ReImagine Appalachia

Using Federal Broadband Funding to Pivot to a Reimagined Appalachia:
Principles for State Broadband Infrastructure Policy

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"High quality, affordable broadband is foundational for a prosperous 21st century Appalachia. Children and families— and the local businesses, schools and health care institutions that serve them—require broadband to ensure their well-being. All Appalachians, regardless of their income or race, must be able to access the internet. Universal broadband is also necessary for a smart grid."

--ReImagine Appalachia Blueprint

Box 1

Principles for Maximizing Good Jobs and the Expansion of High Speed, Reliable, and Affordable Broadband with Broadband Equity, Access, and Deployment (BEAD) Program Funds

1. Encourage stakeholders to challenge the initial FCC maps and continually update publicly available maps to maximize the effective use of public funds.
   - States and their broadband authorities should encourage stakeholders to challenge the initial FCC maps issued on November 18, 2022, when they overstate broadband speeds and availability. They should then iteratively generate independent, peer-reviewed maps and databases on an ongoing basis that specify broadband speeds and availability in all locations.

2. Deploy fiber optic technology to achieve universal high-speed (100/100 Mbps), reliable, and affordable service.
   - Fiber optic technology offers high-speed service, long-term adaptability (i.e., is "future proof"), and cost-effectiveness. State broadband authorities should use BEAD funds to extend fiber optic in unserved and underserved areas. In the few areas in which fiber is cost-prohibitive in the short run, BEAD investments should deliver reliable service at speeds of at least 100/20 Mbps and implement near-term investments in a way that facilitates fiber deployment in the medium term.

3. Implement strong labor and community benefit/local hiring standards that include strong training components.
   - State broadband authorities should prioritize requests for funding from organizations that either utilize their own directly employed and well-trained workforce or that commit to deploying contractors that meet strong labor standards (e.g., prevailing wage laws, responsible contractor provisions, and project labor agreements). Whether using directly employed or contractor workforces, proposals should include legally binding commitments to enforce strong labor standards backed by effective compliance strategies and incorporate robust training plans which include local hiring provisions for low-income and diverse workers.

4. Incorporate comprehensive digital equity and inclusion provisions.
   - To combat low-income communities' historical lack of access to broadband services, state broadband agencies should designate a portion of BEAD funds for offering low-cost broadband options to eligible low-income consumers, identifying and delivering fiber to the premises to underserved low—and moderate—income multi-family housing and multi-tenant buildings, deploying or improving broadband service in eligible community centers, subsidizing low-income families' purchase of digital connective devices, and developing a long-term plan through which low-income populations and communities can acquire basic digital skills.

5. Regulate broadband as an essential utility and opportunistically and efficiently build publicly-owned middle-mile networks on public infrastructure projects.
   - To ensure the delivery of quality broadband service that operates for the public good, state legislators should authorize their public service commission to regulate broadband as an essential utility. Regulating broadband in this manner will ensure network resiliency, public safety, and consumer protection. When undertaking public infrastructure or publicly regulated projects (e.g., road, rail, or electric grid construction/maintenance), states should opportunistically invest in publicly-owned middle-mile networks to support local competition in broadband delivery.

6. Award grants to providers that will best meet labor & community benefit standards and offer high speed, reliability, and affordability.
   - State broadband authorities should give priority to funding proposals from providers or other entities who offer the best combination of labor and community benefit standards, speed, reliability, and affordability. In addition, if incumbent ISPs do not propose deploying broadband to underserved residents or communities, local municipalities and cooperatives should have the opportunity to access funds to deliver high-speed, reliable, affordable service to those areas.

7. Give funding priority to regional entities with the capacity to hold providers accountable, including by developing local leadership focused on the public good.
   - To address capacity bottlenecks in sparsely populated areas, state broadband authorities should (a) give funding priority to county and multi-county entities with the scale and expertise to ensure rural areas get good value for public investments, (b) if necessary to reach places with the greatest need, reduce or eliminate matching requirements that have often blocked access to federal broadband funding to date, and (c) invest in leadership development (e.g., local broadband councils) to increase local capacity to negotiate with ISPs for good deals and hold them accountable.

8. Implement federal broadband leadership that ensures all communities and families have the broadband speeds, reliability, and affordability essential to thrive in the 21st century.
   - To overcome historically fragmented and incumbent-provider-dominated federal broadband policies, the Biden administration should create a White House broadband office or alternative mechanism for achieving integrated federal broadband policies that serve the public good—not the bottom lines of ISPs.
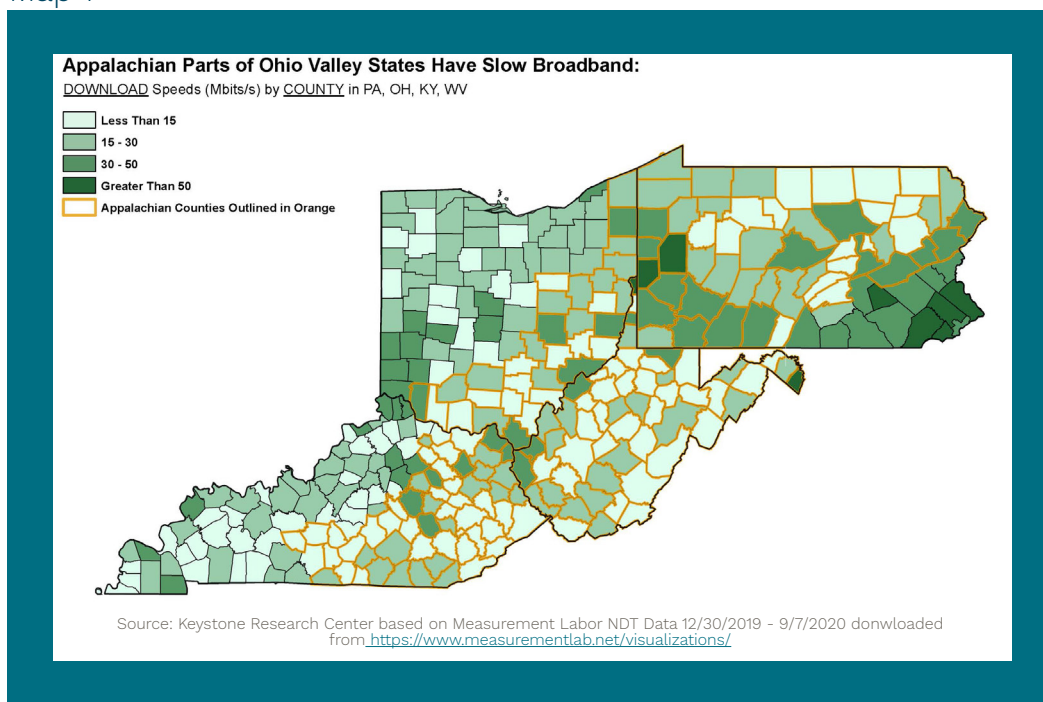
It is now widely recognized that high-quality internet is essential infrastructure. Like access to water or electricity, it is a necessity for families, students, businesses, farmers, healthcare providers, communities, and rural regions to thrive—even to have a chance to thrive. High-speed, reliable broadband can also contribute to reductions in carbon emissions. It will cut travel because more people and places conduct their business remotely. It will increase energy efficiency via implementing a "Smart Grid" and more efficient use of resources through precision agriculture and forestry.

