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## **Roundtable Outcomes Report**

### **A Look Ahead to Access and Regulation in the Not-Too-Distant Broadband Future**

Roundtable Discussion Date: December 1, 2023  
University of Colorado Law School

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#### **In Gratitude**

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## Executive Summary

In an era of increasing internet ubiquity, the ability to access and use online tools, services, and information is an essential aspect of everyday life. Many segments of society, however, remain under-connected and even excluded from the digital world. As technology evolves, the harms associated with the digital divide are compounding. To address this, Congress created the Broadband, Equity, Access, and Deployment (“**BEAD**”) Program, which presents a transformational opportunity for advancing broad digital inclusion in many areas within the United States.

To better understand the future of broadband regulation after BEAD’s implementation, CU Boulder’s Silicon Flatirons Center convened a roundtable discussion, entitled *A Look Ahead to Access and Regulation in the Not-Too-Distant Broadband Future*, on December 1, 2023 (the “Roundtable”). Held at the University of Colorado Law School, the Roundtable brought together experts from government, academia, public interest, and industry.

Roundtable participants underscored that, to realize Congress’ ambitions for BEAD and diminish the digital divide, policymakers must support additional programs and initiatives alongside—and after – BEAD. In short: infrastructure investment alone is insufficient. Necessary programs to accompany BEAD should promote digital equity and inclusion, promote network maintenance and cybersecurity, and provide access to the devices necessary to use broadband networks.

The digital divide represents one of the most pressing challenges facing Americans today, exacerbating socioeconomic divisions entrenched within society. Affordability is a persistent barrier to access, but lack of adequate broadband infrastructure, devices, and digital literacy skills also entrenches existing inequalities, excluding people from access to justice and civic participation. Closing the digital divide matters because when people lack access to broadband, it has broad impacts on everyone, both the unconnected and the connected. When more people can access the internet, society benefits through increased economic participation, civic engagement, and global competitiveness. There is a symbiotic human element to spreading broadband access; efforts to close the digital divide represent a commitment to societal equity and progress.

After exploring the importance of maximizing BEAD’s funding and closing the digital divide, this report offers three **findings**:

- 1) **BEAD’s deployment programs alone are insufficient to solve digital inequity.** Closing the digital divide requires

providing people with digital skills training and equitable devices with sufficient technical specifications.

- 2) **Once broadband infrastructure is in place, additional upkeep costs for new networks will require resources dedicated to routine maintenance and cybersecurity services.** If these needs are not adequately met nationwide, a new digital divide could grow from inside of the network itself.
- 3) **Effectively closing the digital divide requires additional funding mechanisms beyond congressional appropriations.** Despite BEAD's unprecedented allocation of funds, many states will dedicate their entire budget towards deployment alone.

Based on the insights shared at the roundtable, this Report offers the following **recommendations** for addressing the digital divide:

- 1) **Partner with community anchor institutions.** Partnering with integral local community institutions like schools and libraries can help bridge, legitimize, and instill trust in new broadband programs.
- 2) **Invest in digital navigators.** Digital navigators can help create, build, and maintain trust within communities by reaching unconnected and under-connected people.
- 3) **Recognize, define, and deploy equitable devices.** People need access to truly equitable devices with sufficient and proficient technological specifications to perform tasks online effectively. Equitable devices should have the right technical and security specifications to allow people to connect safely and securely.
- 4) **Build on existing programs to lower barriers to access.** Broadband access programs should be grouped with existing government programs with a proven track record of trust and community goodwill to maximize ease of access and awareness.
- 5) **Re-up effective and in-demand programs like the Affordable Connectivity Program ("ACP").** Congress should promptly renew funding for the ACP, which is generally seen as a programmatic success. If renewed, ACP could also be instrumental in getting and keeping people online as the BEAD program is realized.
- 6) **Identify adequate and stable funding for broadband support programs.** Whether broadband support programs depend on congressional appropriations, funding from service

providers, edge providers, or some combination, any funding mechanisms must be reliable and sustainable.

- 7) **Support access to both broadband and voice line connections.** Broadband and Voice are complementary services that many Americans rely on. Broadband is important, and increasingly popular, but voice remains essential. Forcing people to choose only one leaves a large segment of the population without access to vital services.
- 8) **Network maintenance and cybersecurity require ongoing investment.** Large and smaller Internet Service Providers (“ISPs”) alike will need to ensure that they allocate resources for network maintenance and the costs associated with securing the network on an ongoing basis.

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## I. Introduction

In 1995, when the internet was still in its infancy, there were 40 million people connected online.<sup>1</sup> Today, this number is 5 billion.<sup>2</sup> The internet is the “essential communications medium of our time.”<sup>3</sup> Accordingly, internet access is integral to modern communication, commerce, and innovation.

The consequences of being un- or under-connected are increasingly pronounced as the internet is entwined in everyday work, communication, and essential services. Lack of affordable high-speed internet service has historically excluded many people from connecting online, but the pandemic exacerbated this problem.<sup>4</sup> People were unable to access “adequate education, health care, economic vitality and development, and public safety” benefits.<sup>5</sup> Today the digital divide continues to have acute impacts upon the lives of the un- and under-connected.

