PLACE MAP + DESIGN + BUILD

Broadband Report for the Place: Map + Design + Build Project

May 2024

MISSISSIPPI MAIN STREET ASSOCIATION

STENNIS INSTITUTE
MISSISSIPPI STATE UNIVERSITY

Project Overview

The broadband component of Place: Map + Design + Build was incorporated into the project's scope of work to provide greater capacity for understanding the need for enhancing broadband access for community anchor institutions (CAIs) and businesses in the historic (Main Street) districts in eleven communities. In doing so, select CAIs were identified, and a survey designed to enable local Main Street organizations to obtain a better understanding of current broadband access, availability, and usage of these institutions. A second survey was also designed to enable communities to obtain a better understanding of local downtown businesses that will enable local Main Street organizations to help identify capacity-related broadband issues. Furthermore, broadband stations during the public PLACE workshops allowed for public interaction with key stakeholders to help identify opportunities and challenges related to broadband connectivity in the downtown areas. Additionally, speed test promotional items, grant and funding materials, and technical assistance services available through the Broadband Expansion and Accessibility of Mississippi (BEAM) "State Broadband" office were shared with community members during the site visits. Finally, a report of important broadband resources was compiled and made available to the participating PLACE communities to better enable them to design enhanced broadband strategies that align with local needs and aspirations.

The Importance of Broadband to Community Vitality

The internet was first introduced to the public 30 years ago. Since then, this technology has evolved into an essential component of everyday life. Fast and reliable internet connectivity is quite simply the most transformational technology in modern times. Today, this highly complex set of interconnected networks is considered by many as essential to human existence as electricity and indoor plumbing. Nothing has revolutionized every aspect of our modern lives as much as the internet. The way we live, work, learn, and play is highly dependent on our ability to successfully access high-speed, or broadband, internet connections from our home, office, vehicle, and even public spaces. The COVID-19 pandemic only exacerbated the urgency of having adequate bandwidth in all aspects of life for people to prosper today.

Michael Powell, President and CEO of NCTA – The Internet and Television Association and former chairman of the Federal Communications Commission (FCC) said, "I think solving the rural broadband issue is the seminal issue of infrastructure today. I don't think you can be an active participant in society or the economy without being able to access that infrastructure."

Virginia's Commonwealth Connect Team describes three primary areas where broadband internet is critically important to communities: economically, socially, and educationally. Simply put, communities with significant broadband connectivity tend to have more and better jobs, be safer, healthier, and wealthier, and have improved educational outcomes.

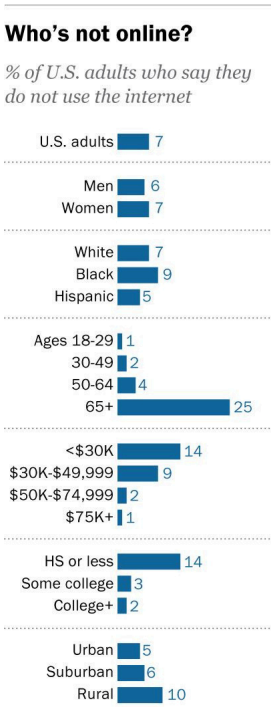


Fig. 1. Source: Pew Research Center

High Speed Internet Benefits

Why High-Speed Internet Matters

The National Telecommunications and Information Administration (NTIA) with the United States Department of Commerce further identifies ten benefits why having high-speed internet availability is essential in today's complex world.

Government Services

High-Speed Internet helps government agencies improve quality, lower costs and increase transparency by improving internal operations and making it easier for residents to interact with them online.

Urban Revitalization

Fully wired communities can provide residents with opportunities to take career and skill development classes, allow for more effective public safety and contribute to greater economic growth.

Telework

High-Speed Internet allows teleworkers opportunities to more readily live and work in locations of their own choosing, without having to be within commuting distance of a corporate center or another base location.

Fig. 2. Source: NTIA

Environmental Sustainability

High-Speed Internet enables buildings to communicate with utilities and the energy market. Smart buildings and smart grids, hold great promise for greater efficiencies in energy consumption.

Education

High-Speed Internet networks enhance educational experiences by providing students and teachers with access to an array of resources and the opportunity for distance learning.

Healthcare

High-Speed Internet makes remote access to clinical services possible and cost-effective. It also allows physicians to monitor their patients through innovative home health devices.

Accessibility

High-Speed Internet is an important tool to address the needs of people with disabilities. Through various broadband-based applications and supporting technologies, people with disabilities have access to a new array of smart devices improving quality of life.

