

## **Issue Brief: ICLE's Principles for the Future of Broadband Infrastructure**

*Public investment in broadband infrastructure must not harm competition*

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## **TL;DR – Top Line Summaries of Principles**

- To move forward successfully on broadband infrastructure spending, Congress must take seriously the roles of both the government and the private sector in reaching the unserved.
- Current U.S. broadband infrastructure is robust, as demonstrated by the way it met the unprecedented surge in demand for bandwidth during the recent COVID-19 pandemic.
- To the extent it is necessary at all, public investment in broadband infrastructure should focus on providing internet access to those who don't have it, rather than subsidizing competition in areas that already do.
- Highly prescriptive mandates—like requiring a particular technology or requiring symmetrical speeds— will be costly and likely to skew infrastructure spending away from those in unserved areas.
- There may be very limited cases where municipal broadband is an effective and efficient solution to a complete absence of broadband infrastructure, but policymakers must narrowly tailor any such proposals to avoid displacing private investment or undermining competition.
- Consumer-directed subsidies should incentivize broadband buildout and, where necessary, guarantee the availability of minimum levels of service reasonably comparable to those in competitive markets.
- Firms that take government funding should be subject to reasonable obligations. Competitive markets should be subject to lighter-touch obligations.

## Introduction

The COVID-19 pandemic has highlighted the resilience of U.S. broadband infrastructure, the extent to which we rely on that infrastructure, and the geographies and communities where broadband build-out lags behind. As the extent and impact of the digital divide has been made clearer, there is renewed interest in the best ways to expand broadband access to better serve all Americans.

At ICLE, we would caution policymakers to eschew calls to address the digital divide simply by throwing vast sums of money at the problem. They should, instead, pursue a principled approach designed to encourage entry in new regions, while avoiding poorly managed subsidies and harmful price controls that would discourage investment and innovation by incumbent internet service providers (ISPs). Here is how to do that.

### I. The world as it is, and as we'd like it to be.

The challenge of connecting Americans to the internet requires overcoming two separate but related problems. The first is *deployment*: reaching *unserved* Americans in areas where no broadband infrastructure currently exists. The second is *adoption*: improving service and access in areas where broadband is available, but not enough consumers take advantage. Properly tailoring public policy solutions to address each of these challenges requires understanding the specific nature of the problems.

While reliable statistics on deployment can be difficult to obtain,<sup>1</sup> the Federal Communications Commission's ("FCC") latest Broadband Deployment Report finds that internet access with 25 Mbps download speed and 3 Mbps upload speed—considered a base-level definition of “broadband”—is available to approximately 95.6% of the U.S. population, while 91.7% of the population has access to 100/10 Mbps.<sup>2</sup> We note that gaps in current FCC data likely understate the number

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<sup>1</sup> Although not strictly a principle, we would also encourage finding ways to include funding for improved mapping and analysis for the purposes of adequately gauging broadband deployment and utilization.

<sup>2</sup> Fourteenth Broadband Deployment Report, *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 20-269, FCC 21-18 at 24 fig.4 (Jan. 19, 2021), <https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf>. Limitations to note— not everyone actually subscribes based on 477 data which is self-reported and resolves to a census block which has its own limitations, but in the end the estimates won't be far off from 96%. C.f. FCC Form 477 Local Telephone Competition and Broadband Reporting Instructions, OMB Control No. 3060-0816 available at <https://transition.fcc.gov/form477/477inst.pdf> [hereinafter “Form 477 Instructions”]; see also FCC 2020 Report, *supra*, note 3 at ¶ 99 (The number of fixed residential connections has increased from 91 million in 2015 to 105 million in 2019).

of Americans without access and we look forward to updated, granular maps informing future policy efforts.

