

Before the  
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION,  
U.S. DEPARTMENT OF COMMERCE  
Washington, DC 20230

In the Matter of )  
 )  
Infrastructure Investment and Jobs Act Implementation ) Docket No. NTIA-2021-0002

**COMMENTS OF THE BENTON INSTITUTE FOR BROADBAND & SOCIETY**

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## INTRODUCTION

On January 7, 2022, the National Telecommunications and Information Administration (NTIA) announced it was requesting public comment on policy and program considerations associated with new broadband grant programs authorized and funded by the Infrastructure Investment and Jobs Act, Pub. L. No. 117-58 (2021) (IIJA or Bipartisan Infrastructure Law): the Broadband Equity, Access, and Deployment (BEAD) Program, the Enabling Middle Mile Broadband Infrastructure Program, and the State Digital Equity Planning Grant Program. In these comments, the Benton Institute for Broadband & Society<sup>1</sup> suggests that the NTIA must ensure that everyone in American can use high-performance broadband as soon as possible. Affordable, 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.

The Benton Institute for Broadband & Society (Benton) is a 40-year-old, 501(c)(3) private operating foundation that conducts research and engages in advocacy to bring open, affordable, high-performance broadband to all people in the U.S. to ensure a thriving democracy. Benton provides information and analyses about broadband policy and has published a number of recent reports written by Benton experts (attached) that can help inform NTIA's implementation of the IIJA.

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<sup>1</sup> The Benton Institute for Broadband & Society believes that communication policy – rooted in the values of access, equity, and diversity – has the power to deliver new opportunities and strengthen communities. These comments reflect the institutional view of the Benton Institute for Broadband & Society, and, unless obvious from the text, is not intended to reflect the views of its individual officers, directors, or advisors.

In the IIJA, Congress has included some critical language that lays the foundation for the work on which the NTIA now embarks, including a critical set of challenges, principles and goals that NTIA and every state and local policymaker, every community leader, and every broadband provider should embrace and evangelize.

As Congress finds:<sup>2</sup>

1. Access to affordable, reliable, high-speed broadband is essential to full participation in modern life in the United States.
2. The persistent “digital divide” in the United States is a barrier to the economic competitiveness of the United States and equitable distribution of essential public services, including health care and education.
3. The digital divide disproportionately affects communities of color, lower-income areas, and rural areas, and the benefits of broadband should be broadly enjoyed by all.
4. In many communities across the country, increased competition among broadband providers has the potential to offer consumers more affordable, high-quality options for broadband service.
5. The 2019 novel coronavirus pandemic has underscored the critical importance of affordable, high-speed broadband for individuals, families, and communities to be able to work, learn, and connect remotely while supporting social distancing.

And it is the sense of Congress that:<sup>3</sup>

A broadband connection and digital literacy are increasingly critical to how individuals—(A) participate in the society, economy, and civic institutions of the United States; and (B) access health care and essential services, obtain education, and build careers;

1. Digital exclusion—(A) carries a high societal and economic cost; (B) materially harms the opportunity of an individual with respect to the economic success, educational achievement, positive health outcomes, social inclusion, and civic engagement of that individual; and (C) exacerbates existing wealth and income gaps, especially those experienced by covered populations;
2. Achieving digital equity for all people of the United States requires additional and sustained investment and research efforts;

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<sup>2</sup> IIJA, §60101.

<sup>3</sup> IIJA, §60303.

3. The Federal Government, as well as State, tribal, territorial, and local governments, have made social, legal, and economic obligations that necessarily extend to how the citizens and residents of those governments access and use the internet; and
4. Achieving digital equity is a matter of social and economic justice and is worth pursuing. These comments follow the order of the questions set forth in the notice soliciting

comments. They do not address every question; for convenience of the reader, we quote each question to which Benton presents comments.

## I. **Bringing Reliable, Affordable, High-Speed Broadband to All Americans**

### **1. What are the most important steps NTIA can take to ensure that the Bipartisan Infrastructure Law's broadband programs meet their goals with respect to access, adoption, affordability, digital equity, and digital inclusion?**

Pursuant to President Joseph Biden's Executive Order on Implementation of the Infrastructure Investment and Jobs Act,<sup>4</sup> in implementing the IIJA, NTIA should prioritize investing public dollars equitably, including targeting disadvantaged communities. As NTIA crafts requirements and guidelines for IIJA broadband programs, it should aim to ensure support flows to the areas and people who most need it including: communities of color, lower-income areas, persistent poverty counties, high-poverty areas, and rural areas as well as aging individuals, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, and individuals who are members of a racial or ethnic minority group. NTIA should prioritize projects that demonstrate that these areas and populations have been identified and offer solutions to their connectivity needs.

NTIA must approach access, adoption, affordability, digital equity, and digital inclusion as necessary parts of a comprehensive broadband strategy. As Congress correctly expressed in the IIJA, "achieving digital equity is a matter of social and economic justice and is worth pursuing"<sup>5</sup>—and is only achieved when all "individuals and communities have the information technology capacity that is needed for full participation in the society and economy of the

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<sup>4</sup> Executive Order 14052, Implementation of the Infrastructure Investment and Jobs Act, 86 Fed. Reg. 64335 (November 18, 2021).

<sup>5</sup> IIJA, §60303(5)

United States.”<sup>6</sup> The IJA’s broadband programs will not be successful unless everyone in United States has access to and the ability to adopt affordable, high-performance broadband networks and services. Innovative states have found ways to incorporate digital equity and economic development considerations into their grant programs. Many states’ broadband grant programs explicitly request and reward some combination of economic development plans, likely community impact indicators, and additional broadband awareness, adoption, and digital training programs.<sup>7</sup>

Wherever possible, IJA broadband programs, especially BEAD, should promote competition. As Congress finds, “In many communities across the country, increased competition among broadband providers has the potential to offer consumers more affordable, high-quality options for broadband service.”<sup>8</sup> And as noted in the Executive Order on Promoting Competition in the American Economy,<sup>9</sup> “In the telecommunications sector, Americans ... pay too much for broadband, cable television, and other communications services, in part because of a lack of adequate competition.” Low-income and rural households are the most vulnerable to conditions that threaten basic economic liberties, democratic accountability, and the welfare of workers, farmers, small businesses, startups, and consumers. NTIA should 1) police unfair, deceptive, and abusive business practices, 2) resist creating local broadband monopolies and

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<sup>6</sup> IJA, §60302(10)

<sup>7</sup> Sherman, Ryland; Hovis, Joanne; and Levin, Jacob. “Putting State Broadband Funds to Work: Best Practices In State Rural Broadband Grant Programs.” Evanston, IL: Benton Institute for Broadband & Society, June 2021. (Attachment A) <https://www.benton.org/publications/state-broadband-grants>

<sup>8</sup> IJA, §60101(4)

<sup>9</sup> Executive Order 14036, Promoting Competition in the American Economy 86 FR 36987 (July 9, 2021)

promote competition, 3) promulgate rules that promote competition, including the market entry of new competitors; and 4) promote market transparency through compelled disclosure of information. Specifically, NTIA should:

- **Prioritize Open-Access Networks that Facilitate Competition Between Multiple Providers:** IJJA broadband programs should give preference in awarding funding to broadband network builders that choose to provide open access
- **Support Municipal Experimentation:** IJJA broadband programs should enable municipalities and counties to experiment with various ways of increasing broadband deployment.
- **Encourage Local Planning and Engagement:** Even applying for IJJA broadband programs support requires funding. NTIA should provide the kind of support offered by multiple states, including Illinois, which provide grants to eligible municipalities and/or economic development organizations in order to assist in the creation of a local or regional broadband strategy.
- **Empower Community Institutions to Act as Launching Pads:** Supported broadband projects should allow private broadband providers to extend networks that reach community institutions into nearby neighborhoods.
- **Collect and Make Public Broadband Pricing Data:** NTIA should require subgrantees to disclose their residential pricing (with fees and ancillary charges) for each market and NTIA should provide public analyses of competition in local markets.

Concerning **access**, NTIA should ensure that whenever feasible, public funds are used to build networks that will meet users' needs, not just for today, but also for decades to come.

High-performance broadband networks provide fast, symmetrical upload and download speeds, low latency, ample monthly usage capacity, and security from cyberattacks. Public funds should be targeted to networks that, once installed, can be upgraded easily and scaled as the demand for broadband increases—not for the construction of networks that will quickly become obsolete.<sup>10</sup> State broadband deployment programs have used a range of technology-

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<sup>10</sup> For more see Sallet, Jonathan. October 2020. *Broadband for America Now*. Evanston, IL: Benton Institute for Broadband & Society. (Attachment B) <https://www.benton.org/publications/broadband-america-now> and Sallet, Jonathan. October 2019. *Broadband for America's Future: A Vision for the 2020s*. Evanston, IL: Benton Institute for

neutral selection mechanisms either to favor the fastest broadband technologies or eliminate technologies that cannot meet minimum criteria. The most common way is to use an application process that awards more priority to faster, scalable technologies.<sup>11</sup>

To ensure we reach universal broadband adoption in the U.S., the IJJA broadband programs must ensure that broadband services are affordable to all households however low their incomes are. **Broadband adoption and broadband affordability** are closely linked. The digital lives of Americans with lower and higher incomes remain markedly different.<sup>12</sup> In fact, the shares of Americans in each income tier who have home broadband or a smartphone have not significantly changed from 2019 to 2021. About two-fifths of adults with lower incomes do not have home broadband services (43%) or a desktop or laptop computer (41%).<sup>13</sup> Some 46% of low-income households say they find it “somewhat” or “very” difficult to put their monthly internet bill into their budget. We also find that 40% of low-income households say they cannot afford to pay anything for home broadband service. Another 22% say that about \$25 per month would suit them. Cost of monthly service is the chief reason cited by those who lack a home

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Broadband & Society. (Attachment C) <https://www.benton.org/publications/broadband-policy2020s> .]

<sup>11</sup> Sherman, Hovis and Levin, supra, n. 7.

<sup>12</sup> Vogels, Emily A. “Digital divide persists even as Americans with lower incomes make gains in tech adoption.” Pew Research Center (June 22, 2021) <https://www.pewresearch.org/fact-tank/2021/06/22/digital-divide-persists-even-as-americans-with-lower-incomes-make-gains-in-tech-adoption/>; Horrigan, John B. Affordability and the Digital Divide. EveryoneOn (December 21) (Attachment D) <https://www.everyoneon.org/s/EveryoneOn-Report-on-Affordability-the-Digital-Divide-2021.pdf>

<sup>13</sup> Vogels, supra, n. 12.



broadband subscription.”<sup>14</sup> By comparison, broadband service and computers are nearly ubiquitous among adults in households earning \$100,000 or more a year.<sup>15</sup>

Concerning **digital equity and inclusion**, NTIA should require and assist states in developing statewide digital equity coalitions that will work to support digital equity ecosystems<sup>16</sup> in tribal, rural, suburban, and urban communities across each state.

NTIA should work closely with each state to provide the technical assistance, programmatic guidance, and other logistical support needed to develop a statewide digital equity coalition, which would be responsible for developing, implementing, and evaluating its State Digital Equity Plan.

