BROADBAND FOR AMERICA **NOW**

by JONATHAN SALLET

Published by the BENTON INSTITUTE
for BROADBAND & SOCIETY

BROADBAND FOR AMERICA **NOW**

A Benton Institute for Broadband & Society publication
written by Benton Senior Fellow **Jonathan Sallet**

Please include the following attribution when citing this report:
Sallet, Jonathan. October 2020. Broadband for America Now. Evanston, IL: Benton Institute for Broadband & Society.
https://www.benton.org/publications/broadband-america-now

BENTON
INSTITUTE
for BROADBAND
& SOCIETY

Broadband Delivers Opportunities
and Strengthens Communities

727 Chicago Ave., Evanston, IL 60202
www.benton.org

Contents

Foreword 5

I Broadband for America Now 6

II The COVID-19 Crisis Demonstrates That America Needs High-Performance Broadband Now 8

III The COVID-19 Crisis Reveals a Digital Chasm That Will Remain Even After the Current Health Crisis Passes 9

Work 9

Learning 10

Health Care 11

Government Services 13

IV What We Have Learned in This Crisis: The Building Blocks of Better Broadband Policy 14

A. Digital Equity 14

A Changed Future 14

The Impact on Pre-Existing Challenges 15

New Learning and New Policy 16

Key Recommendations for Digital Equity: 17

1. Make Broadband Much More Affordable 17

2. Delivering Digital Skills to Empower Participation and Recover Jobs 18

B. High-Performance Broadband Network Deployment 19

A Changed Future 19

The Impact on Pre-Existing Challenges 20

New Learning and New Policy 20

Key Recommendations for Deployment 21

1. Pursue a Unified Broadband Infrastructure Agenda 21

2. Deploy Scalable Broadband Networks 22

3. Support Tribal, State, and Local Efforts 23

C. Competition in Local Broadband Markets 24

A Changed Future 24

The Impact on Pre-Existing Challenges 25

New Learning and New Policy 26

Key Recommendations for Competition: 27

1. Encourage New, Competitive Entrants and Local Experiments in Private-Public Collaboration 28

2. Gather Pricing Data and Other Information Necessary to Promote and Assess Competition 28

3. Expand Competition for Residents of Multi-Tenant Environments 29

D. Community Anchor Institutions 30
A Changed Future 30
The Impact on Pre-Existing Challenges 30
New Learning and New Policy 30
Key Recommendations for Community Anchor Institutions: 31
1. Ensure That Everyone Can Access Community Anchor Institution Broadband 32
2. Ensure That Community Anchor Institutions Have the Bandwidth Needed to Meet Increased Demand at Competitive Prices 32
3. Use Community Anchor Institutions as a Launching Pad for Community-Based Broadband Access and Competition 33

V Moving Forward Together: Supporting State, Tribal, and Local Broadband Leadership 34

VI Conclusion 37

About the Author 38

Acknowledgements 39

Endnotes 40

Foreword

Everyone in America should be able to use High-Performance Broadband.

For all that has changed since the Benton Institute released *Broadband for America's Future: A Vision for the 2020s,* this goal remains paramount.

In October 2019, we said that connecting our entire nation through High-Performance Broadband would bring remarkable economic, social, cultural, and personal benefits. We said that open, affordable, robust broadband is the key to all of us reaching for—and achieving—the American Dream.

We did not know that the world would change, permanently, with the spread of COVID-19, nor how poignantly our digital divides would be revealed—and deepened.

We did not know that millions would lose their jobs, unemployment would linger, economic growth would nosedive, and many businesses would face retrenchment if not extinction.

We did not know that students of all ages would be forced to connect with teachers and classmates via teleconferencing from home or, if they were on the wrong side of the digital divide, from library or fast-food parking lots.

We did not know that telehealth would become a pressing national need—not just in the treatment of COVID-19, but as a way to provide safe access to health care generally.

We did not know that people would be blocked from government services not because of closed offices, but because of insufficient bandwidth.

Now we know that universal and affordable High-Performance Broadband is more than a goal—it is a necessity.

We ask you now to do more than just join the conversation; we ask that you lend your voice in demanding that policymakers ensure everyone has affordable access to, and can use, the essential service of our time.

The strength of High-Performance Broadband is that it will—if fully accessible to all in America—help solve some of our most critical challenges and help people overcome key barriers regardless of where they live and who they are.

Last year we asked you to imagine each community enabled to identify and build on its strengths and employ technology accordingly.

This year we say we can't wait any longer to make it happen. We must start addressing at-home internet access not as a troubling issue, but as a civil rights emergency in need of a comprehensive solution. We ask for *Broadband for America Now* since our current crises demand it.

Adrianne B. Furniss, *Executive Director*
Benton Institute for Broadband & Society

Broadband for America **Now**

Think back just a year. In October 2019, the Benton Institute for Broadband & Society issued *Broadband for America's Future: A Vision for the 2020s.*[1] The agenda was comprehensive, constructed upon achievements in communities and insights from experts across the nation. The report outlined the key building blocks of broadband policy—deployment, competition, community anchor institutions, and digital equity (including affordability and adoption). The agenda called for everyone to be able to use High-Performance Broadband by the end of the decade.

When we released the report last fall, we promised a refresh in 2020 because we knew there were issues that required additional development and more success stories that needed to be told.

What we did not know was that the world would be changed permanently by COVID-19, creating health, economic, and social crises, resulting in the worst economic setback in America in decades and unveiling a connectivity crisis that spans rural and urban places, threatening to create an even more divided America.

Before he passed, Congressman John Lewis told us, "Access to the Internet … is the civil rights issue of the 21st century."[2] There are almost three times as many people without broadband in urban/metro places than in rural places,[3] and lack of broadband adoption is greater among Black, Hispanic, and lower-income households.[4] Federal Communications Commissioner Geoffrey Starks, joined by civil rights leaders, explained, "Our historic failure to close the digital divide has had a devastating effect on communities of color in both rural and urban America."

America has suffered, but we have also awoken to critical truths that we have known but failed to fully act upon.

We awoke to the importance of broadband as a tool for helping people navigate societal challenges, in this case COVID-19. No longer can it be denied that everyone needs High-Performance Broadband at home so they can lead healthy, productive lives. The communities most disparately impacted by COVID-19 were among those most likely to lack the requisite connectivity to safely shelter in place.

We awoke to the importance of broadband as a tool for helping our society to be more equitable, inclusive, and sustainable. We have been reminded anew that growing income inequality is a threat to American prosperity, to individual economic opportunity, and to democracy itself.

Indeed, the pandemic has exacerbated the long-term trend toward greater and greater income inequality that we highlighted in *Broadband for America's Future*[5] as disproportionate harm has been visited on low-income workers, communities of color, and young people. In the summer of 2020, some were predicting a "K" shaped recovery[6]—good news for people who hold financial assets like stocks and bonds, bad news for blue-collar workers and owners of small businesses. In a world in which the impact of COVID has disproportionately stricken people of color and frontline workers, the present crises threaten to further limit individual opportunity.

Talent that goes to waste is talent that cannot rebuild our nation. Society as a whole loses when disconnected communities are unable to get online. Structural racism robs people of dignity while imposing multiple harms on the ability of people of color to experience economic mobility and access needed health care and education. In early October 2020, Jeb Bush called for national investment to bring broadband to every area of America, ensuring the ability to reach rural areas and people who cannot afford broadband. This would create a world in which "everyone would rise up as we gain access to the full spectrum of talents in our population."[7]

Moving online for school, work, and health care is increasing the divide between the connected and the un- or under-connected in an unprecedented way, leaving millions at risk of falling even further behind.

We have been starkly reminded, as well, to threats to our democracy. To speak and be heard, to engage in civic discourse, to participate in the political and electoral process all increasingly require broadband. Thus, lack of connectivity harms democracy by further disenfranchising our nation's most vulnerable, marginalized populations, making it more challenging to register to vote, request an absentee ballot,[8] and participate fully in a more inclusive, democratic future. Access to the justice system is also important for a healthy democratic society. Sadly, this may also become even more timely as evictions start to rise.[9]

High-Performance Broadband available to everyone in America is an important ingredient for a more just America, a healthier society, and an economy that offers true opportunity for everyone.

II

The COVID-19 Crisis Demonstrates That America Needs High-Performance Broadband Now

As we near the end of 2020, we need to inject a new sense of urgency into implementing equitable broadband policies.

Even after the present health crisis passes, the world is not going back to the way it was. Old views (which is to say circa 2019)—about how broadband connections are used and who needs to be connected—should no longer limit our vision going forward.

That is why we concentrate first and foremost on the manner in which residential broadband usage has changed and is changing—not just during this health crisis but after it ends. We should construct broadband policy based on the ways people use broadband, and that has changed drastically.

Thus, for each of our areas of emphasis, new ambitions have grown out of past analysis:

- **Digital Equity:** Making affordable High-Performance Broadband available to low-income, unserved, and underserved populations (Black, brown, and rural)—accompanied by training in digital skills that empowers users to make the most of their connections—will contribute to a more equitable society.
- **Deployment:** In a world in which the talents of all people matter, broadband infrastructure investment is a necessary economic strategy. There is no reason to saddle any rural and urban area with second-rate broadband.
- **Competition:** Americans should not have to pay more (in dollars, in sacrificed quality, or in delayed innovation) merely because public policy has failed to promote competition effectively.
- **Community Anchor Institutions:** Using broadband to fulfill their missions, these institutions should be able to reach users wherever they are—from dining room tables to spare bedrooms to parking lots—and serve as launching pads for communitywide access.

This essay offers our key recommendations by describing the likely pattern of changing broadband usage once the present crisis recedes, and by emphasizing how federal, state, tribal, and local governments should work together to implement a comprehensive broadband agenda.

III

The COVID-19 Crisis Reveals a Digital Chasm That Will Remain Even After the Current Health Crisis Passes

We're not going back to broadband circa 2019. Every aspect of life is going to have a significant virtual component from here on.

That's the lesson we've learned in 2020 about the use of broadband networks by people in their homes. Residential broadband access has become crucial to work and learn, to schedule and attend remote visits with a doctor, and to remain connected with family and friends—with multiple members of the household online at the same time. And Americans recognize this need: A Pew research study found that 87% of Americans viewed the internet as essential or important during the pandemic.[10]

As Mike Lynch, the cable and broadband officer for the City of Boston, said earlier this year, "The work is not done. Everybody discovered over the last six months that connectivity is a must-have, and people who may not have been that interested or didn't see the immediate need are now pressed into understanding that we have a need for connectivity."[11]

We are living in a world where the pandemic required us to move our lives online. Seemingly overnight, we had to learn how to do activities online that were previously performed overwhelmingly in person. With these new skills and a new environment in which participation in society is ever more reliant on broadband, change will certainly come to all manner of pursuits.

This new dynamic translates into greater need, but also greater opportunity. Having been forced to use broadband more than in the past, people have learned how to videoconference and, in general, be better at what they do online.[12] That experience, and the continuing challenges of a post-crisis world, will bend the curve of broadband usage upward. Greater demand for services over broadband networks offers the prospect of better supply of broadband-enabled services, which will, in turn, attract greater demand. That's what positive feedback loops create: a dynamic system of mutually reinforcing improvement.

To better understand the importance of broadband going forward, we consider work, learning, health care, and the delivery of government services. But we remember that broadband is not just about these activities: True social justice requires that public policy empower lasting change so everyone may fully participate in our society.

Work

Nick Bloom, an economist at Stanford, explains the changes in work from home this way: "Before COVID, five percent of working days were spent at home. During the pandemic, this increased eightfold to 40

percent a day. And post-pandemic, the number will likely drop to 20 percent."[13] Thus we can expect greater usage of remote work for those who can (about 40 percent of employees, by one calculation).[14] Bloom offers three key reasons for this change. First, those people who can telecommute will be reluctant to be in crowded areas, elevators, and public transportation. Second, employers and employees have invested time and money into working from home—creating workspaces and learning how to navigate various videoconferencing technologies. Third, the notion that people can't work effectively from home has largely dissipated.[15]

Unfortunately, not all people will enjoy the same opportunities to work from home, and not all physical communities will benefit from the work-from-home boom. Already, remote work is concentrated among high-income earners[16] in urban or suburban areas.[17] And racial disparities in other aspects of society also arise with telework: Non-Hispanic white and Asian workers are more likely to telework than Black and Hispanic workers.[18]


Yosef Getachew

Digital skills have become critical for the entire workforce, and jobs that have traditionally not relied on technology may add new technological demands. A 2017 Brookings Institution report found that "digital skills have now become a prerequisite for basic economic inclusion, including for people without a bachelor's degree," as jobs have rapidly been transformed by the introduction of digital tools and information technology.[19] Yosef Getachew, director of the Media & Democracy Program at Common Cause, emphasizes the new use of information technology in jobs done by drivers, factory workers, mechanics, and service providers.[20]

And, as discussed herein, many new jobs require technology skills: About a third of the jobs in the United States are "middle-skill" jobs, which require some postsecondary education, such as an associate's degree or a credential from a community college.[21] As John Horrigan has emphasized, eight in ten middle-skill jobs now require digital skills, and the need for digital skills is only growing.[22]

Learning

Students have long been suffering the consequences of the digital divide both in the classroom and at home. As of last year, only about a third of K-12 schools met the goal the Federal Communications Commission established for 2018 of having 1 Mbps per student and staff (1 Gbps per 1,000 students and staff).[23] About 30 percent of public school students lack adequate broadband or devices to learn from home,[24] and this "homework gap" is more pronounced for Black, Hispanic, and lower-income households.[25] The Joint Center for Political and Economic Studies has emphasized that "30.6% of Black households with one or more children age 17 or younger lack high-speed home internet (over 3.25 million Black children live in these households)."[26]

These differences have far-reaching effects. In March 2020, researchers from the Quello Center at Michigan State University explained that "[d]isparities related to home Internet access go well beyond student experiences with their homework."[27] As the report emphasizes, the difference between students with limited or no home internet access and those who do have such access is big—it's equivalent to the gap in digital skills between eighth- and eleventh-grade students. Students with more digital skills score better on standardized tests like the SAT and are more likely to enter a technology profession.[28] Those researchers have explained, "[c]ontrary to some expectations that students can get by through the use of a cell phone as a substitute for high-speed home internet access,

those who rely on a cell phone only for internet access outside of school experience gaps in performance as large as, or larger than, those with no home internet," as they rely on smaller screens, slower devices and less robust subscription plans.[29] As we discuss here, the current FCC definition of broadband (25/3 Mbps) constitutes inadequate service for households that are sending simultaneous video streams to support distance learning, teleworking, and other needs such as remote health care.

When the pandemic struck in March 2020, school closures impacted 55 million school children and 14 million college students in the United States.[30] Teachers and professors have moved lessons and assignments online in an attempt to continue instruction, but their effectiveness is limited by their students' level of access to the internet and related technologies. About 90 percent of the 51,000 students in the predominantly Black Detroit Public Schools Community District couldn't participate in online learning initially because they did not have access to the internet or technology at home.[31]

In most American cities, schools are still closed at the start of the fall 2020 semester and learning is happening entirely online. School-based connectivity programs, such as the distribution of hotspots to students who need them, are a short-term and insufficient solution.