Some insist the standards for new deployment and increased service should be “symmetrical” (i.e., the same upload and download) speeds of 100 Mbps or more, but these calls are misguided.<sup>3</sup> Not only would such standards deplete resources to deploy even minimally viable service to the 4.6% of the population currently without it, but such speeds—particularly 100 Mbps upload speeds—are simply unnecessary as “minimum” baselines. While 25/3 Mbps service is the currently defined minimum for broadband, the average fixed broadband connection in the United States actually delivers more than 170 Mbps download service—itsself a substantial increase since the beginning of the pandemic.<sup>4</sup> But even where faster service is available, very few users find it necessary.<sup>5</sup> Indeed, research consistently indicates the majority of users are adequately served by speeds well below 25/3 Mbps.<sup>6</sup>

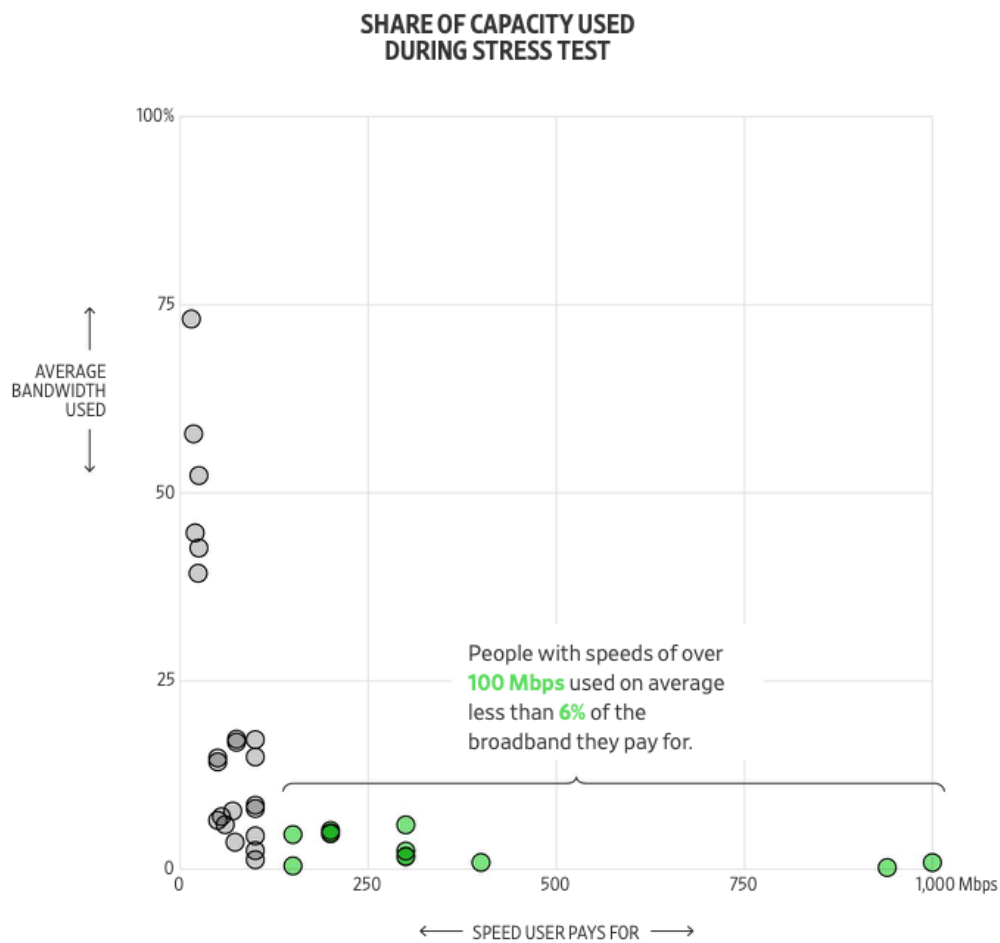
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<sup>3</sup> Note, the objection here is not necessarily to 100 Mbps as a download baseline, but on the requirement that the connection be *symmetrical*. The costs of deploying a 100/100 Mbps symmetrical network and much larger than, e.g., a 100/10 Mbps network, and those costs are not justified by the assumed benefits.