In addition, NTIA should actively encourage the development of a state interagency working group or task force that would represent the state in the statewide digital equity coalition.

The NTIA can also provide assistance to help state coalitions include entities that have not traditionally been involved in digital equity work, but see it as essential to their goals of supporting outcomes in the following areas, that have been identified in the IJJA: economic and workforce development; education; health; civic and social engagement; climate and critical

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<sup>14</sup> Horrigan, *supra*, n. 12.

<sup>15</sup> Vogels, *supra*, n. 12.

<sup>16</sup> Digital equity ecosystems are defined as “interactions between individuals, populations, communities, and their larger sociotechnical environments that all play a role in shaping the digital inclusion work in local communities to promote more equitable access to technology and social and racial justice.” See Rhinesmith, Colin, and Susan Kennedy. “Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond.” Evanston, IL: Benton Institute for Broadband & Society, October 2020. (Attachment E) <http://benton.org/digital-equity-ecosystems-report>

infrastructure resiliency; and delivery of other essential services, especially with respect to covered populations mentioned in the Bipartisan Infrastructure Law.

**3. Transparency and public accountability are critical to the success of the Bipartisan Infrastructure Law's broadband programs. What types of data should NTIA require funding recipients to collect and maintain to facilitate assessment of the Bipartisan Infrastructure Law programs' impact, evaluate targets, promote accountability, and/or coordinate with other federal and state programs? Are there existing data collection processes or templates that could be used as a model? How should this information be reported and analyzed, and what standards, if any, should NTIA, grant recipients, and/or sub-grantees apply in determining whether funds are being used lawfully and effectively?**

For IJJA grants aimed at promoting home broadband adoption, grantees should be required to conduct surveys of beneficiaries (i.e., those who acquire home broadband due to the grantees' program) to explore various dimensions of service, such as:

- How the enrollee found out about the program
- Ease of enrolling for broadband service
- What motivated enrollee to sign up for the program?
- Whether the enrollee had a home high-speed subscription in the past
- If enrollee had service in the past, the reason for disconnection

The NTIA should convene a working group of researchers and practitioners in the digital inclusion field to develop standards for such data collection. It is likely that most grantees and NTIA will have a common set of phenomena that they would like to measure about enrollees (e.g., how enrollees found out about the program, attitudes about the impact of having a home subscription). An identical (or very nearly so) survey instrument for these metrics would build a valuable database for program assessment. This is not to say that all surveys of enrollees should be exactly the same; grantees should have latitude to ask questions that are specific to their program.

For funding recipients to do this work, NTIA must play an active and engaged role in providing shared tools and frameworks to help funding recipients (i.e., the statewide digital equity coalition) to assess the outcomes and impact of their work.

The challenges facing community-based organizations in measuring the success of their digital inclusion and broadband adoption programs have been identified in research by Dr. Colin Rhinesmith and Angela Siefer, the executive director at the National Digital Inclusion Alliance.<sup>17</sup> This research has shown that there is a significant need for “shared vocabulary, outcomes-based evaluation tools and implementation support; need for common indicators; and time and resources” to do this work efficiently and effectively.<sup>18</sup> NTIA can play a critical role in making these tools and resources available, which would also help to standardize the data collection process. The Digital Equity Logic Model<sup>19</sup> is one tool that NTIA can share with funding recipients to help them focus their efforts on outcomes that lead to broader social, community, and economic outcomes. NTIA should also help funding recipients focus their digital equity efforts on achieving broader social, community, and economic goals, particularly with those identified by state agencies.

## **II. Supporting States, Territories, and Sub-Grantees to Achieve the Goal**

**5. In implementing the Bipartisan Infrastructure Law's programs, NTIA will offer technical assistance to states, localities, prospective sub-grantees, and other interested parties. What**

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<sup>17</sup> Colin Rhinesmith and Angela Siefer. “Digital Inclusion Outcomes Based Evaluation.” Evanston, IL: Benton Foundation, May 2017. (Attachment F) [benton.org/outcomes-based-evaluation-report](https://benton.org/outcomes-based-evaluation-report)

<sup>18</sup> Id.

<sup>19</sup> Id., at p. 12

**kinds of technical assistance would be most valuable? How might technical assistance evolve over the duration of the grant program implementation?**

Research indicates that the most successful state programs to expand broadband connectivity for their residents include the same core components: 1) a state-level broadband office with full-time staff, 2) systems to support local and regional planning and technical assistance, and 3) well-funded competitive grant programs for internet service providers, such as telephone and cable companies, wireless internet service providers, electric cooperatives, and municipal utilities.<sup>20</sup> NTIA should help and eligible entity has all three.

1) A “broadband office” is a centralized entity within state government with a full-time focus on expanding highspeed internet access, including distributing funds and providing planning and capacity-building support to communities. To ensure that these offices can effectively fulfill those functions, states must provide adequate funding and dedicated, full-time staff who understand broadband issues, can manage grant administration, and can work with the wide range of affected stakeholders. A broadband office offers:

- Capacity within state government to address deployment and adoption of high-speed internet.
- A clear point of contact for stakeholders interested in the state’s broadband plans.
- The structure, support, and authority to execute the planning, capacity building, and competitive grant programs that increase service availability.
- A venue for building strong relationships with multiple stakeholder groups and a trusted resource for broadband information.
- A neutral voice when educating policymakers and community leaders.
- Coordination and partnership building to advance broadband projects and policy.

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<sup>20</sup> De Wit, Kathryn and Anna Read “3 Key Components Define Effective State Broadband Programs” (Pew Charitable Trusts (May 21, 2021) <https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2021/05/3-key-components-define-effective-state-broadband-programs>)

- A resource for local and regional entities' broadband planning efforts.

2) When undertaking a broadband expansion effort, communities must first engage in a variety of planning activities, and states can support these efforts by providing, ideally via their broadband offices, funding and technical support. Planning typically happens in two phases: strategic and technical. Strategic planning involves defining goals, cultivating stakeholder buy-in, identifying existing assets, conducting surveys or other demand (economies of scale) research, reaching out to internet service providers, and examining potential models for deployment, such as working with the incumbent provider or launching a publicly owned and operated network. Technical planning follows those steps and consists mainly of network design, business planning, and, if applicable, submission of applications for funding. Ideally, planning should be directly tied to funding. However, local governments' capacity to conduct this sort of extensive planning varies widely across jurisdictions, and many communities, especially rural and underserved ones, may not have the necessary expertise, staff, or financial resources. State programs that provide support for or lead planning efforts can help build the capacity and provide the resources that communities need to be successful. Planning and technical assistance for local and regional entities offers:

- A more active voice for community members in designing local broadband networks and negotiating public-private partnerships.
- Evidence for the private sector of a community's desire and willingness to pay for expanded service.
- Clear funding priorities and project timelines for grant administrators.
- An achievable outline for how a project will connect the entire community, not just the most profitable sections, to high-quality, affordable internet at speeds that will be useful over the long term.
- A chance to define local priorities and objectives related to digital equity and economic development.

- Opportunities to form partnerships and advance community goals, especially when funding is not available or secured.

3) Competitive grant programs provide limited subsidies to internet service providers to extend service into rural and unserved areas and, when well-designed, can correct the market failures that have left many people without access to high-speed, reliable internet. Competitive grant program offers:

- A set of evaluation criteria for proposed projects that includes items such as demonstrated community support or economic need in the service areas. These criteria help states make decisions based on factors other than just cost per household served.
- Matching funds from the applicant and eligible partners, such as localities, to cover a certain percentage of the project's cost, demonstrate commitment from the applicants, and help ensure efficient use of public funds.
- An emphasis on faster speeds, such as by requiring scalable technology and prioritizing projects that meet speed requirements, to help ensure that funded projects can meet future usage needs without additional state investment.
- Alignment between community plans and applicants' proposals to confirm that infrastructure projects meet local needs and help funders manage risk by ensuring that communities have assessed their options and gained resident and partner buy-in.
- Effective stewardship of public funds via clear accountability measures for grant recipients to help ensure that funded proposals achieve their intended purpose and help project leaders assess and communicate progress to policymakers and the public. Robust accountability provisions may include well-structured challenge processes to allow input from both incumbent and applicant providers; clear milestones for deployment, reporting, data collection, and field visits to monitor project progress; and post-grant requirements, such as abiding by the principles of net neutrality.
- Reduced costs of deployment in high-cost areas.
- Greater availability of broadband connections and progress toward secondary goals, such as use of networks to strengthen local economies.

NTIA should also assist states in developing statewide digital equity coalitions that will work to support digital equity ecosystems in tribal, rural, suburban, and urban communities across each state.

The NTIA can also provide assistance to help state coalitions include entities that have not traditionally been involved in digital equity work, but see it as essential to their goals of

supporting outcomes in the following areas, that have been identified in the IIJA: economic and workforce development; education; health; civic and social engagement; climate and critical infrastructure resiliency; and delivery of other essential services, especially with respect to covered populations mentioned in the Bipartisan Infrastructure Law.

**6. The Bipartisan Infrastructure Law requires states and territories to competitively select subgrantees to deploy broadband, carry out digital equity programs, and accomplish other tasks. How should NTIA assess a particular state or territory's subgrant award process? What criteria, if any, should NTIA apply to evaluate such processes? What process steps, if any, should NTIA require (e.g., Request for Proposal)? Are there specific types of competitive subgrant processes that should be presumed eligible (e.g., publicly released requests for proposals and reverse auctions)?**

While there is a wide range of best practices, successful state broadband programs have similar attributes that NTIA should encourage or require:<sup>21</sup>

- **Integrating digital equity and economic development.** Grant programs that previously had focused solely on deployment costs have expanded to include consideration of digital inclusion and economic benefits—to low-income communities, farms, small businesses, and teleworkers—thus also enabling grantees to compete for federal programs that focus on such metrics, including that of the Economic Development Administration (EDA), which requires careful evaluation of economic impacts.
- **Broad, inclusive eligibility criteria for subgrantees:** Early restrictions on the types of organizations that could apply for deployment grants have been replaced in effective state programs by broad, inclusive eligibility criteria that recognize the value of innovative collaborations among a range of entities, including electric cooperatives, local governments, and private companies. For example, California once required that funding applicants possess a Certificate of Public Convenience and Necessity (CPCN) or a Wireless Identification Registration (WIR), effectively restricting the program to companies offering wireline telephone or cellular telephone services.<sup>22</sup> That restriction excluded newer broadband competitors and municipalities, thus reducing the number of applications far below available funding and resulting in far more investment by grantees in middle-mile infrastructure than in critically needed last-mile connections to

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<sup>21</sup> Sherman, Hovis and Levin, *supra*, n.7.