Higher education, too, will be changed by the mass migration to virtual learning even after the COVID-19 crisis passes. While some programs in higher education require students' physical presence on campus or in the classroom, others can be conducted entirely virtually. Many colleges and universities are starting the year online,[32] and some, such as Harvard's Graduate School of Education, have gone online for the entire 2020-21 school year.[33] Dr. Douglas Harris of Tulane University said that high-quality online degree programs may allow a greater range of students to access the opportunity—for instance, a nontraditional student without the ability to access high-resourced, high-quality schools may be able to enroll in a program usually restricted to students who live nearby.[34]

The demand for online education, both at the K-12 and higher education levels, will be greater after the current crisis than before. Already, enrollment at Arizona State University, for example, is up 7.6 percent over last year, and more than 53,000 students are entirely online—ASU's largest online enrollment to date.[35] When schools across the country closed, students, families, and school professionals had to adapt rapidly to distance learning. Schools employed technologies like Google Classroom and Zoom that became essential for many teachers and professors to manage virtual learning. The positive feedback loop we have talked about may come into play here as well. As students begin in the future to return to classrooms, teachers and professors will continue to use the technologies they adopted to enhance distance learning, recognizing that digital technologies can be powerful complements to in-person learning.

Health care

Like remote work, telehealth was slow to grow before the pandemic, largely stifled by complex state and federal regulations.[36] Telehealth has long been "on the brink of greater use and acceptance," but changes in regulations at the outset of the pandemic have allowed the practice to become much more common as

patients attempt to avoid busy, potentially dangerous medical facilities[37] and as Congress has appropriated emergency stimulus funds to support telehealth.[38]

Indeed, by one calculation, doctors and other medical professionals have been "seeing 50 to 175 times the number of patients via telehealth than they did before the pandemic."[39] More than half of physicians now say they are using telehealth to treat patients, compared with only 18 percent in 2018.[40] Health care systems have done "a decade's worth of work" to launch telehealth programs, and patients are enjoying a new "consumerization" of health care as virtual services increase their options for care.[41]

But lack of affordable broadband connections, technology, and digital skills continues to impede broader use. The University of Alabama at Birmingham has conducted 200,000 telehealth visits since the pandemic began, but nearly 40 percent took place over audio instead of over video. Dr. Eric Wallace, the University of Alabama at Birmingham's medical director of telehealth, explains that the issue is not just broadband access in rural areas; he also points to affordability issues, a lack of technology, and a lack of digital literacy among patients.[42]

Greater experience with telemedicine and revamped payment processes may sustain the new demand for remote care and lead to new roles for health care locations once the crisis passes. When medical appointments are available from home and patients can easily send data about their health status via their home internet connection, the role of health care locations—clinics, pharmacies, hospitals—may shift. Some experts are even rethinking the role of hospitals as "hubs" for care. Schools and public housing, for instance, may be better places to integrate clinical care with social services, housing, and other nonclinical services.[43] Dr. Michael Boland, IT director of the Wilmer Eye Institute at Johns Hopkins, says that the pandemic has necessitated creating an "ecosystem of distributed care" so that patients are not densely packed into one location.[44] For instance, patients may receive part of their care at a testing facility and part of their care through video at home. Broadband connections are therefore crucial not only for the home and the hospital, then, but for any location where patients receive care.

The trend toward telehealth may incentivize the use of at-home technology to monitor patient health.[45] For instance, glaucoma patients can already check their eye pressure at home and send the data back to a doctor.[46] Moving forward, patients may regularly send their vital signs to their physician and only visit a doctor's office or hospital for an in-depth exam or medical procedure.[47] Telehealth allows patients in a small town or rural community to receive treatment from a specialist in their condition, an opportunity that previously would have been impossible or required extensive travel.[48] Of course, sending data from an at-home diagnostic technology or participating in a videoconference with a specialist requires a broadband connection at home and, in particular, high upload speeds, as well as the digital skills necessary to use telehealth applications and devices, an issue of digital equity that we address here.

As the use of broadband in health care grows, health care policy becomes an important tool for increasing broadband adoption following on the crises-driven changes to expand Medicare reimbursement for telehealth services.[49] Thus, for example, FamiliesUSA proposed an agenda in July 2020 that includes expanding

reimbursement for telehealth services permanently and establishing payment parity between equivalent services delivered in person and by video.[50]

In this crisis, health care is a matter of social justice, and broadband connectivity is, therefore, a tool for social justice.

Government Services

Before the COVID-19 crisis, government services were already moving online. As Denise Linn Riedl, chief innovation officer of South Bend, Indiana, explained, some residents were asking for digital services before the pandemic, but other residents and city government officials did not see the value. Since the pandemic forced so many Americans to stay home, "some hearts and minds changed," and more government employees and community residents have since recognized the benefit of digital service. Thus, Linn Riedl says, the pandemic has created "good market pressure" for the city's departments to modernize because residents want to do as much as they can remotely.


Denise Linn Riedl

The recent experience of unemployment claims tells the tale. The Economic Policy Institute found that for every 10 people who successfully filed for unemployment benefits, three to four additional people tried to apply but couldn't get through the system to file a claim, and two more people did not even try applying because it was too difficult.[51] The need for better systems to satisfy people's needs became obvious.

Samantha Schartman, executive director of the Marconi Society, has offered government services as a specific example of the positive feedback loop described here—a world in which broadband access to government services improves the services themselves as they are modernized to better meet the needs of the governments' constituencies.[52]

Schartman's vision is already playing out across the country. For example, the increased stress on state unemployment insurance systems pushed several states, such as Washington and Oklahoma, to upgrade their software and operations to better meet the flood of demand. And governments can be proactive in meeting constituent needs.[53] Lexington, Kentucky, CIO Aldona Valicenti says her community will periodically run short surveys of visitors on the city's websites, asking constituents what kind of services and information they want to be able to use.


Olivia Wein

But as government services move online, those without broadband, technology, or digital skills will struggle. Consider the difficulties low-income households in Baltimore have faced in applying for federal heating assistance. With in-person intake sites closed, households must apply online or with paper applications. But many households do not have ready access to the internet or the digital skills to upload documentation and navigate the online energy assistance process, which has led consumer advocates to press for wide distribution of paper applications and secure drop boxes.[54] Olivia Wein of the National Consumer Law Center points to this example as further evidence of the need for digital equity.

IV

What We Have Learned in This Crisis: The Building Blocks of Better Broadband Policy

Work, learning, health care, government services, and other facets of everyday life will be more dependent on broadband in the future than in the immediate past. That can be to the good, setting in motion dynamic change that makes online activities even better—for people who have broadband.

But the more important broadband connections become, the more disadvantaged are those who cannot use broadband, either because no service is available, they cannot afford connections to their home, or they do not yet have the needed digital skills.

The increased importance of broadband—when so many lack access to it—threatens to widen digital divides, resulting in digital chasms that will be larger, longer-lasting, and harder to close. This widening digital divide exists not only for urban and rural Americans, but also for Indian Country, and particularly for people of color, low-income people, and those whose connection to society is particularly dependent on access to broadband, like students or seniors.

Stated differently, the shift to online education, health, and welfare means that the "digital divide" becomes even worse for those who do not have broadband.

High-Performance Broadband serves all forms of usage discussed above. We have sometimes talked about broadband for education or healthcare or economic growth, but the power of broadband is that the same network can be used to accomplish all of these goals—and more. Thus, although we reference usage-specific programs in some places in this section, we believe that the important policy foundation is this: High-Performance Broadband can support all societal, democratic, and economic pursuits. For example, comprehensive approaches to affordability can provide access to work, learning, health care, and government services, while improving our democracy.

A. Digital Equity


Francella Ochillo

A Changed Future

As a nation, we have this year engaged in an extremely important conversation about race, social justice, and the role of government—from how to police our neighborhoods to how to deliver our mail. Black, brown, and rural communities are bearing the brunt of lack of internet access and the fallout that accelerates. As Francella Ochillo, executive director of Next Century Cities, emphasizes, "Communities that have been locked out of digital opportunities, namely Indigenous, Black, Brown, rural, and low-income

residents, require affordable and reliable access to help the most disenfranchised among them achieve more equitable outcomes across the board."[55]

Digital equity ensures that all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy.[56] Digital equity is achieved by employing a combination of policies—including deployment, competition, and empowerment of community institutions.


Joshua Edmonds

Joshua Edmonds, director of digital inclusion for the City of Detroit, says that long-term digital equity challenges require long-term solutions: "What we're doing here is not a project with a defined start and end. We are building an operation that goes on in perpetuity."[57] A successful digital equity strategy can then meet a range of needs, from remote learning to affordability to access. "There are multiple iterations of the digital divide," Edmonds explains. "But when the community is under-resourced, we can't think beyond Divide 1.0. Instead, we need to have the infrastructure to be able to deal with Divide 2.0 and beyond."[58]

In our 2019 report, we separately addressed issues of affordability and adoption. This year, we address them as aspects of digital equity in order to emphasize that the challenge of connecting the unconnected is about more than the funding of subscriptions or the teaching of skills. The challenge of connecting the unconnected is a matter of social justice. It is a matter of ensuring that everyone in America benefits from policies that address the availability, quality, and cost of internet access and the skills needed to have and use an internet connection for the betterment of their lives.

The Impact on Pre-Existing Challenges

Low-income Americans have long struggled to afford an internet connection or a computer to use that connection. In fact, four in ten Americans making less than $30,000 a year lack either a home broadband connection or a computer.[59] Nearly 60 percent of people without broadband at home cite the cost of the subscription as the leading barrier to adoption.[60]

In addition, millions of Americans lack the skills needed to use the internet, including the over 40 percent of adults with less than a high school degree.[61] Increasingly, digital skills are required to hold a job. Middle-skill jobs, about a third of the jobs in the United States, are those that require some postsecondary education, such as an associate's degree or a credential from a community college.[62] Eight in ten middle-skill jobs now require digital skills, and the need for digital skills is only growing.[63]


Jon Peha

Even when a job itself does not require any digital skills, getting the job might. Job openings and applications are often posted online, even for a job requiring no skills whatsoever—so lack of internet access, or computer access, or skills to use them, closes off access to jobs. Professor Jon Peha of Carnegie Mellon University finds that the number of unique visitors to websites related to job searches increased over 40 percent from March 2020 to May 2020.[64] In an earlier, pre-pandemic study, Peha had found that the best predictor of the use of internet-connected computers in a public library is the unemployment rate in the surrounding neighborhood.[65] "Both of these results," Peha says, "support my belief that we absolutely must make the internet accessible to people who are unemployed or underemployed."[66]

All of this is against a grim backdrop. Indeed, the effect of the COVID-19 crisis threatens to increase inequality.[67] Tragically, the pandemic has exacerbated health outcomes for communities of color with vastly disproportionate numbers of hospitalizations and deaths.[68] In addition, former Federal Reserve economist Claudia Sahm points to the danger of a long period of high unemployment: "The longer unemployment stays elevated and businesses stay closed, the more you risk severing the tie between employees and employers. That's a recipe for a decade of trouble."[69]

At the same time, the combined impact of the crises threatens to exacerbate gender inequality,[70] and the effects of the crisis on working mothers are likely to be persistent.[71] As Max Fisher and Emma Bubola observe, adverse impacts snowball: "When inequality is high, the cost of living tends to rise, forcing more lower-income families to live paycheck to paycheck."[72] And when people are sick or unemployed or under greater financial pressure, they are less likely to be able to afford a broadband connection to the home or a computer to use that connection.

New Learning and New Policy

Affordability: In 2019, Benton called for Congress to "consider the creation of separate support for eligible low-income people to afford fixed-broadband connections, including those in need of special in-home services, such as health care."[73]


Larry Irving

This year, many voices have called for Congress to take the concrete step of ensuring accessible broadband. Larry Irving, my former colleague at the Department of Commerce, then head of the National Telecommunications Infrastructure Administration (NTIA), coined the term "digital divide," and has spoken about the "millions [who] simply can't afford" broadband, a problem that he says "we can solve quickly."[74] Civil rights and consumer organizations have voiced support for doing just that.[75]

Mignon Clyburn and Jonathan Sallet called for Congress to provide affordable home broadband to low-income Americans, including the newly unemployed, by designing a permanent broadband credit.[76] Free Press endorsed a $50 monthly benefit for low-income households to use with the broadband provider of their choice.[77] Public Knowledge made a similar proposal that the federal government cover the cost of broadband capable of two-way video.[78]

Legislative action has already begun to focus on the need to address affordability. For example, the House of Representatives passed legislation appropriating $9 billion to establish a broadband benefit of $50 per month ($75 per month on tribal lands) for low-income households.[79]

Benton also called for federally funded broadband networks to provide an affordable, robust broadband service to low-income people for $10 per month and to anyone for $50 per month. At the end of 2019, FCC Commissioner Geoffrey Starks made the same point, proposing that we "require rural broadband auction winners to offer an affordable broadband service option."[80] When the COVID-19 crisis hit, Commissioner Starks emphasized again in April 2020 the importance of affordability, citing the FCC's responsibility to ensure that publicly funded deployment projects provide low-cost offerings, especially when rural Black communities "are clearly already experiencing job loss and distress."[81]

Digital Skills: In our 2019 report, we called on the federal government to support digital literacy efforts run by local authorities and emphasized the importance of digital skills training to "focus on middle-skill and other jobs."[82] In the year since, these ideas have been developed and embraced.


John Horrigan

For example, in August 2020, the Benton Institute published John Horrigan's *Adapting Jobs Programs for Today and Tomorrow.*[83] His analysis of the importance of skills training focused specifically on middle-skill jobs, which generally require facility with the internet and computers. Typical examples of middle-skill jobs include clerical or administrative positions, sales, construction, repair/installation, and health care tech. For example, food-safety training relies on virtual reality in some organizations, while in agribusinesses, food-packaging workers have to coordinate with robots.

Digital equity requires ongoing community-level partnerships that recognize the different kinds of digital skills that people need. When state and local officials issued stay-at-home orders, local digital inclusion programs around the country had to rethink how to deliver their services. To aid in this adaptation, the National Digital Inclusion Alliance (NDIA) developed the Digital Navigator model with the expertise of NDIA affiliates. Digital Navigators address the whole digital inclusion process—home connectivity, devices, and digital skills—remotely or in person. As NDIA Executive Director Angela Siefer explains: "Digital Navigators receive training on digital equity resources in order to help residents learn to access critical services online."[84] The Digital Navigator model is an option for organizations to ensure that their constituents can connect with them online.[85]

When discussing job training, it's important to remember that many employers require online applications. In our 2019 report, we told the tale of two men seeking jobs at fast-food restaurants who asked to submit paper applications but were told they could only apply online—yet another barrier to full participation in the economy.[86]

Key Recommendations for Digital Equity:

Making affordable High-Performance Broadband available to low-income, unserved and underserved (Black, brown, and rural) populations—accompanied by digital skills training that empowers users to make the most of their connections—will contribute to a more equitable society.

1. Make Broadband Much More Affordable


Mignon Clyburn

Adopt a permanent broadband credit: In a *Boston Globe* op-ed earlier this year, Mignon Clyburn and Jonathan Sallet called on Congress to establish a broadband credit—America's Broadband Credit (ABC)—to ensure that many more people can afford high-speed internet access.[87] (To be comprehensive, Congress should ensure that people can afford both mobile and fixed service; at the moment, the FCC's Lifeline program is typically used for mobile service.)

What might such an effort look like? In proposing a program more focused on broadband to the home, Congress should consider these design elements:

- **Eligible service:** A household subsidy of $50 per month (with a higher subsidy for tribal lands), which is roughly the cost of medium-tier broadband plans in urban settings. That subsidy would allow anyone and any device in the household to be connected to the internet simultaneously, which is how so many families today are operating.

