical role in deploying funding for regional technology hubs as part of the CHIPS and Science Act. Governors urge Congress to include robust funding for EDA in Fiscal Year 2024.
- **Energy Grant Programs:** Governors support full funding for the State Energy Program (SEP) and Weatherization Assistance Program (WAP). These programs are critical tools for the development and implementation of our state and territorial energy strategies and goals and examples of successful state-federal programs. SEP is the primary state-federal cooperative program addressing energy efficiency and renewable energy projects in all sectors of the economy. States and territories have a history of successfully matching federal dollars with

state, local, and private funds to help homeowners, small businesses, schools, municipalities, and hospitals save energy. Similarly, WAP helps low-income families, the elderly, and the disabled by improving the energy efficiency of low-income housing.

- **Water Infrastructure:** Governors share Congress's ongoing concerns about aging water, inland waterways, port, and wastewater infrastructure. We commend your leadership in passing the IIJA and the historic resources for flooding mitigation and coastal resilience as well as drinking water and wastewater projects. Governors support full funding for the Drinking Water State Revolving Fund and the Clean Water State Revolving Fund to provide long-term, low-cost loans for state and territorial projects. NGA also supports continued efforts to ensure the Harbor Maintenance Trust Fund and Inland Waterways Trust Fund receipts are equitably allocated and dedicated for their intended purpose to ensure our ports and inland waterways are maintained at the highest level. Additionally, Governors support robust funding for the U.S. Army Corps of Engineers civil works program for flood control and ecosystem restoration.
- **Environmental Management:** Governors express our continued support of predictable federal funding for states that are home to Defense Environmental Cleanup sites managed by the U.S. Department of Energy (DOE) and we request substantially increasing funding for the Office of Environmental Management. According to DOE's own estimates, each year that the federal government underfunds the cleanups at the sites in our states, the completion timeline – and the expected cost of the aging facilities and infrastructure – increases by years and billions of dollars, respectively, while the potential for radioactive contamination increases. The best way the federal government can meet its obligations and protect taxpayers is to invest in the resources needed now to accelerate these cleanups.
- **Sufficient Wildfire Response and Management Funding:** Governors appreciate federal, state, local, territorial, tribal, non-governmental and public partners who help manage our national cohesive wildfire management strategy and effectively respond to wildfires when they occur. Governors urge strong funding for this work at the Department of Interior and the U.S. Forest Service and request increased funding for Wildland Fire Management activities. Congress should also ensure relevant agencies are effectively implementing long-term wildfire mitigation strategies.

On behalf of all Governors, we thank you for your continued support of these top NGA priorities for Fiscal Year 2024, and for focusing on funding our nation's critical needs.

Sincerely,

Governor Andy Beshear
State of Kentucky
Co-Chair, NGA Task Force on Economic Development and Revitalization
National Governors Association
Governor Henry McMaster
State of South Carolina
Co-Chair, NGA Task Force on Economic Development and Revitalization
National Governors Association

National
Urban League

September 20, 2023

The Honorable Cathy McMorris Rodgers
2188 Rayburn House Office Building
Washington, DC 20515

The Honorable Frank Pallone
2107 Rayburn House Office Building
Washington, DC 20515

The Honorable Bob Latta
2467 Rayburn House Office Building
Washington, DC 20515

The Honorable Doris Matsui
2311 Rayburn House Office Building
Washington, DC 20515

Dear Chair McMorris Rodgers, Ranking Member Pallone, Chair Latta, and Ranking Member Matsui,

We are pleased to see that you are convening the "Connecting Every American: The Future of Rural Broadband Funding" hearing as it remains a top priority for the National Urban League (NUL) and the broader civil rights community that everyone in this country is connected to affordable, reliable broadband regardless of their geographic location and income level. To that end, **we urge you to robustly fund the Affordability Connectivity Program (ACP) as you consider the best means of addressing the digital connectivity needs of all families in this country.** NUL and our 92 affiliates across 36 states and the District of Columbia have long fought for the economic empowerment of historically under-resourced communities across the nation. We are proud that our work contributed to the passing of historic bipartisan legislation, the *Infrastructure Investment and Jobs Act (IIJA)*, that seeks to equitably bridge the digital divide. We are pleased that this federal legislation has allocated substantial resources to addressing broadband availability, including $42.45 billion to increase broadband access and adoption through the Broadband Equity, Access, and Deployment (BEAD) program. Equally significant, this bipartisan legislation led to the establishment of the $14.2 billion ACP to promote broadband adoption. The ACP, to date, has successfully connected more than 20 million households across the nation to affordable broadband and remains a stellar example of a whole-of-nation approach to bridging the digital divide.

As we have previously stated to Members of Congress and in our *Lewis Latimer Plan for Digital Equity and Inclusion*, the NUL and majority of stakeholders across the public and private sectors believe that federal investment in broadband funding should be focused on four goals:[1]

[1] Letter from Marc H. Morial, President & CEO, National Urban League, to Senator Ben Ray Luján (filed December 12, 2022), Letter from Marc H. Morial, President & CEO, National Urban League, to Senator John Thune (filed January 13, 2023); Comments of National Urban League, Senate USF Working Group, (August 25, 2023); The

• **Availability:** Creating robust broadband networks so they are available to every residential and business location in the United States.
• **Affordability:** Ensuring everyone can afford to use those broadband networks and devices needed to navigate the internet.
• **Access to Economic Opportunities:** Establishing new economic opportunities that allow all people to fully participate in the growth of our digital economy and benefit from the deployment of these networks as workers and business owners.
• **Utilization:** Making full use of networks to improve the delivery of, and outcomes associated with public and essential services, such as education, healthcare, public safety, job training, and civic engagement.

The IIJA is primarily focused on providing the necessary funding to achieve the availability, affordability, and access to economic opportunities goals. That is appropriate, as the utilization goal can only fully be realized if the first three goals are accomplished. There remains a lot of work to be done to ensure that all unserved and underserved communities have access to broadband. And even more to ensure that these communities can afford it. Closing the digital divide will not be quick, nor will it be easy.

There is an urgent need for policy to address both supply side and demand side barriers. Supply and demand are interconnected; greater coverage means more potential customers, while more potential customers improve the economics of networks yet to be built as well as existing networks. Once broadband networks reach every residential and business location in the United States, the next step is ensuring that consumers have affordable access to these networks. Thus, the greatest challenge to efficiently achieving Congress' objectives is uncertainty about the future of the ACP.