In 2021, the United States made a historic commitment to closing the digital divide. The federal government committed \$42.5 billion in funding to broadband deployment in unserved and under-served locations through the Broadband Equity, Access, and Deployment (“**BEAD**”) program.<sup>6</sup> The BEAD program promises to expand high-speed internet access by funding planning, infrastructure deployment, and adoption programs throughout the United States. At Silicon Flatirons’ 2023 “The Internet’s Midlife Crisis” Flagship Conference, National Telecommunications and Information Administration (“**NTIA**”) Administrator Alan Davidson emphasized the broad sweep of the program:

This is our generation's big infrastructure project. This is our chance to connect everybody in the country with what they need to succeed and thrive in the digital economy, in this modern economy. And it's going to take a lot of work. It's going to take years to do it. But I do think that we will look back 10 years from now, 20 years from now and say, this was the moment where we finally stepped up and connected everybody, and that's big.<sup>7</sup>

The BEAD program is a once-in-a-generation infusion of public money into broadband infrastructure. The program aims to transform

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<sup>1</sup> Silicon Flatirons Center, [2023 Flagship Conference The Internet’s Midlife Crisis](#), 106 (2023).

<sup>2</sup> *Id.*

<sup>3</sup> *Id.*

<sup>4</sup> Next Century Cities, [Cut Off From the Courthouse: How the Digital Divide Impacts Access to Justice and Civic Engagement](#), (2022).

<sup>5</sup> Silicon Flatirons, *supra* note 1, at 176.

<sup>6</sup> Infrastructure Investment and Jobs Act, Pub. L. No. 117-58 (2021).

<sup>7</sup> Silicon Flatirons, *supra* note 1, at 113.

communications in the United States by enabling individuals and locations that have been digitally left behind to join and take advantage of communications networks.

To better understand the future of broadband regulation after BEAD's implementation, Silicon Flatirons convened a roundtable discussion, entitled *A Look Ahead to Access and Regulation in the Not-Too-Distant Broadband Future*, on December 1, 2023, at the University of Colorado Law School in Boulder, Colorado. The roundtable brought together government, academia, public interest, and industry experts to discuss the future of digital equity and inclusion, cybersecurity and upkeep after infrastructure deployment, and the future of universal service programs. The discussion followed a modified version of the Chatham House Rule—participants are quoted and paraphrased in this report, and these materials are attributed only with permission.<sup>8</sup>

The roundtable's expert discussion underscored a key takeaway: several programs and initiatives, which are outside of BEAD's purview, must *also* succeed in order for congressional aspirations towards ameliorating the digital divide to be realized. That is, BEAD is necessary, but alone not sufficient, to close the digital divide. Closing the digital divide requires more than wide-scale deployment of new broadband infrastructure. It requires addressing broadband access, affordability, and equity. Policymakers should remain cognizant that BEAD, while a source of crucial funding, does not fully address each of the elements necessary to close the digital divide.

Roundtable discussants highlighted three essential steps, in addition to BEAD's funding, required to realize the once-in-a-generation opportunity that BEAD's funding presents. This report explores each of these three perspectives.

- *One*, the future of digital equity and inclusion requires thoughtful and targeted programs. Deploying broadband infrastructure alone is not enough to on-board people who currently lack access to digital networks. Access to equitable devices with sufficient technical specifications and digital skills training, ensuring communities of color are not asked to sacrifice their privacy in exchange for connectivity, and using community-based organizations to bridge the trust gap are all vital to ensure people are connected.
- *Two*, cybersecurity must be addressed across the network. A new digital divide is growing from the inside of the network—

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<sup>8</sup> Under the Chatham House Rule, participants are free to use and discuss information received, but neither the identity nor the affiliation of any participant may be revealed. This rule was modified so that participants could be quoted and paraphrased with their permission.

namely, cybersecurity. With the massive costs associated with network upkeep, the resources required to secure networks may advantage larger, more well-resourced ISPs. In addition, thinning middle mile and transit capacity could also constrain smaller providers.

- *Three*, closing the digital divide requires funding mechanisms beyond congressional appropriations. Congressional appropriations alone are insufficient to close the digital divide. Obtaining funding from providers for both broadband and voice connections remain vital. States may also consider additional conditions on the award of BEAD grants to effectuate broadband affordability goals.



## II. Digital Equity and Inclusion

While the pandemic brought new urgency to the importance of closing the digital divide, these issues have been present long before 2020. Brandy Reitter, Executive Director of Colorado's Broadband Office, emphasized this point at Silicon Flatirons' Internet's Midlife Crisis Conference, stating that the issues associated with the digital divide "existed way before Covid did, but were exacerbated by Covid."<sup>9</sup> Reitter further highlighted how access to broadband has become critical: "broadband is at the intersection of everything we do . . . education, health care, economic vitality and development, and public safety. When you don't have it [broadband], you're being left behind. You can't participate in the economy. And you can't move your communities forward."<sup>10</sup>

However, deploying broadband infrastructure alone is not enough to onboard people who currently lack access to digital networks. During the roundtable, Dr. Nicol Turner Lee, Senior Fellow, Brookings, echoed this sentiment, "We should really be addressing equal access to digital resources as a means to improved quality of life and well-being."