- **Robust broadband performance:** Public policy would not be well served by appropriating federal funds to pay for services already provided today at a lower cost; the government should not pay $50 per month for what is already being provided for, say, $10 per month. Nor should Congress accept the current 25/3 measure of broadband as adequate. In our 2019 report, for example, Benton advanced the idea of 50/50 Mbps low-latency service with unlimited data usage as a starting point for a low-cost program.[88]

- **Portable credits:** The FCC's current Lifeline program limits the number of broadband providers that may provide service. ABC would allow eligible participants to choose their broadband provider, which would give them more options and help to boost competition (where there is competition). The program could be structured so that broadband providers are reimbursed by the federal government for the service they provide under this new program.

- **Eligible participants:** In addition to those who qualified for Lifeline, eligible participants should include the newly-unemployed, low-income families with K-12 students in Title I schools, college students receiving Pell Grants, at-risk senior citizens or other people in need of long-term telehealth services, and consumers with disabilities, who tend to have lower incomes.

- **Verification:** Eligibility verification for users should be quick and easy, and certification of broadband providers offering eligible services should be expeditious. Thus, there should be a mechanism by which enrollment in the ABC program occurs automatically upon entry into any of the qualified programs—subject, of course, to an opt-out provision. To expedite enrollment, providers of broadband service should (a) make it available without any waiting period or deposit, (b) allow enrollment regardless of past arrearages, and (c) permit consumers to terminate service at any time without penalty or harm to credit score.

- **Dedicated funding:** ABC needs stable and dedicated funding of its own. As we get a better sense of the rise in unemployment and analyze how many households will be eligible, budget projections will be important to finalize this proposal, including the appropriate size and structure of the credit.

2. Delivering Digital Skills to Empower Participation and Recover Jobs

Support digital equity programs: The federal government should better coordinate its own digital equity efforts,[89] but it should go further to also support digital equity programs led by states that will work at the local level with communities to provide the skills people need to use broadband connections. A good example comes from the infrastructure bill that passed the House of Representatives in July, which contains about $1.3 billion to fund state digital equity grants, including funds that would go to local communities, nonprofits, and community anchor institutions, with funding specified for Indian tribes, Alaska Native entities, and Native Hawaiian organizations.[90]

Provide enhanced skills for job seekers: For many Americans, especially those who have lost their jobs and are unlikely to get them back, digital skills training could be the key to new employment opportunities. Broadband, already important to digital skills training, has become even more crucial during the pandemic to allow people to access this training in two key ways:[91]

- **As a delivery mechanism:** Some digital skills training can take place online, either through remote classes or a virtual experience designed to emulate the job.
- **As a wraparound service:** Access to broadband may ease the burden of finding childcare or food-availability support. Broadband may allow an individual, who might not otherwise participate, to choose to enroll in online digital skills training.

Successful efforts around the nation demonstrate the importance of local partnerships, the need to integrate online with in-person instruction, and the importance of home broadband for students of all ages.

B. High-Performance Broadband Network Deployment

A Changed Future

A high-performance nation requires high performance from its networks. There is no reason for unserved and underserved areas in rural or urban parts of America to be saddled with second-rate broadband.

Here's one illustrative example. Our 2019 report concluded that the current federal benchmark for speeds that constitute broadband—25 Mbps/3Mbps—is too low. That was before many people began to use video applications to work, learn, and even visit doctors remotely. In a world of symmetrical video applications, the upstream speed of 3 Mbps is not plausible for a family conducting multiple online video sessions simultaneously, a point we discuss further in the context of the performance characteristics that should be required of networks built with federal funds.[92] The ability to upload content is also important for engaging in free expression.

Broadband deployment will provide short- and long-term stimuli to boost much-needed economic recovery. Broadband construction has been estimated to create between seven and 20 direct jobs per million dollars spent and, through equitable procurement efforts, increase workforce diversity. The projection of jobs created is likely to be at the higher end of the range when unemployment is higher—as it is now—because there is underutilized labor.[93] The jobs created through the building and expansion of broadband networks are relatively high-paying: On average, they pay 42 percent more than the average for manufacturing jobs in America[94] and, correctly executed, will create new pathways for people to enter the workforce.

Deployment provides broader social benefits as well. People living in rural areas are more likely to have other health conditions and live farther away from a hospital than Americans in urban or suburban parts of the country[95] at a time when rural health care facilities have been closing. The rise of telemedicine could greatly benefit rural America, bringing medical professionals and specialists to isolated parts of the country through remote visits and digital monitoring—if those rural Americans have access to High-Performance Broadband.

As a result, recommendations for broadband deployment come with new urgency: Everyone in the U.S. needs access to High-Performance Broadband now, and undertaking this major infrastructure project will provide both short-term and long-term economic benefits.

The Impact on Pre-Existing Challenges

The pandemic has thrown both the reach and the performance of networks into sharp relief. Professor Jon Peha is conducting a study of how broadband connections fared during the COVID-19 crisis. His review of measurement data nationwide concludes that during the pandemic, upstream speed was significantly degraded, with median upload speeds at mid-day down more than 25 percent from pre-COVID levels.[96]

A local official in South Carolina explained, "The COVID-19 pandemic has highlighted the disparity in internet accessibility in rural areas where students are unable to access distance learning and employees are unable to work from home."[97] The CEO of one rural network provider said, "COVID has intensified the challenges that we're already facing in rural America."[98]

On tribal lands, too, the lack of broadband access has been very detrimental; indeed, scholars have reported that the "assumption that Indigenous students have internet access once they return to their home communities is a grave, and unfortunate, misunderstanding."[99] Darrah Blackwater describes the following challenges faced in Native communities:

- students who return home from college, unable to finish their assignments;
- workers who can't telecommute or sell their goods online; and
- communities that are unable to access the latest health information and emergency procedures.[100]

This is important because unconnected communities lacking up-to-date online access to information from public health authorities have been among some of the communities hardest hit by the COVID epidemic.

Urban areas also lack even the kind of internet access that the FCC currently considers to be broadband. A map of internet access in Chicago not only demonstrates the existence of places with "no availability at 25 Mbps" but correlates the absence of broadband service with neighborhoods that have a poverty rate of 20 percent or more.[101] Nationally, FCC analysis, which systematically overstates deployment, shows that 2.63 percent of urban residents do not have access to broadband at the typical cable broadband speeds of 100/10 Mbps.[102]

New Learning and New Policy

New research shows that farms often lack the connections required for modern agriculture. As University of Virginia Associate Professor Christopher Ali—the author of a forthcoming book on rural broadband—explains, "If you're getting your internet connection from what's called DSL … it is not fast broadband."[103] In fact, the U.S. Department of Agriculture has found that only 75 percent of farms reported having internet service in any form, including the legacy DSL connections provided over copper networks and even old-


Christopher Ali

fashioned dial-up.[104] That just isn't good enough for modern precision farming, accessing weather predictions to know when to water, or connecting local produce to the global marketplace to move food from their farm to your fork.

For too long, federal policy has failed to support the construction of High-Performance Broadband networks in rural America and on Tribal Lands.[105] Ali describes a policy of "good enough" that is used to justify inadequate speed definitions for broadband, the deployment of subpar technologies, and the distribution of public funds in return for poor connectivity.[106] For example, the FCC allocated $10 billion in 2015 to construct broadband in rural areas but required no more than 10/1 Mbps service, which is now understood to be inadequate.[107] Those networks are now being "overbuilt" through the expenditure of additional FCC funds that do not require more than the 25/3 Mbps standard and fail to ensure the presence of networks that meet today's broadband usage patterns.[108]

Indeed, states have recognized the importance of scalable networks. As Kathryn de Wit, who leads the Pew Charitable Trusts' research into state broadband efforts, explains, "State leaders recognize that in an increasingly digital world, speeds that suffice today may not be enough for tomorrow. By taking a long-term approach to infrastructure planning, states can avoid a problem that federal leaders commonly face: a broadband network that's become obsolete in the time it took to build."[109] Thus states have set higher speed minimums for new builds, incentivized or even required technologies that can scale and adapt, and implemented accountability requirements; these steps leading to infrastructure will serve communities well into the future.[110]

The economic and social benefits of broadband justify the investment. The federal government needs to fund High-Performance Broadband and do it quickly. The sooner we start to build, the sooner we reap the benefits of building.

Key Recommendations for Deployment

In a world in which the talents of all people matter, broadband infrastructure investment is a necessary economic strategy. There is no reason to saddle any rural and urban area with second-rate broadband.

1. Pursue a Unified Broadband Infrastructure Agenda

Map broadband oases and deserts: With the passage of the Broadband DATA Act, the congressional mandate is clear: Effective deployment requires accurate data. Adequate funding for that effort is a necessity, as is support for independent research from independent data sources.

In addition, the National Telecommunications and Information Administration, the Federal Communications Commission, and the U.S. Department of Agriculture should publish a comprehensive map that demonstrates the eligibility of different areas of the country for federal broadband programs.

Make broadband the job of every part of the federal government: Given that broadband touches so many parts of the federal government, including agriculture, economic development, education, and housing,

the White House should appoint a broadband coordinator to enlist federal agencies across the board and to improve outcomes by supporting state, tribal, and local governments. For example:

- Agencies such as the Department of Housing and Urban Development, the Department of Education, the Bureau of Indian Affairs, and the Federal Reserve Banks (which manage the Community Reinvestment Act) should focus their broadband efforts on High-Performance Broadband.
- Where governments fund infrastructure, like highways and bridges, they should mandate installation of broadband infrastructure that is available to multiple providers.
- Federal procurement policies can also consciously spur deployment.

2. Deploy Scalable Broadband Networks

Treat broadband as essential infrastructure: Broadband deployment should be embedded in every infrastructure effort undertaken or supported by governments. Facilitating broadband network construction will help rebuild the economy, creating high-paying jobs that are important to economic growth.

Give underserved rural and urban areas equal importance: Although rural areas suffer from persistent and unique challenges, lack of broadband anywhere, including in urban environments, must be addressed. America needs High-Performance Broadband everywhere.

Establish future-proof performance standards: High-Performance Broadband networks provide fast, symmetrical upload and download speeds, low latency (moving data without noticeable delay), ample monthly usage capacity, and security from cyberattacks. Public funds should be targeted to networks that, once installed, can easily be upgraded and scaled as the demand for broadband increases—not for the construction of networks that will quickly become obsolete. The Federal Communications Commission should promptly scrap its current 25/3 Mbps benchmark for broadband. Fast uploads and downloads are non-negotiable, because these symmetrical speeds reflect how Americans are using connections today—from hybrid learning to connecting with doctors. To meet the growing demands for both upstream and downstream transmission, Congress should establish high-performance standards (such as a minimum 100/100 Mbps symmetrical requirement) for any new network construction that federal funding supports so that these networks are scalable to meet future needs. The $80 billion for broadband deployment enacted by the House this year as part of the Accessible, Affordable Internet for All Act (H.R. 7302) should be sufficient to build out across America.[111]

Ensure that broadband is available to all Americans as soon as possible: In areas where it is not financially feasible to provide High-Performance Broadband immediately, we need a Plan B that provides basic connectivity now. Congress should offer interim support for currently available solutions.

Establish requirements for funded deployment: Public-interest requirements should accompany any broadband construction or upgrades that rely on public funding. For example, recipients of federal deployment funding should be required to offer two baseline standardized tiers of service: a $50-per-month package for all consumers, and one at $10 per month for income-eligible individuals.

Promote competition for government funds: When considering use of public funds, policymakers should employ competitive processes. For example, reverse auctions and competitive grant programs bring down the cost of funding capital expenditures for broadband deployment. The E-Rate program, for example, has enjoyed considerable savings because of the use of competitive bidding.[112]

3. Support Tribal, State, and Local Efforts


Dr. Traci Morris

Address challenges of tribal lands: Dr. Traci Morris of Arizona State University has explained that internet access on tribal lands "is necessary for every part of functioning life in the U.S.—governance, taxes, education, health care."[113] Public policy requires an understanding of the specific challenges facing Tribal Nations and solutions fit for those challenges.

An important contribution has been offered by Morris and Geoff Blackwell, who have developed a comprehensive agenda to solve Tribal Nation broadband deployment issues, emphasizing that the current federal approach does not work on tribal lands.[114] Their plan includes:

- Establishing a Tribal Broadband Fund to support broadband deployment needs separate from the existing Universe Service Fund framework;
- Creating targeted economic regulatory approaches for use on tribal lands working with Tribal Nations utilizing new funding mechanisms, new licensing platforms, and actual analysis and identification of targeted new market entries;
- Addressing the problem of the warehousing of spectrum, given the limited access that Tribal Nations have to licensed exclusive-use spectrum for the deployment of wireless services and the development of systems on their lands;
- Prioritizing spectrum licensing over tribal lands directly to Tribal Nations;
- Creating and maintaining a federal interagency working group to assist in identifying federal resources and technical expertise for high-speed broadband deployment, and
- Realigning and reaffirming the definition of tribal lands at the FCC to be consistent with the federal trust responsibility and inclusive of all tribal lands, and ensuring that other federal agency programs have the same definition.

To that end, Blackwell and Morris support passage of the DIGITAL Reservations Act introduced by Congresswoman Deb Haaland (D-NM),[115] the Bridging Tribal Digital Divide Act of 2020 introduced by Senator Tom Udall (D-NM),[116] and provisions of the Accessible, Affordable Internet for All Act relevant to tribal lands.[117]

Facilitate federal, tribal, state, and local coordination: Solving connectivity challenges will be hobbled for as long as COVID-19 depletes local resources. And local leaders tell us that philanthropic partners and the

generosity of providers to create stopgap solutions is welcome but, in the long term, insufficient. The federal government is particularly well poised to fund broadband deployment because the current economic crisis has placed a major strain on state finances. Unlike states, the federal government has broad powers to finance public investment, especially in the face of economic crisis. The federal government should embrace state, tribal, and local governments as partners.

C. Competition in Local Broadband Markets

A Changed Future

The formula for competition is simple: "The more, the merrier." That doesn't mean that every competitor will succeed, nor does it mean that the circumstances in every place will always support new competitive entry. But it does mean that government should promote competitive opportunities because competition delivers welcome, and often unexpected, benefits to consumers. Robust and vibrant competition can enable lower prices, improved service, and innovative technologies—bringing better and more affordable broadband to more Americans.

In other words, everyone should be connected, and competition should be promoted to ensure that consumers get the full benefit of High-Performance Broadband. Competition that does not come immediately may be possible, and successful, in the future.

An important competition issue arises where the government funds the construction of broadband networks. If government policy is operating well, then public dollars will be spent where the returns on private investment would be insufficient to support the construction of any broadband network. In such circumstances, the "natural" number might be zero, but sound public policy supports deployment so that everyone can participate in democracy, society, and the economy.[118]

The threat, of course, is that government funds a monopoly that faces no competitive constraints in its pricing or other service terms (such as data usage) and no competitive pressures to upgrade its network or improve customer service. If there is insufficient economic incentive to support the construction of even one network in a place, and therefore public resources are needed to have any broadband deployment at all, then why is the correct public policy necessarily to accept "one"? The aspiration of government policy is not to create a monopoly that would thereby deny Americans the benefits of the better services and new innovation that competition can enable.

Promoting competition simply offers the potential for additional consumer benefits to flow from the expenditure of public funds. Open-access middle-mile networks, for example, offer this potential by empowering new broadband services (such as fiber or fixed wireless) for consumers.

Similarly, municipalities have seen, and thus understand, the effects of limited competition, which is why so many have sought to support competitive alternatives that, as described here, deliver new forms of value, including better pricing, to consumers.

The seriousness of the competition challenge has grown as (a) broadband usage has become more important to the daily functioning of society and (b) the recession and heightened unemployment have impacted millions of Americans.