It is estimated that ACP funding is likely to be exhausted by early to mid-2024. Failure to extend ACP will devastate the over 20 million households and counting that already benefit from or are seeking to enroll in this program. That, in and of itself, is a disaster for our country economically and socially, but the potential discontinuation of ACP will also cause a great inefficiency in the BEAD program. The reasons are as follows: Bidders will seek to close a funding gap; the greater the potential revenue, the smaller the funding gap. Those bidding to receive BEAD funds to deploy networks will not seek funding for 100% of the capital cost of the network. Rather, they will seek funding for the gap between the capital cost and the private investment that they can generate to receive an acceptable market return.

As the Rural Digital Opportunity Fund (RDOF) auction demonstrated, the funding gaps vary greatly between geographic regions. All providers will complete a detailed analysis of what revenues they expect to receive in order to provide a return on the capital they will invest. Again, the greater the potential revenue, the smaller the funding gap. In preparing their bids, bidders must make assumptions about the revenues they will receive. Companies must make assumptions about the long-term prospects of the ACP. Rural areas have a high number of ACP-eligible households and households that are currently enrolled in ACP. If the potential grantees

Lewis Latimer Plan for Digital Equity and Inclusion, National Urban League, (March 2021), https://nul.org/program/lewis-latimer-plan.

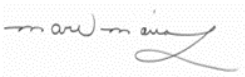
assume ACP will be permanent, they will build higher revenues into their models and therefore need less funding to incentivize investment. If the assumption proves correct, then the funding will accurately reflect the long-term funding gap. If the assumption proves wrong, however, the potential grantees will receive too little funding and suffer adverse financial consequences. Such consequences for any enterprise would present an issue, and, for smaller enterprises focused on rural areas, they could be ruinous.

As noted above, if ACP, or an alternative long-term broadband affordability program, is not authorized, there will be severe consequences in terms of tens of millions of Americans being disconnected or never having the opportunity to connect to the internet. Additionally, if Congress fails to reauthorize ACP, the federal government likely will end up overpaying for broadband deployments. As a result, the federal dollars will end up funding deployments to significantly fewer unserved and underserved homes and businesses. That reduction in the states' ability to meet the Congressional goal of closing the digital divide will not be due to the misconduct of any grantee or state but because Congress had not made its intention clear about a critical financial input to the models that the private sector uses to apply for BEAD funding. To improve the efficiency of BEAD, there must be a sustainable funding mechanism for ACP. Therefore, we urge you and your colleagues to explore options to ensure this critical program receives continued funding.

The global Covid-19 pandemic demonstrated the necessity of universal broadband access. This need has not diminished, but only increased over time. In particular, ACP has proven critical in connecting low-income households as well as communities of color and other underserved communities. The lack of continued ACP funding threatens the ability of these communities to thrive in the digital age.

The most important piece of closing divide and ensuring universal affordable broadband is finding a way to fund ACP. Over 20 million Americans, in vulnerable populations, are relying on Congress to find a solution. The National Urban League looks forward to continuing to work with you and all members of Congress in addressing these critical issues. If you or your staff have any questions, please contact Alisa Valentin, Senior Director of Technology and Telecommunications Policy, at avalentin@nul.org.

Sincerely,



Marc H. Morial
President and CEO
National Urban League

NCSL STANDING COMMITTEE on COMMUNICATIONS, FINANCIAL SERVICES, & INTERSTATE COMMERCE

POLICY DIRECTIVES AND RESOLUTIONS

LEGISLATIVE SUMMIT
Indianapolis, Indiana
Aug 14-16, 2023

CONTENTS

POLICY: ONLINE CHILD PRIVACY PROTECTION 2

POLICY: SUPPORTING THE AFFORDABLE CONNECTIVITY PROGRAM (ACP) THROUGH PERMANENT CONGRESSIONAL FUNDING 4

POLICY: RESOLUTION IN SUPPORT OF POSITION STATEMENT RECOGNIZING CONGRESSIONAL CONSENT TO THE INTERSTATE INSURANCE PRODUCT COMPACT 6

COMMITTEE: **COMMUNICATIONS, FINANCIAL SERVICES, & INTERSTATE COMMERCE**

POLICY: **ONLINE CHILD PRIVACY PROTECTION**

TYPE: **RESOLUTION**

Whereas, the internet presents certain risks for children under the age of 13 years who may not be able to recognize dangerous situations online.; and

Whereas, Congress passed the Children's Online Privacy Protection Act of 1998 (COPPA) to limit personally identifiable information from children without their parents' consent. In 2000, the Federal Trade Commission (FTC) issued a rule implementing COPPA that requires websites to post a complete privacy policy, notify parents directly about their information collection practices, and obtain verifiable parental consent before collecting personal information from their children or sharing it with others; and

Whereas, since COPPA's enactment, research on children's mental health and their online interactions has become available, showing a disturbing increase in youth mental health issues commensurate with social media presence. Studies have found that youth who spend over three hours per day on social media have double the risk of experiencing poor mental health outcomes such as depression and anxiety; and

Whereas, full compliance with COPPA has yet to occur and it has become a concern of the states to protect children online as their presence on social media platforms and other online websites has increased significantly since COPPA's enactment and the FTC promulgated its rule; and

Whereas, states have begun to introduce and enact legislation to provide enhanced protections for children on the internet; and

Now therefore be it resolved that, given that Congress has already established a baseline structure for regulating content shown to children, and that there is a federal

agency in place to establish a regulatory framework, NCSL supports updating COPPA to reflect current concerns, encouraging compliance within the private sector, and creating reasonable federal standards to better protect children's data that recognize important state interests and do not preempt state laws or create unimplementable, burdensome, or costly mandates for states.

COMMITTEE: **COMMUNICATIONS, FINANCIAL SERVICES, & INTERSTATE COMMERCE**

POLICY: **SUPPORTING THE AFFORDABLE CONNECTIVITY PROGRAM (ACP) THROUGH PERMANENT CONGRESSIONAL FUNDING**

TYPE: **RESOLUTION**

WHEREAS, internet connectivity is essential to the success of families, businesses, and government services; and

Whereas, Congress created the Affordable Connectivity Program (ACP) in 2021 to make broadband service and connected devices available to lower-income households at discounted prices from providers that opt to participate in the program; and

WHEREAS, ACP has enabled low-income individuals and families to access online educational resources, gain employment opportunities, access vital services such as telehealth and government assistance, and participate in our civic life; and

Whereas, as of July 2023, more than 19 million low-income American households rely on support from ACP for access to the internet, and growing, many of whom receive broadband access effectively free after the ACP discount; and

Whereas, after state and federal broadband expansion investments, the ACP will help more Americans, including persons of color and residents in rural communities, stay connected; and

WHEREAS, many states are requiring recipients of the Department of Treasury's Capital Projects Funds to participate in ACP; and