Participants also stressed that, beyond access to infrastructure, many people also lack access to equitable devices and digital skills. Trust must be built. Closing the digital divide equitably requires that communities of color are connected without sacrificing their privacy. Lastly, providing community anchor institutions with the resources to get their constituents signed up for affordability programs will help un- and under-served populations to get and stay connected. Adding broadband affordability programs to already existing subsidy programs such as food assistance or housing assistance will institutionalize broadband affordability programs.

### A. Equitable Devices and Digital Literacy

Broadband infrastructure deployment alone is insufficient to close the digital divide. It is essential to also ensure that people have access to equitable devices and are provided with the skills to use them. Participants emphasized that these two facets of the digital divide, devices and skills are intertwined, and therefore it is vital that they are addressed together.

Across the roundtable, participants agreed that digital literacy was a key component of addressing the digital divide. Turner Lee noted that without the necessary skills, people would be unable to meaningfully compete in the economy. Melanie Colleti, Digital Equity Manager, Colorado Broadband Office, highlighted digital navigator programs as

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<sup>9</sup> Silicon Flatirons, *supra* note 1, at 176.

<sup>10</sup> *Id.*

a way of helping people boost their digital skills. Kate Allison, Executive Director Research & Analysis | Digital Equity, Comcast, expanded on this, stating that once a new network is deployed, it is imperative that we “find a way to get people online, keep them safe online, and make sure they’re able to develop the skills they need to move forward.”

Allison further elucidated that device deployment and digital skills training are two connected components of bridging the digital divide. She expressed that on numerous occasions during Comcast’s deployment efforts, “you can hand someone a fully equitable device, but if they don’t have the digital skills to know how to turn on the device, connect safely, or figure out what a Wi-Fi opportunity looks like,” they believe the laptop is broken and don’t end up using the device. As a result, Allison argued that digital skills training needs to go hand in hand with deployment efforts.

Andy Stutzman, Executive Director, Next Century Cities, agreed with her main contention but pushed back, arguing that the devices themselves are an essential aspect that should not be quickly overlooked. He stated that while “broadband access is great, digital literacy is great, and digital skills are great,” without equitable devices, we cannot genuinely achieve digital equity.

There is a significant disparity in the devices that people use to access the internet. A study by Pew Research Center found that as of 2021, 27% of adults in households earning less than \$30,000 a year relied solely on smartphones and mobile connections to access the internet.<sup>11</sup> Furthermore, these households often have to rely on smartphones to conduct tasks “traditionally reserved for larger screens,” such as applying and interviewing for jobs.<sup>12</sup> As a result, acquiring equitable devices can transform and improve how these households perform fundamental tasks online.

Stutzman expressed the concern that many of the laptops he has seen and received from providers are not equitable devices because their technical specifications are limited, with only about “4 GB of RAM with the slowest processor available.” These hardware limitations also restrict the amount of use a family can get out of it. Turner Lee expanded on Stutzman’s point, adding that “when a child brings a laptop into the home for schoolwork . . . other people in the home will actually use it for other things,” including “talk[ing] to their healthcare provider.”

Some participants agreed with Stutzman's distinction between ineffective devices and truly equitable devices; however, many

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<sup>11</sup> Emily A. Vogels, [Digital Divide Persists Even as Americans with Lower Incomes Make Gains in Tech Adoption](#), Pew Research (Jun. 22, 2021).

<sup>12</sup> *Id.*

struggled with defining exactly what an equitable device looks like. Turner-Lee added that “having the right hardware” should go beyond simply the specifications of the device but also making sure that people “have a place to put it that is safe and secure.” She offered the idea of “institutionalizing hardware programs into spaces where people congregate.”

## B. Differential Impact of Privacy Harms in Communities of Color

Communities of color are often on the wrong side of the digital divide.<sup>13</sup> When broadband is deployed in un- and under-connected locations, people may be asked to trade their privacy in return for access to broadband service, resulting in differential levels of privacy harm in these communities.<sup>14</sup> For example, in New York City’s free public Wi-Fi networks, internet use is free on the condition that companies providing the free service “can collect, store, and analyze users’ valuable personal, locational, and behavioral data.”<sup>15</sup> In 2021, the Federal Trade Commission’s (“**FTC**”) investigation of the privacy practices of ISPs revealed that ISPs can use or sell consumer’s personal information to differentially advertise products based on “race and ethnicity data (or proxies for such data such as location data).”<sup>16</sup> Being forced into trading privacy for connectivity is an inadequate means of achieving access and inclusion. Thus, ensuring that communities of color are connected without sacrificing their privacy is a key part of ensuring that broadband is provided equitably.<sup>17</sup>

Participants were particularly concerned with the unique and differential burdens communities of color face. Turner Lee, whose book on the U.S. digital divide releases in August 2024, described witnessing this differential impact in her field research as it pertains to elementary school students who were unable to sign up for free or reduced lunch benefits, despite being eligible, because the information that they were required to provide to the state would disclose where they lived and put them at risk of deportation.<sup>18</sup> As a result, relying on programs like school lunch benefits, which require disclosure of sensitive information, to implement broadband access programs could present differential harms to specific communities.

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<sup>13</sup> See, e.g., Leon Yin & Aaron Sankin, [Dollars to Megabits, You May be Paying 400 Times As Much As Your Neighbor for Internet Service](#), The Markup, (Oct. 19, 2022, 6:51 AM).

<sup>14</sup> See generally Fed. Trade Comm’n, [Examining the Privacy Practices of Six Major Internet Service Providers](#) (2021), (discussing privacy harms and internet service providers).