In other words, when America is struggling, competition becomes even more important because lack of competition can exacerbate income inequality and act as an additional barrier to participation in our democracy, society, and economy.

The Impact on Pre-Existing Challenges

Broadband competition in the U.S. is limited, and limited competition typically results in higher prices, lower quality, and slower innovation. At typical cable broadband speeds of 100/10 Mbps, nearly 80 percent of Americans face either a monopoly (no choice) or a duopoly (only one choice) for fixed service.[119]

According to FCC data, at typical cable broadband speeds, about 34 percent of urban residents face a monopoly and about 48 percent face a duopoly. Why monopoly? NDIA studies suggest that telecommunications firms have chosen not to deploy or have delayed deployment in low-income urban neighborhoods.[120] For example, in a 2019 report, Dr. Brian Whitacre concludes that the incumbent telecommunications provider "withheld fiber-enhanced broadband improvements from most Dallas neighborhoods with high poverty rates, relegating them to Internet access services which are vastly inferior to the services enjoyed by their counterparts nearby in the higher-income Dallas suburbs."[121]

Limited competition, particularly in urban areas, can especially disadvantage the 30 percent of Americans who live in apartment buildings and other multi-tenant environments.[122] That's a double whammy: The annual income of people who live in apartment buildings and other multi-tenant environments is only about 54 percent of the median homeowner's income, so they are at greater risk of not being able to afford broadband that is priced above competitive levels.

In rural America, monopolies are even more prevalent. At the typical cable broadband speeds, FCC data for rural areas find that about 36 percent of rural residents have no service and about 47 percent face a monopoly.[123] Turning to agriculture, one recent study found that "78% [of U.S. ranchers and farmers] do not have another viable option to change service providers."[124]

Critical endorsement for pro-competition policy has come in the past year. For example, the Accessible, Affordable Internet for All Act would prohibit state governments from limiting communities from building their own broadband networks, including through public-private partnerships; would require a new examination of how competition impacts the price of broadband service; and would impose specific pro-competitive provisions in the federal funding of new broadband deployment. The legislation also includes support for broadband deployment, including competitive deployment, through a nationwide "dig once" requirement. These are good policies, with which we agree.

New Learning and New Policy

The impact of nontraditional and new providers: Greater emphasis needs to be given to nontraditional providers. Large companies provide the great bulk of home broadband today; at the end of 2019, the top sixteen providers accounted for about 96 percent of home subscriptions.[125] But for places with too little competition (or no service at all), new, smaller, and nontraditional providers can play an outsize role.

They can be very small, like the internet service provider that was started from scratch when Ethan Gleiner, a local IT professional in southwestern Virginia, created MtnNet to bring broadband to homes in rugged locations that commercial broadband had not reached.[126] Nontraditional providers can use their expertise in other forms of networks to provide broadband, like rural electric cooperatives or municipal utilities or investor-owned utilities that provide middle-mile connections. They can be startups, like Starry Internet's fixed-wireless service in places like Boston, San Francisco, and Northern Virginia.

Benton's 2020 research supports the position that new entrants generally provide unique value propositions to residential and small-business users. Forthcoming research from the Benton Institute and CTC Technology & Energy focuses on the opacity of the information provided by incumbent broadband providers about their stand-alone broadband offerings, which hinder the ability of consumers to make informed decisions, and the importance of new value propositions when a third (or even fourth) broadband provider enters a local market, including such features as lower pricing (in absolute terms or by Mbps); higher speeds, especially upstream; increased monthly capacity; and/or simplified pricing plans.

Open-Access, Middle-Mile Networks: Open-access means that the networks permit any internet service provider to connect on nondiscriminatory terms and conditions. Middle-mile networks reach from national and major regional internet backbones to a local site (which could be a school or library).

For example, the Accessible, Affordable Internet for All Act would give a leg up in federal funding of network expansion to broadband providers who promise to open up their networks to other providers.[127] As a 2020 report from the Pew Charitable Trusts explains, states are leading the way in demonstrating the importance of open access to middle-mile networks. From its review of state broadband efforts, Pew concludes that "investment in middle-mile infrastructure facilitates last-mile deployment."[128]

The Benton Institute will be publishing a forthcoming white paper reviewing the experience of open-access, middle-mile networks, with an emphasis on what makes them attractive vehicles for additional last-mile deployment. Successful strategies include:

- Adopting sustainable network strategies, such as careful planning and use of available infrastructure;
- Working towards realistic business strategies with broadband providers, including nontraditional providers like rural electric cooperatives and local, independent telephone companies; and
- Building community support through demonstrated demand, shared goals, and combined local and state resources.

Examples of successful open-access, middle-mile networks exist across the country and vary in size and primary purpose—but all benefit from strong state and local leadership.

Municipal experimentation: In July 2020, the Open Technology Institute at New America issued its annual report on the cost of connectivity, which finds substantial evidence of an affordability crisis in the U.S. and observes that municipal networks "appear to offer some of the best value in the United States."[129] To the same effect, Brian Whitacre and Roberto Gallardo find that "the existence of municipal broadband restrictions tends to lower availability and broadband competition."[130]

The last point is important. In 2019 Benton recommended: "States should repeal and, if necessary, Congress should pre-empt current state laws that restrict municipalities and counties from experimenting with various ways of increasing High-Performance Broadband deployment. Whether these local governments and the communities do so or not should be left up to them."

The importance of transparency: Benton has also published additional analysis in support of reinstating the Broadband Consumer Labels to provide consumers with important tools when they are shopping for fixed- and mobile-broadband services. Forthcoming research from the Benton Institute and CTC Technology & Energy explains that consumers who lack the resources or sophistication to navigate the byzantine complexity—and opacity—of incumbent pricing structures, fees, and terms will often pay higher prices simply because they struggle to understand the confusing materials presented by broadband providers.[131] The Cost of Connectivity 2020 study also emphasizes that consumers "struggle to determine the total cost of internet service due to poor transparency, highly complex pricing structures, and confusing itemized billing."[132]

Similarly, Benton research provides further explanation of the importance of collecting pricing and similar data that would allow for analysis of competitive conditions, which is vital because, after all, competition makes products and services more affordable. As Free Press rightly explains in its COVID-19 policy recommendations, "Without pricing data it's impossible to thoroughly assess, let alone solve, the affordability problem that is the primary barrier to bridging the digital divide."[133]

Competition to benefit tenants: As noted previously, 30 percent of Americans live in apartment buildings and other multi-tenant environments.[134] Too many apartment and condominium residents are forced to pay their landlords or property managers a premium to access a pre-chosen broadband provider as part of bulk-billing packages. Paid-priority agreements and restrictive access requirements can functionally prohibit other broadband providers from reaching potential customers. The resulting broadband monopolies can lead to higher prices, lower service quality, and fewer service options for apartment-dwelling households.

Key Recommendations for Competition:

Americans should not have to pay more (in dollars or sacrificed quality and innovation) merely because public policy has failed to promote competition effectively.

1. Encourage New, Competitive Entrants and Local Experiments in Private-Public Collaboration

Encourage nontraditional providers: The National Telecommunications and Information Administration should take on the express role of working with state, tribal, and local governments to lower regulatory barriers to entry, with emphasis on nontraditional providers; to incentivize new investment; and to encourage public-private collaborations that encourage the deployment of High-Performance Broadband by nontraditional providers. All federal programs that support broadband should consciously work to encourage entry from more broadband providers.

Support open-access, middle-mile networks: Federal funding should support the deployment of middle-mile networks that offer nondiscriminatory access to private providers to reach residences and small businesses. Such middle-mile deployment can pack a powerful punch by, for example, bringing scalable connections directly to community anchor institutions while also lowering the cost of investment for private providers that can build from those community anchor institutions to adjoining residential neighborhoods. A federal effort would parallel state initiatives, which have recognized that the presence of open-access middle-mile networks cuts the cost of reaching homes, which makes broadband more affordable. (As noted earlier, when last-mile deployment is being funded, federal programs should give a leg up in awarding support to broadband network builders that choose to provide open access.)

Allow municipal experimentation: Congress should pre-empt state laws that restrict municipalities and counties from experimenting with various ways of increasing broadband deployment, such as allowing communities to apply for the same federal and state funding as private companies.

Encourage local planning: The federal government should provide funding to encourage local planning, which may include developing local or regional broadband strategies and applying for federal broadband grants. Multiple states provide support for these kinds of initiatives, such as Maryland, which offers grants to localities with their internet service provider partners for costs associated with federal funding applications.[135] Such planning efforts can also be helpful in cataloguing all of the challenges, including challenges of digital equity, which will be helpful to all levels of government.

2. Gather Pricing Data and Other Information Necessary to Promote and Assess Competition

Competition cannot be measured without public access to broadband pricing and terms of service.

Require pricing disclosure: Congress should require broadband providers to disclose their residential pricing (with fees and ancillary charges) for each market, and the FCC should provide public analyses of competition in local markets. Such requirements can be tailored to the needs of smaller broadband providers as needed.

Reinstate the Broadband Consumer Disclosure Label: The FCC should reinstate its Broadband Consumer Disclosure Label, which would empower consumers to make better-informed choices for both mobile and fixed broadband services, including by understanding and being able to compare the quality of broadband services (such as the available upstream speed).

3. Expand Competition for Residents of Multi-Tenant Environments

Mandate the FCC to protect consumers and foster competition: Congress should resolve current confusion and grant clear authority to the FCC to act on behalf of Multi-Tenant Environments (MTEs), like apartment buildings, to foster competition. Currently, the FCC's ability to act on MTE issues relies on a combination of authorities from different legislative acts, which can raise complex questions of technology and law that invite extended litigation.

Prohibit anticompetitive practices: The FCC should adopt clear rules that prohibit anticompetitive practices and ban artificial access limits to MTE competition, including by prohibiting:

- Exclusive agreements that prevent competitive broadband providers from effectively accessing customers that want to use them. For example, some building owners grant exclusive contracts to broadband providers and incorporate a standardized package into tenants' monthly rent. This practice forces consumers to pay for a service they may not want or pay twice if they chose a different service. Others allow only one broadband provider to market its service within the MTE.
- Artificial limits to physical access: As a technical matter, multiple broadband providers can use a single connection to an MTE, without having to run separate wiring to each dwelling unit. Artificial limits include:
    - Exclusive wiring arrangements, and
    - Rooftop exclusivity agreements, by which building owners can restrict wireless transmission devices from being placed on rooftops, effectively preventing tenants from choosing these services and needlessly restricting consumer options.

Adopt broad broadband access rules and carrier-neutral broadband wiring requirements in MTE codes: The FCC has found that mandatory access laws that allow broadband entry and installation lead to an "increase in the supply of broadband to MTEs." Governments should ensure that MTE codes do not act as a barrier to entry. Where necessary, Congress should circumscribe housing codes that enable building owners to restrict competing broadband providers from serving tenants.

Adopt consistent broadband wiring requirements in all federally supported housing projects and incorporate pro-competitive access requirements: The U.S. Department of Housing and Urban Development (HUD) recently required that all multifamily rental housing it directly funds include broadband wiring. These requirements should be extended to multiple-dwelling units only receiving financing insured or guaranteed by HUD or the Federal Housing Administration.

D. Community Anchor Institutions

A Changed Future

The creation of the E-Rate program—spurred by President Bill Clinton's call "to connect every classroom, every clinic, every library, every hospital in America into a national information superhighway by the year 2000"[136]—was big. Twenty-six years later, that call to action almost seems quaint. The goals are all phrased in terms of physical locations—a classroom, a clinic, a library, and a hospital. That was the way the architecture of connectivity was imagined and that was the way that the E-Rate program was modernized in 2014—better broadband connections to and within schools and libraries.[137]

The Impact on Pre-Existing Challenges

As digital access grew over the decades, people recognized that none of these activities were solely confined to institutional locations. Before the pandemic, we understood that children without internet at home would struggle to complete online homework assignments. But even the term "homework gap" can convey the view that there are things done in the school building (or medical facility or library) and other, ancillary things that are done in other places.

It's time for a new perspective. It's time to recognize that it is the act of learning, not the place of learning, that counts—as well as the act of accessing libraries and their services, the act of obtaining medical treatment, and the act of accessing government services. These are no longer place-specific activities; all of them are migrating online.

Broadband policy should combine traditional strategies with the new realities that community anchor institutions must reach people wherever they are.

New Learning and New Policy


John Windhausen

As John Windhausen—a longtime advocate for community anchor institutions and executive director of the Schools, Health & Libraries Broadband (SHLB) Coalition—says, "Recent events have confirmed how important it is to use community institutions as a jumping off point to reach everybody in their surrounding communities."[138]

Stories of teachers and students finding public access points to participate in classes abound.[139] On tribal lands, schools deployed school buses with hotspots during the pandemic.[140] For millions of Americans without a broadband connection at home, school and library parking lots became a much-needed, short-term solution.[141]

We have also seen community anchor institutions reach into their neighborhoods using existing resources.

- San Antonio is using fiber-optic cables that already connect to schools, libraries, police stations, and public-safety radio systems to offer LTE wireless broadband in neighborhoods. As its chief information officer, Craig Hopkins, said, "In order to get into a neighborhood, you have to go where the infrastructure is."[142]

- In Pittsburgh, thousands of students did not have what they needed for online learning when schools suddenly shut down in March. In June, a partnership between a local nonprofit and the resident cable company secured support to ensure that "nearly all" households would be able to study online in the upcoming school year.[143]
- Chattanooga's municipal network teamed up with Hamilton County Schools in July "to ensure all students can access the internet for online learning as the COVID-19 crisis continues" by providing free service of at least 100/100 Mbps, with no data caps, to about 28,500 students.[144]

Even now, the E-Rate program could do more. Colorado Attorney General Phil Weiser has filed an emergency petition with the Federal Communications Commission explaining how, under existing law, the FCC could fund home connectivity for K-12 students who are not allowed to attend classes in person.[145] The SHLB Coalition has proposed that Congress expressly allow schools and libraries to extend their networks to serve nearby neighborhoods without jeopardizing their continued E-Rate funding. This would make possible, at separate expense, build-out of broadband networks linked to community anchor institutions' networks.

Support for community anchor institutions is critically necessary. When school districts are closed, the E-Rate program should step in to provide funds so that students can connect to online classrooms, using whatever tools are available: subsidies for subscriptions to broadband services, Wi-Fi hotspots, and public access to connectivity that reaches a school and library and that can reach the community.

The push for affordability clearly has positive spillover effects in connecting people to their community anchor institutions. Efforts like our proposed broadband credit can help ensure that low-income families have an affordable broadband connection that school-age children can use for online learning.

Even as we emphasize broadband to students at home, public policy needs to ensure that school and library networks are able to handle the future demands of a hybrid educational model that combines in-person and online instruction. As of last year, only 28 to 32 percent of K-12 schools met the goal the FCC established for 2018 of having 1 Mbps per student and staff (1 Gbps per 1,000 students and staff). As learning technologies get more sophisticated and immersive, and as more teachers incorporate digital learning into more aspects of their day, the standards for schools must continue to change. The State Educational Technology Directors Association has already recognized the need for higher standards to be met by the middle of the decade, recommending that at least 1.4 Mbps per student be available in all school districts.

Key Recommendations for Community Anchor Institutions:

Community anchor institutions can use broadband to fulfill their missions, reach users wherever they are, and serve as launching pads for communitywide access.