WHEREAS, states and territories may require recipients of Broadband Equity, Access, and Deployment (BEAD) funding to participate in ACP or any successor program; and

WHEREAS, current ACP funding could be exhausted in early 2024; and

WHEREAS, allowing funding for the ACP program to lapse will impose a hardship on the millions of families that rely on such support to secure broadband services that are necessary for jobs, for homework, and for staying connected with loved ones; and

WHEREAS, in addition to impacts on broadband adoption, the end of ACP would also impede the success of ongoing federal and state efforts to close the digital divide through the construction of new infrastructure to help reach those in unserved and underserved parts of the country; and

WHEREAS, it is crucial for Congress to prioritize the continuity and sustainability of ACP to ensure that low-income American families can continue to afford broadband internet access service; and

NOW, THEREFORE BE IT RESOLVED that the National Conference of State Legislatures urges Congress to fund the ACP program to ensure the continuation of the program ensuring that all Americans can have access to broadband service; and

BE IT FINALLY RESOLVED that a copy of this Resolution be sent to the President of the United States and all members of Congress.

COMMITTEE: COMMUNICATIONS, FINANCIAL SERVICES, & INTERSTATE COMMERCE

POLICY: RESOLUTION IN SUPPORT OF POSITION STATEMENT RECOGNIZING CONGRESSIONAL CONSENT TO THE INTERSTATE INSURANCE PRODUCT COMPACT

TYPE: MEMORIAL RESOLUTION

WHEREAS, it is well established that states have primary jurisdiction and responsibility for regulating insurance products offered by the life insurance industry to consumers in their respective jurisdictions; and

WHEREAS, the National Conference of State Legislatures (NCSL) strongly supports rights of states to regulate their unique insurance markets while joining together to support targeted modernization initiatives that protect insurance consumers and streamline regulation; and

WHEREAS, NCSL endorsed the development and implementation of the *Interstate Insurance Product Regulation Compact* (Insurance Compact) in 2004 and has actively supported its mission with NCSL legislators serving on the Insurance Compact Legislative Committee; and

WHEREAS, the Insurance Compact serves to bring states together to set national Uniform Standards that apply as the product requirements for life insurance, annuity, disability income, and long-term care insurance products, including requirements that in certain cases may differ from state-specific product requirements; and

WHEREAS, the Insurance Compact is an instrumentality of the states serving as a central clearinghouse for prompt and thorough product review and approval while preserving state authority over all other areas of insurance regulation—including agent

licensing, market conduct, company licensing and solvency regulation—as well as preserving applicable state filing fee revenues; and

WHEREAS, since it became operational in 2006, the Insurance Compact has demonstrated sustained growth in the number of Compacting States, the number of Uniform Standards for the authorized product lines, the number of filing companies and product filings and has transformed the state-based product filing platform for Compacting States, their regulated entities and insurance consumers.

WHEREAS, the Compacting States represent 46 jurisdictions comprising more than 70 percent of the nationwide premium volume for asset-protection insurance products; and

WHEREAS, more than 100 product Uniform Standards prepared and adopted by the Insurance Compact member states have fulfilled the promise of stringent and detailed requirements administered by knowledgeable, professional staff, with over 12,000 insurance products reviewed and approved for use in the Compacting States; and

WHEREAS, states' legislatures determine the extent and authority of participation in the Insurance Compact, and further exercise their sovereign authority and rights, through their legislatively designated representative to the Insurance Compact, who serves on the Compact Commission, its governing body; and

WHEREAS, the Insurance Compact has become an extremely important part of the fabric of state-based product regulation for these authorized insurance products; and

WHEREAS, a recent court opinion by the Colorado Supreme Court found that congressional consent to an interstate compact would affect whether states could join together to embrace provisions in duly promulgated uniform standards that may differ from state laws; and

WHEREAS, it is well-established in interstate compact case law that regulations adopted by states pursuant to an interstate compact with congressional consent can apply when different from state law; and

WHEREAS, the Insurance Compact is considering adoption of a position statement known as Position Statement 1-2022 to document that Congress conferred implied consent for the Insurance Compact in 2006 in the form of Public Law 109-356 enacted by Congress and signed by President George W. Bush, which authorized the District of Columbia to enter the Compact, and approved the delegation of authority necessary for the Commission to achieve the purposes of the Compact; and

NOW, THEREFORE BE IT RESOLVED that NCSL reaffirms its endorsement of the Insurance Compact as the legislative-regulatory state-based solution to making the product submission, review, and approval process more uniform, efficient, and robust across states; and

BE IT ALSO RESOLVED that NCSL agrees that the Compact Commission, working with legislators, regulators, and others in Compacting States, should take action to further strengthen and inform on the legal foundation of the Insurance Compact, an interstate agreement among the states requiring passage by their respective legislatures; and

BE IT FURTHER RESOLVED that at the recommendation of the Insurance Task Force of the Communications, Financial Services and Interstate Commerce Committee, NCSL supports the adoption by the Compact Commission of Position Statement 1-2022 acknowledging implied congressional consent was given to the Insurance Compact in 2006; and

BE IT FINALLY RESOLVED that a copy of this Resolution shall be distributed to the Office of the Interstate Insurance Product Regulation Commission with instructions to distribute to its members, members of the Legislative Committee and members of its Consumer and Industry Advisory Committees.

September 21, 2023

The National Rural Electric Cooperative Association (NRECA) is the national service organization for more than 900 not-for-profit rural electric cooperatives that provide electric power to 56% of the nation's landmass and 327 of the nation's 353 "persistent poverty counties." Electric cooperatives are focused on people, not profits, and have a longstanding commitment to rural communities that drives co-ops to identify ways to help build a better tomorrow.

More than 80 years ago, electric cooperatives formed to bring affordable electricity to high-cost, low density rural areas where large investor-owned utilities would not. Today, more than 200 electric cooperatives are involved in rural broadband deployment efforts, whether as the internet service provider themselves or through partnerships. Since cooperatives are owned by the people they serve, they truly understand the need for broadband in these areas and the challenges associated with deploying this infrastructure, which is why some co-ops have chosen to expand their services to include broadband. In many communities, co-ops are providing this service because no other provider will.

We appreciate the Energy and Commerce Committee's commitment to rural broadband deployment and programs aimed at closing the broadband gap for rural and low-income consumers. As discussions begin around the future of broadband programs and ongoing needs in hard to reach, rural, or economically distressed areas, NRECA respectfully submits the following comments for consideration.