<sup>4</sup> Speedtest Global Index, (last accessed Feb. 9, 2021 at 9:15 PM), available at <https://www.speedtest.net/global-index/united-states#fixed>; see also Ookla, Tracking COVID-19’s Impact on Global Internet Performance, Speedtest, Mar. 13, 2020; updated Jul. 20, 2020), available at <https://www.speedtest.net/insights/blog/tracking-covid-19-impact-global-internet-performance/#/United%20States>.

<sup>5</sup> See FCC, 2020 Broadband Deployment Report, ¶ 14 (Jun. 8, 2020), available at <https://docs.fcc.gov/public/attachments/FCC-20-50A1.pdf> (“The Commission’s data shows that in the areas where gigabit service is available, only 4% of Americans living in those areas are in fact subscribing to it.”).

<sup>6</sup> See, e.g., Shalini Ramachandran, Thomas Gryta, Kara Depena, & Patrick Thomas, *The Truth About Faster Internet: It’s Not Worth It*, Wall St. J. (Aug. 20, 2019), <https://www.wsj.com/graphics/faster-internet-not-worth-it/>; Netflix, *Internet Connection Speed Recommendations* (last accessed Apr. 6, 2021), <https://help.netflix.com/en/node/306> (recommending 25 Mbps for 4K/Ultra HD); Google, *System Requirements* (last accessed Apr. 6, 2021), <https://support.google.com/youtube/answer/78358?hl=en> (recommending 20 Mbps for 4K); Amazon, *Issues with Live Streams on Prime Video* (last accessed Apr. 6, 2021), [https://www.primevideo.com/help/ref=atv\\_hp\\_nd\\_cnt?no-deId=GP57SKQ7CB5DRS6F](https://www.primevideo.com/help/ref=atv_hp_nd_cnt?no-deId=GP57SKQ7CB5DRS6F) (recommending minimum download speed of 5 Mbps for HD content).



Source: [Wall Street Journal](#)

Even at the peak of the pandemic-induced demand surge for broadband, with millions of newly remote workers and students suddenly needing multiple video conference streams, current upload and download bandwidth proved more than adequate.<sup>7</sup> There is simply no basis for the claim that

<sup>7</sup> See Broadband Internet Technical Advisory Group, *2020 Pandemic Network Performance*, at 24 (Apr. 5, 2021), [https://www.bitag.org/documents/bitag\\_report.pdf](https://www.bitag.org/documents/bitag_report.pdf) [BITAG Report] (“The Internet in the United States has performed and continues to perform well during the pandemic, in the face of extraordinary and unprecedented changes in demand and use. This strong performance covers all of the connected parts of the Internet, from user applications to content distribution infrastructure, all types of Internet access networks, and everything in between. This is likely due to a combination of the nature of the design of the Internet itself, open and interoperable standards, competent technical and operational execution, and significant long-term investments across the entire Internet ecosystem. Infrastructure operators and network operators also responded rapidly to the sudden increase in application and network usage by quickly

consumers need upload speeds that are “symmetrical” to download speeds; consumers are much likelier to need higher download speeds for typical uses.<sup>8</sup>

While conceding that symmetrical 100 Mbps speeds are beyond what most consumers currently require, some nonetheless claim that such massive increases are needed to “future-proof” the nation’s broadband infrastructure.<sup>9</sup> But while usage demands may, of course, eventually exceed what today’s high-speed broadband networks offer, we do not know nearly enough about when that might occur—or what other technologies will be available when it does—to justify massive investments, much of it certain to be malinvestment, solely out of an abundance of caution. And among the costs we must consider is the lost opportunity to deploy sufficient broadband service *today* to the 4.6% of Americans who lack it.<sup>10</sup>

Fortunately, this is not the first time we have encountered such a challenge. Much of the 20th century was spent trying to achieve similar ends with universal telephone service and access to multi-channel video systems. We can draw from those experiences, and from the Telecommunications Act<sup>11</sup> and Cable Act,<sup>12</sup> the wisdom of a “carrot-and-stick” approach. To offer entrants a clear path to

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adding everything from server capacity to interconnection capacity, and last mile access network capacity at rates far beyond pre-pandemic levels.”). See also Doug Brake, *Lessons From the Pandemic: Broadband Policy After COVID-19*, ITIF, available at <https://bit.ly/3jGJseT>.