<sup>22</sup> California Public Utilities Commission, “California Advanced Services Fund Background and History,” <https://www.cpuc.ca.gov/industries-and-topics/internet-and-phone/california-advanced-services-fund/casf-background-and-history>

unserved homes and businesses.<sup>23</sup> California welcomes now a much broader set of applicants, and its program performance has improved significantly.<sup>24</sup>

- **Community engagement:** The best state funding programs include a critical role for local governments and communities, working in collaboration with private partners, to ensure local input, benefit from local insights, and bring to bear local assets and resources. Indeed, the past decade of experimentation has given rise to a range of cooperative agreements between localities and private entities. Many of the best state grant programs provide flexibility for business structures that include public-private partnerships and other infrastructure access and management agreements. These new organizational forms allow adaptation to reflect the needs and resources of each party involved, while leveraging benefits in financing and permitting available to such hybrid forms. Many states welcome these flexible collaborations; Virginia and Maryland actually require cooperation between a public and a private entity.<sup>25</sup>

**7. NTIA views the participation of a variety of provider types as important to achieving the overall goals of the Bipartisan Infrastructure Law broadband programs. How can NTIA ensure that all potential subrecipients, including small and medium providers, cooperatives, non-profits, municipalities, electric utilities, and larger for-profit companies alike have meaningful and robust opportunities to partner and compete for funding under the programs?**

To ensure that IJA broadband programs' resources are utilized to their fullest, the deployment grant evaluation process should reward funding competitively to the proposals that offer the best combination of broadband capabilities to the areas most in need at the lowest cost.<sup>26</sup>

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<sup>23</sup> California Public Utilities Commission, "Order Instituting Rulemaking to Consider Modifications to the California Advanced Services Fund," October 25, 2012, 11-14 <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M032/K728/32728734.PDF>

<sup>24</sup> California Public Utilities Commission, "California Advanced Services Fund Background and History," n. 22, supra.

<sup>25</sup> Erik C. Johnston and Tamarah Holmes, "2021 Virginia Telecommunication Initiative (VATI) Program Guidelines and Criteria," Virginia Department of Housing and Community Development (DHCD), 6, ("2021 Virginia VATI Program Guidelines and Criteria") <https://dhcd.virginia.gov/sites/default/files/Docx/vati/2021-vati-guidelines-and-criteria.pdf>; Kenrick M. Gordon, "FY21 Maryland Broadband Infrastructure Grant Program: Grant Application Guide," Maryland Governor's Office of Rural Broadband, November 4, 2020, 8 <https://dhcd.maryland.gov/Broadband/Documents/BroadbandInfrastructureProgram/FY21%20Broadband%20Infrastructure%20Program%20Grant%20Application%20Package.pdf>

<sup>26</sup> Sherman, Hovis and Levin, supra, n.7.



Competition between a wide variety of provider types is a *requirement* of the IIJA. States' initial proposals must include "a plan to competitively award subgrants."<sup>27</sup> And an eligible entity may use grant funds in the BEAD Program to "competitively award subgrants."<sup>28</sup> An eligible entity, in awarding subgrants for the deployment of a broadband network..., "may not exclude cooperatives, nonprofit organizations, public-private partnerships, private companies, public or private utilities, public utility districts, or local governments from eligibility for such grant funds."<sup>29</sup>

NTIA's broadband program rules should clearly state that all subgrant awards must allow all eligible broadband provider types to fairly compete for funds.

Of special note are public-private partnerships.<sup>30</sup> Both federal and state appropriators have taken notice of the potential of public-private collaboration to improve and accelerate broadband deployment. Officials at both the state and federal levels have either developed grant programs designed specifically for public-private partnership efforts or adapted their rules to facilitate them.

Several states—including Virginia, Maryland, Maine, and Vermont—have special grant programs specifically for public-private efforts. The Virginia Telecommunication Initiative (VATI) can provide up to 80 percent of project costs to eligible partnerships, requiring that applicants

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<sup>27</sup> IIJA, §60102(e)(3)(A)(i)(IV)

<sup>28</sup> IIJA, §60102(f)

<sup>29</sup> IIJA, §60102(h)(1)

<sup>30</sup> Sherman, Hovis and Levin, *supra*, n.7.

provide only one-fifth of the deployment cost from other sources.<sup>31</sup> To involve a nongovernmental entity, Maryland requires that the local jurisdiction enter into a partnership with “[a]ny other legal entity, including a cooperative, private corporation, or limited liability company organized on a for-profit or not-for-profit basis” in order to apply.<sup>32</sup> Maine encourages communities applying for grants to partner with one of the telecommunications providers already serving customers in Maine.<sup>33</sup>

In addition, NTIA should work through the following organizations to alert them to IJA broadband programs opportunities: National Telecommunications Cooperative Association—The Rural Broadband Association, INCOMPAS, National Rural Electric Cooperative Association, National League of Cities, ACA Connects, and Coalition for Local Internet Choice.

**8. States and regions across the country face a variety of barriers to achieving the goal of universal, affordable, reliable, high-speed broadband and broadband needs, which vary from place to place. These challenges range from economic and financial circumstances to unique geographic conditions, topologies, or other challenges that will impact the likelihood of success of this program. In implementing the Bipartisan Infrastructure Law's broadband programs, how can NTIA best address such circumstances?**

NTIA could conduct (or commission) a study to examine “non broadband factors” (e.g., rates of residential segregation, share of population without health insurance) that may be associated with low broadband adoption levels.<sup>34</sup> With respect to achieving broadband needs,

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<sup>31</sup> “2020 Virginia Telecommunication Initiative Program Guidelines and Criteria,” Virginia Department of Housing and Community Development, *supra*, n.25’ . .

<sup>32</sup> Kenrick M. Gordon, “FY21 Maryland Broadband Infrastructure Grant Program: Grant Application Guide,” p. 8, *supra*, n.25.

<sup>33</sup> “Preparation,” ConnectMaine, <https://www.maine.gov/connectme/grants/infrastructure-grants/process> .

<sup>34</sup> This could leverage the Commerce Department’s extensive store of economic and demographic information available at granular levels of geography.

broadband adoption rates vary fairly reliably by metrics of community economic distress. Places with high rates of poverty, for example, are likely also to have a lower share of households with broadband internet subscriptions at home. This suggests that applications for funding to support broadband adoption in these areas may warrant special consideration due to high levels of need.

### III. **Ensuring the Future of America Is Made in America by All of America's Workers**

**11. One objective of the Bipartisan Infrastructure Law is to ensure American workers have access to high quality jobs, especially those who were impacted the most by the pandemic, including women and people of color. What federal policy tools can NTIA apply to help ensure that broadband funding is deployed in a way that maximizes the creation of good paying jobs and that women and people of color have full opportunity to secure those jobs.**

NTIA could require or encourage states to require or encourage subgrantees to include the local and state-based labor workforce in supported broadband projects—for local knowledge, for the ability to scale, and to take part in local workforce development.<sup>35</sup>

NTIA should actively work with local, state, tribal, and national entities that have direct ties with and represent members of historically marginalized populations to gain input, feedback, and advice about how digital equity can lead to good paying jobs for women and people of color. These commitments should include initiatives that support job pipelines for traditionally marginalized communities. Labor unions and other worker representatives have expertise in training and workforce development and can serve as partners in this process.<sup>36</sup>

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<sup>35</sup> Hovis, Joanne; Sherman, Ryland; Schulhof, Marc. “The Era of the Broadband Public-Private Partnership: New Trends and Opportunities in the Wake of COVID-19.” Benton Institute for Broadband & Society, November 2021 (Attachment G).

<sup>36</sup> *Id.*

NTIA should learn how individuals and organizations within digital inclusion coalitions have worked to embrace digital equity as a pathway to good paying jobs. For example, entities representing workforce development and unions have played an important role in digital equity initiatives in recent years, often working alongside organizations that represent women and people of color.<sup>37</sup> A focus on digital equity ecosystems can also help to surface issues that are important to women and people of color that can be addressed through broadband access, adoption, affordability, digital equity, and digital inclusion.

Broadband deployment can 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.<sup>38</sup> The jobs created through the building and expansion of broadband networks are relatively high-paying:

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<sup>37</sup> See Rhinesmith and Kennedy, *supra*, n. 11.

<sup>38</sup> 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\\_FTTN.pdf](http://neoconnect.us/wp-content/uploads/2015/09/Economic_Effects_of_FTTN.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 *Id.*, at pp. 9-10.

On average, they pay 42 percent more than the average for manufacturing jobs in America<sup>39</sup> and, correctly executed, will create new pathways for people to enter the workforce. As digital equity efforts and new public and private funding increase deployment demands, such skills will be in higher demand. For the most part, these jobs do not require a bachelor’s degree and are relatively stable and well paying. In parts of rural and semi-rural California, skilled telecommunications technicians earn an average of \$57,000 per year, and in much of urban California, these technicians earn an average of \$84,200 per year.<sup>40</sup>

Given the growing demand for workers in the broadband infrastructure construction and maintenance fields, stakeholder entities can work together—and should be doing so as soon as possible—to develop local training programs that could create opportunity for new workers as well as provide continuing education credits and advanced certifications for those already in the industry who choose to maintain and upgrade their skills.<sup>41</sup>

Several communities have designed broadband education programs to address the need for skilled telecommunications professionals in their respective markets and to create viable new paths for career development for local workers. For example, the city of Wilson, North Carolina’s municipal broadband operation, Greenlight, previously offered a 10-week Fiber Optic

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<sup>39</sup> Speed Matters.org, “Economic Growth & Quality Jobs,” [https://speedmatters.org/economic\\_growth\\_quality\\_jobs](https://speedmatters.org/economic_growth_quality_jobs) (Speed Matters.org is a program of the Communications Workers of America.)

<sup>40</sup> “Occupational Employment and Wage Statistics Query System,” U.S. Bureau of Labor Statistics, <https://data.bls.gov/oes/#/home>, custom regional query of “Telecommunications Equipment Installers and Repairers,” the most narrowly defined employment category to include broadband installers

<sup>41</sup> Id.

Basics course through the local community college. The course provided an overview on “what fiber-optics are, the types of fiber-optic networks, and how they are spliced, tested, installed, and maintained.”<sup>42</sup> The course included hands-on opportunities for students to learn technical skills, such as fiber splicing. Greenlight and Wilson Community College also developed a five-day “boot camp” version, intended in part to draw students from outside Wilson. Affordability was a focus of the program: Both the 10-week course and the five-day boot camp were available for about \$145 each. Greenlight and Wilson Community College announced in August 2021 that they will pilot a Fiber Broadband Association-accredited program that combines classroom instruction with a 2,000-hour apprenticeship at Greenlight. Participants will receive an optical telecom installation certification

In Philadelphia, the CAP (Corporate Accountability Project) Comcast campaign focused on securing a variety of community benefits from the cable and broadband company as it negotiated a franchise agreement with its hometown.<sup>43</sup> Comcast’s franchise agreement, renegotiated every fifteen years, gives the company permission to use public rights-of-way to operate its services. Building awareness among city residents and other constituents, holding public hearings, and involving the city council, the campaign—led by Media Mobilizing Project, in collaboration with a broad coalition of activists, residents, policymakers, media producers, and public-sector workers—was able to gain commitments that Comcast would:

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<sup>42</sup> Wilson Community College, “Continuing Education Schedule,” Spring 2019, <https://web.archive.org/web/20191114001153/https://www.wilsoncc.edu/continuing-education>. See also: GigEast Exchange, <https://www.wraltechwire.com/2019/12/12/fiber-rich-wilson-movesforward-with-advanced-workforce-training/>

<sup>43</sup> Sallet “Broadband for America Now,” *supra*, n.10.