The pandemic made the critical importance of broadband and the vast inequities in broadband availability, speed, reliability, and affordability apparent. Recently, new results from the National Assessment of Educational Progress (NAEP) confirmed what many people suspected: that lower-income school districts experienced significant declines in test scores during the pandemic.[2] One contributing reason was almost certainly the digital divide and the fact that low-income students and school districts had much less universal access to high-speed broadband when schools delivered education remotely or using hybrid approaches. Gaps in job growth and living standards will also widen unless we give all communities access to affordable, reliable, high-speed broadband.
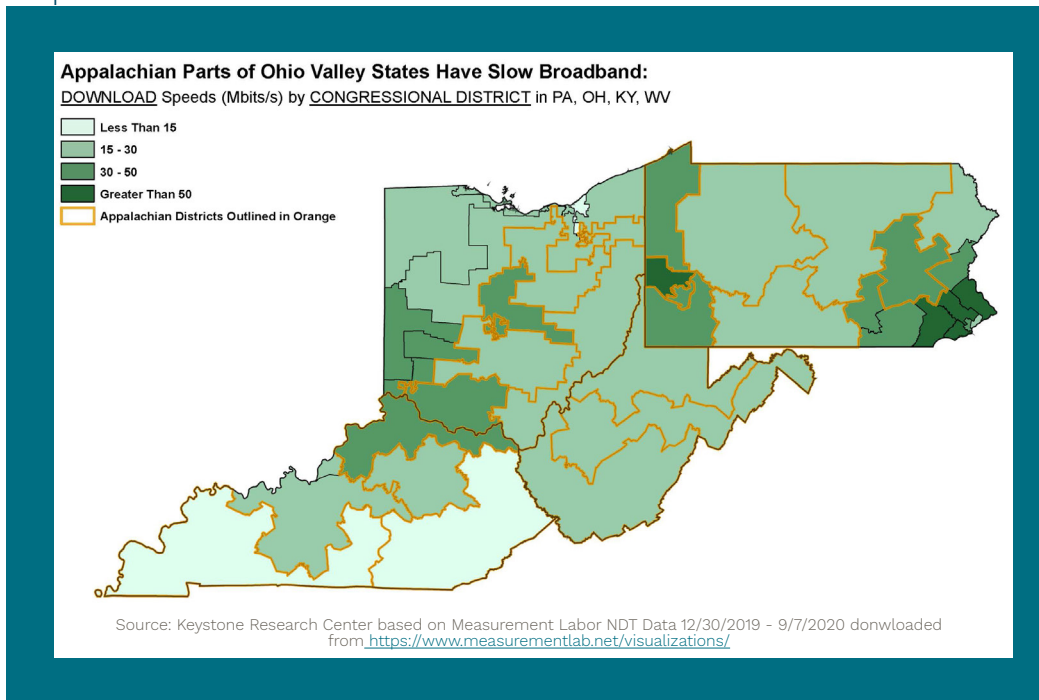
The October 2020 ReImagine Appalachia broadband white paper documented the low broadband speeds currently—and the wide variation in speeds—in much of West Virginia, Pennsylvania, Ohio, and Kentucky.[3] The rural and Appalachian portions of these states had the lowest-speed broadband, with West Virginia, Kentucky, and Ohio in the bottom 20 states for both upload and download speeds. West Virginia ranked 46th for download speeds and 43rd for upload speeds.

Federal investments in broadband in the Bipartisan Infrastructure Law, or BIL (formally, the "Infrastructure Investment and Jobs Act (IIJA)")—coming on top of the deployment of American Rescue Plan (ARP) dollars for broadband in many states—offer a historic opportunity to move towards universal high-speed, reliable, and affordable broadband. The BIL contains $65 billion for broadband, including $42.45 billion for the Broadband Equity, Access, and Deployment (BEAD) Program, a formula-based program that will apportion

Map 1

Appalachian Parts of Ohio Valley States Have Slow Broadband:
DOWNLOAD Speeds (Mbits/s) by COUNTY in PA, OH, KY, WV

Less Than 15
15 - 30
30 - 50
Greater Than 50
Appalachian Counties Outlined in Orange

Source: Keystone Research Center based on Measurement Labor NDT Data 12/30/2019 - 9/7/2020 donwloaded from https://www.measurementlab.net/visualizations/

Map 2

Appalachian Parts of Ohio Valley States Have Slow Broadband:
DOWNLOAD Speeds (Mbits/s) by CONGRESSIONAL DISTRICT in PA, OH, KY, WV