1. Ensure That Everyone Can Access Community Anchor Institution Broadband

Adopt a comprehensive approach: Congress should:

- Ensure that everyone can access High-Performance Broadband, an approach that would, by definition, assist users of community anchor institutions through mechanisms like the proposed broadband credit and deployment funding.
- Secure support for community anchor institutions to be able to obtain competitive rates for robust broadband to their own facilities.
- Provide low-income students with the requisite connectivity to learn effectively from home, with support of the kind included in the HEROES Act and the Accessible, Affordable Internet for All Act, both passed in 2020 by the House of Representatives.
- Guarantee that federal assets, like spectrum, are available to community anchor institutions to help them reach users.

2. Ensure That Community Anchor Institutions Have the Bandwidth Needed to Meet Increased Demand at Competitive Prices

Establish connectivity goals fit for anticipated rising demand: The FCC's connectivity goals should be re-examined periodically. Governments should also establish connectivity goals for other community anchor institutions. Such goals should recognize the changing nature of applications, including the increasing use of high-quality video, and the proliferating number of devices that must be supported by on-premises broadband networks. Governments should also ensure that such broadband is high-performance in every sense of the term to meet the needs of community anchor institutions for redundancy, network security, and scalability.

Support anchor institutions with direct funding: State, tribal, and local governments should, as they are financially able, provide direct funding to community anchor institutions, including matching funds, so that the anchor institutions themselves can choose the broadband providers and services that best serve their communities' needs. State, tribal, and local governments should also facilitate comprehensive broadband strategies, which can include the work of the nation's state research and education networks.[146] Congress should include support for all community anchor institutions—not just schools, libraries, and health care facilities—to get the bandwidth they will need for the next decade. And Congress should mandate the kind of competitive processes, including so-called special construction, by which schools and libraries can contract for cost-effective build-out of fiber networks to their locations, which has driven down bandwidth pricing to schools and libraries over the past half-decade. Competitive-bidding processes yield the best terms for community anchor institutions and can bring more fiber-based deployment into a community.

Ensure that the FCC's Rural Health Care Program has the funding it needs to leverage telemedicine opportunities for the long term: This would be in addition to the one-time stimulus increase in the CARES Act.[147] Connected health care facilities are especially important in rural markets where hospital closures and a shortage of doctors have made access to health care even more expensive and less available to consumers.

3. Use Community Anchor Institutions as a Launching Pad for Community-Based Broadband Access and Competition

Use anchors as launching pads: Broadband networks built to connect anchor institutions often reach deep into local neighborhoods. Allowing other internet service providers to access these publicly funded, middle-mile networks would reduce the cost of building last-mile connections, spurring deployment in residential neighborhoods. Government-supported, middle-mile networks should be available to all broadband providers on a nonexclusive basis. Thus, federally funded deployment of broadband connections to community anchor institutions should permit any extra capacity (such as additional fiber strands) to be used by residential providers so long as federal funding does not go to any non-shared costs of the residential network. This ties closely to the recommendation discussed previously regarding open-access, middle-mile networks that can connect to community anchor institutions. A challenge to this strategy comes from the administration of the E-Rate program. A shadow has been cast over such efforts by the legal question as to whether E-Rate participants can share their networks for other uses, even where E-Rate is not paying for the expansion of a network to reach residential customers. This uncertainly should be erased. Broadband deployment would be most advantaged if all make-ready costs—such as trenching and conduit—are fully allocable to the FCC's E-Rate, Rural Health Care, or similar efforts, along with any fiber strands and electronics that will be used for service to the school.

V

Moving Forward Together: Supporting State, Tribal, and Local Broadband Leadership

Even before the COVID-19 crisis, people in the U.S. placed greater trust in local government than in federal officials.[148] That has been true in this crisis as well, with confidence in state, tribal, and local governments higher than in either Congress or federal agencies.[149]

Federal policy should take advantage of the expertise and knowledge of state, tribal, and local governments, and the federal government should leverage its spending capacity to assist those governments facing severe budget shortfalls. The best approach is to fuse federal support with state, tribal, and local leadership.

Broadband is more than just a technology; it is the way that society is being shaped. The laboratory of the states is critical because broadband deployment and usage include strategies that build on different state, tribal, and local circumstances, including their political and economic environments, health threats, resource levels, and broadband usage needs.

- New York primarily used its financial resources to design and implement a sophisticated multi-stage reverse auction process to facilitate 100/20 Mbps deployments across all but the most remote parts of the state. This ensured that even the most remote areas were able to receive at least 25/4 Mbps service for $60 per month.[150]
- Washington used one of the nation's earliest nonprofit, open-access, middle-mile networks, owned and controlled by several Public Utility Districts representing communities across the state, to encourage rural localities and private broadband providers to connect remote residents.[151] Its Rural Broadband Program offers grants to facilitate further rural wireline deployments at speeds of at least 100/20 Mbps.[152]
- Minnesota's long-standing commitment to state-level broadband leadership has combined its forward-thinking Border to Border Broadband Development Grant Program and coordination with state offices with community leaders like the Blandin Foundation.[153] With grants announced at the beginning of 2020, the Minnesota efforts will connect almost 50,000 homes and businesses to broadband.[154] Importantly, Minnesota is awarding grants that require new construction to be capable of scaling to at least 100/100 Mbps.[155]
- The Illinois Office of Broadband, housed within the Illinois Department of Commerce and Economic Opportunity, is responsible for administering the $400 million Connect Illinois broadband infrastructure grant program to facilitate deployment scalable to 100/100 Mbps or better by 2028. To support this investment, the office is implementing a holistic strategy that includes state mapping of broadband assets, including available technology and levels of service; the Illinois Connected Communities program to promote community broadband planning and capacity building; and efforts to expand digital literacy, adoption, and inclusion.

Even the nature of local broadband providers differs state by state. Some, like Maine and Massachusetts, have robust middle-mile networks; others, like California, are served by a handful of national and regional providers; some, like Minnesota, feature small, but critical, local telephone companies and fixed-wireless providers; while places like Tennessee are served by rural electric cooperatives that are expanding into broadband. Some—like California, Illinois, and Michigan—boast statewide research and educational networks that provide connectivity to colleges, universities, and K-12 schools. Michigan's Merit Network provides assistance to local communities that confront a lack of broadband connectivity. These make a difference: Brian Whitacre and Roberto Gallardo present econometric analyses that "demonstrate a consistently positive impact of state broadband funding on availability."[156]

The fundamental advantage is this: State, tribal, and local governments are not thousands of miles away. They are accessible to local needs and the broadband companies that provide the service. Pew Charitable Trusts' expert Anna Read offers concrete examples of different ways that state and local leaders are taking concrete action: "In some cases, that's as simple as offering a 'broadband ready' certification to communities that meet certain qualifications. In others, it's using policy to clarify that cooperatives can provide broadband—or that they can be formed for the express purpose of providing broadband services."[157] But the bottom line is this: State, tribal, and local governments can achieve results through local knowledge, planning, and active stakeholder engagement.

The impact of connectivity gaps is felt locally, and some of the most critical connectivity problem-solving is being generated locally. That should create a natural incentive to support state, tribal, and local efforts, including through federal investment.

But the federal government, particularly the Federal Communications Commission, seems to want to put the brakes on state efforts. This year, the FCC will award more than $16 billion to deploy broadband in unserved areas through its Rural Digital Opportunity Fund. But the FCC inexplicably—and wrongly—curbed the ability of applicants to use both federal and state funds to maximum effect to build the best networks. As Commissioner Geoffrey Starks explained, the FCC's stance serves to "discourage badly needed state-federal partnerships [and] risk unequal application of the rules between states."[158]

Also, the process of applying for federal support can be simplified: State, tribal, and local governments should be able to provide much-needed benefits without navigating through pages and pages of complicated requirements. Take the application guide for the USDA ReConnect program, which is 238 pages long and burdensome. For example, we have heard from state officials and local schools and libraries that the requirements of obtaining federal assistance are discouraging participation,[159] and, as Francella Ochillo emphasizes, "nationwide connectivity issues cannot be solved without state and local perspectives."[160]

The United States is not a single homogeneous economy. State, tribal, and local governments are most familiar with how broadband programs can work within their own regional economic strategies, jobs programs, and distinct state laws. They not only are better able to design flexible and tailored employment options that address the needs of their people and their local economy; they stand ready to take up the mantle of broadband leadership.

The federal government should make it easier for state, tribal, and local governments to lead in broadband policy.


Kathryn de Wit

As the recent report from the Pew Charitable Trusts authored by Kathryn de Wit and Anna Read demonstrates, states are finding innovative and creative ways to advance their broadband goals—stepping up with stakeholder outreach, capacity building, funding, program evaluation, and plenty of public-private partnerships. West Virginia's Broadband Enhancement Council recognized that broadband would be crucial to the state's economic development, especially those areas that have been affected by mine closures.[161] A focus on broadband's potential to revitalize communities has allowed the state to use federal economic development funds for broadband, including the Community Development Block Grant and the Abandoned Mine Land Grant.[162]

State, tribal, and local governments can experiment with pragmatic solutions that solve the whole broadband problem—from building networks to ensuring that people, like the newly unemployed, have the resources and skills to use broadband.[163] Pew's report describes how, after a 2017 survey showed that only 40 percent of Tennesseans with access to broadband networks actually subscribed, Tennessee's broadband grant program changed to incentivize applicants to develop plans to increase adoption: "Providers receive additional points on their applications by coupling their infrastructure build-out with digital literacy programs, low-income assistance programs, and awareness campaigns."[164]

Virginia is a good example of what state leadership can achieve for broadband. In the midst of the COVID-19 crisis, the General Assembly is considering Governor Ralph Northam's request to increase funding to bring better broadband to all Virginians. Such support is important, as students stay home and learn, adults stay home and work, and seniors stay home even as they visit their doctor.

Virginia's broadband challenges are multifaceted. In rural areas, nearly a third of households have no access to broadband.[165] More than 600,000 Virginians have only one wired service provider, leaving them with no option to switch if they are dissatisfied with their service.[166] In urban communities where broadband is available, it may not be affordable. In fact, the census tracts with the lowest broadband adoption rates in the Commonwealth are not in rural Virginia but in Richmond.[167]

The new funding would support a stronger Virginia Telecommunication Initiative program. Just this year, that grant program was improved by prioritizing networks that are willing to serve everyone in a location, including less densely populated neighborhoods.[168] And more parts of Virginia are now eligible for grants.[169]

With state, tribal, and local governments showing the way on broadband internet access, the federal government should support—not hamper—them. It's time to build a comprehensive broadband agenda, informed by state, tribal, and local leadership and innovation. The sooner we do so, the sooner we will reap the boundless benefits that come when every person can use a robust connection from their home to the internet.

VI

Conclusion

Crises bend the arc of history, and our current health, economic, and social-justice challenges will as well. In times of crisis, taking the long view is important. Again and again in American history, national emergencies and threats have been the fulcrum for improvement in our communications infrastructure.

Technology is a tool; it is neither by itself utopia nor dystopia. But it is a tool that can be used to improve society.

Samuel Morse thought his telegraph would bring world peace.[170] It did not. During the Civil War, the first transcontinental telegraph spanned the nation, and it was critical to Abraham Lincoln's management of the war effort.[171]

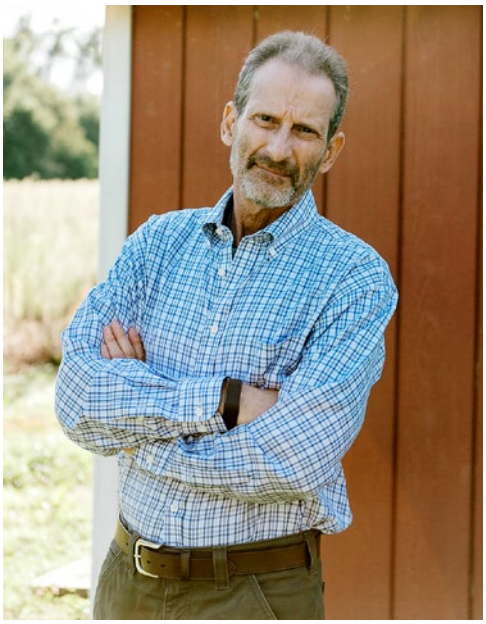
Frederick Douglass believed, as he explained in late 1861, that new technologies of communication, such as newly invented photography, would set his people free by telling the truth about their humanity and "challeng[ing] a sea of racist stereotypes."[172] Douglass, then the most photographed person in the world,[173] ended that speech by reminding his audience that the railroad "and the small ticking sound of the telegraph are alike prophecies of hope to the philanthropist, and warnings to the systems of slavery, superstition, and oppression to get themselves away to the murky shades of barbarism."[174] Frederick Douglass's prophesy has been, as Barack Obama said in July 2020, "a constant work in progress."[175]

In the 20th century, photography captured the central role of Black suffragettes[176] and the despair of the Depression, such as in Walker Evans's famous images; and then, supplemented by video and television, it both revealed the savagery of attacks on civil rights advocates on the Edmund Pettus Bridge and spread the images, words, and cadence of Dr. Martin Luther King's dream.[177]

This is American history, and American history needs to be learned and its lessons amplified even as it continues to be written—with 21st century technologies. The importance of broadband-enabled technologies to the fight for social justice is blindingly obvious: The truth of the deaths of George Floyd[178] and Ahmaud Arbery[179] were both recorded on smartphones and shared over broadband networks.

Schoolchild after schoolchild has stood and pledged liberty and justice for all. Liberty includes economic and social opportunity for all. One religious tradition tells us, in an admonition valued by Supreme Court Justice Ruth Bader Ginsburg,[180] "Justice, justice you shall pursue."[181] Broadband is only a tool, but in the months since the publication of our 2019 report, broadband has shown itself to be a tool that has magnified the upheld beacon of justice.

We know now what we need to know: High-Performance Broadband connections are an essential pathway to full participation and equal opportunity in our society, our economy, and our democracy. The time to fulfill that promise—and to realize that prophesy—is now.



About the Author

Jonathan Sallet is a Senior Fellow at the Benton Institute for Broadband & Society. His work on communications and technology policy includes serving during the Clinton Administration as head of the White House's first working group on education technology and of the office of Policy & Strategic Planning for Secretary Ron Brown at the Department of Commerce. From 2013-2016, Mr. Sallet served as Acting General Counsel and then as General Counsel of the Federal Communications Commission during the chairmanship of Tom Wheeler.

Mr. Sallet was as a deputy assistant attorney general in the Antitrust Division of the Department of Justice in the Obama Administration and President Obama appointed him to be a member of the Council of the Administrative Conference of the United States.

Earlier in his career, Mr. Sallet served as Editor-in-Chief of the Virginia Law Review at the University of Virginia and as a law clerk to Judge Edward Tamm of the United States Court of Appeals for the District of Columbia Circuit and to Associate Justice Lewis F. Powell, Jr., of the United States Supreme Court.
Mr. Sallet and his wife Lori divide their time between Virginia and the Eastern Shore of Maryland, where they own a certified-organic, working farm.

Acknowledgements

I would like to extend a special thanks to all those who made this work possible: To Marjorie Craig Benton, Trustee, for her foresight in pursuing the Benton mission for almost four decades and, of course, for her warm and personal hospitality; to Executive Director Adrianne B. Furniss for her leadership of Benton's work as it takes on new challenges and, of course, for her decision to let me lend Benton a hand; to Executive Editor Kevin Taglang for his continuing insights in both the substance of policy and the style of effective writing; and to the Benton trustees, board, and staff generally for their continuing support. Special thanks go to Jordan Arnold, whose indefatigable efforts, subject-matter expertise, and sage judgment over the past months contributed enormously to the content and coherence of this essay.