- Expand affordable internet to low-income communities across Philadelphia through its Internet Essentials program,
- Provide free Wi-Fi service at municipal buildings,
- Increase customer service commitments,
- Underwrite the expansion of Career and Technology Education at the Philadelphia Public Schools, and
- Give \$500,000 in seed funding to the Digital Literacy Alliance (DLA), which grants funds to local groups promoting digital literacy, targeting the gaps that Philadelphia libraries cannot address.

The campaign also helped deliver equity to wage workers and women- and minority-owned businesses.

#### IV. **Ensuring Publicly Funded Broadband Networks That Sustain and Scale**

**13. NTIA is committed to ensuring that networks built using taxpayer funds are capable of meeting Americans' evolving digital needs, including broadband speeds and other essential network features. What guidance or requirements, if any, should NTIA consider with respect to network reliability and availability, cybersecurity, resiliency, latency, or other service quality features and metrics? What criteria should NTIA establish to assess grant recipients' plans to ensure that service providers maintain and/or exceed thresholds for reliability, quality of service, sustainability, upgradability and other required service characteristics?**

To properly assess the broadband services supported by IJA programs, NTIA could adopt and measure three distinct types of reliability metrics: performance, connectivity, and core services. NTIA should require network operators to provide network outage information in the FCC's Network Outage Reporting System and infrastructure status information in the Disaster Information Reporting System.

Starting in 1992, telephone companies have been required to notify the Federal Communications Commission (FCC) of outages affecting more than 30,000 customers. The outage data that the FCC collects provides critical situational awareness that enables the FCC to be an effective participant in emergency response and service restoration efforts, particularly in the early stages of communications disruption.

To ensure reliability of performance, NTIA could set a target level of performance over a specified timeframe. There are multiple measures to be employed, including the speed (data rate), latency, jitter, or bit error rate.

The Broadband Internet Technical Advisory Group<sup>44</sup> recently released a study on latency and its critical role in providing high-performance Internet connections.<sup>45</sup> BITAG concludes that the Internet community should start to measure and report on working latency — in networks and in networking equipment — as this is often as critical to end-user quality of experience as bandwidth capacity (throughput). A key step to accomplishing this would be to agree on the measurement methods and methodology to use for such testing. And Broadband Internet Access Service providers and developers of network equipment (e.g., routers, access points, modems) should:

- Work to deploy mechanisms to reduce working latency due to buffering, such as Active Queue Management (AQM), where appropriate; and
- Investigate future methods for delivering very-low-latency services such as Low-Latency Low-Loss Scalable Throughput (L4S) and Non-Queue-Building (NQB).

In 2012 the FCC required interconnected Voice over Internet Protocol (VoIP) service providers to report significant network outages that meet specific criteria and thresholds.<sup>46</sup> The

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<sup>44</sup> The Broadband Internet Technical Advisory Group (BITAG) is a non-profit, multi-stakeholder organization focused on bringing together engineers and technologists in a Technical Working Group (TWG) to develop consensus on how the Internet operates including broadband network management practices and other related technical issues that can affect users' Internet experience, including the impact to and from applications, content and devices that utilize the Internet.

<sup>45</sup> See "Latency Explained" (January 10, 2022)

[https://www.bitag.org/documents/BITAG\\_latency\\_explained.pdf](https://www.bitag.org/documents/BITAG_latency_explained.pdf)

<sup>46</sup> Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting To Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers, 27 FCC Rcd 2650 (2012).



action is an example of compelling reporting on reliability of core services. To measure reliability of core services on networks supported by IIA networks, NTIA and the FCC could also require reporting on services like Domain Name System (DNS), e-mail, and the World Wide Web. Network operators could be asked to report on periods of no connectivity, diminished performance, localized or system-wide loss of availability, etc.

With increased reliance on broadband networks for full participation in modern life, economic success, educational achievement, positive health outcomes, social inclusion, and civic engagement comes the increased importance of network reliability. A common metric for reliability is “availability,” which is the amount of time that a system is expected to be in service (or free of failures). This is often expressed as a statistical time measure (e.g., Mean Time to Failure, or MTTF) or the percentage of time over some period that the system is available for service. In addition to MTTF, reliability engineers are also interested in the Mean Time to Restore (MTTR), which—when coupled with information about the relative costs of outages, recovery, and failure avoidance options—provides the basic elements for a cost-benefit analysis of good reliability management.

Poor reliability can affect user traffic demand well beyond periods of unavailability. For instance, research finds that frequent periods of high packet loss (above 1%) can result in a decrease in traffic volume for 58% of users even during periods of no packet loss.<sup>47</sup> At the time

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<sup>47</sup> Bischof, Zachary and Bustamante, Fabian and Feamster, Nick, Characterizing and Improving the Reliability of Broadband Internet Access (2018), <https://arxiv.org/pdf/1709.09349.pdf>.

of the Bischof *et al* research, broadband services delivered an average availability of at most 99% with an average annual downtime of 17.8 hours.<sup>48</sup>

**14. NTIA is committed to ensuring that networks constructed using taxpayer funds are designed to provide robust and sustainable service at affordable prices over the long term. What criteria should NTIA require states to consider to ensure that projects will provide sustainable service, will best serve unserved and underserved communities, will provide accessible and affordable broadband in historically disconnected communities, and will benefit from ongoing investment from the network provider over time?**

Successful state broadband deployment programs have used a range of technology-neutral selection mechanisms to either favor the fastest broadband technologies or eliminate technologies that cannot meet minimum criteria. The most common way is to use an application process that awards more priority to faster, scalable technologies.

For example, Minnesota's broadband improvements scoring system considers both the current speed available in the area and the resulting speed after the infrastructure is deployed, awarding a higher score to more significant performance increases.

Minnesota and Illinois have established scalability as part of their minimum technology requirements, allowing slower initial speeds only if they can be affordably upgraded. All projects funded by Illinois and Minnesota must be scalable to speeds of 100/100.<sup>49</sup>

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<sup>48</sup> By contrast, one study found that U.S. phone networks averaged an availability rate better than 99.999 percent in the time period studied. See D. Kuhn, "Sources of Failure in the Public Switched Telephone Network" in *Computer*, 1997-04, Vol.30 (4), pp.31-36.

<sup>49</sup> Minnesota Governor's Taskforce on Broadband, "Annual Report of the Governor's Task Force on Broadband," December 2020, [https://mn.gov/deed/assets/2020-bbtf-annual-report\\_tcm1045-466512.pdf](https://mn.gov/deed/assets/2020-bbtf-annual-report_tcm1045-466512.pdf), 14; Connect Illinois Broadband Grant Program, "Frequently Asked Questions (FAQ)," updated February 24, 2020, pp. 1-2. <https://www2.illinois.gov/dceo/ConnectIllinois/Documents/Connect%20Illinois%20FAQ%202.24.20.pdf>

With an eye toward scalability and the future, many successful state broadband programs fund areas that are purportedly “served” but where speeds still do not meet state criteria for the future. For example, the state of Washington encourages applications for both unserved (less than 25/3 Mbps) and underserved (less than 100/20 Mbps) communities, with award priorities considering readiness, impact on community, and grant cost balanced against the level of prior service.<sup>50</sup>

NTIA should reject the mindset that “anything is better than nothing” when it comes to broadband in rural America or for low-income households.<sup>51</sup> For example, interviews with farmers, rural internet service providers, equipment manufacturers, and other agricultural leaders and experts brought to light a broad consensus around several key outcomes for rural broadband, such as the need for: robust upload speeds and scalable technologies.<sup>52</sup> Most farmers (87 percent) plan on or are considering incorporating more data into day-to-day decisions, supporting their economic and environmental sustainability. However, they face internet-related barriers, including slow internet speeds (21 percent), high costs (20 percent),

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<sup>50</sup> Washington Community Economic Revitalization Board (CERB), “Rural Broadband Program,” (presentation), June 21, 2018, 3, 5-6, <https://deptofcommerce.app.box.com/v/cerbrbworkshoppresentation>.

<sup>51</sup> See, e.g., Ali, Christopher “The Politics of Good Enough: Rural Broadband and Policy Failure in the United States” 24 International Journal of Communication 5982–6004 (2020).(Attachment H)

<sup>52</sup> Arnold, Jordan. “The Future of American Farming: Broadband Solutions for the Farm Office, Field, and Community.” Evanston, IL: Benton Institute for Broadband & Society, September 2021. (Attachment I) [benton.org/publications/future-american-farming](https://benton.org/publications/future-american-farming)

and unreliable service (16 percent).<sup>53</sup> Nearly one third said internet connectivity has impacted purchaseG decisions to upgrade farm equipment in the past 18 months.<sup>54</sup>

Farmers, like most business owners, need broadband networks that offer symmetrical, robust upload and download speeds and ample monthly usage capacity. Current standards emphasize download, but on farms, upload is crucial for data-driven decision-making. Networks built with public dollars should be scalable and easily upgraded once installed, so that they do not quickly become obsolete as the demand for capacity increases. To meet the growing demand for both upstream and downstream speeds among farmers, networks must be capable of 100/100 Mbps service.

On adoption, NTIA should not adopt nor allow eligible entities and subgrantees to adopt a “build and they will come” sensibility. Public investment in deployment of broadband networks, including state-of-the-art networks, will pay fewer dividends unless they connect people who do not currently have internet access. In the IJJA, Congress strives for achieving digital equity and recognizes that requires additional and sustained investment.<sup>55</sup> Moreover, to be viable over the long term, networks will need operating revenue, which, in turn, requires customers/subscribers. For low-income and rural areas, a sufficient number of customers may not quickly materialize. NTIA should require states and subgrantees to demonstrate that they

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<sup>53</sup> “Rural Broadband and the American Farmer” United Soybean Board  
<https://api.unitedsoybean.org/uploads/documents/58546-1-ruralbroadband-whitepages-final.pdf>

<sup>54</sup> Id.

<sup>55</sup> IJJA, §60303(3)

have thought through their potential customer base and revenue potential to help ensure that networks receiving government funded are used and maintained over time.

The IJA requires states to prioritize persistent poverty counties and high-poverty areas. Since historically redlined communities have been negatively impacted by social, economic, and racial discrimination, states should be required to identify these areas and report how this history of discrimination has impacted these communities' broadband access, adoption, and use.<sup>56</sup> These communities may need additional technical support from NTIA to ensure their needs are addressed in states' 5-year broadband deployment and state digital equity plans.

**15. In its effort to ensure that BEAD-funded networks can scale to meet Americans' evolving needs, and to ensure the public achieves the greatest benefit from the federal investment, NTIA seeks to understand reasonably foreseeable use cases for America's broadband infrastructure over the next five, ten, and twenty years. What sort of speeds, throughput, latencies, or other metrics will be required to fully connect all Americans to meaningful use over the next five, ten, and twenty years? How can the BEAD program meet our nation's broadband network connectivity needs in the future and what other benefits can Americans expect from this program and the networks it will help fund in other industries and across the economy? How can existing infrastructure be leveraged to facilitate and amplify these benefits? What are the best sources of evidence for these questions and for predicted future uses of broadband?**

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.