- Less Than 15
- 15 - 30
- 30 - 50
- Greater Than 50
- Appalachian Districts Outlined in Orange

Source: Keystone Research Center based on Measurement Labor NDT Data 12/30/2019 - 9/7/2020 donwloaded from https://www.measurementlab.net/visualizations/

funding to states (and tribal areas) based on the extent of "unserved" people and places (defined as places with download speeds below 25 Megabits (Mbps) and upload speeds below 3 Mbps).[4]

BIL also provides

- $14.2 billion for the Affordable Connectivity Program ($14.2 billion)—up to $30/month for low-income families and up to $75/month for low-income families on Tribal Lands;
- $2 billion for the Broadband ReConnect Program through which the Rural Utilities Service at the Department of Agriculture will provide loans and grants to cooperatives;
- $2 billion for tribal broadband grants;
- $2.75 billion for digital equity planning and capacity development;
- and, $1 billion for middle-mile connections to build a high-speed backbone for communities, businesses, and anchor institutions.

This brief focuses on the allocation of BEAD funding. We outline principles and recommendations that West Virginia, Pennsylvania, Ohio, and Kentucky should follow as they draft their plans to the federal government for how they will use BEAD funds.

The table below spells out the steps for states seeking BEAD funding. In May 2022, the National Telecommunications and Information Administration (NTIA) issued its Notice of Funding Opportunity (NOFO) for the $42.5 billion in BEAD funding. By July 18, 2022, all states and territories had submitted letters of intent to the NTIA, enabling them to receive BEAD funding. By August 15, 2022, state governments submitted requests for $5 million in initial planning funds to NTIA. Initial state proposals for using BEAD funds will be due six months after the issue of final broadband maps by the Federal Communications Commission (FCC). If the FCC releases the final maps no later than June 2023, after modifications based on challenges to the initial new maps (released November 18), then final proposals from states would be due no later than December 2023..

Timeline for States and Tribal Lands: Broadband Equity, Access, and Deployment (BEAD) Program

PROCESS STEP	DUE DATE
Notice of Funding Opportunity (NOFO) Release	May 13, 2022
Letter of Intent Due	July 18, 2022
Request for Initial Planning Funds	August 15, 2022
Five-Year Action	Within 270 days of receipt of Initial Planning Funds
Program Fund Allocation and Notice of Available Amounts	On or after the date on which the final FCC Broadband DATA Maps are made public. Initial maps were issued on November 18, 2022. Challenges to those maps are due by January 13, 2023. The NTIA noted on November 10 that the final Notice of Available Amounts might not be until June 30, 2023. [5]
Initial Proposal	180 days after issuance of their Notice of Available Amounts–i.e., final maps (as late as December 31, 2023).
State Challenge Process	Challenge: Begins after submission of Initial Proposal and before allocation of BEAD funds
20 Percent Funding Release	Assistant Secretary shall make available to the Eligible Entity 20% of the grant funds
Final Proposal and Release of Remaining Funds	No later than twelve (12) months after the date upon which the Assistant Secretary approves the Eligible Entity's Initial Proposal

Source: BroadbandUSA, National Telecommunications and Information Administration (NTIA); https://broadbandusa.ntia.doc.gov/broadband-equity-access-and-deployment-bead-program.

In developing these principles and recommendations for states to incorporate in their proposed plans to NTIA for distributing their BEAD funds, ReImagine Appalachia sought to ensure that the deployment of BEAD funds will maximize (a) the expansion of high-speed, reliable, and affordable internet and (b) the creation of good union jobs building out broadband networks. To get input on accomplishing these objectives, we interviewed stakeholders, including labor groups, community groups, and local, state, and federal government entities, and held two listening sessions. The box on the next page summarizes our principles. The rest of this brief elaborates on the principles and provides logic and evidence for each of them.

1 - Encourage stakeholders to challenge the initial FCC maps and continually update publicly available maps as a foundation for maximizing the effective use of public funds.

In May 2022, the National Telecommunications and Information Association (NTIA) issued its Notice of Funding Opportunity (NOFO) for $42.5 billion in federal broadband funding available under the Broadband Equity, Access, and Deployment (BEAD) Program. As of July 18, 2022, all states and territories had submitted letters of intent to the NTIA enabling them to receive BEAD funding. State governments then submitted requests for $5 million in initial planning funds to NTIA by August 15 (see this timeline). Past Federal Communications Commission (FCC) maps have been woefully inaccurate, often aiding and abetting incumbent providers' efforts to impede competition and block federal funding to places where incumbents deliver expensive, low-speed service. The federal and state processes to distribute BEAD funds must start with effective federal-state collaboration to improve maps. Otherwise, too many communities and neighborhoods will be left behind, and the once-in-a-generation chance to achieve high-speed, reliable, and affordable broadband will be missed.

As summarized in the October 2020 ReImagine Appalachia white paper on broadband, past Federal Communications Commission (FCC) data on broadband availability did not accurately capture actual accessibility, usage, or affordability. For example, the FCC counted the entire census block as having access if any single location did. FCC methods resulted in eye-popping overcounts of broadband availability. Whereas the FCC claimed in 2019 that 14.5 million Americans lack broadband access, independent research suggests the real total was 36 to 42 million.