<sup>15</sup> Benjamin Dean, [The Heavy Price We Pay For ‘Free’ Wi-Fi](#), The Conversation, (Jan. 25, 2016).

<sup>16</sup> *FTC*, supra note 14, at 38.

<sup>17</sup> *Dean*, supra note 15.

<sup>18</sup> Nicol Turner Lee, *Digitally Invisible: How the Internet is Creating the New Underclass* (forthcoming 2024).

Although these specific concerns and harms only affect certain segments of the population, they remain durable barriers that keep these communities from accessing benefits and achieving equitable broadband.

### **C. Trust and Community Anchor Institutions**

Providing community anchor institutions with the resources to get their constituents signed up for affordability programs will help un- and under-served populations get and stay connected. Adding broadband affordability programs to existing subsidy programs such as food or housing assistance will institutionalize broadband affordability programs and help with lack of trust issues. Lack of trust and awareness of communications affordability programs has resulted in a history of under-enrollment in these important efforts to connect people. Community anchor institutions serve an important function in the broadband ecosystem by bridging the trust gap and connecting hard-to-reach populations, but they need resources to do this important work.

Beyond the programs themselves, participants discussed concerns about people not fully realizing or taking advantage of connectivity efforts. More specifically, while affordability programs are important, when people lack trust or are unaware of the programs, the ability to adequately address digital inequity is hampered.

In discussing digital skills and literacy, Colletti mentioned the importance of having digital navigators sit down with people to help them understand the technology and build trust between communities and broadband access efforts. She described trust and the lack thereof as a “through line” underlying digital inequity and how many of these programs remain underutilized because of fear or distrust in government deployment programs. Colletti suggested that the best way to build trust would be to implement digital navigators and contract with community-based organizations to reach people.

Many participants agreed with this personal approach, with Allison adding that digital navigators, in particular, can help “create trust, build trust, and maintain that trust over time.” Allison also highlighted that creating new programs can present a barrier to access because inherently, “creating a new process, another burden, or another piece of administrative burden for people to jump through in order to get something [also] creates difficulties.” The administrative burden of enrolling in a new program creates a disincentivizing effect that is further amplified when you consider factors like skepticism and lack of trust in the programs as a whole.

One solution participants agreed on was legitimizing these programs by rolling them into existing programs and avoiding new processes lacking community reputation. Allison suggested that instead of

creating new processes and burdens, it would be beneficial to “fold [these programs] into existing processes” that people already trust. Caroline Siegel Singh, Program Manager, Greenlining, agreed, citing the success of the Greenlining Institute’s efforts to do so. She stated that “by incorporating these processes into existing social service enrollment processes, we were just able to get so many more applicants who otherwise would not have seen this as a program that they were eligible for and interested in.” Specifically, she offered that grouping broadband access programs in with programs like “housing assistance, SNAP, and SNAP EBT” was particularly effective. Singh lauded the effectiveness of “creating a one-stop shop” for people to receive benefits, which not only maximizes the ease of access but also allows new programs to trade on the goodwill of existing programs.

By limiting the number of new processes and burdens, the barriers to entry are minimized. In doing so, Allison explained that this would “make sure you’re empowering them [these programs] through trusted folks and institutions” while simultaneously “also not creating another piece of work” for people to navigate. As a result, this simultaneously makes it easier for people to become aware of the programs, access the necessary technology, and build on existing trust.

In addition to rolling programs into existing offerings, Singh referenced recent work by the Greenlining Institute demonstrating this principle, where they found that the most cost-effective way to reach “hard-to-reach communities and convey information that is culturally competent” is to invest in building trust and establishing trusted messengers within communities. Participants agreed that one effective way of doing so would be working alongside community anchor institutions<sup>19</sup> and capitalizing on their established trust within the community.

Turner Lee detailed the importance of this based on her observations around the country during the pandemic, where “community anchor institutions, including schools and libraries, were very critical” because they already had established relationships and were thus able to serve the community effectively. Participants overwhelmingly agreed with this point. In particular, Sarah Smith, Broadband Program Specialist, NTIA, encouraged state broadband offices to try to truly understand how integral community anchor institutions are and the importance of supporting these institutions in order to reach these communities

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<sup>19</sup> Connect America Fund, A National Broadband Plan for Our Future, Establishing Just and Reasonable Rates for Local Exchange Carriers, High-Cost Universal Service Support, Developing an Unified Intercarrier Compensation Regime, Federal-State Joint Board on Universal Service, Lifeline and Link-Up, and Universal Service Reform - Mobility Fund, FCC 11-161, Report & Order & Further Notice of Proposed Rulemaking, 26 FCC Rcd, 17,663, 17, 681 n.37 (2011) (“We note that “[c]ommunity anchor institutions” as defined in the Recovery Act include schools, libraries, medical and healthcare providers, community colleges and other institutions of higher education, and other community support organizations and entities. See 47 U.S.C. § 1305(b)(3)(A).”).

effectively. She referenced Colorado's decision to support anchor institutions by funding them directly using planning grants. In turn, these community anchor institutions were able to provide detailed research on where the needs genuinely are in the community and provide insight into communities that have historically been underserved and invisible.