In the course of preparing this follow-up to our 2019 Report, we were fortunate enough to meet and talk with many people over the last year who are hard at work on broadband across the nation. I am particularly grateful to those who reviewed different parts of this report; lending their special expertise, raising important questions, and offering insightful recommendations. The report is better for their contributions.

Mignon L. Clyburn, Principal, MLC Strategies, LLC

Kathryn de Wit, Manager, Broadband Research Initiative, The Pew Charitable Trusts

Yosef Getachew, Director of Media and Democracy Program, Common Cause

Joanne Hovis, President, CTC Technology & Energy

Jim Kohlenberger, former Chief of Staff, White House Office of Science and Technology Policy

Traci Morris, Ph.D. (Chicasaw Nation), Executive Director, American Indian Policy Institute, Arizona State University

Francella Ochillo, Executive Director, Next Century Cities

Jon M. Peha, Professor of Electrical Engineering and Public Policy, Carnegie Mellon University

Andrew Jay Schwartzman, Senior Counselor, Benton Institute for Broadband & Society

Gigi Sohn, Senior Fellow and Public Advocate, Benton Institute for Broadband & Society

Olivia Wein, Staff Attorney, National Consumer Law Center

Tom Wheeler, Former FCC Chairman; Visiting Fellow, Brookings Institution; Senior Fellow, Harvard Kennedy School

John Windhausen, Jr., Executive Director, Schools, Health & Libraries Broadband (SHLB) Coalition

Endnotes

1 Jonathan Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," *Benton Institute for Broadband & Society*, October 2019, 9-10, 20-23, 93-94, https://www.benton.org/publications/broadband-policy2020s.

2 Tim Farley, John Lewis, and David L. Cohen, "Rep. John Lewis (D-GA) and Comcast Exec. VP David Cohen Discuss Internet Essentials on SiriusXM Radio," The Morning Briefing (podcast), SiriusXM Radio, made available in recorded form on August 24, 2012, https://corporate.comcast.com/comcast-voices/rep-john-lewis-d-ga_and_comcast_exec_vp_david_cohen_discuss_internet_essentials_with_tim_farley.

3 John B. Horrigan, "Analysis: Digital Divide Isn't Just a Rural Problem," *Daily Yonder*, August 14, 2019, https://dailyyonder.com/analysis-digital-divide-isnt-just-a-rural-problem/2019/08/14/.

4 "Internet/Broadband Fact Sheet," *Pew*, June 12, 2019, https://www.pewresearch.org/internet/fact-sheet/internet-broadband/.

5 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 9-10, 20-23, 93-94.

6 Some economists say that "a stuttering recovery isn't shaped like a U, a V, or even an L, as much as a K, whereby those at the top of the heap strengthen their positions while the rest see their fortunes further degrade. Tory Newmyer, "The Finance 202: Economists Talking Up 'K Shaped' Recovery as Stocks Surge but Inequality Widens," *The Washington Post*, August 19, 2020, https://www.washingtonpost.com/politics/2020/08/19/finance-202-economists-talking-up-k-shaped-recovery-stocks-surge-inequality-widens/.

7 Jeb Bush, "Broadband Internet is an Imperative, Not a Luxury," *Slate*, October 2, 2020, https://slate.com/technology/2020/10/jeb-bush-broadband-internet-investment.html, (noting Americans who "live in rural areas where broadband providers say it's too expensive to serve. Or, alternatively and commonly, they can't afford it.").

8 See, e.g., National Digital Equity Center, "Requesting Your Maine Absentee Ballot Online" (webinar), September 12, 2020, https://digitalequitycenter.org/class/webinar-requesting-your-maine-absentee-ballot-online-9-12/, (Once a month for at least four months, the National Digital Equity Center hosted a webinar designed to teach Maine residents how to request their absentee ballots online.).

9 See National Consumer Law Center, "Remote Court Appearances in the COVID-19 Era: Protecting Consumers in Collection Lawsuits," June 2020, https://www.nclc.org/images/pdf/special_projects/covid-19/IB_Remote_Court_Appearances.pdf, (NCLC issue brief on consumer protections re remote hearings in debt collection cases); Michael Marciano, "Legal Services NYC Asks 'Virtual Court' to Consider Underserved Pro Se Clients," April 16, 2020, https://www.law.com/newyorklawjournal/2020/04/16/legal-services-nyc-asks-virtual-court-to-consider-underserved-pro-se-clients/?slreturn=20200808151223 (legal services worried about inability of low-income, limited English proficiency, elderly and pro se clients to get online for virtual court); Matt Reynolds, "Could Zoom Jury Trials Become the Norm During the Coronavirus Pandemic?," May 11, 2020, https://www.abajournal.com/web/article/could-zoom-jury-trials-become-a-reality-during-the-pandemic, (ABA article about Zoom jury trials citing FCC data estimating 21.3 million Americans without high speed internet).

10 Emily A. Vogels, Andrew Perrin, Lee Rainie, and Monica Anderson, "53% of Americans Say the Internet Has Been Essential during the COVID-19 Outbreak," *Pew*, April 30, 2020, https://www.pewresearch.org/internet/2020/04/30/53-of-americans-say-the-internet-has-been-essential-during-the-covid-19-outbreak/.

11 Brittany-Rae Gregory, "Connecting Residents in Boston, MA," Next Century Cities, September 9, 2020, https://nextcenturycities.org/connecting-residents-in-boston-ma/.

12 For example, in April 2020, the New York Times noted how people's "behaviors shifted, sometimes starkly, as the virus spread and pushed us to our devices for work, play and connecting." Ella Koeze and Nathaniel Popper, "The Virus Changed the Way We Internet," *The New York Times*, April 7, 2020, https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html. See also The Adecco Group, "We Asked 8,000 People How They Want to Work Post-COVID-19. Here Are 5 Things They Told Us That Will Likely Change the World of Work Forever," June 30, 2020, https://www.adeccogroup.com/futuhreinsight/we-asked-8000-people-how-they-want-to-work-post-covid-19-here-are-5-things-they-told-us-that-will-likely-change-the-world-of-work-forever/.

13 Nicholas Bloom, "How Working from Home Works Out," Stanford Institute for Policy Research, June 2020, https://siepr.stanford.edu/research/publications/how-working-home-works-out.

14 Jonathan I. Dingel and Bret Neiman, "How Many Jobs Can Be Done at Home?," Becker Friedman Institute for Economics at the University of Chicago, June 19, 2020, https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf.

15 Nicholas Bloom, "The Bright Future of Working from Home," Stanford Institute for Policy Research, May 2020, https://siepr.stanford.edu/research/publications/bright-future-working-home.

16 Katherine Guyot and Isabel V. Sawhill, "Telecommuting Will Likely Continue Long after the Pandemic," *Brookings*

Institution, April 6, 2020, https://www.brookings.edu/blog/up-front/2020/04/06/telecommuting-will-likely-continue-long-after-the-pandemic/.

17 Bloom, "How Working from Home Works Out." And there is more to do to ensure that front-line workers can earn a living wage in workplaces operated to keep them safe.

18 Rafi Goldberg, "Nearly a Third of American Employees Worked Remotely in 2019, NTIA Data Show," National Telecommunications and Information Administration ("NTIA"), September 3, 2020, https://www.ntia.doc.gov/blog/2020/nearly-third-american-employees-worked-remotely-2019-ntia-data-show.

19 Mark Muro, Sifan Liu, Jacob Whiton, and Siddarth Kukarni, "Digitalization and the American Workforce," Brookings Metropolitan Policy Program, November 2017, https://www.brookings.edu/research/digitalization-and-the-american-workforce/.

20 Yosef Getachew (Media & Democracy Program director, Common Cause), email to Jordan Arnold, September 23, 2020.

21 Harry Holzer, "Job Market Polarization and U.S. Worker Skills: A Tale of Two Middles," *Brookings Institution*, April 2015, https://www.brookings.edu/wp-content/uploads/2016/06/polarization_jobs_policy_holzer.pdf.

22 John B. Horrigan, "Adapting Jobs Programs for Today and Tomorrow," *Benton Institute for Broadband & Society*, August 3, 2020, 2, https://www.benton.org/sites/default/files/AdaptingJobsPrograms.pdf.

23 EducationSuperHighway, "State of the States – 2019," 6, 13, https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/2019%20State%20of%20the%20States.pdf.

24 Sumit Chandra, Amy Chang, Lauren Day, Amina Fazlullah, Jack Liu, Lane McBride, Thisal Mudalige, and Danny Weiss, "Closing the K–12 Digital Divide in the Age of Distance Learning," Common Sense and Boston Consulting Group, 2020, 3, https://www.commonsensemedia.org/sites/default/files/uploads/pdfs/common_sense_media_report_final_6_29_12-42pm_web_updated.pdf.

25 Brooke Auxier and Monica Anderson, "As Schools Close Due to the Coronavirus, Some U.S. Students Face a Digital 'Homework Gap,'" *Pew*, March 16, 2020, https://www.pewresearch.org/fact-tank/2020/03/16/as-schools-close-due-to-the-coronavirus-some-u-s-students-face-a-digital-homework-gap/.

26 The Joint Center for Political and Economic Studies, "Expand Internet Access among Black Households," August 4, 2020, https://jointcenter.org/expand-internet-access-among-black-households/, (footnotes omitted).

27 Keith N. Hampton, Laleah Fernandez, Craig T. Robertson, and Johannes M. Bauer, "Broadband and Student Performance Gaps," The Quello Center, Michigan State University, March 3, 2020, 7, http://quello.msu.edu/wp-content/uploads/2020/03/Broadband_Gap_Quello_Report_MSU.pdf, (hereafter cited as Quello Center, "Broadband and Student Performance Gaps").

28 Quello Center, "Broadband and Student Performance Gaps," 10, (discussing STEM and STEAM-related jobs).

29 Quello Center, "Broadband and Student Performance Gaps," 5.

30 Abigail Hess, "How Coronavirus Dramatically Changed College for Over 14 Million Students," *CNBC*, March 26, 2020, https://www.cnbc.com/2020/03/26/how-coronavirus-changed-college-for-over-14-million-students.html; "Map: Coronavirus and School Closures in 2019-2020," *Education Week*, updated September 16, 2020, https://www.edweek.org/ew/section/multimedia/map-coronavirus-and-school-closures.html.

31 Valerie Strauss, "Coronavirus Pandemic Shines Light on Deep Digital Divide in U.S. Amid Efforts to Narrow It," *The Washington Post*, April 29, 2020, https://www.washingtonpost.com/education/2020/04/29/coronavirus-pandemic-shines-light-deep-digital-divide-us-amid-efforts-narrow-it/.

32 Emma Whitford, "August Wave of Campus Reopening Reversals," *Inside Higher Ed*, August 12, 2020, https://www.insidehighered.com/news/2020/08/12/hundreds-colleges-walk-back-fall-reopening-plans-and-opt-online-only-instruction.

33 Michelle Kurilla and Kavya Shah, "Six Harvard Graduate Schools to Conduct Classes Online in Fall 2020," *The Harvard Crimson*, June 3, 2020, https://www.thecrimson.com/article/2020/6/3/hgse-fall-online/.

34 Doug Harris (professor and department chair of economics, Tulane University), in video discussion with Jonathan Sallet and Jordan Arnold, June 15, 2020; see Jon Villasenor, "Online Classes Are Here to Stay. What Does That Mean for Higher Education?," *Brookings Techtank* (blog), June 1, 2020, https://www.brookings.edu/blog/techtank/2020/06/01/online-college-classes-are-here-to-stay-what-does-that-mean-for-higher-education/.

35 "Overall enrollment [is] up 7.6% over fall 2019 as university gives students options of where and how they prefer to attend class." Meenah Rincon, "'Forward Momentum': ASU Launches Fall Semester with Multiple Ways to Learn," Arizona State University, August 20, 2020, https://asunow.asu.edu/20200820-sun-devil-life-asu-begins-fall-semester-record-enrollment.

36 Nicol Turner Lee, Jack Karsten, and Jordan Roberts, "Removing Regulatory Barriers to Telehealth before and after COVID-1," *Brookings Institution*, May 6, 2020, https://www.brookings.edu/research/removing-regulatory-barriers-to-telehealth-before-and-after-covid-19/.

37 Office of the President, "Executive Order on Improving Rural Health and Telehealth Access," Exec. Order No. 13941, 85 Fed. Reg. 47881 (August 3, 2020), https://www.govinfo.gov/content/pkg/FR-2020-08-06/pdf/2020-17364.pdf; Stuart M. Butler, "After COVID-19—Thinking Differently About Running the Health Care System," *Journal of the American Medical Association (JAMA) Forum*, April 23, 2020, https://jamanetwork.com/channels/health-forum/fullarticle/2765238?resultClick=1,

(temporary rules expanding Medicare reimbursement for televisits).

38 Coronavirus Aid, Relief, and Economic Security ("CARES") Act, Pub. L. 116–136, § 5001, 134 STAT. 281, 531, March 27, 2020, https://www.congress.gov/116/plaws/publ136/PLAW-116publ136.pdf, (hereafter "CARES Act").

39 Tanya Albert Henry, "After COVID-19, $250 Billion in Care Could Shift to Telehealth," American Medical Association, June 18, 2020, https://www.ama-assn.org/practice-management/digital/after-covid-19-250-billion-care-could-shift-telehealth.

40 Nathan Eddy, "Nearly Half of Physicians Using Telehealth, up from Just 18% in 2018," *Healthcare IT News*, April 23, 2020, https://www.healthcareitnews.com/news/nearly-half-physicians-using-telehealth-just-18-2018.

41 Heather Landi, "The COVID-19 Pandemic Will Have a Long-Term Impact on Healthcare. Here Are 4 Changes to Expect," *Fierce Healthcare*, May 18, 2020, https://www.fiercehealthcare.com/tech/4-ways-healthcare-will-change-from-impact-covid-19-experts-say.

42 Dr. Eric Wallace (medical director of telehealth, University of Alabama at Birmingham), in telephone interview with Jordan Arnold, September 23, 2020.

43 Butler, "After COVID-19—Thinking Differently About Running the Health Care System."

44 Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.

45 Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.

46 Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.

47 Morris Panner, "How Telehealth Technology Is Helping to Close the Urban-Rural Divide in Health Care," *Forbes*, June 30, 2020, https://www.forbes.com/sites/forbestechcouncil/2020/06/30/how-telehealth-technology-is-helping-to-close-the-urban-rural-divide-in-health-care/#5a88ef88e0e4.

48 Panner, "How Telehealth Technology Is Helping to Close the Urban-Rural Divide in Health Care."

49 See Heather Landi, "CMS: Upcoming Medicare Payment Rule to Include Permanent Telehealth Expansions," *Fierce Healthcare*, June 25, 2020, https://www.fiercehealthcare.com/practices/cms-upcoming-medicare-payment-rule-to-include-proposals-to-expand-telehealth?MvBriefArticleId=9211.

50 Lee Taylor-Penn and Emmett Ruff, "Advancing Health Equity through Telehealth Interventions During COVID-19 and Beyond: Policy Recommendations and Promising State Models," FamiliesUSA, July, 22, 2020, https://familiesusa.org/resources/advancing-health-equity-through-telehealth-interventions-during-covid-19-and-beyond-policy-recommendations-and-promising-state-models/.

51 Ben Zipperer and Elise Gould, "New Survey Confirms That Millions of Jobless Were Unable to File an Unemployment Insurance Claim," *Economic Policy Institute*, April 28, 2020, https://www.epi.org/blog/unemployment-filing-failures-new-survey-confirms-that-millions-of-jobless-were-unable-to-file-an-unemployment-insurance-claim/.