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<sup>56</sup> Tibken, Shara "The broadband gap's dirty secret: Redlining still exists in digital form." C|Net (June 28, 2021) <https://www.cnet.com/home/internet/features/the-broadband-gaps-dirty-secret-redlining-still-exists-in-digital-form/>

## Work

Nicholas 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.”<sup>57</sup> Thus we can expect greater usage of remote work for those who can (about 40 percent of employees, by one calculation).<sup>58</sup>

## Learning

The demand for online education, both at the K-12 and higher education levels,<sup>59</sup> will be greater after the current crisis than before. In 2020, enrollment at Arizona State University, for example, was up 7.6 percent over the previous year, and more than 53,000 students were entirely online—ASU’s largest online enrollment to date.<sup>60</sup> 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. Even as students returned to

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<sup>57</sup> Nicholas Bloom, “How Working from Home Works Out,” Stanford Institute for Policy Research, June 2020, <https://siepr.stanford.edu/research/publications/how-workinghome-works-out>

<sup>58</sup> 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\\_WhitePaper\\_Dingel\\_Neiman\\_3.2020.pdf](https://bfi.uchicago.edu/wp-content/uploads/BFI_WhitePaper_Dingel_Neiman_3.2020.pdf)

<sup>59</sup> Ali, Christopher “The Other Homework Gap: Post-Secondary Education During COVID-19.” Benton Institute for Broadband & Society (April 7, 2020) (Attachment J) <https://www.benton.org/blog/other-homework-gap-post-secondary-education-during-covid-19>

<sup>60</sup> “Overall enrollment [is] up 7.6% over fall 2019 as university gives students options of where and how they prefer to attend class.” [asu.edu/20200820-sun-devil-life-asu-begins-fall-semesterrecord-enrollment](https://asu.edu/20200820-sun-devil-life-asu-begins-fall-semesterrecord-enrollment)

classrooms, teachers and professors 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

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<sup>61</sup> and as Congress has appropriated emergency stimulus funds to support telehealth.<sup>62</sup>

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.”<sup>63</sup> More than half of physicians now say they are using telehealth to treat patients, compared with only 18 percent in 2018.<sup>64</sup> Health care systems have done “a decade’s worth of work” to launch

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<sup>61</sup> Executive Order 13941, Improving Rural Health and Telehealth Access, 85 Fed. Reg. 47881 (August 3, 2020); 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 telehealth visits).

<sup>62</sup> 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”).

<sup>63</sup> 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-billioncare-could-shift-telehealth>

<sup>64</sup> 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>

telehealth programs, and patients are enjoying a new “consumerization” of health care as virtual services increase their options for care.<sup>65</sup>

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.<sup>66</sup> 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.<sup>67</sup> 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.<sup>68</sup> For instance, glaucoma patients can already check their eye pressure at home and send the

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<sup>65</sup> 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>

<sup>66</sup> Butler, “After COVID-19—Thinking Differently About Running the Health Care System.”

<sup>67</sup> Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.

<sup>68</sup> Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.



data back to a doctor.<sup>69</sup> 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.<sup>70</sup> 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.<sup>71</sup>

The average household downloaded 462 GB of data per month in first quarter 2021, an amount that had steadily increased by 25 to 40 percent annually for the last several years before the pandemic.<sup>72</sup> Videoconferencing applications have also tested the limits of networks' upload capacities. Internet monitoring company OpenVault found that average monthly upload usage increased 63 percent between the end of 2019 and the end of 2020, from 19 to 31 GB per month.<sup>73</sup> A growing number of upstream super-users have nearly reached the limits of certain networks; OpenVault noted that there have been "an increasing number of incidents in which upstream traffic exceeded 80% of node capacity," requiring that network operators pinpoint bottlenecks and take action to improve upstream connectivity.

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<sup>69</sup> Dr. Michael Boland (IT director, the Wilmer Eye Institute at Johns Hopkins), in telephone interview with Jonathan Sallet and Jordan Arnold, July 2, 2020.

<sup>70</sup> 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-healthcare/#5a88ef88e0e4>

<sup>71</sup> *Id.*

<sup>72</sup> "Broadband Insights Report (OVBI) Q1 2021," p. 13, OpenVault, <https://openvault.com/resources/ovbi/> (accessed October 20, 2021).

<sup>73</sup> "OVBI Special Report: 2020 Upstream Growth Nearly 4X of Pre- Pandemic Years," OpenVault, April 1, 2021, <https://openvault.com/ovbi-special-report-2020-upstream-growth-rate-nearly-4xof-pre-pandemic-years/>

This demand for bandwidth is reflected in the types of service packages that people actually subscribe to when they are available. Nearly 10 percent of broadband subscribers have 1 Gbps service, an amount that grew 300 percent throughout 2020.<sup>74</sup> As of Q1 2021, 80.4 percent of broadband-subscribing households had adopted services providing downloads of at least 100 Mbps.<sup>75</sup>

Simply put, fiber offers the best mix of technical attributes to meet this ever-increasing list of requirements. Other technologies cannot satisfy the range of current demands and requirements being placed on broadband networks.

NTIA should encourage states' 5-year plans to reflect best-in-class broadband infrastructure goals.<sup>76</sup> **Of all broadband infrastructures, community-wide fiber-to-the-premises represents the pinnacle: a robust, infinitely scalable transmission medium with a lifetime of many decades.** Access to fiber's gigabit-and-beyond speed allows businesses to compete and grow at a global scale through strategies like cloud computing, e-commerce, business-to-business relationships, and operational efficiencies. Access to best-in-class broadband allows workers to upskill and reskill online, work remotely, and develop entrepreneurial pursuits. And such access removes constraints on residential use, allowing for home-based business, telemedicine, and distance learning.

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<sup>74</sup> "Broadband Insights Report (OVBI) Q1 2021," p. 7. Another 4 percent have services between 500 and 900 Mbps.

<sup>75</sup> Id.

<sup>76</sup> Sherman, Hovis and Levin, *supra*, n.7.

This is the infrastructure favored by markets, investors, and consumers—and that is increasingly a key differentiator for those communities that have it.<sup>77</sup>

## **V. Allocation and Use of BEAD Funds to Achieve Universal, Reliable, Affordable, High-Speed Broadband**

**18. The Bipartisan Infrastructure Law provides that BEAD funding can be used in a variety of specific ways, including the provision of service to unserved and underserved areas, connection of community anchor institutions, data collection, installation of service within multi-family residential buildings, and broadband adoption programs. The law also permits the Assistant Secretary to designate other eligible uses that facilitate the program's goals. What additional uses, if any, should NTIA deem eligible for BEAD funding?**

Formal, informal, and emerging digital inclusion coalitions and alliances across the state that work to promote digital equity ecosystems in rural, tribal, suburban, and urban communities should be deemed eligible for BEAD funding. These local and state coalitions are well positioned to use federal funding to address broadband availability and affordability and to promote the adoption of broadband and digital equity, as detailed in recent studies.<sup>78</sup>

Therefore, NTIA should emphasize the important role that digital inclusion coalitions and alliances have played in promoting digital equity in rural, tribal, suburban, and urban communities across the nation and invite these groups to show how they can build on their past successes to further promote and inspire digital equity across the state and nation with this opportunity.

## **VI. Establishing Strong Partnerships Between State, Local, and Tribal Governments**

**19. Community engagement is critical to eliminating barriers to broadband access and adoption. NTIA views strong involvement between states and local communities as key to ensuring that the broadband needs of all unserved and underserved locations are accounted for in state plans submitted for funding. What requirements should NTIA establish for**

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<sup>77</sup> Id.

<sup>78</sup> Rhinesmith and Kennedy, *supra*, n. 11.

**states/territories to ensure that local perspectives are critical factors in the design of state plans?**

NTIA should require statewide digital equity plans to specify a strategy by which states will elicit participation from local communities. This strategy could include: a) convening digital equity stakeholders in cities/towns to provide input into state plans, b) holding a series of townhalls throughout the state, and c) enlisting the participation of community anchor institutions and local economic development organizations to help define equity needs and frame solutions

NTIA could also require states to develop statewide digital equity coalitions to ensure that local perspectives are included in the design, implementation, and evaluation of State Digital Equity Plans. In addition, NTIA should require these statewide coalitions to show in their digital equity plans how they have worked to develop strong partnerships between state, local, and tribal governments.

NTIA could also require states to include public meeting minutes and other public documentation as evidence that the state has worked across the state to develop strong partnerships. Through this process, states could show how they have developed partnerships to represent the needs of the following historically underserved populations: low-income households, aging populations, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, racial and ethnic minorities, and rural inhabitants. Organizations and entities across the state that represent the voices and perspectives of these populations should be included in statewide digital equity coalitions that are responsible for overseeing the State Digital Equity Plans.

**20. When formulating state broadband plans, what state agencies or stakeholder groups should be considered in the development of those plans?**

NTIA should require that state broadband plans are developed by a statewide digital equity coalition that includes organizations that represent the following populations: low-income households, aging populations, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, racial and ethnic minorities, and rural inhabitants.

These plans should not only focus on universal deployment/access, but also broader social, community, and economic development goals identified by other agencies and communities across the state.

Wherever possible, NTIA should look to and share existing examples of strong partnerships between state, local, and tribal governments in supporting digital equity ecosystems in communities across the state, particularly where digital equity is needed.<sup>79</sup>

**VII. Low-Cost Broadband Service Option and Other Ways to Address Affordability**

**22. The Bipartisan Infrastructure Law requires that BEAD funding recipients offer at least one low-cost broadband option and directs NTIA to determine which subscribers are eligible for that low-cost option. BIL § 60102(h)(5)(A). How should NTIA define the term “eligible subscriber?” In other words, what factors should qualify an individual or household for a low-cost broadband option?**

NTIA should define “eligible subscriber” as Congress did in the IJA when creating the Affordable Connectivity Program.<sup>80</sup> Eligible subscribers can meet any of the following criteria:

- Meet the qualifications for participation in the Lifeline program;

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<sup>79</sup> *Examples of such partnerships can be found in Rhinesmith and Kennedy, supra, n. 11 p.18-19.*

<sup>80</sup> IJA, §60502

- A household’s income is at or below 200% of the [Federal Poverty Guidelines](#) for a household of that size;
- At least one person in the household receives benefits from one of the following federal assistance programs: Medicaid, Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Supplemental Security Income, Federal Public Housing Assistance, or Veterans and Survivors Pension Benefit;
- At least one person in the household is in the free and reduced-price lunch program or the school breakfast program (including the Community Eligibility Provision);
- At least one person in the household has received a Federal Pell Grant in the current award year;
- If a household is located on Tribal lands, it is eligible if at least one person in the household participates in Bureau of Indian Affairs general assistance, Tribally administered Temporary Assistance for Needy Families, Head Start (only those households meeting its income qualifying standard), or the Food Distribution Program on Indian Reservations.