In addition to state broadband offices working with community anchor institutions, Smith also introduced the idea of providers "stepping into the digital equity space and [serving] the important connector role" by working with community-based organizations and creating workforce development programs. She described providers as capable of filling a "key piece currently missing" by spreading awareness and providing information on available services.

### III. Upkeep and Cybersecurity after BEAD

After BEAD deployment, to maximize the efficacy of networks, infrastructure will require constant maintenance and upkeep. Nick Feamster, Professor of Computer Science, University of Chicago, described the importance of network upkeep post-BEAD, “it’s not sufficient to just give funding and financial resources to build.” He continued, stating “a big part of getting the most out of your infrastructure is having the capacity to maintain it and to keep it reliable and secure in the face of the dynamism.” As a result, beyond deployment and adoption, the cybersecurity and upkeep costs required to maintain future networks will present additional obstacles in the pursuit of reliable high-speed internet for all.

These high costs could create a new digital divide growing from the inside of the network: cybersecurity. As a result, the resources required to secure networks may advantage larger, more well-resourced ISPs. In addition, thinning middle mile and transit capacity could also constrain smaller providers.

#### A. Cybersecurity is the New Digital Divide

Participants agreed that once the infrastructure is deployed, to properly address the broadband needs of these communities and maximize the impact of the BEAD program’s funding, this infrastructure needs to be properly maintained and managed. The expenses associated with establishing a network do not cease once infrastructure is deployed. Building a network inherently calls for continued investment in the form of routine network maintenance. Therefore, providers that are tasked with deploying new networks and providing service must also be prepared to bankroll future network cybersecurity. Participants across the roundtable agreed that the demands of network upkeep would require additional funding beyond BEAD. Ken Fellman, President, Kissinger & Fellman, P.C., expressed concern that these costly demands could introduce a new kind of cybersecurity-oriented digital divide. As Feamster, described, “The infrastructure itself is one thing, but running the infrastructure is another.”

Feamster added that infrastructure upkeep requires “fast detection and remediation” to address issues like network “reliability, outages, congestion failure, faults of equipment, misconfiguration, and security attacks.” This long list of potential needs also means that network upkeep and cybersecurity can end up being quite costly. As a result, Feamster expressed concern about the costs of upkeep, stating, “there are ongoing needs for keeping that infrastructure properly configured,

maintained, up to date, and monitored . . . that requires skills, administration, and fairly pricey software.”

Fellman raised the idea of a new divide on cybersecurity, potentially where “parts of rural America are going to be less secure than in the suburban and urban areas” because of a disparity in network upkeep and security. Tejas N. Narechania, Professor of Law, University of California, Berkeley School of Law, agreed, stating that many security services are offered by providers in the middle of the internet, such as by CDNs, but CDNs are “deployed selectively” and not available in all geographies on equal terms. Hence, some regions have better access to these services than others, and that might lead to a “new and different digital divide, one that grows from within the internet.”

## **B. Benefits of Scale**

While the participants generally agreed that cybersecurity could introduce a new digital divide, participants were divided on the kinds of ISPs that are best suited to meet these increased demands. Some participants raised the idea that the cybersecurity and upkeep needs required to maintain the network inherently create distinct advantages for ISPs with established and skilled administrators. As a result, this could be detrimental for small to medium providers. Feamster introduced the topic of economies of scale and how the size of an ISP may be a factor in whether or not the provider is capable of sustainably maintaining operations as the demands increase in the future.

Jason Livingood, Vice President, Comcast, discussed these high upkeep costs and theorized that the constant “operational maintenance of the network on an ongoing basis” could result in the end of the “era of the mom-and-pop ISPs.” He contrasted these small to medium “mom-and-pop ISPs” to large ISPs like Comcast, which already have a large pool of talent, enough scale to go out and build networks, and a team with the proper security certifications and database skills to constantly monitor the network. Livingood argued that a unique benefit of a large ISP is that “you have a really deep bench of talent” that can address and explore a wide variety of issues very narrowly, as opposed to a small ISP that is limited in scale. He expressed concern that with the shorter “bench of engineering talent” at a small-to-medium ISP, it could be difficult to pay attention to all of the upkeep demands.

Mark Walker, Vice President, CableLabs, agreed with some of these points and theorized that as issues get more complicated, threats continue to grow, and consequences multiply, smaller operators may not have the talent necessary to meet these demands. Walker argued that cybersecurity issues are such a specialized knowledge area that “inherently, a small operator isn’t going to have the internal talent” to secure their networks. As a result, smaller ISPs may have to “outsource .



. . . to keep up with the reliability standards required.” Some participants agreed with outsourcing as a viable path forward.

Several participants disagreed with this claim, believing small ISPs have the resources available to meet these challenges and may have distinct advantages in this cybersecurity-oriented future. Fellman said that in Colorado, several smaller rural ISPs have a proven track record of maintaining their networks and connecting their communities, often getting better connectively than in areas of Metro Denver. Singh added that in debating the benefits of small vs. large ISPs and cybersecurity, it is also important to consider the risk to consumers.

Across the board, ISPs often contain a “gold mine” of data about users’ personal information and internet traffic.<sup>20</sup> While all providers are potential targets for data breaches, one notable concern with a larger ISP is that it presents a more attractive and enticing target for hackers. Comcast, like many other large companies, has reported data breaches to the state related to software security vulnerabilities that were exploited. As a result, even if larger ISPs provide more engineering talent and resources, these providers’ size and notoriety may increase the risk that they will be targeted. This requires, in order to maintain security, larger companies to increase spending to prevent future attacks.