The Measure of Universal Service

Universal Service principles have been a driving force behind rural broadband deployment efforts for decades. When Congress passed the 1996 Telecommunications Act, it set the standard that all consumers, including low-income and those in rural areas, should have reasonably comparable service at reasonably comparable rates to what is available in urban areas. As Congress considers the effectiveness of existing universal service programs and the goal of achieving universal service for broadband, ensuring that broadband service levels and rates charged for those services in rural and hard-to-reach areas are reasonably comparable to urban areas should be the first guidepost.

Rural parts of the country historically have been relegated to substandard broadband service compared to their urban counterparts, in large part because the FCC's 25/3 Mbps standard, which was set in 2015, failed to keep up with growing consumer demand and comparable service levels available in urban areas. In rural areas, countless federal dollars have gone to support networks or technologies that cannot consistently meet the definitions for minimum broadband speeds included in recent federal programs. Other factors, such as the high costs, low population densities, and other challenges associated with building infrastructure in hard-to-reach areas have also contributed to the lack of progress in meeting universal service goals. Consumers in rural areas are all too often limited by much slower broadband speeds but are charged rates similar to what urban consumers pay for a much higher broadband speed. This is clearly not what was envisioned by Congress in the 1996 Telecommunications Act.

Achieving the goal of universal access to broadband does not mean that rural America must somehow resign themselves to becoming "second class" broadband citizens, with significantly lower broadband speeds and capabilities than the rest of the country. Yet the standards consistently set by federal programs aimed at rural deployment have fallen short, aiming for "good enough" simply because it's easier to achieve rather than aiming for a sustainable and scalable connection. Progress toward universal deployment should be measured by whether the higher level of broadband service considered adequate for household needs is widely available throughout the country, including in the more remote and rural parts of the country.

As discussions continue around the future of Universal Service programs and ways to close the digital divide, Congress must take a more forward-looking approach to federal broadband support programs, setting standards and goals that look to the future and can enable growth, innovation, and network sustainability. Continuing to push for the status quo will continue the cycle of funding inadequate or soon-to-be obsolete networks rather than ones that can provide lasting and scalable service for all Americans, no matter where they live.

Affordability is Necessary for Universal Service

A permanent program is needed to address broadband affordability. With its close connection to communities located in 327 of the nation's 353 "persistent poverty counties," NRECA members understand the importance of addressing affordability when seeking to close the digital divide. Many co-ops provide service to the hardest to serve and highest cost areas of the country, further emphasizing the need for a program that can help providers deliver the highest-quality broadband to their communities at an affordable price.

NRECA believes that the current Lifeline program should be revised or replaced with a permanent low-cost program more in line with the FCC's Affordable Connectivity Program (ACP), to provide a sustainable and low-term program able to adequately address broadband affordability. This will become increasingly important as networks are built out, particularly in rural, low-income areas, where affordability will increasingly become a barrier to broadband adoption as compared to access. The ACP has been helpful in addressing challenges with adoption and affordability. As more cooperatives, as well as other providers in high-cost rural areas, build out their broadband networks, increasing the adoption rate is key to the long-term viability of the business.

In a recent survey of NRECA's broadband participants, 95% indicated that they participate in the FCC's Affordable Connectivity Program. While some respondents highlighted challenges with the administrative side of the program, most voiced support for continuation of the program and felt it was helpful in connecting new consumers with affordable broadband service. Ensuring that there is a consistent, dependable, and effective low-income broadband program, such as the ACP, will allow rural providers to deliver the highest quality broadband service to their communities at an affordable price.

Recommendations for the Future of Universal Service Programs

The Universal Service Fund is the single most comprehensive ongoing federal program to address the digital divide, and the high-cost support mechanism has been instrumental in connecting rural homes and businesses with internet service. The FCC has taken steps to improve the verifications, audits, as well as speed and latency testing for high-cost support programs, it's clear that more can be done.

The FCC should be required to reevaluate and update its definition for broadband on a more consistent basis. This will help to ensure that rural consumers are consistently served with adequate broadband, not relegated to sub-par service due to outdated definitions and bureaucratic federal policies. It will also help to reduce the need for incremental network upgrades every few years. By setting future-looking standards and reevaluating to guarantee that rural needs are met, the goals of universal service can be better achieved. It's also worth noting that federal programs do not move quickly, and it can be months or even years between the enactment of a program and actual disbursement of funds for network construction. This has enabled the construction of networks that are obsolete years before the project is completed, as speeds and consumer demands have increased while programs are set to lower standards.

Additionally, Congress should discontinue the use of reverse auctions to award funding in high-cost areas. Reverse auctions, such as the one used in the FCC's Rural Digital Opportunity Fund (RDOF), force companies to undercut themselves to obtain the award, which in many cases does not truly reflect the cost to deploy nor does it provide quick, reliable, and affordable access in unserved areas. Some providers bid impossibly low as a way to block a competitor from receiving funding to serve that area, and small, local providers can be disadvantaged due to the lack of resources enjoyed by larger competitors. We won't know the true extent of waste, fraud and abuse in RDOF until the first milestone is hit for numerous providers, which could be as early as December 2025. However, the recent calls for additional funds from the FCC to supplement RDOF bids or for the ability to relinquish all or part of their RDOF Phase I grants without penalty highlight the ongoing concerns with the reverse auction format, and could serve as a warning signal that many awardees will not be able to fulfill their RDOF commitments. Many of the rural areas in which providers have begun to claim it's too expensive to serve, even with RDOF support, are ineligible for BEAD funding in those areas due to overbuilding concerns. This could lead to those areas not only facing a potential default from their winning RDOF provider but could also exclude them from eligibility for BEAD or other funds until it's too late.

Finally, transitioning the USF from a fee-based funding model to an appropriations model would subject the program to uncertainty, chaos, and volatility. Given the critical nature of the USF programs, NRECA opposes transitioning USF funding to an appropriations model. However, should Congress decide to go this route, NRECA respectfully suggests a five-year authorization and appropriation cycle rather than the annual yearly model. This would provide greater consistency and certainty for participating providers and safeguard the program and its participants from the unpredictability of the annual appropriations cycle. NRECA would agree that the USF contribution methodology needs to be updated to ensure it is adequate and predictable, to ensure the viability of the USF program to meet its goal of bridging the digital divide.

Cooperative Pole Attachment Rates Are Not a Barrier to Rural Broadband Deployment

As electric utilities, cooperatives own and maintain utility poles and rights of way for the safe and reliable distribution of electricity to their members. Ensuring the safe, affordable and reliable delivery of electricity is the first priority for every electric cooperative. When space and capacity allow, co-ops lease out excess space on their poles for the delivery of telecommunications services by third party providers, or even their own broadband subsidiary. This relationship provides communications companies with access to an existing pole distribution network for a small fraction of the significant costs that co-ops have incurred to build and maintain these systems. Despite this tremendous benefit, some for-profit communications companies contend that pole attachment rental rates charged by rural electric cooperatives prevent them from providing broadband services to rural communities. These claims are

unfounded. The fees charged to attach to co-op poles reflect the unique geographic and demographic characteristics of each co-op's service territories, which can vary from state to state and co-op to co-op.