**23. Under the Bipartisan Infrastructure Law, states and territories are charged with developing low-cost broadband service options in consultation with NTIA and broadband providers interested in receiving funding within the state. BIL § 60102(h)(5)(B). What factors should NTIA consider in guiding the states in design of these programs to achieve this goal? Should NTIA define a baseline standard for the “low-cost broadband service option” to encourage states/territories to adopt similar or identical definitions and to reduce the administrative costs associated with requiring providers to offer disparate plans in each state and territory? What are the benefits and risks, if any, of such an approach?**

NTIA should adopt a baseline standard for low-cost options that, in combination with the FCC’s Affordable Connectivity Program, allows even the lowest-income households to afford reliable, robust broadband internet access service. Departures from this baseline should be clearly justified.

Low-cost options should also meet certain quality standards that permit recipients to stream video and do other activities consistent with the FCC’s universal service goals (e.g., public health, education, health care).

Speed standards should be informed by standards set in the IJJA for unserved and underserved households: low-cost options should not relegate subscribers to service that does not offer reliable 100 megabits per second downloads and 20 megabits per second uploads with a latency sufficient to support real-time, interactive applications.<sup>81</sup>

NTIA should recognize that affordability thresholds for consumers vary. But the monthly cost of a home broadband subscription remains the top barrier to adoption. Low-cost broadband service options should help ensure digital equity, especially for low-income households.

As Congress finds in the IJJA, digital exclusion carries a high societal and economic cost, materially harms the opportunity of an individual with respect to the economic success, educational achievement, positive health outcomes, social inclusion, and civic engagement of that individual, and exacerbates existing wealth and income gaps, especially those experienced by individuals who live in low-income households, aging individuals, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, individuals who are members of a racial or ethnic minority group, and individuals who primarily reside in a rural area.

Benton experts have written a number of reports exploring broadband availability, adoption, and use, especially for vulnerable populations including low-income households.

In 2016, Dr. Colin Rhinesmith conducted a national study of digital inclusion organizations that help low-income individuals and families adopt high-speed internet service.

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<sup>81</sup> §60102(a)(1)(C)(II)

The study looked at eight digital inclusion organizations across the United States working at the important intersection between making high-speed internet available and strengthening digital skills—two essential and interrelated components of digital inclusion, which is focused on increasing digital access, skills, and relevant content.<sup>82</sup>

Prior to Dr. Rhinesmith’s work, much of the research on broadband adoption focused on understanding the factors that influence whether an individual is likely to pay for high-speed internet services. These factors have been used to predict rates of broadband adoption. As part of this thinking, the phrase “willingness to pay” became widely accepted within broadband adoption literature. This phrase focuses on what an individual is willing to pay for high-speed internet access, while also paying attention to demographic characteristics of the individuals studied.

Dr. Rhinesmith’s research found that several of the digital inclusion organizations and the low-income residents who benefited from their services reported that cost is the paramount issue in determining people’s adoption of broadband. Low-income people, in particular, suggested that the term “ability to pay” is more relevant to their lives than the term “willingness to pay.” The low-income adults who participated in Dr. Rhinesmith’s study explained that paying for broadband is not as much of a choice that involves what they are willing to pay for different Internet speeds, but rather a choice between broadband service and the ability to pay for food, for instance.

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<sup>82</sup> Rhinesmith, Colin. January 2016. *Digital Inclusion and Meaningful Broadband Adoption Initiatives*. Evanston, IL: Benton Foundation. (Attachment K)  
<https://www.benton.org/publications/digital-inclusion-and-meaningful-broadband-adoption-initiatives>



All of the low-income individuals and families who participated in Dr. Rhinesmith’s research understood the value of broadband service. But their ability to pay for service was a major challenge. Successful interventions need to address “ability to pay” rather than “willingness to pay.”

Dr. Rhinesmith’s research supports findings from previous studies that have shown that successful digital inclusion efforts depend on a recognition of how persistent poverty shapes people’s ability to access and use computers and the internet in ways that are meaningful to their lives.<sup>83</sup>

Dr. Rhinesmith’s research indicates how problems with broadband adoption in low-income communities are intimately bound up in other problems that are markers of poverty, such as low high school graduation rates and health outcomes. Poverty is intimately connected to the challenges facing low-income people in adopting broadband service at home. Efforts to increase broadband adoption must understand the structural problems of poverty.

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<sup>83</sup> See, e.g., Lisa J. Servon, *Bridging the Digital Divide: Technology, Community and Public Policy* (Malden, MA: Wiley-Blackwell, 2002); Dharma Dailey, Amelia Bryne, Alison Powell, Joe Karaganis and Jaewon Chung, “Broadband Adoption in Low-Income Communities,” Social Science Research Council, March 2010, <http://www.ssrc.org/publications/view/broadbandadoption-in-low-income-communities/> (Dailey et al); and Virginia Eubanks, *Digital Dead End: Fighting for Social Justice in the Information Age* (Cambridge, MA: The MIT Press, 2011) (Eubanks). John B. Horrigan, “The Essentials of Connectivity: Comcast’s Internet Essentials Program and a Playbook for Expanding Broadband Adoption and Use in America,” Comcast Technology Research & Development, March 2014, [http://corporate.comcast.com/images/Final\\_IE\\_Research\\_Full\\_Paper.pdf](http://corporate.comcast.com/images/Final_IE_Research_Full_Paper.pdf). John B. Horrigan, “Deepening Ties: Comcast Internet Essentials Customers Show Broader and Deeper Ties to the Internet Over Time—Especially Among Those Who Had Digital Literacy Skills Training,” January 2015, <http://corporate.comcast.com/images/comcast-ie-report-2-horrigan.pdf>

Dr. Rhinesmith’s research also found that for many low-income individuals and families, low-cost computers are just as important as having access to low-cost broadband. Half of the organizations that participated in Dr. Rhinesmith’s study recognized that providing low-cost or free computers was a key part of their broader digital inclusion efforts. As part of this work, digital inclusion organizations refurbish computers and resell them at affordable prices for low-income people who often are not able to afford new computers. For many low-income people, having a computer at home allows them to connect to the internet, search and apply for jobs, improve their computer skills, and help their children excel at school and in their daily lives.

Also among the attached articles are two recent studies conducted by Benton Senior Fellow Dr. John B. Horrigan.<sup>84</sup> They provide reliable and current data on the importance of the barriers facing low and middle-income users in obtaining broadband access. They also suggest that the market for connectivity for low-income households should be robust enough to support multiple price points—including ones which, in conjunction with the FCC’s Affordable Connectivity Program’s subsidy, would result in minimal or no outlays for qualifying households.

In June-July 2021, Dr. Horrigan conducted a high-quality telephone survey of 2503 Philadelphia households. The study shows that affordability is the most important obstacle to connectivity in low-income households.

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<sup>84</sup> Horrigan “Affordability and the Digital Divide” supra, n. 12.; “Connecting Philadelphia: 2021 Household Internet Assessment Survey” City of Philadelphia (Attachment L) <https://www.phila.gov/media/20211019110414/Connecting-Philadelphia-2021-Household-Internet-Assessment-Survey.pdf>

Fifty-six percent of non-broadband adopters said that the cost of access was a problem. Asked to identify the most important reason for not having high-speed service at home, 42% cited affordability. The report showed the particular burdens that low-income households face in obtaining access to broadband. Thirty-one percent of low-income households reported a service interruption during the current pandemic, and 21% of K-12 households had service interrupted because the pandemic made paying the bill a challenge.

The Philadelphia study validates the effectiveness of discount programs in easing the financial burden of access as well as adding new users. It found that the rate of high-speed broadband connectivity had increased from 70% to 84% over the preceding two-year period, a remarkable increase over that short period. Significantly, fully half of the improvement is attributable to free or discounted programs; of the 14% increase in home broadband adoption from 2019 to 2021, free or discount offers account for 9% points. Moreover, about two-thirds of those who have signed up for free or discount offers say it would be difficult for them to have service without them.

Discount offers also have the highest incidence among target populations. Some 21% of households with kindergarten through 12th-grade students have signed up for one of these discount or free offers. For low-income Philadelphians (those whose incomes are below \$20,000 annually), 17% had taken advantage of one of these offers. Thirty-one percent of low-income Philadelphia households lost internet connectivity during the pandemic due to difficulty paying.

Dr. Horrigan has also completed a national survey of low- and lower-middle income households.<sup>85</sup> The results are similar to what was found in Philadelphia.

The national survey of low- and lower-middle-income households asked these households what they pay for service and to identify monthly service fees that would be *too expensive* for their budgets. That survey found a range of perspectives on affordability:

- 40 percent of households whose incomes were below \$50,000 annually said they could not afford any monthly fee;
- 22 percent reported that \$25 per month would be a comfortable figure for their household budgets; and
- 38 percent said that figures that align roughly with lower-cost market rates (between \$55 and \$70 per month) would be affordable for them.

The national survey also found that affordability is, by a considerable degree, the greatest obstacle to broadband access.<sup>86</sup> Respondents were asked to select one or more from a list of eleven reasons not to subscribe, and then asked to pick the most important of those considerations. Fifty-five percent of respondents listed cost as a factor,<sup>87</sup> and 21% listed cost as the most important barrier for them.<sup>88</sup>

According to BroadbandNow, carriers with large national footprints (e.g., Verizon, Comcast, Cox, Spectrum, and AT&T) have promotional rates that typically start at \$40 or

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<sup>85</sup> 12503 online responses were supplemented by 383 telephone interviews. Each household had income of less than \$50,000. Horrigan “Affordability and the Digital Divide,” supra n. 12. [see attachment]

<sup>86</sup> 18% of respondents report a service disruption during the pandemic arising from inability to pay.

<sup>87</sup> Runners up were cost of a computer (47%), smartphones are adequate (38%), and internet access available outside the home (32%).

<sup>88</sup> Other reasons most often listed as most important included, in descending order, smartphones are adequate (15%), cost of computer (11%), and internet access outside the home (5%).

\$50/month.<sup>89</sup> Cox’s program starts at \$30/month and, after a year, increases \$15 to \$45/month. AT&T’s monthly rate increases by \$20. But these are not necessarily the rates low-income consumers pay.

Dr. Horrigan’s national survey included other data points relevant to affordability of service:

- The average non-bundled monthly internet service cost was \$62.<sup>90</sup> People who sign up for free or discount internet plans (just 9 percent of those surveyed) pay an average of \$27 per month for service.
- 46 percent said it was at least somewhat difficult to pay for service.<sup>91</sup> One-third (34 percent) said it was “not too difficult” to pay for service. 20 percent said it was “not at all difficult.”
- Some 56% of non-connected, non-broadband subscribers say they would not subscribe to the internet at the right price. Overall, this comes to 40% of non-broadband users who would not subscribe to service. They would likely need substantial service subsidies to get online, as well as digital navigation services including finding a service plan, assistance installing it, and training on how to use computers and (safely and securely) the internet.
- 18 percent of low- and lower-middle income households said that since the pandemic they experienced a service interruption due to difficulties in paying their monthly internet service fee.

Dr. Horrigan’s national study also finds that a sizable portion of the “subscription vulnerable” rely on free or discount programs.<sup>92</sup> Some 34 percent use one of those programs for home connectivity. About the same number (32 percent), however, say it is too difficult to sign up for one of those programs. Another 26 percent say they do not qualify (even if it is likely

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<sup>89</sup> BroadbandNow, Cheapest Internet Service in 2021 (last accessed December 7, 2021) <https://broadbandnow.com/internet/best/cheap>.