Entertainment

High-Speed Internet is essential to enjoy 21st-century entertainment. Streaming video, online gaming and connecting with friends and relatives via social media are only possible because of broadband.

Economic Development

High-Speed Internet enables local communities, regions and nations to develop, attract, retain and expand job-creating businesses and institutions.

Public Safety

Wireless broadband, is becoming indispensable to the interoperability of police, fire, health and other government entities in both day-to-day and crisis situations.

Downtown Digital Placemaking

Creative placemaking is a phrase that is often used to describe community-led efforts designed to activate downtowns and community gathering places. Deliberate steps must be taken to create these thriving public places that provide the amenities that people have come to expect. Quite simply, people attract other people.

Tracy Hadden Loh, a fellow with the Center for Transformative Placemaking at the Brookings Institute, found that in a study of 45 cities and surrounding regions in the United States, the largest and densest center of employment was still the downtown core in each community. Downtown revitalization is still a vital piece of the economic development puzzle, but Hannah White, former CEO of Main Street America, reminds communities that there is not one recipe for success. “There’s no one type of project or type of investment that is going to ensure resilience,” White said.

Today, broadband availability in downtown districts and other public gathering places is no longer considered a “bonus” or luxury item but an expectation of those who work, live, and visit in these areas. This expectation means that creative placemaking strategies should certainly incorporate access to and/or expansion of broadband infrastructure in these areas.

The UK-based digital agency Calvium calls the addition of technology-related amenities to a place digital placemaking. According to Calvium, “digital placemaking is the augmentation of physical places with location-specific digital services, products, or experiences to create more meaningful destinations for all.” This can mean much more than simply browsing the internet or checking email through a wireless connection.

Fostering deeper relationships among people in places through immersive technology can boost the social, cultural, environmental, and economic value of them. Creating digital amenities such as informational kiosks, virtual reality depictions of future developments, installations that tell neighborhood stories, or even digital art embedded in public places are examples of digital placemaking that is aided or made possible through the availability and use of broadband in these areas.