Electric cooperatives work in good faith to negotiate reasonable rates for pole attachments so that the burden of financing rural broadband deployment does not unfairly fall on rural electric customers. On average, electric co-ops serve 7 customers per mile, compared to approximately 34 customers per mile served by larger investor-owned utilities. Rural, high-cost areas require more pole and wires to serve a small customer base from which they can recoup the higher deployment costs.

Many cooperatives have started deploying broadband in their service territories in large part because no other providers have been willing to do it. Much like the 1930s, when electric cooperatives were the providers of last resort for many unserved rural communities, the same holds true today related to broadband connectivity. Since cooperatives are owned by the people they serve, they truly understand the need for broadband in these areas and the challenges associated with deploying this infrastructure. The one-size-fits-all approach that some in the industry would like to see implemented does not accurately reflect the unique costs of building and maintaining a pole distribution network in low density, hard-to-reach rural areas that can differ from state to state and co-op to co-op.

Conclusion

NRECA members have taken meaningful steps in recent years to connect their members with affordable, reliable, and scalable broadband service, and believes that Universal Service Fund Programs are critical to ensuring that rural as well as low-income portions of the country are able to receive affordable broadband connections that are so necessary in our increasingly digital economy. We appreciate the Committee's consideration of rural broadband programs and the issues facing rural and low-income consumers across the country, and stand ready to work with Congress and other stakeholders to ensure that USF programs can achieve the goals of affordable, universal service for all Americans, no matter where they live.

Congress of the United States
House of Representatives
Washington, DC 20515

September 20, 2023

Dear President Biden, Speaker McCarthy, Leader Schumer, Leader Jeffries, and Leader McConnell:

As members of the Rural Broadband Caucus, we write to urge you to extend funding for the Affordable Connectivity Program (ACP).

High speed broadband has the potential to revolutionize the way rural populations live their lives. Many families, students and businesses in rural areas struggle to gain access to key services such as telemedicine, distance-learning, online banking and grant applications that help small businesses compete in the twenty-first century.

The Affordable Connectivity Program has provided financial assistance for critical broadband access to nearly 21 million Americans. This program has great success in providing rural, urban and suburban families, Pell Grant recipients and veterans across the country affordable high-speed broadband. The ACP provides eligible households with up to $30 per month towards their internet bills, and provides households in some rural, insular and tribal areas with up to $75 per month towards their internet bills. In addition, the program provides a one-time subsidy of $100 towards desktops, laptops or tablet computers for children and families.

At current funding projections, the ACP will be depleted in early 2024, putting those millions of Americans who rely on the program at risk of losing broadband access. The ACP is a valuable tool in connecting every American to high-speed, affordable broadband, and is in urgent need of additional funding. The continuation of the ACP will improve the economic case for deployment and reaffirm our continued commitment to provide broadband service to millions of unserved and undersold households.

We urge you to support funding for the Affordable Connectivity Program as we explore new funding mechanisms to remove this program from the traditional appropriations process. We cannot risk our most vulnerable constituents losing access to the internet services they so depend.

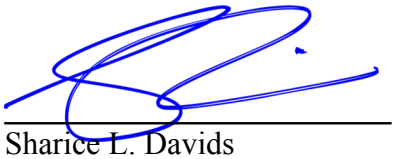
Sincerely,

Angie Craig
Member of Congress

Robert J. Wittman
Member of Congress

Ann McLane Kuster
Member of Congress

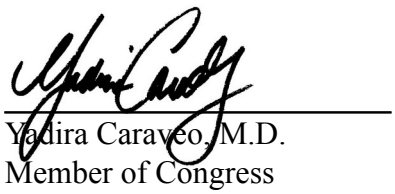
Chris Pappas
Member of Congress



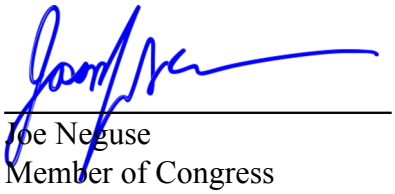
Sharice L. Davids
Member of Congress

Elissa Slotkin
Member of Congress

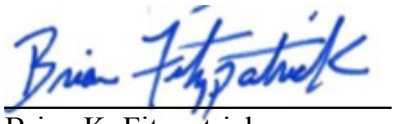
David G. Valadao
Member of Congress



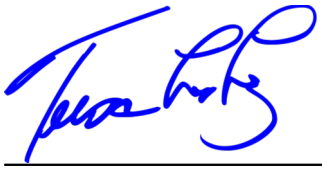
Yadira Caraveo, M.D.
Member of Congress



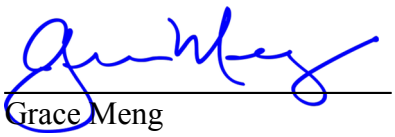
Joe Neguse
Member of Congress



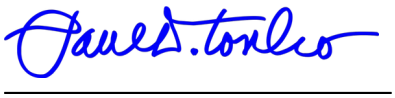
Brian K. Fitzpatrick
Member of Congress



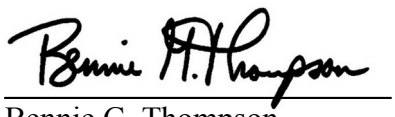
Teresa Leger Fernández
Member of Congress



Grace Meng
Member of Congress



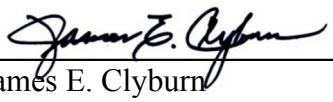
Paul D. Tonko
Member of Congress



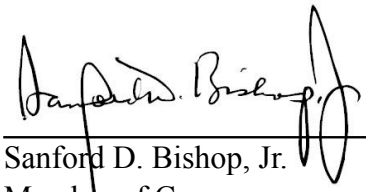
Bennie G. Thompson
Member of Congress

Terri A. Sewell
Member of Congress

Matt Cartwright
Member of Congress

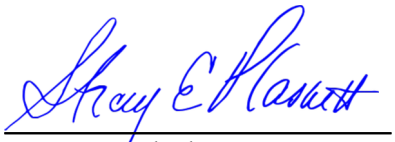


James E. Clyburn
Member of Congress



Sanford D. Bishop, Jr.
Member of Congress

Mark Pocan
Member of Congress

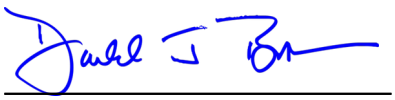


Stacey E. Plaskett
Member of Congress

Jill Tokuda
Member of Congress

Jared Huffman
Member of Congress

Michael V. Lawler
Member of Congress



Don Bacon
Member of Congress

Mike Thompson
Member of Congress

September 18, 2023

The Honorable Kevin McCarthy
Speaker of the House
U.S. House of Representatives
Capitol Building H-232
Washington, DC 20515