Predating the Infrastructure Investments and Jobs Act (IIJA), as directed by the Broadband Data Act of 2019, The FCC began to generate more accurate broadband maps. Some critics feared, however, that even these new maps would remain heavily dependent on self-provided industry data. On November 18, 2022, the FCC unveiled what the FCC chairwoman called "the pre-production draft of its new broadband maps."[6] These maps will be open for comment until January 13, 2023. Moreover, the FCC chairwoman, West Virginia's Senators, and broadband experts and advocates all encourage states, communities, and individuals to submit challenges to the map by the January deadline–to ensure that they do not overstate broadband speeds and availability.[7] If states don't effectively challenge overstatements of their broadband capabilities, they could miss out on $100 million or more in funding.[8] Beyond the May 13 deadline, to ensure the effective use of BEAD and other public funds, states and their broadband authorities should define processes to iteratively generate independent, peer-reviewed maps and databases on an ongoing basis that specify broadband speeds and availability in all locations. These should incorporate data from multiple sources, including crowd-sourced broadband speed tests (such as MLab and Ookla).[9]

Accurate broadband service maps will allow states to identify "underserved communities" (and individual locations where at least 80% of the population has access to speeds under 100 Mbps download/20 Mbps upload) that have in the past been considered technically served because the old FCC maps determined that they met the outdated, inadequate FCC broadband definition (at least 25 Mbps download and 3 Mbps upload speeds). The determination that providers served these areas has blocked these places from receiving federal funds in the past, allowing Internet Service Providers (ISPs) to profit using outdated technologies and without making new investments (e.g., in fiber).

2 - Deploy fiber optic technology to achieve universal, high-speed, reliable, and affordable service

States should commit to a goal of delivering high-speed service–100 Megabytes per second (Mbps) download and upload speeds–to unserved and underserved areas, helping eliminate geographic and income inequities. To capitalize on the historic opportunity to achieve this ambitious goal, we have to use the best available technology, one with the adaptability to further increase speeds in the future and give every community the broadband it needs to thrive. To ensure states use the best available technology, the NTIA directs states to allocate funds primarily to fiber-to-the-home deployment: fiber optic broadband offers high speeds, symmetrical service, and the ability to scale and upgrade over time. NTIA recommends states set the "Extremely High Cost Per Location Threshold" (above which states may choose not to prioritize end-to-end fiber deployment) as high as possible to help ensure that end-to-end fiber projects are deployed wherever feasible.[10] An engineering analysis of fiber compared to fixed wireless technologies concludes that "fiber represents the most fiscally prudent expenditure of public funds in most circumstances because of its longevity and technical advantages.[11] The analysis found that while fiber's upfront capital costs are higher than those of fixed wireless in many circumstances, the total cost of ownership over 30 years is comparable for fiber and fixed wireless, and fiber provides much higher quality service. In areas where fiber is cost-prohibitive in the immediate future, BEAD investments must deliver reliable service of at least 100/20 Mbps, with specific plans for achieving 100/100 Mbps over time.

An additional reason to deploy fiber is that it is the most environmentally sustainable technology of today and tomorrow.[12] Its high speeds enable more remote activities and reduce travel for business purposes. Data transmission over fiber networks also requires less energy than wireless technologies, coaxial cable, and copper networks. Fiber's reliability and durability also require less maintenance—i.e., less deployment of field maintenance staff and their trucks, diesel generators, and other equipment—and have a lifespan of over 50 years, limiting the waste and disposal of old cabling.

3 - Implement strong labor, community benefit, and local hiring standards

The standards in our third recommendation will not only ensure that Appalachian communities keep good-paying jobs local, but they will also ensure the broadband build-out is done by high-road companies and skilled workers that deliver better quality work, reliability, and cost-effectiveness in the long run. Without such standards, interviews with industry participants indicate that many ISPs do not currently comply with fair labor standards and outsource construction to low-wage subcontractors who speed through jobs and cut corners. Consistent with these findings from interviews, an extract from a "Violations Tracker" database maintained by the non-profit Good Jobs First revealed 79 cases in which companies in the broadband industry had settled cases from 2001 to 2021 in PA-OH-WV-KY for violations of employment- and labor-related safety offenses, paying fines totaling $2.7 million. Forty-six of the settlements were in the period 2014-21. The number of settlements is suggestive of an endemic problem. The small size of the settlements and persistence of violations indicates the inadequacy of the penalties and the fact that too many contractors regard such settlements as "the cost of doing business."

One contractor in Kentucky left behind an "endless" list of problems, including the following. (1) Poorly attached equipment that pulled loose from poles (see the first figure below). (2) Misplaced equipment on

customer premises (see the second figure below) and faulty splices to terminal equipment on customer premises. At some more difficult installations, the company simply skipped the connection to some customers, doing no work at all. One underlying reason: the company had no experienced splicers of its own who could address problems as they arose, a problem compounded by a total absence of quality control. (3) The contractor didn't use proper safety equipment, leading the state to shut down whole projects and requiring the resubmission of paperwork to restart the installation, costing significant time and money. (4) The company even failed to safeguard its equipment from theft, leading to further losses of time and money when stolen equipment had to be replaced.

What a mess the contractor made connecting drops on a pole.

The contractor placed the Network Interface Device on the deck's rail. A union tech had to return to the customer and place it on the house where it belongs.

In another example, contractors to one of West Virginia's biggest ISPs left out 911 circuits, leaving customers without access to emergency response—and unaware that they had no means of calling 911. With contractors, as opposed to in-house workforces, according to several industry participants, "it's the wild, wild west." One reason is the widespread use of misclassified 1099 independent contractors– who do not receive benefits or workers' compensation insurance because, theoretically, they are not "employees"—and who also may not have up-to-date skills.[14]

One telling development that drives home the pervasive problems with contractors: a major unionized ISP provider in the Ohio River Valley has recently begun to expand its internal workforce for future broadband build-outs. The company has concluded that "the contractors weren't worth it."[15] This development underscores that low-wage, low-skill—"low-road"—contractors do not simply erode job quality in broadband buildouts. They also increase costs and delays for ISPs and ultimately for customers; they erode reliability; and they drive up long-term–or life cycle–costs even more than upfront costs because work has

to be redone. Enforcing labor standards protects consumers, ensures better value for taxpayers from public investment, and raises pay and benefits for workers.