<sup>90</sup> Rural residents pay an average of \$69 per month while those living in urban areas pay \$59. Very low-income households (those whose annual incomes are \$15,000 or less) pay \$54 per month.

<sup>91</sup> 11 percent said it was “very difficult.” 35 percent said it was “somewhat difficult.”

<sup>92</sup> The research found that connectivity is tenuous for many households. The “subscription vulnerable” are defined as those households that have lost service, say fitting the internet into their budget is very difficult, and/or are living at or near the poverty level.

that most do) and 8 percent say they could not demonstrate that their households qualify for such offers.

**24. Affordability is a key objective of the Bipartisan Infrastructure Law's broadband programs. What factors should be considered in the deployment of BEAD funds to help drive affordability beyond the low-cost option?**

The IIJA directs NTIA to consider community poverty rates in use and prioritization of BEAD funds:

- NTIA must consider a high rate of poverty in an area in determining what is a high-cost area;<sup>93</sup>
- BEAD funds can be used for installing internet and Wi-Fi infrastructure or providing reduced-cost broadband within a multi-family residential building, with priority given to a residential building that is in a location in which the percentage of individuals with a household income that is at or below 150 percent of the poverty line applicable to a family of the size involved is higher than the national percentage of such individuals.<sup>94</sup>
- States are to award funding in a manner that gives priority to projects based on deployment of a broadband network to persistent poverty counties or high-poverty areas.<sup>95</sup>

In communities impacted by extreme and/or persistent poverty, no price point may encourage adoption of low-cost options. In these areas, deployment projects that include the provision of free broadband internet access service should be encouraged.

The FCC recently announced plans for a pilot program focused on Affordable Connectivity Program-eligible households participating in Federal Public Housing Assistance (FPHA) programs.<sup>96</sup> NTIA should consider encouraging states to partner with agencies that administer

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<sup>93</sup> IIJA, §60102(a)(2)(G)(i)(IV)

<sup>94</sup> IIJA, §60102(f)(4)

<sup>95</sup> IIJA, §60102(h)(1)(A)(iv)(I)

<sup>96</sup> Affordable Connectivity Program (WC Docket No. 21-450) Adopted January 14, 2022; released January 21, 2022 <https://www.fcc.gov/document/fcc-releases-rules-implement-affordable-connectivity-program>

the FPHA programs to ensure all residents have access to reliable, robust broadband networks offering service at affordable prices. Wired or wireless broadband networks offering free service to FPHA residents is one way to address the cost barrier to adoption for the lowest-income households.

## **VIII. State Digital Equity Plans**

**25. The Bipartisan Infrastructure Law includes historic investments in digital inclusion and digital equity, promising to bring all Americans the benefits of connectivity irrespective of age, income, race or ethnicity, sex, gender, disability status, veteran status, or any other characteristic. NTIA seeks to ensure that states use Digital Equity Planning Grants to their best effect. What are the best practices NTIA should require of states in building Digital Equity Plans? What are the most effective digital equity and adoption interventions states should include in their digital equity plans and what evidence of outcomes exists for those solutions?**

NTIA should work closely with each state to provide the technical assistance, programmatic guidance, and other logistical support needed to establish a statewide digital equity coalition, which would be responsible for developing, implementing, and evaluating its State Digital Equity Plan.

There are best practices in statewide digital inclusion coalitions. Statewide coalitions have been established in several states, including Maine, New Jersey, North Carolina, and Utah. During the pandemic, these statewide digital equity coalitions have focused their efforts in the following ways: providing maps of free internet locations; listing low-cost internet deals; providing recommendations to COVID-19 task forces; creating online-resource webpages; helping people understand the nuances of digital inequity and what digital inclusion truly means; offering up-to-date information on federal funding opportunities, state actions, and opportunities, along with other information to help the coalition members respond to the

COVID-19 pandemic; and collaborating to leverage knowledge and resources to further digital inclusion work.<sup>97</sup> Examples such as these should be shared to inform the development of statewide digital equity coalitions. Public/private partnerships can also be an important element in state plans.<sup>98</sup>

**26. Some states and territories will benefit from technical assistance in preparing Digital Equity Plans. What types of technical assistance, support, data, or programmatic requirements should NTIA provide to states and territories to produce State Digital Equity Plans that fully address gaps in broadband adoption, promote digital skills, advance equitable access to education, healthcare and government services, and build information technology capacity to enable full participation in the economy for covered populations? What steps, if any, should NTIA take to monitor and assess these practices?**

NTIA should help provide assistance to states in developing and/or implementing their own data dashboards that can be used to identify gaps in broadband access, adoption, affordability, digital equity, and digital inclusion across the state.

NTIA can also play a role in helping states to establish both statewide digital equity coalitions and State Digital Equity Plans. NTIA should require that the statewide coalitions identify and address any evidence of digital redlining in historically marginalized communities that exists.

In addition, NTIA should develop and share examples of community-level broadband adoption and digital inclusion programs, including approaches to stakeholder engagement between state, local, and tribal governments and other entities representing historically

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<sup>97</sup> Rhinesmith and Kennedy, *supra*, n. 11 at p. 18.

<sup>98</sup> Hovis, Joanne; Baller, Jim; Talbot, David; and Blake, Cat. "Public Infrastructure/Private Service: A Shared-Risk Partnership Model for 21st Century Broadband Infrastructure." Benton Institute for Broadband & Society, October 2020. (Attachment M)

<https://www.benton.org/publications/public-infrastructureprivate-service>



underserved and marginalized populations across the state. NTIA should also provide support to states in helping state agencies see how they can collect data to show how the funding can support broadband access, adoption, and use, as well as broader social, community, and economic outcomes.

NTIA can play an important role in assisting states and territories to see what success can look like when states develop successful statewide digital equity coalitions and plans to promote digital equity. Through this process, NTIA will be playing a key role in capacity building at the state level to promote digital equity.

Common-sense components of a digital equity plan include:

- Asset mapping: Collecting and sharing information on the entities doing “digital divide” work in a state and entities whose core missions might not be “closing the digital divide” but who directly benefit from a smaller digital divide.
- Enlist the participation of the private sector (e.g., large employers in a community) that may have a stake in reducing the digital divide.

**28. How should NTIA ensure that State Digital Equity Plans impact and interact with the State's goals, plans and outcomes related to: (i) Economic and workforce development; (ii) education; (iii) health; (iv) civic and social engagement; (v) climate and critical infrastructure resiliency; and (vi) delivery of other essential services, especially with respect to covered populations mentioned in Bipartisan Infrastructure Law § 60303(2)(C)?**

NTIA should require that states develop an interagency working group that includes agencies focused on the following areas: economic and workforce development; education; health and human services; civic and social engagement; climate and critical infrastructure resiliency; and delivery of other essential services, especially with respect to covered populations mentioned in the Bipartisan Infrastructure Law. This interagency working group and/or task force should represent the state in the statewide digital equity coalition.

**29. The Bipartisan Infrastructure Law directs states and territories to include in their digital equity plans “measurable objectives for documenting and promoting: (i) The availability of, and affordability of access to, fixed and wireless broadband technology; (ii) the online accessibility and inclusivity of public resources and services; (iii) digital literacy; (iv) awareness of, and the use of, measures to secure the online privacy of, and cybersecurity with respect to, an individual; and (v) the availability and affordability of consumer devices and technical support for those devices.” What best practices, if any, should states follow in developing such objectives? What steps, if any, should NTIA take to promote or require adoption of these best practices? What additional guidance and oversight about the content of the State Digital Equity Plans should NTIA provide?**

The “measurable objectives” include both objective metrics (whether something is available or not) and subjective ones (whether something is affordable to consumers, whether grant recipients have promoted resources for digital literacy or online privacy). Given the range of metrics of interest, NTIA should consider recommending that digital equity plans use multiple approaches for measurement:

- Ask grantees to record and report, for example, the digital literacy resources available to beneficiary of adoption promotion programs.
- Measure people’s perceptions about resources: Survey whether grantees’ clients have enrolled in digital literacy initiatives and their perceptions about its impact.
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NTIA should ask statewide digital equity coalitions to follow steps and guidance included in

NTIA’s own Broadband Adoption Toolkit,<sup>99</sup> as well as information in the following documents:

“Digital Inclusion Program Startup Manual,”<sup>100</sup> “Digital Inclusion Coalition Guidebook,”<sup>101</sup>

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<sup>99</sup> Broadband Adoption Toolkit. National Telecommunications and Information Administration (May 2, 2013)

[https://www2.ntia.doc.gov/files/NTIA\\_2013\\_BroadbandUSA\\_Adoption\\_Toolkit.pdf](https://www2.ntia.doc.gov/files/NTIA_2013_BroadbandUSA_Adoption_Toolkit.pdf)

<sup>100</sup> Siefer, Angela, Bill Callahan, and Paolo Balboa. “Digital Inclusion Program Startup Manual.” National Digital Inclusion Alliance, <https://startup.digitalinclusion.org/>

<sup>101</sup> Callahan, Bill, Tianca Crocker, and Angela Siefer, Digital Inclusion Coalition Guidebook. National Digital Inclusion Alliance

<https://www.coalitions.digitalinclusion.org/pdfs/NDIA%20Coalition%20Guidebook%20V1.2%20%28Print%29.pdf>

“Digital Inclusion and Meaningful Broadband Adoption Initiatives,”<sup>102</sup> and “Growing Healthy Digital Equity Ecosystems During COVID-19 and Beyond.”<sup>103</sup>

## **IX. Digital Equity Coordination Requirements**

**30. The Bipartisan Infrastructure Law requires state and territories to consult with historically marginalized and disadvantaged groups, including individuals who live in low-income households, aging individuals, incarcerated individuals (other than individuals who are incarcerated in a Federal correctional facility), veterans, individuals with disabilities, individuals with a language barrier (including individuals who are English learners and have low levels of literacy), individuals who are members of a racial or ethnic minority group, and individuals who primarily reside in a rural area. What steps should NTIA take to ensure that states consult with these groups as well as any other potential beneficiaries of digital inclusion and digital equity programs, when planning, developing, and implementing their State Digital Equity Plans? What steps, if any, should NTIA take to monitor and assess these practices?**

NTIA should require that states provide public meeting minutes and other public documentation that shows evidence of public stakeholder engagement and consultation with historically marginalized and disadvantaged groups. In addition, wherever it is possible, NTIA should require that historically marginalized and disadvantaged groups are consulted in the documentation of digital redlining in communities across the state. This documentation, as well as plans to address digital redlining, should be included in each State Digital Equity Plan. NTIA should require that states provide updates in each planning, capacity, and implementation stage.

**31. The Bipartisan Infrastructure Law also requires states and territories to coordinate with local governments and other political subdivisions in developing State Digital Equity Plans. What steps should states take to fulfill this mandate? How should NTIA assess whether a state has engaged in adequate coordination with its political subdivisions?**

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<sup>102</sup> Rhinesmith, Colin. “Digital Inclusion and Meaningful Broadband Adoption Initiatives.” Evanston, IL: Benton Foundation, January 2016. (Attachment N) [benton.org/broadband-inclusion-adoption-report](https://benton.org/broadband-inclusion-adoption-report)

<sup>103</sup> Rhinesmith and Kennedy, *supra*, n. 11.