Conversely, Singh argued that upkeep costs could actually work in favor of smaller, local ISPs because “local providers already have coalitions working on their side,” and since in a community network, they are the only ones serving their area, they often share information and collaborate towards the mutual goal of serving communities. Cybersecurity threats are not going away and the spending to thwart them is only likely to increase for all providers large and small, public and private.

### **C. Competition Policy and Thinning Middle Mile**

Closely tied to the discussion on small providers and their capabilities, participants also raised concerns about the lack of competition in the middle mile market. Several participants agreed that the lack of competitive offerings in the middle mile market could constrain smaller providers and create bottlenecks in the network. Narechania explained that “middle mile and transit capacity is thinning” and offered two potential solutions. His two proposals were to “invest in more transit capacity or invest in other competitors to dominant CDNs.”

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<sup>20</sup> Stacey Higginbotham, [Your Biggest Potential Data Leak Isn't Your Nest, You're your ISP](#), Fortune (Jan. 26, 2016, 9:36 AM).

Content delivery networks (CDNs), geographically distributed servers that cache content close to end users, typically allow for the quick transfer of assets needed for loading internet content.<sup>21</sup> Popular websites such as Google, Netflix, and Meta often rely on CDNs and offnet servers in thousands of ISPs to serve their billions of users worldwide.<sup>22</sup> Narechania referenced a paper detailing how this widespread distribution of servers leads to a concentration of traffic as these offnets are often colocated.<sup>23</sup> Furthermore, as colocation increases, where servers from distinct hypergiants serve common users, previously unacknowledged risks, such as congestion and DoS attacks, become more threatening.<sup>24</sup> As a result, investing in competitors to combat the dominant CDNs could alleviate some of this congestion.

Corian Zacher, Senior Policy Counsel, Next Century Cities, agreed with the idea of investing in a state-funded middle mile network as a potential answer. They explained that because the “middle mile isn’t very well mapped publicly,” as a new provider, it is often difficult to come into an area and “plug into that network.” Therefore, “several states [including] Kentucky, California, and Massachusetts have all invested in state middle mile networks ... partner[ing] with local communities to make sure that there were last connections available before going forward with constructing the network.” Many participants agreed with Zacher’s suggestion of investing in other competitors and partnering with local providers. Ted Gilliam, Vice President, General Counsel, Strategic Sales and Infrastructure Policy for Zayo Group, explained that companies like Zayo, which receives NTIA funding, also partner with local providers to bring middle-mile infrastructure to the end user. Therefore, he stated that when funds flow “towards companies like Zayo, who will then partner with local ISPs, [this] should have the effect of reducing the issue because you then bring competition into that market.”

While several participants agreed with this approach, a number of participants emphasized the importance of investing in existing networks. Harold Feld, Senior Vice President, Public Knowledge, argued that “we need funding to harden networks and consider funding areas that are [particularly] isolated.” Fellman agreed with Feld’s premise on reinforcing the network, explaining that “there are plenty of parts in the state [of Colorado] where if there’s a major fiber cut, it’s not going to impact the ability for somebody to call 911 because of redundant parts of the network. But there are also lots of rural parts of the state where a fiber cut can be devastating.” As a

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<sup>21</sup> [What is a CDN](#), Cloudflare, (last visited Apr. 30, 2024).

<sup>22</sup> Kevin Vermeulen et al., [The Central Problem with Distributed Content](#), Sigcomm 1, 2 (Nov. 28, 2023).

<sup>23</sup> *Id.* at 1.

<sup>24</sup> *Id.*

result, especially in these rural areas, reinforcing the networks should be a top priority.

## IV. Funding Mechanisms Post-BEAD

While many of BEAD's programs will help take monumental steps towards the mission of broadband for all, participants agreed that securing funding for broadband affordability programs is vital to the success of BEAD's infrastructure investments. Narechania, posing the question to the roundtable, asked, "what does universal service look like in a world [after] we have infrastructure built out everywhere? Yes, access is the most important challenge right now, but after access . . . we still have affordability and adoption challenges left to surmount." Brian Adkins, Vice President, Lumen Technologies, agreed, asking the roundtable to consider life after BEAD and the "continuing mission of universal service on a regular basis."

Traditionally, the Federal Communications Commission ("**FCC**") provides universal service support through four primary programs: (1) the High Cost Support Program, (2) the Lifeline Program, (3) the Rural Health Care Support Program, and (4) the E-Rate Program.<sup>25</sup> In 2021, pursuant to the directives in the Infrastructure Investment and Jobs Act ("**IIJA**"), the FCC introduced the ACP, which was funded by congressional appropriations and sought to provide eligible households with discounts on broadband services and connected devices.<sup>26</sup>

Closing the digital divide and keeping it closed requires funding mechanisms beyond BEAD. Addressing this concept, the participants also discussed potential methods to acquire the funding needed to effectuate broadband affordability programs. The discussion focused on (1) the lack of reliability in congressional appropriations and the need to find alternative funding mechanisms, (2) the importance of affordability programs funding both broadband and voice line connections, and (3) state efforts to help address the additional need for funding.