For these reasons, consistent with NTIA guidance, public funding should require compliance with strong labor, community benefit, and local hiring standards.[16] Ensuring "Fair labor practices" is one of three primary criteria that states must incorporate into their "grading scheme for subgrantees.[17] The NTIA requires that, at a minimum, states evaluate information on subgrantees' records of labor compliance and their plans to comply with labor laws. For the record of compliance, states must evaluate information on a subgrantee and any subcontractors' record of compliance with federal labor and employment laws on broadband deployment projects in the last three years, as well as data on the historical use of subcontracting arrangements, including staffing plans, and at least one example of each subcontractor's past performance in the context of a similar project. For plans to comply with labor laws, states must evaluate a subgrantee and any subcontractors' wage scales and wage and overtime practices and how the subgrantee will ensure the implementation of workplace safety committees.

Further, NTIA encourages states to go beyond its baseline requirements to ensure compliance with fair labor practices.[18] In part E of a section on "Eligible Entity Obligations," "Fair labor practices and highly skilled workforce," NTIA spells out additional factors that could be included in an "effective plan for plan compliance with federal labor and employment laws," such as binding commitments to strong labor standards and protections, use of a directly employed workforce, paying prevailing wages, use of project labor agreements, commitment to union neutrality, use of labor peace agreements, use of a skilled and credentialed workforce, and taking steps to prevent the misclassification of workers. In part F, "Advancing equitable workforce development and job quality objectives," NTIA encourages states to consider scoring applicants on job quality and training.

The ReImagine Appalachia states of PA, WV, OH, and KY should fully incorporate the NTIA guidance to ensure fair labor practices on the buildout of broadband in our region. Our states should give priority to sub-grantee proposals that:

- Will use companies' own directly-employed workforces to deploy fiber; or
- If a contracted workforce is proposed, have a credible plan that will ensure compliance with fair labor standards including
    » A commitment to abide by federal and, where relevant, state prevailing wage laws to avoid a race to the bottom on wages. Studies of prevailing wage in practice show that such policies boost productivity, reduce injury rates, and help address the shortage of skilled labor.[19]
    » Additional points for proposals that also use other approaches to ensure further compliance with fair labor standards, including responsible contractor provisions or project labor agreements. (Appendix A includes sample responsible contractor language.)
    » contracting out broadband construction in procurement packages large enough for responsible contractors with experienced, skilled workers to bid on the work, with a preference for project labor agreements for subcontracts of $1 million or more.[20]

Whether the workforce is directly employed or contracted out, subgrantees should also be required to demonstrate that companies building out broadband with BEAD funds:

- Have robust in-house (including multiemployer apprenticeships) training programs with established requirements that are tied to uniform and progressive wage scales, job titles, and certifications recognized by the industry. As noted in the NTIA guidance, these could be "Registered Apprenticeships or other joint labor-management training programs that serve all workers."

- Will implement local hiring requirements with pipelines to broadband technician jobs (in companies that directly employ technicians) or unionized trades via pre-hire training or apprenticeship readiness programs accessible to low-income and diverse people wherever broadband expansion occurs and also to coal workers in regions where they have been dislocated.
- Make binding legal commitments to abide by fair labor standards, training, and local hiring requirements and to ensure that labor information (including data showing compliance with prevailing wage and local and diverse hiring requirements) is made publicly available, ideally through an online portal.

4 - Incorporate comprehensive digital equity and inclusion provisions

State broadband extension plans should ensure digital equity and inclusion, including by using their share of $2.75 billion in funding provided in the Digital Equity Act Programs (DEAP) of the IIJA for state agencies to develop, implement, and oversee original digital equity and inclusion plans. ((For more details on DEAP funding available through IIJA, see NTIA's overview of Digital Equity Programs and this FAQ.) DEAP includes:

- $53.4 million in planning grants for states ($874,236 for KY, $1,470,551 for OH, 1,604,132 for PA, and $728,066 for WV).
- $2.69 billion for states (and other eligible entities) to implement and oversee digital equity and inclusion plans using a formula that is 50% based on state population, 25% based on the comparative lack of availability and adoption of broadband compared to other states, and 25% based on their "covered" populations as defined in Section I.C. of the NOFO (i.e., based on the number of people who are veterans, in low-income households, in rural areas, 60 and over, with language barriers, in racial or ethnic minorities, who have disabilities, incarcerated in non-federal correctional facilities).

States should use these funds to combat low-income people's historical lack of access to quality high-speed internet. To this end, state plans should:

- Consistent with the NTIA NOFO (p. 7) require "…all projects to provide a low-cost option to eligible subscribers…," "all states to have plans to address middle-class affordability…" and give priority to proposals that "…improve affordability to ensure that networks built using taxpayer dollars are accessible to all Americans."
- As one component of developing more granular broadband maps, develop a plan for documenting multi-family housing and multi-tenant buildings with poor broadband service, including in communities considered "served" by traditional FCC data.
- Deploy an allotment of BEAD funds to improve broadband service to these unserved or underserved multi-family and multi-tenant buildings consistent with NTIA's NOFO (p. 33), which specifically authorizes "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 has a substantial share of unserved households or 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… is higher than the national percentage of such individuals." (See also p. 39 of the NOFO, which mentions multi-tenant buildings.)
- Allocate a portion of BEAD funds to (NOFO, p. 33) deploying and upgrading broadband network services available at eligible community anchor institutions that lack access to Gigabit-level

broadband service (such as schools, libraries, health clinics, health centers, hospitals or other medical providers, public safety entities, institutions of higher education, or public housing organizations). State plan evaluation criteria for proposals should ensure the targeting of funds for anchor institutions to low-income communities where low proportions of families and businesses currently have access to high-speed internet.