The Honorable Rosa DeLauro
Ranking Member
Committee On Appropriations
U.S. House of Representatives
H307 Capitol
Washington, DC 20515-6015

The Honorable Hakeem S. Jeffries
Minority Leader
U.S. House of Representatives
Capitol Building H-204
Washington, DC 20515

The Honorable Patty Murray
Chair
Committee on Appropriations
U.S. Senate
Capitol Building S-128
Washington, DC 20510

The Honorable Charles E. Schumer
Majority Leader
U.S. Senate
Capitol Building S-221
Washington, DC 20510

The Honorable Susan Collins
Ranking Member
Committee on Appropriations
U.S. Senate
Capitol Building S-128
Washington, DC 20510

The Honorable Mitch McConnell
Minority Leader
U.S. Senate
Capitol Building S-230
Washington, DC 20510

The Honorable Maria Cantwell
Chair
Committee on Commerce, Science & Transportation
U.S. Senate
Russell Senate Office Building 254
Washington, DC 20510

The Honorable Kay Granger
Chair
Committee On Appropriations
U.S. House of Representatives
H307 Capitol
Washington, DC 20515-6015

The Honorable Ted Cruz
Ranking Member
Committee on Commerce, Science & Transportation
U.S. Senate
Russell Senate Office Building 254
Washington, DC 20510

Dear Mr. Speaker, Minority Leader Jeffries, Majority Leader Schumer and Minority Leader McConnell,

We, the undersigned organizations, representing millions of rural Americans and their livelihoods, urge you to renew the Affordable Connectivity Program (ACP) and the critical investment in broadband connectivity it brings to constituents.

All Americans, whether in rural or urban areas, should be able to benefit from the ever-expanding online world we find ourselves in today. We use broadband for nearly everything in our lives – from accessing a bank account and submitting homework assignments to filing taxes and remaining active in our faith community. The ACP equips millions of families in communities across America with affordable access to the resources of the online world each month.

When Congress enacted the ACP as part of the bipartisan Infrastructure Investment and Jobs Act (IIJA) in 2021, you upheld your responsibility to address America's digital divide. But millions of rural Americans *still* face financial

challenges to obtaining acceptable internet connectivity. Failing to renew this key benefit program would be an upsetting step backward and a slight to one of Congress' key commitments.

Overwhelmingly, rural communities' connectivity has been categorized as a long-term problem to address. These Americans have been overlooked as lawmakers view the digital divide through the simplistic, narrow lens of "who can we help with the most immediate impact". This is because the historical narrative around broadband access holds that households are unconnected because they simply lack access to high-speed internet infrastructure. Indeed, broadband deployment has been toughest in hard-to-reach areas, which in turn causes high costs for internet on rural consumers. However, the ACP has alleviated such high costs through providing a discount. This affordability initiative ensures the billions of federal dollars that Congress and The White House have designated to states help build out more broadband infrastructure, through the Broadband, Equity, Access and Deployment (BEAD) Program, are going to have a tangible impact for the Americans who need it most.

The FCC's enrollment data on ACP has also proven that the digital divide is as much of an affordability issue as it is an access issue. Of the twenty-eight million households in the U.S. that lack broadband internet in their home, eighteen million households say it is simply because they cannot afford an internet connection. That is *forty-seven million Americans* who will continue to remain on the wrong side of the digital divide, simply because they lack affordable Internet. With only 20.5 million subscribers already taking advantage of this $30/month consumer program of the 51 million eligible, it's imperative that Congress continues funding for the ACP to keep our families connected to the world and continue getting even more rural communities connected as well.

Once more, polling has shown internet connectivity is a very strong bipartisan issue, with Democrats, Republicans and Independents overwhelmingly supporting Congressional renewal of the ACP this year. According to a national survey from the Digital Progress Institute, 78 percent of voters support continuing the ACP, including 64 percent of Republicans, 70 percent of Independents, and 95 percent of Democrats. 68 percent of rural, suburban, and urban households also support continuing the program.

Limiting the ACP to such short-lived and modest success would not only prevent further rural households from benefiting from the ACP – but it may also cause the millions who currently rely on this program to lose trust in Washington. We urge you to consider the diverse groups this program benefits and who will suffer if it is not funded once more: Farmers, ranchers, women, black and tribal-owned businesses, small-town artisans, and more. Broadband internet is vital to these communities— this incredible opportunity to get America online shouldn't be wasted.

A real, positive impact has been made on the lives of many of your constituents because of the ACP. As you address longer-term challenges to funding broadband connectivity, we ask you to renew your commitment to close the digital divide and ensure all Americans have the opportunity to access a high-speed broadband connection in their home now.
Thank you for your consideration of our views. We stand ready to assist in whatever way we can.

Sincerely,

Justin Tupper,
President,
U.S. Cattlemen's Association

Jack Alexander,
Chairman,
Rural & Agriculture Council of America

Betsy Huber
President
National Grange

Tina Metzer
Co-Founder
RuralRISE Tech

ROGER F. WICKER
MISSISSIPPI

ARMED SERVICES
COMMERCE, SCIENCE, AND TRANSPORTATION
ENVIRONMENT AND PUBLIC WORKS
RULES AND ADMINISTRATION
COMMISSION ON SECURITY
AND COOPERATION IN EUROPE

United States Senate
WASHINGTON, DC 20510

SUITE 425
RUSSELL SENATE OFFICE BUILDING
WASHINGTON, DC 20510
(202) 224-6253

www.wicker.senate.gov

June 20, 2023

President Joseph R. Biden
The White House
1600 Pennsylvania Avenue NW
Washington, D.C. 20500

Dear Mr. President:

We write regarding the Affordable Connectivity Program, an important tool in our efforts to close the digital divide. The Infrastructure Investment and Jobs Act provided significant funding for the Affordable Connectivity Program, which has already enabled 18 million Americans to access the high-speed broadband services they need. However, given the current rate of enrollment, projections indicate that the funding for the Affordable Connectivity Program could be exhausted as early as the first quarter of 2024. Therefore, we urge the White House to repurpose a portion of unobligated emergency COVID relief funds to ensure the continuity of funding for this program, while we explore alternative sustainable funding mechanisms and updated parameters.