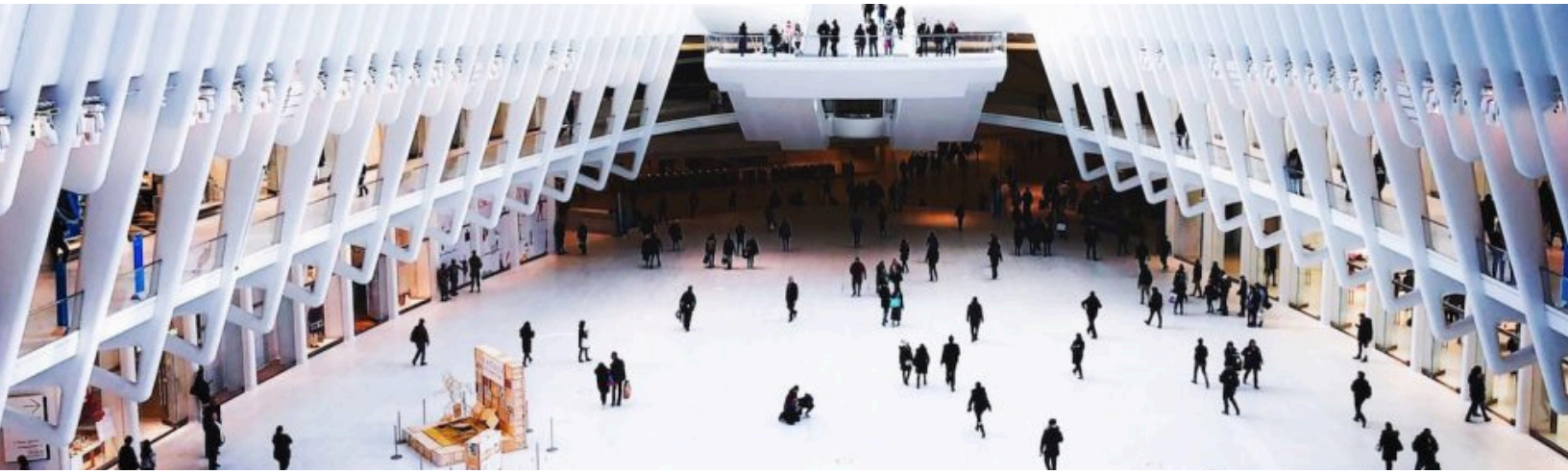


Fig. 3. Source: Calvium

The State of Rural Broadband

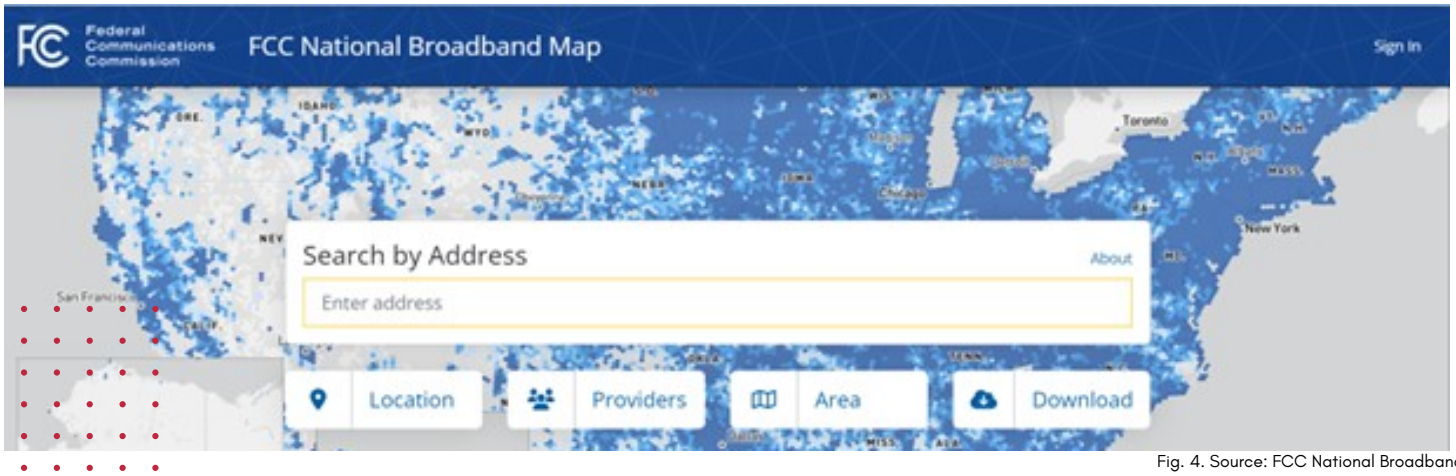


Fig. 4. Source: FCC National Broadband Map

Even with the tremendous progress that has been made in deploying broadband infrastructure throughout the country, the third iteration of the FCC National Broadband Map still shows that more than 7.2 million locations lack access to high-speed internet service. Searchable by physical address, the map can be accessed at http://broadbandmap.fcc.gov.

This disparity is especially evident in rural geographical areas that do not have adequate infrastructure to support the ever-increasing demand for better internet service. The NCTA outlines four critical steps that are essential in bringing broadband to rural areas:

1 Public-private Partnerships

This arrangement shifts the burden from the government to the local provider. The public sector provides the match funding to get the network built and then the private partner operates and maintains the network. This protects taxpayers from having to pay to additionally subsidize the network. Comcast used this approach with the Massachusetts Broadband Institute at the MassTech Collaborative to expand high-speed internet to nine rural communities in the western part of the state.

2 Community Calls to Action

This step requires community members to first come together to assess and identify homes, businesses, and community anchor institutions that could benefit from broadband access. For example, community members from St. Francis, Kansas partnered with Eagle Communications in 2015 to bring broadband fiber to their rural community. Even though the community struggled to get the required number of signatures, the provider went ahead and paid for the project themselves seeing the benefit in rural fiber.

3 Fixed Wireless

In areas with difficult terrain that makes it challenging to lay miles of fiber, some internet service providers (ISPs), like Midco, are deploying wireless solutions across the Midwest to cover areas where homes and businesses are separated by miles of rural farmland and forests. For example, using a "fiber backhaul tower" enables broadband to travel over the airwaves up to five miles away once the data reaches to tower through a hard-wired network.

4 Improved Broadband Mapping

Fundamentally, it is still critical to know where acceptable broadband access and availability exists to the extent it adequately fulfills all the societal needs that have grown to depend on the technology. The FCC has improved broadband data collection practices that involves fixed broadband providers submitting more granular electronic coverage maps that enables better targeting of federal resources to areas without suitable coverage and speeds.

Broadband Technology Overview

The term broadband began to appear in the late 1990s and referred to internet that was faster than the commonly called "dial-up" options available at the time. The words *broadband* and *high-speed* are frequently used interchangeably; however, *broadband* typically refers to the *actual* technology infrastructure being used while *high-speed* typically refers to the quality of connection being provided. Basically, if multiple devices can connect and stream simultaneously with little to no interruption or buffering, the connection is likely a high-speed one. Furthermore, the FCC requires connection speeds of 25 Megabits per second (Mbps) download speed and 3 Mbps upload speed as the minimum thresholds for the connection to be dubbed broadband.