<sup>8</sup> See BITAG Report, *supra* note 7, at 17 (“With the increase in upstream bandwidth usage, the downstream-to-upstream traffic ratio declined from 20:1 to 16:1 and was still ahead of where it was in 2019 according to a CommScope technical report. OpenVault reported that even after the stay-at-home orders the ratio of downstream-to-upstream traffic was still asymmetrical with the average daily consumption during 9 am to 5 pm of 6.35 GB and the average upstream usage of 0.39 GB. This is consistent with the traffic growth reported by the NCTA, ACA, and many of the ISPs. In absolute numbers, the volume of downstream traffic grew at a greater rate than the upstream traffic due to fact that on average video streaming uses anywhere from 2 to 10x more downstream bandwidth than the average upstream bandwidth used by video conferencing. Even with the growth in the use of upstream intensive applications such as video conferencing, the downstream-to-upstream traffic ratio is still highly asymmetrical and illustrates that asymmetrical broadband fulfils the requirements for most residential broadband users”).

For livestreaming video, users still need far less upload speed than what is commonly advertised for download speeds. See, e.g., Restream, *What is a Good Upload Speed for Streaming?* (Jun. 25, 2020), <https://restream.io/blog/what-is-a-good-upload-speed-for-streaming/> (recommending upload speed of 6 to 7 Mbps for Facebook Live, 5.6 and 7.4 Mbps for Twitch, and 24 Mbps to 61.5 Mbps for YouTube at the highest level stream and frames per second available on each platform, respectively); Boxcast, *What Upload Speed Do I Need to Live Stream?* (May 8, 2019), <https://www.boxcast.com/blog/what-upload-speed-do-i-need-to-stream> (recommended upload speed of 13 Mbps for 1080p30, with a minimum of 2.75 Mbps).

<sup>9</sup> See, e.g., Susan Crawford, *FIBER: THE COMING TECH REVOLUTION—AND WHY AMERICA MIGHT MISS IT* (2018).

<sup>10</sup> For example, if 100 Mbps symmetrical speed requirements were imposed on broadband providers, networks—even where consumers are currently receiving 1 Gbps download service—would need to be reengineered or overbuilt. This would not only be a waste of resources, it would further push the unconnected further down the list of priorities as firms are forced to upgrade all of their infrastructure.

<sup>11</sup> Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

<sup>12</sup> Cable Television Consumer Protection and Competition Act of 1992, Pub. L. No. 102-385, 106 Stat. 1460 (1992).

new markets, we must employ the “stick” of penalties for incumbents who interfere with competitive entry, while also offering incumbents the “carrot” of subsidies where such are needed to overcome barriers to entry. This “carrot-and-stick” approach may serve as a baseline framework for a modern broadband infrastructure program.

## **II. Create a cooperative pathway for entry and build-out.**

The overarching purposes of any broadband infrastructure program should be to ensure widespread build-out (i.e., closing the digital divide), to adopt policies that ensure competition where it is possible, and to stimulate consumer demand that facilitates competitive entry where it is not.

In some respects, these goals are in tension: incumbents justifiably will resist government-subsidized competition—for example, via a municipal network—and competitive entry is unlikely where incumbents are backed by government subsidies or operated by tax-funded municipal agents. Creating a pathway for entry into unserved markets therefore requires delicately balancing incentives that facilitate entry in the short run but that, in the long run, incumbents will prefer over a regulated market.