- Allocate a portion of DEAP funds for low-income families to obtain affordable connective devices and identify a dedicated state funding source to sustain such assistance beyond the expenditure of IIJA sources.
- Use a portion of DEAP planning dollars to develop a long-term plan through which low-income populations and communities can acquire basic digital skills, including through "learning by doing" and mentoring/peer learning, which are more effective methods than classrooms divorced from the application of such skills. This long-term plan should focus especially on youth and young adults and incorporate high school programs—including career and technical education integrated with summer jobs, internships, and coops—and apprenticeships that also have pre-apprenticeship feeder programs in K-12 schools and community-based non-profits.

5 - Regulate broadband as an essential utility and opportunistically and efficiently build publicly-owned middle-mile networks on public infrastructure projects

Deregulation of the telecommunication industries undercut the power of state public utility commissions to mandate universal service. It made it more difficult to ensure consideration of the public good even when federal, state, or local governments subsidized broadband. In many cases with past federal broadband funding, subsidies have been prohibited from going to places where they would create competition for an incumbent provider delivering slow, expensive, unreliable service. Given these challenges, in addition to BEAD funds being allowed to go to underserved areas, two other steps could increase states' ability to achieve universal, affordable, high speed, and reliable service.

State legislators should authorize their public service commission to regulate broadband as an essential utility to ensure network resiliency, public safety, and consumer protection. States and the federal governments have historically cooperatively regulated communications infrastructure, and federal case law supports states' authority to regulate broadband. Model state legislation to address this issue would: 1. Undo any blanket prohibition on state oversight for broadband and voice over the internet protocols (VOIP). 2. Explicitly authorize public utility commissions (PUCs) to exercise oversight over broadband/VOIP. 3. Direct PUCs to exercise authority over broadband/VOIP in specific areas such as resiliency, public safety, data collection/transparency, and consumer protection; authorize PUCs to conduct third-party audits of facilities and infrastructure; direct PUCs to report back to the Legislature annually.[21]

States can also invest in publicly-owned "broadband backbone" middle-mile networks to support local competition in broadband delivery. In creating open-access broadband networks, states should adhere to the "dig once" principle, requiring that all transportation infrastructure and construction projects at the state and local levels include the installation of fiber optic broadband lines, thereby expanding states' publicly owned middle-mile networks. States should prioritize the implementation of fiber optic technology when developing open-network broadband backbones where such is feasible to ensure that broadband infrastructure is adequately robust and "future proof" such that it will not have to be replaced as broadband technology evolves and consumer data demands grow.[22]

6 - Award grants to whatever providers will best meet labor & community benefit standards and offer high speed, reliability, and affordability

Industry experts say that the long-term obstacles to achieving high-quality universal broadband at very reasonable rates almost everywhere are not technical but political—the lack of competition in too many places with the population density to support more than one provider; and the lack of capacity in many rural and some other places to establish stable community financing and either negotiate for or set up fiber to the premises. To achieve attractive combinations of price, quality, and universality:

- State broadband plans should encourage innovative infrastructure models that are inclusive and competitive. Public funding should, as a rule, go to the provider offering the best combination of labor and community benefit standards, quality, and affordability.
- If regional ISPs do not propose to deploy broadband to residents of a particular community, local municipalities should have the option of establishing high-quality municipal broadband systems in a manner that is consistent with NTIA guidance. If cooperatives or municipalities receive BEAD funding, they must be able to demonstrate their ability to meet labor and community benefit standards.

7 - Give funding priority to regional entities with the capacity to hold providers accountable, including by developing local leadership focused on the public good

State broadband plans should address the capacity bottlenecks in smaller and rural communities so that those communities can achieve good returns on public investment and hold ISPs accountable. Similarly, they should strengthen the ability of rural areas to hold providers accountable for subpar service. The main channel now involves filing individual complaints with the FCC. Under this process, providers have 30 days to send consumers a written response addressing their complaints, but there is no set timeframe in which providers must resolve a given issue. Moreover, consumers in rural areas who lack alternatives to their current provider—i.e., most rural consumers—have no leverage over their providers to ensure that their issues are resolved promptly or at all.

One way to address capacity bottlenecks is to give BEAD funding priority to regional entities that can demonstrate they have the capacity needed to achieve good deals from providers. In many cases, these will be entities at the county or multi-county level with a significant number of professional staff able to oversee high-quality planning and implementation and to research and adopt best practices. Additional points in proposal scoring rubrics could be given to entities that can demonstrate sufficient capacity and that encompass substantial numbers of small and rural communities that each lack resources on their own to improve broadband service and negotiate effectively with providers before entering service agreements—which often results in subpar service that fails to meet residents' needs if such places do negotiate on their own.

A complementary way to address capacity issues in smaller areas is to invest in finding and developing local leaders with the necessary expertise and who are also responsive to the public good. For example, state plans could permit the use of BEAD funds to
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- Give county governments support, including technical assistance and best practice toolkits, to establish county or multi-county broadband councils. Such councils would centralize broadband leadership in rural areas, ensuring that small communities have a designated and knowledgeable advocate that is capable of applying for grants, documenting local service issues, negotiating with providers before entering service agreements, and raising relevant issues with providers directly.
- Mandate a consultation and negotiation period between communities and providers before providers can acquire a community's service contract. During this period, communities would be given opportunities and resources to consult with their state broadband authority, other communities, and other relevant entities, allowing them to negotiate service expectations with providers from an informed position before entering a service contract.
- Enable communities to retain ownership of a portion of fibers installed in their service area. Under this system, pioneered by a service agreement between Roane County, West Virginia, and CityNet, providers retain ownership of most newly-installed fiber lines and are thus responsible for facilitating repairs, upkeep, and maintenance of those lines.[23] Communities, however, own a portion of the lines and can negotiate contractual commitments that their provider will conduct such repairs and upkeep. This enables communities to hold their providers accountable for issues directly as opposed to utilizing the FCC's complaint process.