### A. Congressional Appropriations vs. Collecting from Providers

Throughout the discussion, participants disagreed on the appropriate funding mechanisms for broadband affordability programs. Many participants believed that relying on appropriations alone for the funding required to close the digital divide would be insufficient. Among this group, Feld argued, that it is "very perilous to rely on appropriations." He added that despite the "enormous success" of the ACP, with numerous state governors "begging their members to re-up the program," the future of an appropriations-backed universal service

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<sup>25</sup> [Universal Service Fund](#), FCC, (last visited Apr. 30, 2024).

<sup>26</sup> Press Release, FCC, [FCC Launches Affordable Connectivity Program](#) (Dec. 31, 2021).

fund seems bleak. However, other participants emphasized that Congress bears the responsibility for deciding whether or not to renew funding for broadband affordability with the ACP. Alexander Minard, Vice President, NCTA – The Internet & Television Association, acknowledged Feld’s concerns surrounding congressional appropriations but noted that it was solely Congress’ job to make the determination on funding the ACP. He stated that even if “Congress can’t [or fails to] make the decision” on funding broadband affordability, they are the ones with the sole authority to make that decision.”

Due to a lack of additional funding from Congress, on February 5, 2024, the FCC announced that the ACP is expected to end by April 2024.<sup>27</sup> While there has been support to re-up and sustain the ACP, with a bipartisan group of lawmakers recently proposing a bill to fund the program through the end of 2024, no votes currently have been scheduled to move the bill forward, and it remains unclear if the program “will be prioritized in a divided Congress.”<sup>28</sup> Losing the ACP, would be a step backward in broadband affordability and could undermine efforts to build trust in historically under and unconnected communities. Beyond losing the positive momentum generated for deployment and access, forcing people to go through the fear, hassle, and risk of signing up for novel programs and then terminating the program after people begin to rely on it, will likely exacerbate the trust gap. Especially for people that already were hesitant to trust novel government programs like the ACP, ending a program that is only beginning to build trust could erect generational distrust and suspicion.

Several participants argued that funding obtained from service providers must still play a key role in funding affordability programs. Jud Cary, Assistant Attorney General, Colorado Attorney General’s Office, brought up the idea of also including edge providers, approaching the issue from the standpoint of “who gets benefit from the network, and who benefits the most financially.” Cary’s suggestion references Commissioner Brendan Carr’s 2021 proposal “requiring Big Tech to pay its fair share” into the Universal Service Fund.<sup>29</sup> Commissioner Carr outlined how “online streaming services provided by just five companies—Netflix, YouTube, Amazon Prime, Disney+ and Microsoft—account for a whopping 75 percent of all traffic on rural

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<sup>27</sup> [The FCC is Taking Steps to Wind Down the Affordable Connectivity Program](#), FCC, (Jan. 12, 2024).

<sup>28</sup> Kavish Harjai, [Biden’s Vow of Affordable Internet for All is Threatened by the Looming Expiration of Subsidies](#), AP News (Feb. 5, 2024).

<sup>29</sup> Statement from Comm. Carr, FCC, [Calls for Ending Big Tech’s Free Ride on the Internet](#) (May 24, 2021).

broadband networks.”<sup>30</sup> These companies do not currently directly contribute to the universal service programs administered by the FCC.

Nonetheless, Cary acknowledged the questions that would arise regarding the FCC’s potential lack of statutory authority, conceding that the edge providers were “not going take [this] sitting down” and would likely challenge the “authority of the FCC.”

Feld suggested another potential solution, “based on a report by Carol Matthey, the solution it seems [could be] to do what worked in the past, which is including broadband as a part of the fund.”<sup>31</sup> Matthey’s 2021 report notes that funding for the USF has been shrinking and proposes incorporating revenues from “broadband internet access services that are increasingly used by Americans today” which would “better reflect the value of broadband internet access service in today’s marketplace for both consumers and businesses.”<sup>32</sup>

## **B. Broadband and Voice Line: Hand in Hand**

In discussing broadband affordability programs, many participants advocated for funding access to both voice line and broadband affordability efforts as we consider the future of these networks.

Feld introduced the discussion, stating that one of the biggest current issues with communications affordability programs is the fact that “we make people choose between wireless or wireline subsidies.” Feld stated that the outdated belief in subsidizing just voice or broadband is a remnant of the time when there was only one choice. He asserted that solving the “real world problems today” starts by recognizing that this is no longer the case and that “mobile and fixed are complements, and we need to recognize that voice as a component is going to remain important.” In making his point about subsidizing both broadband and voice, Feld stated that for public safety workers, “the most common use scenario of when they’re reached through a Wi-Fi connection, tends to be kids who are under the care of an elderly relative, who is suffering a medical emergency, and their parent has the [household’s] lifeline cell phone with them for work.” As a result, for segments of the population, broadband and voice serve as critical complements.

Singh agreed with Feld and stated that “subsidizing only wireless or wireline has been a significant limiting factor in expanding digital access in California.” She referred to California’s state pilot program as

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<sup>30</sup> Id.

<sup>31</sup> In April 2024, the FCC reclassified broadband as a Title II service, potentially providing authority to be able to extend universal service programs to cover broadband services in the future.