Successful state broadband deployment grant programs prioritize local input and incentive collaboration.<sup>104</sup> At a minimum, most successful programs require evidence of local input and buy-in. California’s funding program favorably considers endorsements or letters of support from state and local government, community groups, and anchor institutions.<sup>105</sup> Illinois prioritizes a verified financial commitment from a community partner.<sup>106</sup> Maryland requires that applicants document the local jurisdictional involvement in planning and implementation of the project, including “evidence of local public involvement in such activities as community meetings, public forums, and surveys,” along with letters of support from major community beneficiaries of the deployment.<sup>107</sup>

#### **X. Implementation of Middle Mile Broadband Infrastructure (MMBI) Grant Program**

**35. How can the Middle Mile Broadband Infrastructure program leverage existing middle-mile facilities, access to rights of way, poles, conduit, and other infrastructure and capabilities that are owned, operated, or maintained by traditional and non-traditional providers (public and investor-owned utilities, grid operators, co-ops, academic institutions, cloud service providers, and others) to accelerate the deployment of affordable, accessible, high-speed broadband service to all Americans? What technical assistance or guidance should NTIA provide to encourage applications for this program? Are there examples of successful deployments and/or benefits provided by non-traditional providers to highlight?**

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<sup>104</sup> Sherman, Hovis and Levin, *supra*, n.7.

<sup>105</sup> California Advanced Service Fund (CASF), “Broadband Infrastructure Account – Requirements Guidelines and Application Materials,” December 2018

<sup>106</sup> Connect Illinois Broadband Grant Program, “Frequently Asked Questions (FAQ),” updated February 24, 2020, 5.

<sup>107</sup> Kenrick M. Gordon, “FY21 Maryland Broadband Infrastructure Grant Program: Grant Application Guide,” Maryland Governor’s Office of Rural Broadband, November 4, 2020, 15.

Large companies provide the great bulk of *home* broadband service today.<sup>108</sup> But operators of middle-mile networks observe that smaller and less traditional broadband providers can take advantage of their open facilities.<sup>109</sup> Thus, broadband providers that connect to open-access, middle-mile networks can include rural electric cooperatives,<sup>110</sup> which have existing infrastructure, network routes, and customer relationships that can enable them to deploy high-performance broadband; as well as rural telephone companies, which similarly enjoy pre-existing customer relationships.<sup>111</sup>

Mid-Atlantic Broadband has worked with the Mecklenburg Electric Cooperative to bring fiber to the homes of residents of Halifax County, Virginia.<sup>112</sup> The electric cooperative will use MBC's middle-mile fiber to build last-mile fiber in six counties across southwest Virginia by the beginning of 2021.<sup>113</sup> Unlike most broadband providers, electric cooperatives are member-owned and not-for-profit, and many trace their roots back to the rural electrification movement

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<sup>108</sup> The top sixteen providers account for about 96 percent of home subscriptions. See Leichtman Research Group, "About 630,000 Added Broadband in 3Q 2021," November 17, 2021, <https://www.leichtmanresearch.com/about-630000-added-broadband-in-3q-2021/>

<sup>109</sup> Arnold, Jordan & Sallet, John. "If We Build It, Will They Come? Lessons from Open-Access, Middle-Mile Networks" Evanston, IL: Benton Institute for Broadband & Society, December 2020. (Attachment O) <https://www.benton.org/publications/middle-mile>

<sup>110</sup> See, e.g., Ry Marcattilio-McCracken, "Electric Cooperatives Partner with Dominion Energy to Bring Broadband to Rural Virginia," Community Networks, Institute of Local Self Reliance, August 6, 2020, <https://muninetworks.org/content/electric-cooperativespartner-dominion-energy-bring-broadband-ruralvirginia>

<sup>111</sup> Shirley Bloomfield (CEO, NTCA – The Rural Broadband Association) in an email to Jonathan Sallet on August 7, 2020.

<sup>112</sup> Tom McLaughlin, "Fiber-to-the-Home Gains Toehold in the County," November 14, 2019, South Boston News & Record, SovaNow.com, [http://www.sovanow.com/index.php?/news/article/fiber-to-the-home\\_gains\\_toehold\\_in\\_county/](http://www.sovanow.com/index.php?/news/article/fiber-to-the-home_gains_toehold_in_county/)

<sup>113</sup> *Id.*

of the 1930s. Especially in rural communities, electric cooperatives may be a valuable partner for middle-mile networks aiming to bring service to unserved areas, because electric cooperatives do not face the same profit imperatives that other broadband providers do, although they obviously face their own financial requirements.

Similarly, in Maine, the Three Ring Binder offers, according to Peggy Schaffer, executive director of the ConnectME Authority, “an easier and less costly access for a build, allowing our small providers (who are not usually the incumbent providers) an option to tap in to a big fat pipe rather than negotiate lease-fiber arrangements with their direct competitors.”<sup>114</sup> Indeed, such broadband providers can sometimes even start from scratch, as when Eathan Gleiner, a local IT professional in southwest Virginia, started his own company, dubbed MtnNet, to bring broadband to homes in a rugged mountain location that commercial broadband networks had not reached.<sup>115</sup>

Lit Communities is just such an example: a new company working to connect to open-access, middle-mile networks in places like New Orleans; Medina County, Ohio; and Salem, Virginia, with the Roanoke Valley Broadband Authority.<sup>116</sup>

**36. As network demand grows, capacity needs in the middle mile and network core grow as well. What scalability requirements, if any, should NTIA place on middle-mile grant recipients?**

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<sup>114</sup> Peggy Schaffer (Executive Director, ConnectME) in an email to Jonathan Sallet on August 27, 2020.

<sup>115</sup> Lindsay Cayne, “One Bent Mountain Resident Brings Broadband to His Community,” WDBJ7, January 24, 2019, <https://www.wdbj7.com/content/news/BentMountain-residents-get-broadband-504823932.html>

<sup>116</sup> Brian Snider (CEO, Lit Communities) in an email to Jonathan Sallet on March 29, 2020.

Community surveys are one useful way to assess demand before construction. NoaNet has a statewide system in place for community surveys and demand aggregation to determine the need in a given community.<sup>117</sup> The network will supply a community with a project manager to help understand the results from the survey.<sup>118</sup> NoaNet will then even write a white paper that includes a market analysis of the community, survey results, and data on the economic impact of broadband, all to help local leaders make data-driven decisions when considering an open-access network.<sup>119</sup> In Illinois, the Wabash Communications Co-Op, which connects to the Illinois Century Network, sent a nonbinding pre-subscription form to local farms and businesses asking about their current internet-access technologies (including their cost and level of service) and their interest in new broadband at various performance tiers.<sup>120</sup>

Even the act of searching for broadband solutions signals to broadband providers that there is unmet demand in a community, as was the case for Grayson County, Virginia. When Appalachian Power looked for a locality with which it could partner on a pilot project, the utility sought a local government that had taken steps to find a broadband solution.<sup>121</sup> Grayson County had already hired a broadband consultant and determined that up to 60 percent of the county lacked broadband access, far above the estimate given by the Federal Communications

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<sup>117</sup> NoaNet, “The Road to Broadband: A Planning Guide for Your Community Broadband Network,” 2020, <https://t1h.d3d.myftpupload.com/wp-content/uploads/2020/10/The-Road-to-Broadband-2020.pdf>

<sup>118</sup> *Id.*

<sup>119</sup> *Id.*

<sup>120</sup> Wabash Communications Co-Op, “Illinois Connect Broadband Grant Program: Broadband Pre-subscription Form for Farms and Other Businesses,” 2020, <https://awesomefiber.com/wp-content/uploads/2020/03/Farmand-Business-Forms-WTC.pdf>

<sup>121</sup> Brad Hall (VP of External Affairs, Appalachian Power) in a phone interview with Jonathan Sallet and Jordan Arnold on March 9, 2020.

Commission.<sup>122</sup> Grayson County gave Appalachian Power powerful information to make the case that there are additional residences to be served. Broadband providers themselves may also demonstrate their demand for middle-mile networks, as occurred in Maine. Before the Three Ring Binder was built, the ConnectME Authority heard again and again from broadband providers who wanted to provide service to rural areas but needed middle-mile connectivity to make it work.<sup>123</sup> Those broadband providers were some of the first to use the network once Three Ring Binder completed the build.<sup>124</sup>

Many middle-mile networks began with an initial mission or purpose and then expanded to address new needs. The Illinois Century Network began as an education network, primarily oriented around service to community anchor institutions like schools and libraries, but a federal grant allowed the network to build hundreds of miles of fiber into underserved portions of the state.<sup>125</sup>

Demand measurements can be useful for determining when and where to expand a network. NoaNet's expansion strategy is largely driven by such data and community input.<sup>126</sup> That pairs the network's expertise in broadband deployment with local leaders' knowledge of their own communities. This ensures that decisions about expansion are data-driven, with local communities as strong partners.

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<sup>122</sup> *Id.*

<sup>123</sup> Fletcher Kittredge, "Maine's Three Ring Binder," *Maine Policy Review*, 22.1, 2013, 30-40, <https://digitalcommons.library.umaine.edu/mpr/vol22/iss1/7>

<sup>124</sup> *Id.*

<sup>125</sup> Illinois Century Network, "Illinois Broadband Opportunity Partnership-East Central (IBOP-EC)," <https://www2.illinois.gov/icn/projects/ibop-ec/Pages/default.aspx>

<sup>126</sup> NoaNet, "Community Support," <https://noanet.net/community-support/>, accessed October 18, 2020.



Open-access, middle-mile networks do not happen overnight. Project THOR was the result of years of cooperative planning between local, regional, and state governments.<sup>127</sup> UTOPIA was, for a long time, considered a failure, with one newspaper calling it a “half-billion dollar fiasco menacing city budgets in four counties.”<sup>128</sup> Now, UTOPIA has found success as a middle- and last-mile network, building out to new communities in Utah and even expanding into Idaho.<sup>129</sup> Time horizons set by government programs should recognize the importance of long-term planning for long-term success.

## CONCLUSION

Congress has given NTIA authority to transform broadband networks in our country. Benton hopes these comments will be of use to NTIA and its hard-working staff as it implements its implementation of the IJJA.

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<sup>127</sup> Northwest Colorado Council of Governments (“NCCOG”), “Project THOR Broadband Access Project Achieves Full Availability,” April 2020, <https://nwccog.org/programs/broadband/project-thor/>

<sup>128</sup> Tony Semerad and Vince Horiuchi, “UTOPIA: Fiberoptic Nirvana or a Nightmare with No Way Out?,” The Salt Lake Tribune, December 3, 2012, <https://archive.sltrib.com/article.php?id=55284692&itype=CMSID>

<sup>129</sup> Drew Clark, “UTOPIA Fiber: A Model Open-Access Network,” Broadband Communities Magazine, November/December 2019, <https://www.bbcmag.com/community-broadband/utopia-fiber-a-model-openaccess-network>

## Attachments

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