8 - Implement federal broadband leadership that ensures all communities and families have the broadband speeds, reliability, and affordability essential to thrive in the 21st century

As in health care, the fact that the United States has expensive, unreliable, slow broadband reflects the industry's domination of federal and state policy. This industry capture is exacerbated by fragmented federal approaches, which have, in the past, created a nightmare for communities to navigate, especially those in smaller, rural areas. The broadband funding in the bipartisan infrastructure bill is welcome, but the bill's capacity to transform communities–and give Appalachia and other more rural places a better shot at shared, sustainable, equitable prosperity–hinges also on the Biden Administration and Congress creating a comprehensive, integrated federal approach responsive to the public good and not to corporate bottom lines. A starting point on this would be the Biden Administration more explicitly identifying the problem and creating a vision and a plan for how to address it, which might include a White House broadband office–i.e., leadership at the center of the administration. If, as likely, that requires federal legislation that will be challenging to enact, ReImagine Appalachia and many others in coal-country Appalachia stand ready to help advocate for it.

APPENDIX A: Sample Responsible Contractor Language

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Section xx. Responsible Contracts.

(a) For all aspects of construction, reconstruction, demolition, alteration, repair, or maintenance work on the project, the [individual] shall promote successful project performance, safety, law compliance, level competition, and business integrity, and ensure future workforce development, by utilizing only contractors and subcontractors that:

(1)   Maintain all valid licenses, registrations, or certificates required by a federal, state, or local government that may be required to do business or perform work at the location of the facility.

(2) Comply with the Workers' Compensation Act and Unemployment Compensation Law, and meet bonding and general liability insurance requirements set forth by the contract for work.

(3)   Within the last three years, have not been found by a final decision of a court or government agency to violate any law or regulation applicable to its business, including tax, prompt payment, wage and hour, prevailing wage, environmental, or safety laws or regulations, and has not been debarred or suspended on any project by a federal, state, or local government entity.

(4)   Within the last three years, have not defaulted on a project or declared bankruptcy.

(5)   Within the last ten years, have not been convicted of any crime relating to the contractor's or subcontractor's business.

(6)   Ensure that all individuals employed for work at the facility have completed a minimum of the 10-hour safety training course established by the Occupational Safety & Health Administration of the United States Department of Labor.

(7)   Participate in an approved apprenticeship training program that is registered with and certified by the United States Department of Labor or the Department of Labor and Industry of the Commonwealth that provides for on-the-job training, classroom training, and the graduation of apprentice trainees to the status of journeyperson similar to and pursuant to the training and graduation requirements as outlined under the registered apprentice training programs that are certified by the Department of Labor and Industry, for each specific trade or classification employed for work at the facility. This may be an apprenticeship program subject to the Employee Retirement Income Security Act of 1974, 29 USC sec. 1001 et seq. ("ERISA"), or a non-ERISA program.

(b) The individual shall submit an attestation with their [bid] affirming compliance with this section.

ENDNOTES

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[1] Stephen Herzenberg is the executive director of Pennsylvania's Keystone Research Center and the co-director of ReImagine Appalachia. Cameron Snowden hails from Kentucky and is a ReImagine Appalachia intern and a sophomore at Harvard College. Molly Updegrove, ReImagine Appalachia Outreach Director, provided extensive assistance setting up and helping conduct interviews, offering feedback on the draft brief, and organizing together with RA Campaign Manager Dana Kuhnline. Many other ReImagine Appalachia partners and experts provided valuable input, including Christopher Ali, Jennifer Blatz, Bill Callahan, Brandon Carson, Andrew Cohill, Steve Crum, Nell Geiser, Jason DeValdivielso, Elaine Harris, Ed Hill Jr., James Kunz III, Matt Pennington, David Deamer, Joanne Manganello, Bert McDermitt Jr., Sascha Meinrath; David Morgan, Heidi Norman, John Tuggle, Sarah Riley, Erin Wachter, and Joseph Witmer.

[2] Laura Meckler, "Scores Fall Coast to Coast, Especially in Math, " Washington Post, October 24, 2022; https://www.washingtonpost.com/education/2022/10/24/pandemic-learning-loss-naep-tests/.

[3] Stephen Herzenberg and Mark Shanahan, "Broadband Builds the Future," ReImagine Appalachia, October 2020; https://reimagineappalachia.org/wp-content/uploads/2020/10/ReImagine-Appalachia_Broadband_White_Paper_102820.pdf.

[4] For details, see "Fact Sheet: Department of Commerce's Use of Bipartisan Infrastructure Deal Funding to Help Close the Digital Divide," November 10, 2021; https://www.commerce.gov/news/fact-sheets/2021/11/fact-sheet-department-commerces-use-bipartisan-infrastructure-deal-funding.

[5] National Telecommunications and Information Administration, "Biden-Harris Administration Announces Timeline for National High-Speed Internet Deployment," November 10, 2022; https://www.ntia.doc.gov/press-release/2022/biden-harris-administration-announces-timeline-national-high-speed-internet.

[6] The new Federal Communications Commission broadband map is at https://broadbandmap.fcc.gov/provider-detail/fixed?zoom=4&br=r&speed=0_0&pct_cvg=0.

[7] For the FCC chairwoman's characterization of the new maps, see Jessica Rosenworcel, "The New Broadband Maps Are Finally Here," November 18, 2022; https://www.fcc.gov/news-events/notes/2022/11/18/new-broadband-maps-are-finally-here. For the response of West Virginia's Senators to the new maps, see Metro News Staff, "Manchin, Capito review updated broadband coverage maps from FCC," November 19, 2022; https://wvmetronews.com/2022/11/19/manchin-capito-review-updated-broadband-coverage-maps-from-fcc/.

[8] For example, a team at Penn State led by Professor Sascha Meinrath extracted the raw data for the Pennsylvania map and estimated that 95 percent of locations are considered to have 25/3 broadband connections but also that there are only 4.84 unique locations when the state has 5.77 million housing units and 5.1 million households. The 5 percent unserved figured is below that estimated independently by the Penn State team and many other initiatives, and Pennsylvania could miss out on $100 million if it does not successfully challenge these discrepancies. Personal communication with Sascha Meinrath.