As you are aware, the Broadband Equity, Access, and Deployment (BEAD) Program and the Capital Projects Fund are contributing billions toward the expansion of broadband services to connect high-cost and hard-to-reach areas. These programs operate hand-in-glove with the Affordable Connectivity Program to achieve the goal of universal broadband so that all Americans have access to the modern commerce, educational and healthcare opportunities that broadband enables. As expanded networks become operational, the significance of the Affordable Connectivity Program will become even more important as it ensures our constituents can benefit from these historic investments in connectivity.

Again, we encourage the White House to repurpose a portion of unobligated emergency COVID relief funds to make certain the Affordable Connectivity Program remains on solid financial footing, ensuring our constituents and communities can access crucial broadband services.

Sincerely,

Roger F. Wicker
United States Senator

Mike Crapo
United States Senator

Kevin Cramer
United States Senator

Thom Tillis
United States Senator

Shelley Moore Capito
United States Senator

J.D. Vance
United States Senator

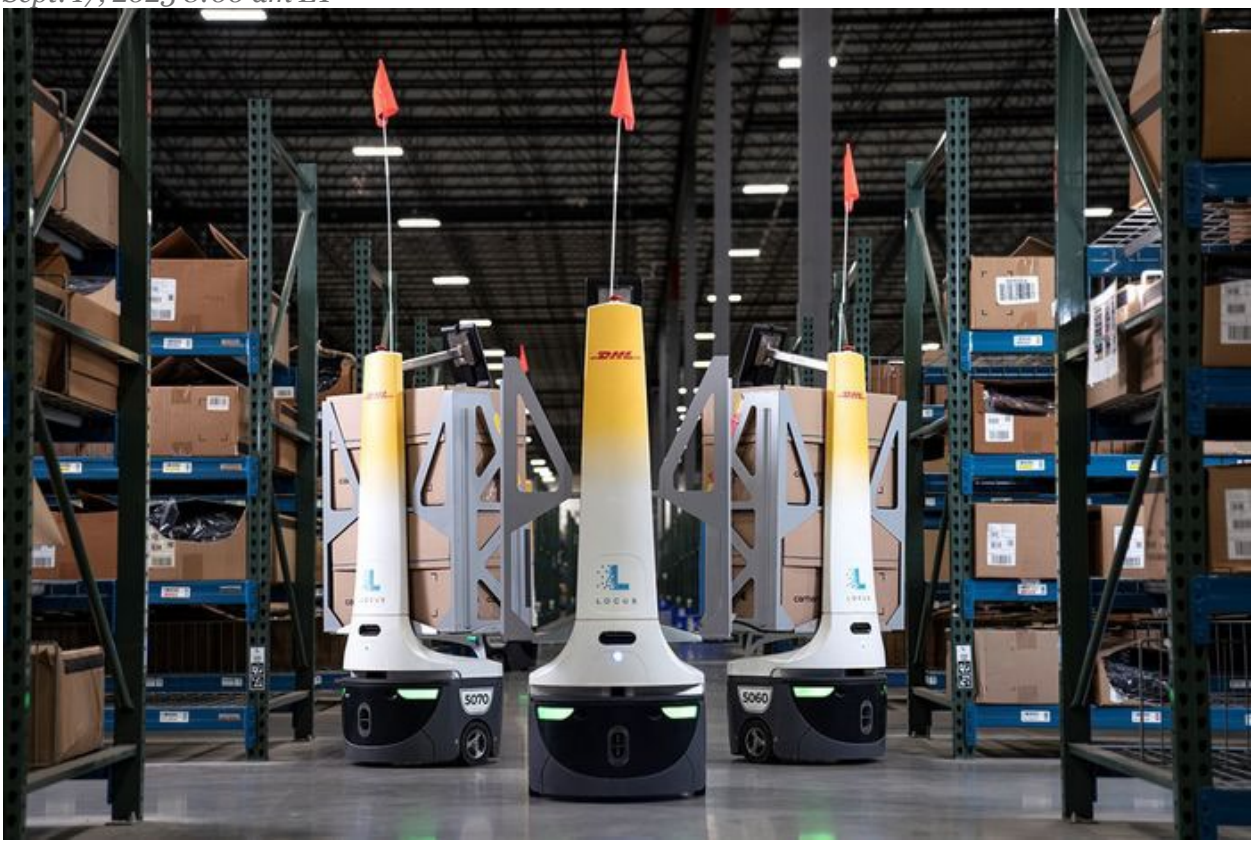
James Risch
United States Senator

Todd Young
United States Senator

Where's the Signal? Warehouse Robots Are Searching for Stronger Internet Connections

Logistics companies say the latest automation technology demands new investment to keep the machines on track and goods moving