Both the Cable Act and the Telecommunications Act employ competitive and regulatory frameworks that offer useful carrots and sticks, and that can serve as something of a model. Firms that accept infrastructure funding to build out rural broadband should be subject to reasonable obligations governing how they use that funding. For instance, they could be required to offer a basic tier of broadband service at a price that is reasonably comparable to that offered in urban areas, where private deployment provides a good standard for competitive pricing. Such rules are needed to ensure that government-supported broadband is deployed in ways that further, rather than undermine, basic deployment and access policies.

But those obligations should be tailored to a specific market’s level of competitiveness. As firms meet their obligations and a market becomes more competitive, such obligations should be phased out. They also should not apply to firms that do not accept infrastructure funding in a given market. Instead, competitive markets should be subject to a different, lighter-touch obligations.

## **III. Adopt a technology-neutral approach.**

It is critical that any broadband infrastructure spending program be technology neutral. Such programs could specify certain reasonable minimum performance and other requirements, but dedicating funds to a particular vision of broadband infrastructure will run into inevitable and avoidable

limitations. Networks should be designed by engineers capable of evaluating technical capabilities and limitations to achieve optimal results, given a program's parameters.

Requirements for specific technologies that deliver specific mandated speeds will tend to skew investment away from harder-to-serve areas, where local conditions may require more flexibility. For example, requiring symmetrical speeds delivered over fiber will deter investment in wireless, fixed-wireless, and satellite solutions that can provide sufficient service in the near- and mid-term.

Many use cases in rural areas require unique mixtures of technologies. Rural farmers typically need to cover hundreds or thousands of square acres in order to reach not just their homes, but accessory buildings and a wide variety of farm equipment. Running a single broadband connection using a predetermined technology may or may not result in the most cost-effective and efficient solution for a given rural location. The focus should be on allowing consumers to select and deploy locally appropriate solutions.

Technology-specific mandates, moreover, have been shown by the recent pandemic to be wholly unnecessary.<sup>13</sup> Asymmetric broadband networks delivered over a range of technologies have performed beyond expectations. Unless there emerges new evidence to suggest a flexible-use approach to broadband networks is inadvisable, U.S. policy should continue to encourage diverse approaches to broadband infrastructure deployment based on relevant local conditions.

To the extent policymakers want to ensure core network infrastructure can support future needs, technology-specific appropriations should be limited to requiring conduit or dark fiber to be installed along roads supported by broader infrastructure spending. Such “dig once” policies—like that proposed by Reps. Anna Eshoo (D-Calif.) and David McKinley (R-W.Va.) in the Nationwide Dig Once Act of 2020,<sup>14</sup> and included in the 2020 Moving Forward Transportation Act<sup>15</sup>—are a cost-effective way to enable future expansion of broadband capabilities without making wasteful, excessive, and distortionary expenditures.

#### **IV. Fund spending through general revenue and connectivity vouchers.**

The Universal Service Fund mechanism—a fee on telephone service used to support build-out of both telephone and internet service—is an ineffective anachronism from a bygone era of analog telephony. Among its myriad problems is that there simply is not enough revenue left in traditional

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<sup>13</sup> See BITAG Report, *supra* note 7.

<sup>14</sup> H.R. 7205 - Nationwide Dig Once Act of 2020, available at <https://www.congress.gov/bill/116th-congress/house-bill/7205/text>.

<sup>15</sup> H.R.2 - Moving Forward Act of 2020, available at <https://www.congress.gov/bill/116th-congress/house-bill/2>.



telephone service to finance the capital costs needed to close the digital divide. Closing the digital divide requires modernizing not only our infrastructure but also the funding mechanisms that support it. Congress should instead fund any significant investment through general revenue.