[9] This principle overlaps finding 9 of the National Association of Counties (NACO), "Broadband Task Force: High Speed Internet Is Essential for All Counties," July 2021; https://www.naco.org/sites/default/files/documents/NACo-Broadband-Task-Force_8-6.pdf.

[10] National Telecommunications and Information Administration (NTIA), "Notice of Funding Opportunity (NOFO): Broadband Equity, Access, and Funding Opportunity (BEAD)," p. 13, fn 6; online at https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf.

[11] CTC Technology, "Fixed Wireless Technologies and Their Suitability for Broadband Delivery," June 2022, p. 51. https://www.benton.org/sites/default/files/FixedWireless.pdf

[12] Communications Workers of America, "Fiber–The Greenest Broadband Technology," December 2022; https://cwa-union.org/sites/default/files/2022-12/CWA-Fiber-and-Climate-Fact-Sheet.pdf.

[13] The violations took place in the Power and Communication Line and Related Structures Construction industry, NAICS 237130. The database is at https://violationtracker.goodjobsfirst.org/. The data were extracted for ReImagine Appalachia by Philip Mattera of Good Jobs First.

[14] While these examples highlight the presence of shoddy contractor work in ReImagine Appalachia's four-state region, shoddy practice in the broadband industry is a nationwide problem. For 14 specific examples of haphazard

broadband build out, with photographs, from seven states including Tennessee, see Communications Workers of America, "Broadband Construction Contractors Risk Safety & Quality; https://docs.google.com/document/d/1l8jocnHsvurVuQKeJxtG1auXcw_zXGla8EXWJ02WMp4/edit.

[15]For a literature review of national research documenting widespread violations of labor standards in many parts of the construction industry combined with a summary of data showing that these violations have made their way even to the most unionized state in the Ohio River Valley–Pennsylvania–and its most unionized metropolitan area (Philadelphia), see Stephen Herzenberg and Russell Ormiston, "Illegal Labor Practices in the Philadelphia Regional Construction Industry: an Assessment and Action Plan," Keystone Research Center; https://krc-pbpc.org/wp-content/uploads/KRC-Illegal-Labor-Con.-Final-01-08-1995-2.pdf.

[16]These recommendations on labor standards draw heavily from: Communication Workers of Americas, "Making BEAD Program Investments Work for the Future: Recommendations for States as they Begin the Planning Process," https://docs.google.com/document/d/1l0p6EzW9XRA0wJQO6PlfekUTg2T2OoeFGEoONwC6L4Y/edit.

[17]The other two primary criteria are project cost and customer affordability. See NTIA "NOFO: BEAD," pp. 56-57.

[18]In subpart E of its NOFO, "Fair labor practices and highly skilled workforce," NTIA lays out Fair Labor Practice requirements, and encourages states to include additional factors as binding commitments to strong labor standards and protections, including, among others, a directly employed workforce, prevailing wages, and a skilled workforce. In subpart F, "Advancing equitable workforce development and job quality objectives," NTIA encourages states to consider scoring applicants on job quality and job training.) See NTIA, "NOFO:BEAD," p. 57 and p. 59.

[19]Malkie Wall, David Madland, and Karla Walter, "Prevailing Wages: Frequently Asked Questions," Center for American Progress, Dec. 22, 2020; https://www.americanprogress.org/article/prevailing-wages-frequently-asked-questions/

[20]For citations to research documenting the benefits of (1) aggregating (or "bundling") projects to achieve economies of scale, (2) responsible bidding criteria, (3) apprenticeship requirements, (4) prevailing wage standards, and (5) project labor agreements, see the ReImagine Appalachia input to the Department of Interior (DOI) prior to DOI issuing guidance for states when allocating Infrastructure Investment and Jobs Act funding for Abandoned Mine Land (AML) reclamation (https://ohiorivervalleyinstitute.org/wp-content/uploads/2022/03/AML-Labor-Policy-Recommendations-March-2022.pdf). For a further level of specificity on prevailing wage, project aggregation, apprenticeship and pre-apprenticeship utilization, project labor agreements, and hiring preference for former coal workers (discussed lower down in the body of this brief), see the comments filed by labor organizations, the Ohio River Valley Institute and ReImagine Appalachia on DOI's first draft of guidance for distributing AML funds: https://ohiorivervalleyinstitute.org/wp-content/uploads/2022/08/Labor-related-comments-re-AML-funds-in-BIL_June-2022.pdf.

[21]This language is adapted from, Communications Workers of America, "Fact Sheet The Broadband Resiliency, Public Safety and Quality Act;" https://cwa-union.org/sites/default/files/broadband_resiliency_act.pdf.

[22]This recommendation integrates the recommendations under "Finding 2" and "Finding 8" of NACO, "Broadband Task Force" July 2021.

[23]Mention of Roane County, West Virginia's service agreement with CityNet can be found at the beginning of the third paragraph of Tim Walker, 'Construction Start-Up of Broadband Project Delayed Until July of 2024,' Allegheny Mountain Radio, August 8, 2022. https://www.alleghenymountainradio.org/construction-start-up-of-broadband-project-delayed-until-july-of-2024/

[24]In May of this year, the Government Accountability Office (GAO) concluded that the United States needs a national broadband strategy, in part because of the fragmentation associated with 100 different programs administered by 15 different agencies. GAO further concluded that "The Executive Office of the President has not decided if a national strategy is needed, but it is well positioned to develop and implement one. A strategy to help better align programs could also include legislative proposals for Congress. Without such a strategy, federal broadband efforts will not be fully coordinated, and thereby continue to risk overlap and duplication of effort." See U.S. Government Accountability Office, "National Strategy Needed to Guide Federal Efforts to Reduce Digital Divide: Report to Congressional Requesters," May 2022, GAO-22-104611; https://www.gao.gov/assets/gao-22-104611.pdf.