Broadband can be deployed by several platforms:

- Digital Subscriber Line (DSL) – transmits data via copper telephone lines
- Cable Modem – transmits data via existing coaxial cable for television
- Fiber – transmits data via hairlike, transparent glass fibers
- Wireless Fidelity (Wi-Fi) – transmits data via short-range, long-range (fixed), or mobile technology
- Satellite – transmits data via individual or constellations of satellites orbiting hundreds or thousands of miles above the earth

ISPs

ISPs are usually public or private entities that provide internet access to end users (customers). A municipal utility is a public ISP while a cable or television provider is a private ISP. Electrical cooperatives are private, not-for-profit member organizations that may provide internet access to consumers as well.

Tier 1	Reach	Costs	Examples
Large ISPs that own, operate, and maintain infrastructure, including the internet backbone.	Global	Tier 1 ISPs coordinate with each other to exchange traffic at no cost. After all, since they all carry roughly the same amount of data on each of their networks, the costs they incur—and the fees they could charge one another—for exchanging data across networks are effectively the same.	AT&T, Deutsche Telekom, Lumen (CenturyLink), Verizon, and Zayo
Tier 2	**Reach**	**Costs**	**Examples**
Typically, large cable providers and telecommunications companies that exchange data over their networks but must buy transit from Tier 1 ISPs to reach other parts of the internet.	Regional	Tier 2 ISPs exchange data for free with other providers in some parts of their networks, but purchase transit services, which allow the ISPs to move user data across another provider's network.	Comcast, Cox, Frontier, and TDS.
Tier 3	**Reach**	**Costs**	**Examples**
Usually last-mile service providers or those that offer only direct connections to customers.	Local	Tier 3 ISPs must buy access to the broader internet, either through direct contracts with Tier 1 providers or by buying services from Tier 2 providers that include connections to Tier 1 networks.	All Points Broadband and Ruralband

Fig. 5. Source: The Pew Charitable Trusts

Main Broadband Components

1. Backbone – The core internet backbone is comprised of interconnected networks that transmit data between and across countries and continents. To ensure reliable service, backbone networks build in redundancy through path diversity. They also contain critical databases and standards that ensure effective and secure internet operation. Global telecommunications and technology companies typically own and operate backbone networks, which principally use terrestrial and submarine fiber-optic cable for connectivity.

2. Middle Mile – Middle mile networks connect an area node with the core internet. The area node is a local connection point for the last mile network elements. Where feasible, middle mile networks should employ path diversity to increase redundancy. In addition, these networks need sufficient capacity to carry the traffic from the local network without contention.

3. Last Mile – Last mile networks, also called access or local networks, connect end users via an area node to a middle mile network, which enables connection into the core internet backbone. Unlike backbone and middle mile networks, which aggregate traffic from multiple customers (e.g., internet service providers, other network owners), last mile networks provide connectivity between end users and an area node. A range of organizations own, operate, and provide internet services over last mile networks, including large and small internet service providers, cable companies, municipalities, and rural electric or telephone cooperatives.