52 Samantha Schartman (executive director, the Marconi Society), in video discussion with Jonathan Sallet, June 5, 2020.

53 See, e.g., Joseph Holloway, "OESC Working on Upgrades to Unemployment Filing Process," *News on 6* (Tulsa, OK television news program and related website), August 26, 2020, https://www.newson6.com/story/5f463ed1ebdc1245ce90b582/oesc-working-on-upgrades-to-unemployment-filing-process; Paul Roberts, "Good News, Bad News for the Unemployed as Washington Agency Tries to Ramp Up amid Flood of Claims," *The Seattle Times*, April 1, 2020, https://www.seattletimes.com/business/economy/state-unemployment-agency-tries-to-ramp-up-as-coronavirus-related-claims-pour-in/.

54 Olivia Wein (staff attorney, National Consumer Law Center), in a note comment sent to Jonathan Sallet, September 8, 2020.

55 Francella Ochillo (executive director, Next Century Cities), in video discussion with Jonathan Sallet, July 14, 2020.

56 Angela Siefer, "What Do We Mean When We Say 'Digital Equity' and 'Digital Inclusion'?," *Benton Institute for Broadband & Society*, October 27, 2016, https://www.benton.org/blog/what-do-we-mean-when-we-say-digital-equity-and-digital-inclusion.

57 Joshua Edmonds (director of digital inclusion, City of Detroit), in telephone conversation with Jonathan Sallet and Jordan Arnold, September 16, 2020.

58 Joshua Edmonds (director of digital inclusion, City of Detroit), in telephone conversation with Jonathan Sallet and Jordan Arnold, September 16, 2020.

59 Monica Anderson and Madhumitha Kumar, "Digital Divide Persists Even as Lower-Income Americans Make Gains in Tech Adoption," *Pew*, May 7, 2019, https://www.pewresearch.org/fact-tank/2019/05/07/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/.

60 John B. Horrigan and Maeve Duggan, "Barriers to Broadband Adoption: Cost Is Now a Substantial Challenge for Many Non-Users," *Pew*, December 21, 2015, https://www.pewresearch.org/internet/2015/12/21/3-barriers-to-broadband-adoption-cost-is-now-a-substantial-challenge-for-many-non-users/.

61 Saida Mamedova, Emily Pawlowski, "A Description of U.S. Adults Who Are Not Digitally Literate," *Stats in Brief*, U.S. Department of Education, May 2018, 6, https://nces.ed.gov/pubs2018/2018161.pdf.

62 John B. Horrigan, "Adapting Jobs Programs for Today and Tomorrow," *Benton Institute for Broadband & Society*, August 3, 2020, 2, https://www.benton.org/sites/default/files/AdaptingJobsPrograms.pdf; Holzer, "Job Market Polarization and U.S. Worker Skills: A Tale of Two Middles," 1.

63 Horrigan, "Adapting Jobs Programs for Today and Tomorrow," 2; Digital US Coalition, "Building a Digitally Resilient Workforce, May 2020, 5, https://digitalus.org/wp-content/uploads/2020/06/DigitalUS-Report-pages-20200602.pdf.

64 Jon Peha (Professor, Carnegie Mellon University), in email to Jonathan Sallet, August 31, 2020.

65 Jon Peha (Professor, Carnegie Mellon University), in email to Jonathan Sallet, August 31, 2020, referencing unpublished research.

66 Jon Peha (Professor, Carnegie Mellon University), in email to Jonathan Sallet, August 29, 2020.

67 Mariya Brussevich, Era Dabla-Norris, Salma Khalid, "Who Will Bear the Brunt of Lockdown Policies? Evidence from Tele-workability Measures across Countries," *IMF Working Papers*, International Monetary Fund, June 12, 2020, 4, https://www.imf.org/en/Publications/WP/Issues/2020/06/12/Who-will-Bear-the-Brunt-of-Lockdown-Policies-Evidence-from-Tele-workability-Measures-Across-49479.

68 See Centers for Disease Control and Prevention ("CDC"), "COVID-19 Hospitalization and Death by Race/Ethnicity," updated August 18, 2020, https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html; APM Research Lab Staff, "The Color of Coronavirus: COVID-19 Deaths by Race and Ethnicity in the U.S.,"APM Research Lab, https://www.apmresearchlab.org/covid/deaths-by-race.

69 Claudia Sahm (formerly Federal Reserve economist), in email to Jonathan Sallet and Jordan Arnold, September 24, 2020.

70 Alexandra Villarreal, "Coronavirus Pandemic Exacerbates Inequalities for Women, UN Warns," *The Guardian*, April 11, 2020, https://www.theguardian.com/world/2020/apr/11/un-coronavirus-pandemic-gender-inequalities-women, (describing report of the United Nations).

71 Titan Alon, Matthias Doepke, Jane Olmstead-Rumsey, and Michèle Tertilt, "The Impact of COVID-19 on Gender Equality," National Bureau of Economic Research, NBER Working Paper No. 26947, April 2020, https://www.nber.org/papers/w26947.

72 Max Fisher and Emma Bubola, "As Coronavirus Deepens Inequality, Inequality Worsens Its Spread," *The New York Times*, March 15, 2020, https://www.nytimes.com/2020/03/15/world/europe/coronavirus-inequality.html.

73 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 103.

74 Stefanie Sanford and Larry Irving, "We Need to Address the Digital Divide Causing an Educational Crisis," *CNN*, July 31, 2020, https://edition.cnn.com/2020/07/31/opinions/digital-divide-kids-education-wellness/index.html.

75 See Olivia Wein and Cheryl Leanza, "Affordable Broadband Service is a Racial Equity and Public Health Priority During COVID-19," The Leadership Conference on Civil & Human Rights, June 29, 2020, https://civilrights.org/blog/affordable-broadband-service-is-a-racial-equity-and-public-health-priority-during-covid-19/.

76 Jonathan Sallet, "America's Broadband Moment: Making Broadband Affordable," *Benton Institute for Broadband & Society*, May 5, 2020, https://www.benton.org/blog/americas-broadband-moment-making-broadband-affordable.

77 Free Press, "Free Press Action Priorities for COVID-19 Relief Legislation," July 17, 2020, 1, https://www.freepress.net/policy-library/free-press-action-priorities-covid-19-relief-legislation.

78 Harold Feld, "Want to Keep America Home? Give Everyone Free Basic Broadband," *Public Knowledge*, March 20, 2020, https://www.publicknowledge.org/blog/want-to-keep-america-home-give-everyone-free-basic-broadband/.

79 Ann Treacy, "Broadband Funding Passing in US House – Now to the Senate," *Blandin Foundation*, July 1, 2020, https://blandinonbroadband.org/2020/07/01/broadband-funding-passing-in-us-house-now-to-the-senate/.

80 Remarks of Commissioner Geoffrey Starks, 2019 Annual Premier Membership & Strategic Meeting, Fiber Broadband Association, Washington, DC, December 10, 2019, 4, https://docs.fcc.gov/public/attachments/DOC-361258A1.pdf.

81 Joint Center for Political and Economic Studies, "Joint Center Hosts Briefing with FCC Commissioner Geoffrey Starks on COVID-19 & the Digital Divide," April 10, 2020, https://jointcenter.org/joint-center-hosts-briefing-with-fcc-commissioner-starks-on-covid-19-the-digital-divide/.

82 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 104.

83 Horrigan, "Adapting Jobs Programs for Today and Tomorrow."

84 Angela Siefer (executive director, National Digital Inclusion Alliance), in email to Jordan Arnold, September 23, 2020.

85 National Digital Inclusion Alliance ("NDIA"),"The Digital Navigator Model," https://www.digitalinclusion.org/digital-navigator-model/, accessed September 23, 2020. As noted below, the Accessible, Affordable Internet for All Act (H.R. 7302) includes the Digital Equity Act, which would provide funding for states to make digital inclusion plans and would also provide funding for local digital equity/inclusion initiatives.

86 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 64.

87 Mignon Clyburn and Jon Sallet, "Make Broadband Far More Affordable," *The Boston Globe*, June 27, 2020, https://www.bostonglobe.com/2020/06/27/opinion/make-broadband-far-more-affordable/.

88 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 37.

89 Yosef Getachew (Media & Democracy Program director, Common Cause), in a note comment sent to Jonathan Sallet, September 9, 2020.

90 Moving Forward Act, H.R. 2, 116th Congress (2020), §§ 31121-31122, https://www.congress.gov/116/bills/hr2/BILLS-116hr2eh.pdf, incorporating Accessible, Affordable Internet for All Act, H.R. 7302, 116th Congress (2020), §§ 1201-1202, https://www.congress.gov/116/bills/hr7302/BILLS-116hr7302ih.pdf. The first digital equity legislation in the current Congress was introduced by Senator Patty Murray (D-WA), Digital Equity Act of 2019, S.1167, 116th Congress (2019-2020), introduced in Senate April 11, 2019, https://www.congress.gov/bill/116th-congress/senate-bill/1167text?q=%7B%22search%22%3A%5B%22Patty+Murray%22%5D%7D&r=3&s=1.

91 Horrigan, "Adapting Jobs Programs for Today and Tomorrow," 7.

92 [Single line cross-cite to establish after design].

93 The employment multiplier method used by broadband infrastructure spending analyses to predict the likely impact on employment often relies on prior data to establish the relationships between capital spending and labor spending in multiple similar telecommunications markets. See, e.g., Hal J. Singer and Jeffrey D. West, "Economic Effects of Broadband Infrastructure Deployment and Tax Incentives for Broadband Deployment," Navigant Economics, March 2, 2010, 8-9, 14, http://neoconnect.us/wp-content/uploads/2015/09/Economic_Effects_of_FTTH.pdf, (relying on the Bureau of Economic Analysis's most recent RIMS II multipliers developed from data in 1997 and 2006). However, those relationships are partially a function of the specific levels of employment and other labor factors present at the time that the historical data was gathered. A higher level of unemployment, relative to the conditions used to calculate the multiplier, reflects excess capacity in the labor market, which may suggest that the infrastructure spending will lead to faster hiring or lower cost of employment per worker as a result of the labor surplus and thus a higher rate of hiring per amount invested. See Singer and West, "Economic Effects…, 9-10.

94 Speed Matters.org, "Economic Growth & Quality Jobs," https://speedmatters.org/economic_growth_quality_jobs, accessed September 24, 2020, (Speed Matters.org is a program of the Communications Workers of America.).

95 Christopher Curley, "Rural America Could Be the Region Hardest Hit by the COVID-19 Outbreak," *Healthline*, August 3, 2020, https://www.healthline.com/health-news/rural-america-hardest-hit-by-covid-19-outbreak#Is-telemedicine-the-answer?.

96 Jon Peha (Professor, Carnegie Mellon University), in email to Jonathan Sallet, August 31, 2020.

97 Gene Zaleski, "'We've Got to Connect Rural America': COVID-19 Has Highlighted Need for Improved Internet Access in T&D Region," *The Times and Democrat* (newspaper in Orangeburg, SC), July 27, 2020, https://thetandd.com/news/local/weve-got-to-connect-rural-america-covid-19-has-highlighted-need-for-improved-internet-access/article_c101dfba-743c-5583-99ae-eea02a9da757.html.

98 Grace Connatser, "Panelists Call for Barriers between Broadband and Rural Communities to Be Taken Down," *Wisconsin State Farmer*, June 30, 2020, https://www.wisfarmer.com/story/news/2020/06/30/panelists-say-barriers-block-rural-communities-internet-access/3259175001/.

99 Brian Howard and Mikhail Sundust, "COVID-19: The Impact of Limited Internet Access and Issues with Social Distancing for Native Students," *Policy Brief*, American Indian Policy Institute, Arizona State University, https://aipi.asu.edu/sites/default/files/indigenous_digital_divide_policy_brief.pdf, accessed September 23, 2020.

100 Darrah Blackwater, "For Tribal Lands Ravaged by COVID-19, Broadband Access is a Matter of Life and Death," Internet Society, May 15, 2020, https://www.internetsociety.org/blog/2020/05/for-tribal-lands-ravaged-by-covid-19-broadband-access-is-a-matter-of-life-and-death/.

101 Adie Tomer, Elizabeth Kneebone, and Ranjitha Shivaram, "Signs of Digital Distress: Mapping Broadband Availability and Subscription in American Neighborhoods," Brookings Metropolitan Infrastructure Initiative, September 12, 2017, https://www.brookings.edu/research/signs-of-digital-distress-mapping-broadband-availability/, (search performed August 24, 2020).

102 Federal Communications Commission ("FCC"), "Compare Broadband Availability in Different Areas" (information request platform), June 2019, https://broadbandmap.fcc.gov/#/area-comparison?version=jun2019&tech=acfow&speed=100_10&searchtype=state&searched=y&geoid=36, (100/10 Mbps, excluding satellite).

103 Biography page of Christopher Ali, University of Virginia, https://mediastudies.virginia.edu/people/cfa2z, visited September 23, 2020; Dave Flessner, "Chattanooga Internet Providers Meet Shifting Demand for Broadband from COVID-19," *Chattanooga Times Free Press*, March 21, 2020, https://www.timesfreepress.com/news/business/aroundregion/story/2020/mar/31/chattanooginternet-providers-meet-shifting-demand/519570/.

104 U.S. Department of Agriculture, "Farm Computer Usage and Ownership," August 2019, 5, https://www.nass.usda.gov/Publications/Todays_Reports/reports/fmpc0819.pdf.

105 For a discussion of tribal lands specifically, see Brian Howard and Traci Morris, "Tribal Technology Assessment: The State of Internet Service on Tribal Lands," American Indian Policy Institute, Arizona State University, Fall 2019, https://aipi.asu.edu/sites/default/files/tribal_tech_assessment_compressed.pdf.

106 Christopher Ali, *Farm Fresh Broadband: The Future of Connectivity* (n.p.; MIT Press, forthcoming), 86-87 (manuscript), (expected title).

107 Ali, *Farm Fresh*, manuscript at 102-104.

108 [Single line cross-cite to establish after design]

109 Kathryn de Wit, (manager, Broadband Research Initiative, Pew Charitable Trusts), in email to Jonathan Sallet, September 17, 2020.

110 See, e.g., Anne Stauffer, Kathryn de Wit, Anna Read, and Dan Kitson, "How States Are Expanding Broadband Access," *Pew*, 14, 23-24, 28-29, February 2020, , https://www.pewtrusts.org/-/media/assets/2020/03/broadband_report0320_final.pdf.

111 In 2017, the FCC under Tom Wheeler published an analysis finding that all Americans could be connected to futureproof networks for $80 billion. Paul de Sa, "Improving the Nation's Infrastructure," FCC document, January 17, 2017, https://docs.fcc.gov/public/attachments/DOC-343135A1.pdf.

112 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 80-81.

113 Avi-Asher Schapiro, "Coronavirus Crisis Threatens Internet Opportunity for Native Americans," *Reuters*, July 27, 2020, https://www.reuters.com/article/us-health-coronavirus-usa-rights-trfn-idUSKCN24T06B.

114 Brian Howard and Traci Morris, "Memorandum: Tribal and Broadband Issues," September 24, 2020, on file with Jonathan Sallet.

115 Deploying the Internet by Guaranteeing Indian Tribes Autonomy over Licensing ("DIGITAL") on Reservations Act, H.R. 7774, 116th Congress, introduced July 24, 2020, https://www.congress.gov/116/bills/hr7774/BILLS-116hr7774ih.pdf.

116 Bridging the Tribal Digital Divide Act of 2020, S. 3264, 116th Congress (2020), https://www.congress.gov/116/bills/s3264/BILLS-116s3264is.pdf.