There are also questions surrounding how to allocate funding. Past efforts to close the digital divide have focused on supply-side cost estimates, allocating funds to whichever firms promise to connect the most consumers at the lowest upfront capital investment. A better approach would be to rely on *demand-side* stimulus: connectivity vouchers. Under this approach, Congress could provide qualifying households with vouchers to purchase broadband service, similar to recent proposals for temporary vouchers during the pandemic.<sup>16</sup> With such an approach, consumers would be able to both get and stay connected and to exercise judgment about what type of connectivity best suits their needs.

Building on the recently created Emergency Broadband Connectivity Fund (“EBB”),<sup>17</sup> a modernized Lifeline program, for example, could be reimagined as a general stipend to purchase telecommunications and internet services. Lifeline currently imposes numerous regulatory hurdles that make it costly to administer. Remodeling the program to be more like the U.S. Department of Agriculture’s Supplemental Nutrition Assistance Program would better empower consumers, as well as stimulate the demand needed to induce ISPs to invest in new build-out and upgrades in the areas they are most needed.

## **V. Be sensible about municipal broadband.**

The current debate over municipal broadband is characterized by hyperbolic claims; in most places, it would be neither a panacea nor a complete death sentence for private broadband investment. Municipal broadband is a highly subsidized service, often relying on revenues from other parts of a local government’s budget to support it. As such, it can be a regressive, hidden tax, placing the burden to subsidize high-consumption users on lower-consumption users and non-users. It is also technically demanding and costly to run; building infrastructure is only half the battle, and many

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<sup>16</sup> See Mignon Clyburn & Robert McDowell, *Congress Can Help America Stay Connected During the COVID Crisis*, MORNING CONSULT (May 15, 2020), <https://morningconsult.com/opinions/congress-can-help-america-stay-connected-during-the-covid-crisis/>.

<sup>17</sup> See FCC, *Emergency Broadband Benefit Program* (Apr. 23, 2021), <https://www.fcc.gov/emergency-broadband-benefit-program>.

local governments are likely ill-suited to operating such networks. There have been some municipal broadband success stories, but also a great many failures.<sup>18</sup>

A limited municipal broadband option may make sense in areas with literally zero broadband providers. If the municipal provider focuses on the costly local backbone by laying conduit and wiring anchor institutions, subsequent public-private partnerships could emerge that allow the municipality to manage a much more limited portion of the network. Meanwhile, private providers could assume responsibility to deploy and maintain last-mile connections, as well as provide the often-burdensome customer-service functions.

Where a municipal provider intends to provision service directly to customers, it should focus on a basic tier of service. The long-term goal should be to encourage private providers with expertise in broadband investment and management to enter the community and more efficiently and effectively serve customers.

Relatedly, where municipal broadband is encouraged, it is crucial to ensure that service provision does not exacerbate the digital divide by curtailing private investment in exurban and rural areas outside the municipal service area by creating a broadband “donut hole” problem.<sup>19</sup>

## **VI. Remove existing regulatory barriers.**

While some mechanisms to encourage broadband deployment are contentious and complex, others are not. Outdated or demonstrably ineffectual regulations that needlessly drive up the costs of deployment should be removed or reformed. Two such barriers stand above the rest:

- “Eligible Telecommunications Carrier” (ETC) requirements<sup>20</sup> should be eliminated. Broadband subsidy programs for “high-cost” rural deployment currently require recipients to obtain ETC status from a relevant state regulator, which imposes exorbitant and unnecessary costs that may deter some potential providers from even seeking USF funds.<sup>21</sup> Last year’s

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<sup>18</sup> See T. Randolph Beard, George S. Ford, Lawrence J. Spiwak, & Michael Stern, *The Law and Economics of Municipal Broadband*, 73 FED. COMM’NS L.J. 1 (2020), available at [http://www.fclj.org/wp-content/uploads/2021/01/73.1.1\\_Municipal-Broadband-Article-Final-Proof.pdf](http://www.fclj.org/wp-content/uploads/2021/01/73.1.1_Municipal-Broadband-Article-Final-Proof.pdf).