<sup>32</sup> Carol Matthey, [FCC Must Reform USF Contributions Now: An Analysis of the Options](#) (2021).

a promising model for a post-ACP future where the state has looked at “combining both ACP with the state and Federal lifeline funds.”<sup>33</sup>

### C. Conditioning State-BEAD Grants

Several participants also suggested that states should consider placing additional conditions on BEAD grants when they are awarded to further broadband affordability goals. Singh indicated that addressing the funding issue starts with “reframing the way in which we think about these programs.” The BEAD program, being a grant program, “means that it is not an entitlement for service providers to access these funds.” As a result, Singh suggested that “in the absence of rate regulation on ISPs, these grant requirements” could be the most effective way to “make meaningful advances on affordability at the state level.” Reframing these state-BEAD subsidy programs around specific conditions, such as requiring providers to offer an affordable low-cost broadband option, could present a compelling and significant financial incentive. Narechania agreed with this idea, emphasizing that “the affordability challenges are real and significant,” and therefore, “we should look at the conditions and see if we need to make [them] more stringent.” He stated that “the duty to serve should be higher, especially when using public money to subsidize private infrastructure.”

Narechania also offered a few policy alternatives, including (1) “extending these affordability conditions from subsidized infrastructure to unsubsidized infrastructure,” (2) “considering[ing] franchise fee credits for affordability conditions, so if you have a more affordable rate, you get a credit against your franchise fee payment for the amount of that affordability subsidy,” and (3) imagining ACP as a program where providers have to participate, and “reimbursement is conditional on the quality of service provided.” Although he acknowledged these options were a bit unconventional, he is interested in policies that provide additional inducement for providers to continue building the network out.

Fellman expressing concern with the reality of implementing Narechania’s proposals, described the second proposal as “great theoretically” but not being practical “over the last 20 years” considering that most states have eliminated franchise fees. He stated that “most states have eliminated local franchising authority and the ability of local governments to charge for the use of the rights of way,”

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<sup>33</sup> See [Cal. LifeLine Program](#), (last visited Apr. 30, 2024) (“The California LifeLine Program (California LifeLine) is a state program that provides discounted home phone and cell phone services to eligible households.”).

therefore, “the vast majority of local governments in this country do not have franchise fee revenues that they could use for this purpose.”<sup>34</sup>

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<sup>34</sup> The FCC has limited local franchising authority in a series of orders interpreting Section 621 of the Communications Act (47 U.S.C. 541). See, e.g., Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984, 34 FCC Rcd. 6844 (2019). In 2021, the Sixth Circuit largely upheld the FCC’s pre-emptions. *City of Eugene v. FCC* 998 F.3d 701 (6th Cir. 2021).



## V. Conclusion

Carrying out Congress' transformative vision of achieving broadband-for-all hinges on more than infrastructure deployment. After infrastructure is in place and new networks are built, bridging the digital divide requires investment in programs and people who can reach under-connected and unconnected people. Funding equitable devices and digital skills training programs, providing resources to maintain networks, and continuing to fund vital broadband affordability programs is essential. It is only with continued effort and investment in these mechanisms that we can build an equitable broadband future.

Although additional progress is still required to maximize Congress' historic broadband investment through BEAD, the following findings and recommendations represent key principles for regulations in a post-BEAD world.

### *Findings*

- 1) **BEAD's deployment programs alone are insufficient to solve digital inequity.** Closing the digital divide requires providing people with digital skills training and equitable devices with sufficient technical specifications.
- 2) **Once broadband infrastructure is in place, additional upkeep costs for new networks will require resources dedicated to routine maintenance and cybersecurity services.** If these needs are not adequately met nationwide, a new digital divide could grow from inside of the network itself.
- 3) **Effectively closing the digital divide requires additional funding mechanisms beyond congressional appropriations.** Despite BEAD's unprecedented allocation of funds, many states will dedicate their entire budget towards deployment alone.

### *Recommendations*

- 1) **Partner with community anchor institutions.** Partnering with integral local community institutions like schools and libraries can help bridge, legitimize, and instill trust in new broadband programs.
- 2) **Invest in digital navigators.** Digital navigators can help create, build, and maintain trust within communities by reaching unconnected and under-connected people.

- 3) **Recognize, define, and deploy equitable devices.** People need access to truly equitable devices with sufficient and proficient technological specifications to perform tasks online effectively. Equitable devices should have the right technical and security specifications to allow people to connect safely and securely.
- 4) **Build on existing programs to lower barriers to access.** Broadband access programs should be grouped with existing government programs with a proven track record of trust and community goodwill to maximize ease of access and awareness.
- 5) **Re-up effective and in-demand programs like ACP.** Congress should promptly renew funding for the ACP, which is generally seen as a programmatic success. If renewed, ACP could also be instrumental in getting and keeping people online as the BEAD program is realized.
- 6) **Identify adequate and stable funding for broadband support programs.** Whether broadband support programs depend on congressional appropriations, funding from service providers, edge providers, or some combination, any funding mechanisms must be reliable and sustainable.
- 7) **Support access to both broadband and voice line connections.** Broadband and voice are complementary services that many Americans rely on. Forcing people to choose only one leaves a large segment of the population without access to vital services.
- 8) **Network maintenance and cybersecurity require ongoing investment.** Large and smaller ISPs alike will need to ensure that they allocate resources for network maintenance and the costs associated with securing the network on an ongoing basis.

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