117 Moving Forward Act, H.R. 2, 116th Congress (2020), § 31401, https://www.congress.gov/116/bills/hr2/BILLS-116hr2eh.pdf, incorporating Accessible, Affordable Internet for All Act, H.R. 7302, 116th Congress (2020), §4001, https://www.congress.gov/116/bills/hr7302/BILLS-116hr7302ih.pdf, (definition of State or local entity).

118 Where private investment has built a network, particularly in a rural area, then some may say that there is no purpose in encouraging competitive entry because the network is a natural monopoly, which is to say that consumer demand in a defined geographic market is insufficient to support a second competitor providing a product of similar quality and price (and therefore with a similar cost structure). But, of course, where a new entrant provides higher quality and/or lower prices (because of lower costs) than monopoly is not necessarily natural. New technologies (say fixed wireless) can offer provider lower prices. (As discussed in the text, a different situation arises where government paid for the construction of a network. Of course, some places are especially challenging; as noted above Brian Howard and Traci Morris, concluding that Indian Country does not have the market characteristics of urban or suburban America, have issued a comprehensive agenda for tribal lands in part because they conclude that "[t] regulatory, programmatic, and funding mechanisms championed over the past twenty years have had limited success when Tribal lands continue to lag behind high-speed internet access when compared to the country overall. Morris and Howard, "Tribal Technology Assessment," 36.

119 FCC, "Compare Broadband Availability in Different Areas" (information request platform), June 2019, https://broadbandmap.fcc.gov/#/area-comparison?version=jun2019&tech=acfow&speed=100_10&searchtype=state&searched=y&geoid=36, (100/10 Mbps, excluding satellite). According to the FCC analysis, which systematically overstates deployment at the typical cable broadband speeds, shows 9.22 percent of all Americans, 2.63 percent of urban residents, 36.28 percent of rural residents, and 38.59 percent of tribal residents have no broadband at these speeds. See also, FCC, "Fixed Coverage Updates as of YE2018; Figures D-3 and D-4," 2020, 2, https://us-fcc.app.box.com/s/tijhz8cupitst0kg4l8c81dtzdyyduu9.

120 Communication Workers of America and National Digital Inclusion Alliance, "AT&T's Digital Redlining Leaving Communities Behind for Profit," October 2020, https://www.digitalinclusion.org/wp-content/uploads/dlm_uploads/2020/10/ATTs-Digital-Redlining-Leaving-Communities-Behind-for-Profit.pdf; Bill Callahan, "NDIA's First AT&T Redlining Report Is a Year Old Today," *Digital Inclusion News*, National Digital Inclusion Alliance, March 10, 2018, https://www.digitalinclusion.org/blog/2018/03/10/ndias-first-att-redlining-report-is-a-year-old-today-2/, (Cleveland); Bill Callahan, "AT&T's Digital Redlining of Dallas: New Research by Dr. Brian Whitacre," *Digital Inclusion News*, National Digital Inclusion Alliance, August 6, 2019, https://www.digitalinclusion.org/blog/2019/08/06/atts-digital-redlining-of-dallas-new-research-by-dr-brian-whitacre/, (Dallas). Both Cleveland and Dallas are served by cable-broadband providers that were not part of the studies. BroadbandNow, "Internet Providers in Cleveland, Ohio," https://broadbandnow.com/Ohio/Cleveland, accessed September 23, 2020; BroadbandNow, "Internet Providers in Dallas, Texas, https://broadbandnow.com/Texas/Dallas, accessed September 23, 2020.

121 Callahan, "AT&T's Digital Redlining of Dallas."

122 Ryland Sherman, "America's Broadband Moment: Facilitating Competition in Apartment Buildings," *Benton Institute for Broadband & Society*, July 22, 2020, https://www.benton.org/blog/americas-broadband-moment-facilitating-competition-apartment-buildings.

123 FCC, "Compare Broadband Availability in Different Areas," (100/10 Mbps, excluding satellite).

124 "Rural Broadband and the American Farmer: Connectivity Challenges Limit Agriculture's Economic Impact and Sustainability," United Soybean Board, 1, 9, https://api.unitedsoybean.org/uploads/documents/58546-1-ruralbroadband-whitepages-final.pdf.

125 Leichtman Research Group, "About 1,245,000 Added Broadband in 2Q 2020," August 13, 2020, https://www.leichtmanresearch.com/about-1245000-added-broadband-in-2q-2020/.

126 Lindsay Cayne, "One Bent Mountain Resident Brings Broadband to His Community," *WDBJ Channel 7*, January 24, 2019, https://www.wdbj7.com/content/news/Bent-Mountain-residents-get-broadband-504823932.html.

127 Moving Forward Act, H.R. 2, 116th Congress (2020), § 31321, https://www.congress.gov/116/bills/hr2/BILLS-116hr2eh.pdf, incorporating Accessible, Affordable Internet for All Act, H.R. 7302, 116th Congress (2020), §3101, https://www.congress.gov/116/bills/hr7302/BILLS-116hr7302ih.pdf,

128 Stauffer et al, "How States Are Expanding Broadband Access," 23.

129 Becky Chao and Claire Park, "The Cost of Connectivity 2020," Open Technology Institute, New America, July 2020, 6-7, https://d1y8sb8igg2f8e.cloudfront.net/documents/The_Cost_of_Connectivity_2020__XatkXnf.pdf.

130 Brian Whitacre and Roberto Gallardo, "State Broadband Policy: Impacts on Availability," *Telecommunications Policy*, 44, no. 9 (October 2020): 102025.

131 [Two-line forthcoming cite when name and other info solidifies more after design]

132 Chao and Park, "The Cost of Connectivity 2020," 6-7.

133 "Free Press Action Priorities for COVID-19 Relief Legislation."

134 Sherman, "America's Broadband Moment: Facilitating Competition in Apartment Buildings."

135 Maryland Department of Housing and Community Development, "Maryland Rural Broadband," https://dhcd.maryland.gov/RuralBroadband/Pages/default.aspx, accessed September 25, 2020.

136 Bill Clinton, "State of the Union Address," January 25, 1994, American History, http://www.let.rug.nl/usa/presidents/william-jefferson-clinton/state-of-the-union-1994-(delivered-version).php.

137 Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 79-80.

138 John Windhausen (executive director, Schools, Health & Libraries Broadband Coalition ("SHLB")), in audio call with Jonathan Sallet, July 30, 2020.

139 Cecilia Kang, "Parking Lots Have Become a Digital Lifeline," *The New York Times*, May 5, 2020, https://www.nytimes.com/2020/05/05/technology/parking-lots-wifi-coronavirus.html.

140 Traci Morris, in email to Jonathan Sallet, September 3, 2020.

141 Kang, "Parking Lots Have Become a Digital Lifeline."

142 Alia Malik, "San Antonio Will Leverage Traffic Lights to Expand Fiber Network for Students," *San Antonio Express-News*, July 24, 2020, https://www.expressnews.com/news/education/article/San-Antonio-will-leverage-traffic-lights-to-15432156.php.

143 Andrew Goldstein, "Neighborhood Allies Secures Internet Access, Devices for PPS Families," *Pittsburg Post-Gazette*, June 11, 2020, https://www.post-gazette.com/news/education/2020/06/11/Neighborhood-Allies-internet-access-devices-Pittsburgh-Public-Schools-families/stories/202006110129.

144 WTVC Staff, "Hamilton Co. Schools, EPB to Provide Free Home Internet and Equipment for Kids in Need," *WTVC News Channel 9* (Chattanooga), July 29, 2020, https://newschannel9.com/news/before-the-bell/hamilton-co-schools-partners-announce-digital-connectivity-initiative-for-local-studen.

145 State of Colorado, Petition for Waiver on behalf of The State of Colorado, Modernizing the E-rate Program for Schools and Libraries, Connect America Fund, WC Docket No. 13-184, September 2, 2020, https://coag.gov/app/uploads/2020/09/State-of-Colorado-Emergency-E-Rate-Waiver-Petition-9.2.2020.pdf.

146 The Quilt, a consortium of regional Research and Education (R&E) Networks throughout the United States, counts among its members such networks in 38 states. The Quilt, "Advanced Regional Networking in Support of Research and Education," https://www.thequilt.net, accessed September 25, 2020.

147 Eric Wicklund, "FCC Boosts Rural Health Program Funding to Support Telehealth Expansion," *mHealth Intelligence*, June 30, 2020, https://mhealthintelligence.com/news/fcc-boosts-rural-health-program-funding-to-support-telehealth-expansion.

148 Lee Rainie, Scott Keeter, and Andrew Perrin, "Trust and Distrust in America," *Pew*, July 22, 2019, https://www.pewresearch.org/politics/2019/07/22/trust-and-distrust-in-america/.

149 Julie Pace, Hannah Fingerhut, and Will Weissert, "AP-NORC Poll: Less Than Half Back Trump's Pandemic Response," *AP News*, April 1, 2020, https://apnews.com/1a7c1f7f226c6d04fa7ca380998a7e9a.

150 New York Broadband Program Office, "New NY Broadband Program Phase 3 Bidders Conference," (presentation), 25, 29, https://nysbroadband.ny.gov/sites/default/files/finall_introducing_phase_3.pdf; New York Broadband Program Office, "New NY Broadband Program: Phase 3 Request for Proposal Guidelines," March 30, 2017, 24-28, https://nysbroadband.ny.gov/sites/default/files/rfp_guidelines_phase_3.pdf.

151 Hannah Trostle, "Fifteen Fun Facts about NoaNet - Fifteen Years of Accomplishments," *Community Networks*, The Institute of Local Self-Reliance, January 13, 2016, https://muninetworks.org/content/fifteen-fun-facts-about-noanet-fifteen-years-accomplishments; Chris Walker (telecommunications director, NoaNet), in telephone interview with Jonathan Sallet, March 13, 2020.

152 Washington State Department of Commerce, "CERB Rural Broadband Program," https://www.commerce.wa.gov/building-infrastructure/community-economic-revitalization-board/rural-broadband/, accessed September 24, 2020.

153 Minnesota Office of Broadband Development, "Annual Report," January 15, 2020, 6-12, 16, https://mn.gov/deed/assets/broadband-annual-report-2020_tcm1045-416256.pdf ("2020 Minnesota Annual Broadband Development Report"); Minnesota Department of Employment and Economic Development (DEED), "Broadband Grant

Program," https://mn.gov/deed/programs-services/broadband/grant-program/, accessed September 24, 2020; Blandin Foundation, https://blandinonbroadband.org/, accessed September 24, 2020.

154 KROX 105.7 FM (Crookston, MN), "Governor Walz Announces New Border-to-Border Broadband Grants," January 21, 2020, https://www.kroxam.com/2020/01/21/governor-walz-announces-new-border-to-border-broadband-grants/.

155 Minnesota Office of Broadband Development, "2020 Minnesota Broadband Grant Application," 4. https://mn.gov/deed/assets/grant-application-instruction-and-application_tcm1045-391863.docx.

156 Whitacre and Gallardo, "State Broadband Policy: Impacts on Availability."

157 Anna Read (broadband policies expert, Pew Charitable Trusts), in email to Jonathan Sallet, August 24, 2020.

158 "Commissioner Starks Official Statement on the Connect America Fund Proceeding."

159 Peggy Schaefer (executive director, The ConnectMaine Authority), in audio call with Jonathan Sallet, April 23, 2020; Sallet, "Broadband for America's Future: A Vision for Broadband in the 2020s," 82.

160 Francella Ochillo, "Universal Connectivity Is Still the Goal. We Need to Keep Working on Long-Term Solutions," *Benton Institute for Broadband & Society*, March 30, 2020, https://www.benton.org/blog/universal-connectivity-still-goal-we-need-keep-working-long-term-solutions.

161 Stauffer et al, "How States Are Expanding Broadband Access," 21-22.

162 Stauffer et al, "How States Are Expanding Broadband Access," 15.

163 "US State Policy," Pew Charitable Trusts, https://www.pewtrusts.org/en/topics/us-state-policy, accessed September 24, 2020.

164 Stauffer et al, "How States Are Expanding Broadband Access," 25.

165 Virginia Commonwealth Connect, "Report on Commonwealth Connect 2.0: Governor Northam's 2020 Plan to Connect Virginia," 11, https://commonwealthconnect.virginiainteractive.org/sites/default/files/CIT%20Documents/Commonwealth%20Connect%20Report.pdf.

166 BroadbandNow, "Internet Access in Virginia," https://broadbandnow.com/Virginia, accessed on June 18, 2020.

167 United States Census Bureau, "Types of Computers and Internet Subscriptions," American Community Survey – 2018, *available at* https://tinyurl.com/ACSInternetSubs2018.

168 Erik C. Johnston and Tamarah Holmes, "2021 Virginia Telecommunication Initiative (VATI) Program Guidelines and Criteria," Virginia Department of Housing and Community Development, 2020, 12, https://dhcd.virginia.gov/sites/default/files/Docx/vati/2021-vati-program-guidelines-criteria.pdf.

169 Johnston and Holmes, "2021 VATI Program Guidelines and Criteria," 12.

170 Jill Lepore, *These Truths: A History of the United States* (New York: W. W. Norton & Company, 2018), 274.

171 Tom Wheeler, *Mr. Lincoln's T-Mails: The Untold Story of How Abraham Lincoln Used the Telegraph to Win the Civil War* (New York: Harper Business, 2006).

172 Sarah Elizabeth Lewis, "For Black Suffragists, the Lens Was a Mighty Sword," *The New York Times*, August 12, 2020, https://www.nytimes.com/2020/08/12/arts/19th-amendment-black-womens-suffrage-photos.html; Lepore, *These Truths: A History of the United States*, 273.

173 Sarah Lewis, ed., *Vision & Justice: A Civic Curriculum* (New York: Aperture Foundation, 2019), 7, https://aperture.org/wp-content/uploads/2019/04/VISION-AND-JUSTICE-BOOKLET_INTERIOR_web.pdf.

174 Frederick Douglass, "Lecture on Pictures" (lecture, December 3, 1861), in John Stauffer, Zoe Trodd, and Celeste-Marie Bernier, *Picturing Frederick Douglass* (New York: W.W. Norton & Company, 2015), 121-141, 141, (also available at https://sites.hampshire.edu/blackaesthetics/files/2016/12/haile-douglass_22lecture_on_pictures22.pdf).

175 Barack Obama, "My Eulogy for Congressman John Lewis," *Medium*, July 30, 2020, https://obama.medium.com/my-eulogy-for-congressman-john-lewis-101ea5eb49d1.

176 Lewis, "For Black Suffragists, the Lens Was a Mighty Sword."

177 Dr. Martin Luther King, Jr., "I Have a Dream…." (speech, Washington, DC, August 28, 1963), NAACP), https://www.naacp.org/i-have-a-dream-speech-full-march-on-washington/.

178 Audra D. S. Burch and John Eligon, "Bystander Videos of George Floyd and Others Are Policing the Police," *The New York Times*, May 26, 2020, https://www.nytimes.com/2020/05/26/us/george-floyd-minneapolis-police.html.

179 Sean Collins, "The Killing of Ahmaud Arbery, an Unarmed Black Jogger in Georgia, Explained," *Vox*, June 24, 2020, https://www.vox.com/identities/2020/5/6/21249202/ahmaud-arbery-jogger-killed-in-georgia-video-shooting-grand-jury.

180 Phil Weiser (Colorado Attorney General), in email to Jonathan Sallet, September 21, 2020.

181 Deut. 16:20, W. Gunther Plaut, author and ed., and David E.S. Stein, ed., *The Torah: A Modern Commentary* (n.p.: CCAR Press, 2015).

Broadband Delivers Opportunities
and Strengthens Communities