<sup>19</sup> See Ben Sperry, *Doublespeak in the Debate About Rural Broadband Buildout*, TRUTH ON THE MARKET (Aug. 6, 2020), <https://truthonthemarket.com/2020/08/06/doublespeak-in-the-debate-about-rural-broadband-buildout/>.

<sup>20</sup> See 47 CFR § 54.201.

<sup>21</sup> See Michael O’Rielly, *Removing Unnecessary Barriers and Maximizing Competition in USF Auctions*, FCC BLOG (Jun. 18, 2020), <https://www.fcc.gov/news-events/blog/2020/06/18/removing-unnecessary-barriers-and-maximizing-competition-usfauctions>.

Expanding Opportunities for Broadband Deployment Act<sup>22</sup>—sponsored in the 116th Congress by Rep. G.K. Butterfield (D-N.C.)—would have eliminated this requirement, and any broadband infrastructure programs should do likewise. The need for so-called “providers of last resort” is another anachronism of the analog telephone age. The FCC is perfectly capable of providing necessary oversight.<sup>23</sup> The benefit for rural consumers would be the timelier arrival of service-improving competition in their areas. This would work in harmony with streamlined user-subsidy programs to make it easier for more telecommunications providers to reach subsidized consumers.

- Certain local deployment requirements should be preempted. Pole attachment requirements, for example, can impede build-out by imposing disproportionate costs on providers. Relatedly, private and municipal owners of poles often try to shift replacement costs onto attachers, a practice that should be limited to a fair allocation. The pace at which broadband infrastructure is deployed is a function of investment. Congress should act to ensure that subnational jurisdictions do not unduly burden access to, or approval of, projects designed to promote broadband deployment.

## Conclusion

The goal of connecting those unserved by broadband is well-founded. A connected populace stands a better chance of being better-educated and productive. But it is not enough merely to desire to bridge the digital divide: sound policy must follow from sound investment principles.

Public efforts to close the digital divide require targeted spending that addresses gaps in access, while preserving the robust private investment ecosystem that has made the U.S. a broadband success story. Moreover, such efforts must refrain from prescribing the use of certain technologies, which could prove more costly and distort deployment in ways that further disadvantages the unserved.

For example, if a 100 Mbps symmetric connection was deemed the minimum standard of broadband, a large swath of well-connected households would suddenly be counted among the “unserved.” This would create incentives to upgrade connections to households that *already* have adequate

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<sup>22</sup> H.R.7160 - Expanding Opportunities for Broadband Deployment Act, available at <https://www.congress.gov/bill/116th-congress/house-bill/7160/text>.

<sup>23</sup> See O’Rielly, *supra* note 21 (“[T]he Commission already imposes its own legal, technical, and financial requirements on auction winners, not to mention extensive rules for interconnected VoIP providers outside of the auction context on everything from rural call completion to 9-1-1 obligations, and ETC status doesn’t seem to confer any additional necessary protections. Moreover, as we know from [the Connect America Fund Phase II], ETC status certainly isn’t a guarantee of providers’ ability to meet service milestones. Finally, most ironically, many states have run their own efficient and effective broadband funding programs without requiring recipients to become ETCs, increasing participation without any problematic consequences.”).

broadband, pushing the hard-to-reach rural and other unserved locations further toward the back of the line. A similar scenario is likely were fiber to be deemed the only acceptable form of broadband deployment.

Similarly, while municipal broadband may make sense in a very limited number of cases where no providers are available, it would be inefficient and distortionary to expend government resources to develop municipal providers in most cases where sufficient private providers already exist. In those cases where municipal broadband is a good fit, it should be designed to avoid displacing private investment.

Finally, where subsidies are needed, they should be used to directly stimulate consumer demand. Subsidies to providers run the risk of introducing price and deployment obligations that can lead both to inefficient outcomes and to insufficient deployment. A consumer subsidy program modeled on existing programs like SNAP could allow private providers to overcome the initial investment hurdles presented by hard-to-reach locations.