By
Liz Young
Sept. 17, 2023 8:00 am ET



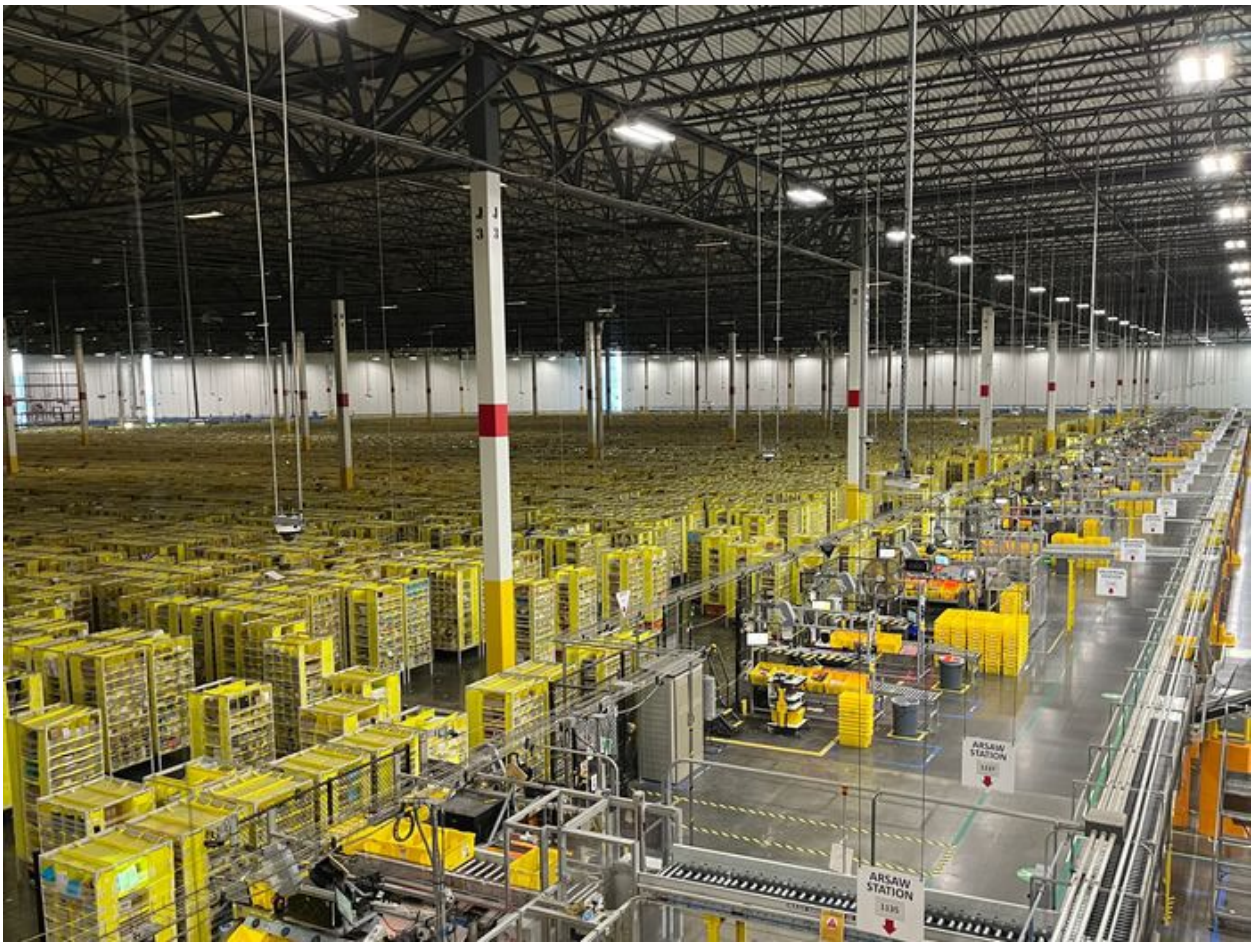
Locus Robotics says it has been working to make its warehouse robots compatible with newer wireless, cellular technology. PHOTO: DHL SUPPLY CHAIN

The new robots, drones and other technology tools filling the country's distribution centers are finding one thing all too difficult to reach: a fast and reliable internet connection.

Robots that wheel through warehouse aisles to find and pick goods need a high-speed link to keep them on the right track. Autonomous forklifts require a signal to direct them as they move pallets from loading docks to storage racks. Self-driving trucks must maintain a GPS tie to get them on the right path from a manufacturing plant to a warehouse.

As companies upgrade their operations with increasingly sophisticated machines, many are finding the internet connections they have in place fall short of the needs of new, high-powered automation technology. For some, that can mean expensive and time-consuming upgrades to get logistics sites up to speed, industry experts say.

Companies frequently have "already selected technology to go deploy before this ever comes up," said Nick Leonard, senior vice president of product for Norfolk, Va.-based logistics software provider SVT Robotics. "Often sites are running essentially their phone infrastructure or just basic internet for email browsing."



A view of autonomous 'pod' shelving units at an Amazon fulfillment center in Carteret, N.J. PHOTO: RICHARD VANDERFORD

The roadblock to automating highlights one of the challenges companies face as they add more technology to their logistics operations, from automating container terminals to using artificial intelligence to track shipments. The rapidly developing automation technology can help speed up operations and lift some of the burden off human workers, but the tools have a new set of requirements such as access to far more electrical power and a strong internet signal.

Building that capability can be particularly difficult for industrial operators that are located in rural areas far from existing infrastructure, or those in urban areas where there are heavy demands on the power grid.

Leonard said that upgrading a warehouse's internet can be as simple as calling the internet provider to increase the bandwidth or as complicated as installing fiber-optic cable lines, antennas and server rooms, depending on the type of automation being added and the existing connections.

"That can get very expensive, in the millions of dollars, to solve those challenges," Leonard said.

Some operators are installing private networks that run on high-speed 5G wireless cellular technology, which can provide faster and more stable internet than traditional Wi-Fi networks, experts say. About 45% of transportation executives and 35% of manufacturing executives surveyed by research firm Gartner last year said they planned to invest in 5G in the next 24 months.

The technology could help logistics operators ensure they have a strong, secure internet connection that can keep their robots running even if bad weather knocks out power or the facility is targeted in a cyberattack. The 5G networks can also provide a steadier connection than Wi-Fi for large buildings and for autonomous vehicles, particularly in remote locations, experts say.

"If you start thinking of autonomous vehicles or robots in general, they require many different types of sensor and visual data to take decisions and to operate autonomously, so that data has to reach them in a reliable and timely manner," said Harpreet Dhillon, a computer engineering professor at Virginia Tech.

Robots that wheel through warehouse aisles need a high-speed link to keep them on the right track. PHOTO: DHL SUPPLY CHAIN

But there is a long way to go before 5G is widely adopted in industrial settings, partly because not all the warehouse automation on the market is able to run off 5G. Robots built to work with Wi-Fi often have to be adapted to 5G.

Those updates can take time, said Mike Johnson, president of warehouse automation firm Locus Robotics. Wilmington, Mass.-based Locus has been working for a few years on making its robots compatible with the cellular technology.

“We have the bots at these sites run 24 hours a day,” Johnson said. “The system has to be super-resilient, super-robust.”

Experts said another barrier to adoption is that 5G networks aren’t as widely understood as Wi-Fi.

“You take these organizations that are not very IT-forward and then throw in something like private [cellular networks], it’s going to be D.O.A.,” said Samuel Reeves, chief executive of Philadelphia-based warehouse automation provider Fort Robotics. “It’s not the way people think about wireless networking right now.”

GE Appliances, a subsidiary of home appliances company, has upgraded its internet as it has added robots and tested autonomous shuttles at its manufacturing facilities and warehouses in Georgia, Kentucky and Tennessee.

Harry Chase, the company’s senior director for central materials, said there have been hiccups along the way.

As much as “we think we’re good to go on Wi-Fi, a lot of times we have to go in there and add extra antennas just because the signals become too weak for the robots to respond to,” Chase said. Without consistent internet, a robot will “start running and then all the sudden it stops, and you go, ‘OK, why did this stop?’” he said.

GE Appliances is rolling out self-driving shuttles by Swedish autonomous trucking startup Einride at facilities in Tennessee to transport items between the company’s buildings. The trucks, which run local routes that stretch a few miles, require a strong cellular connection to navigate the roads.

“We had to put Wi-Fi outside the building, we had to improve the 5G cell network, and we had to go in and hone in the GPS,” Chase said. “If the signal disappears for even a microsecond, the truck will actually come to an automatic stop, so these are the extra things you have to consider.”