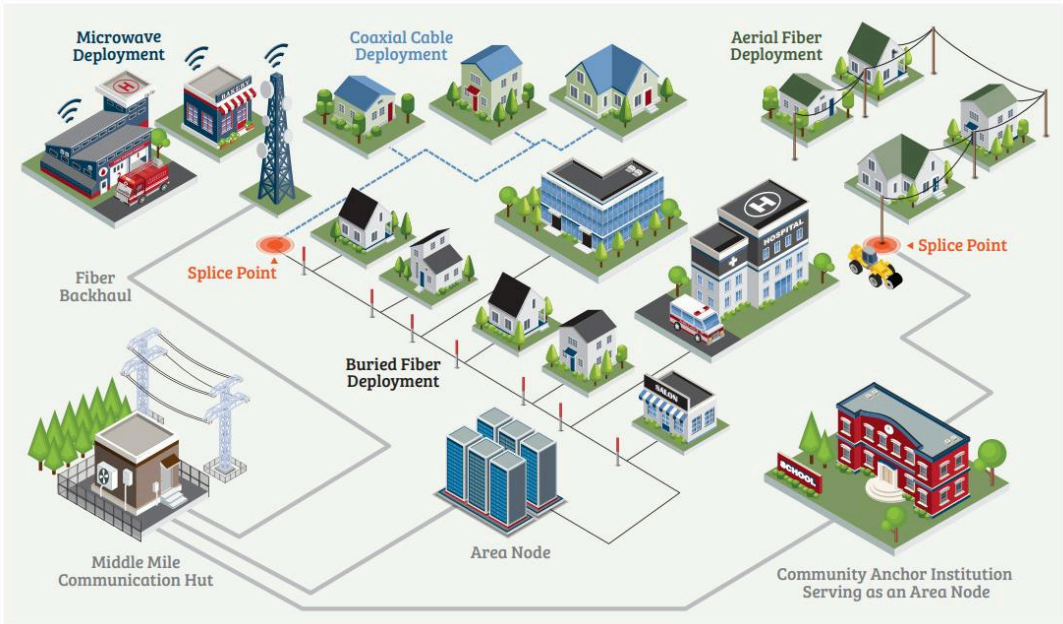


Fig. 6. Source: NCTA

Downtown Public Wi-Fi Considerations

With more than 83 percent of Americans accessing the internet via smartphones, tablets, and other mobile devices, public Wi-Fi availability can be a smart placemaking strategy for communities, especially for walkable areas such as downtown districts. In fact, 15 percent of Americans only have mobile devices available to use for internet connectivity.

In many communities all over the world, public gathering places such as downtown areas have spotty wireless internet access, but it takes a deliberate plan of action to build out seamless connectivity in public places. The process may seem overwhelming at first, but through collaborative relationships with key stakeholders, a Wi-Fi project can become a reality.

North Carolina's Department of Information Technology outlined a four-step process to set up a successful downtown Wi-Fi program: (1) needs assessment, (2) availability assessment, (3) financing availability assessment, and (4) plan development. Overall, the four-step process provides a structured approach for local governments, community organizations, and other stakeholders to plan, fund, and implement a successful downtown Wi-Fi program that meets the connectivity needs of residents, businesses, and visitors. The four steps listed below outline the process:

- **Needs Assessment**: The first step involves conducting a thorough needs assessment to identify the specific requirements and objectives of the downtown Wi-Fi program. This includes understanding the demographic profile of the area, assessing the current level of internet access and connectivity, and determining the key stakeholders and their priorities. Additionally, the needs assessment may involve gathering input from local businesses, residents, visitors, and community organizations to understand their expectations and preferences regarding Wi-Fi coverage and services.

- **Availability Assessment**: Once the needs are identified, the next step is to assess the availability of resources and infrastructure required to implement the downtown Wi-Fi program. This includes evaluating existing broadband infrastructure, identifying potential locations for Wi-Fi hotspots, and assessing the feasibility of leveraging existing infrastructure or building new infrastructure where needed. The availability assessment also considers factors such as power supply, network connectivity, and regulatory requirements that may impact the deployment of Wi-Fi infrastructure.

- **Financing Availability Assessment**: After assessing the needs and availability of resources, the next step is to evaluate the financing options and funding sources available for implementing the downtown Wi-Fi program. This involves identifying potential funding sources such as government grants, private investments, public-private partnerships, or community fundraising initiatives. The financing availability assessment considers factors such as budget constraints, funding priorities, and the potential return on investment (ROI) of the Wi-Fi program.

- **Plan Development**: The final step in the process is to develop a comprehensive plan for implementing the downtown Wi-Fi program based on the findings of the needs assessment, availability assessment, and financing availability assessment. The plan outlines the objectives, scope, timeline, budget, and implementation strategy for deploying Wi-Fi infrastructure, establishing Wi-Fi hotspots, and delivering Wi-Fi services to the target area. Additionally, the plan may include provisions for ongoing monitoring, maintenance, and evaluation to ensure the long-term success and sustainability of the downtown Wi-Fi program.

Broadband Success Stories

The United State Department of Agriculture's Rural Utility Service, (USDA RUS) United State Environmental Protection Agency (EPA), and Appalachian Regional Commission (ARC) sponsored the Cool & Connected program a few years ago. This program worked with select communities in the ARC region to create action plans with goals of revitalizing downtown areas, creating economic opportunities, and protecting the environment. Broadband was the catalyst for all three of these strategies for downtown redevelopment.

The three Cool & Connected communities of Erwin, Tennessee; Lakeville, Indiana; and Millinocket, Maine have case studies that offer insights into how improving high-speed internet access were used to spur downtown revitalization strategies. Access these case studies at https://www.epa.gov/smartgrowth/cool-connected. A summary of ten additional communities' downtown revitalization efforts initiated by the Cool & Connected program is included in the resource materials.

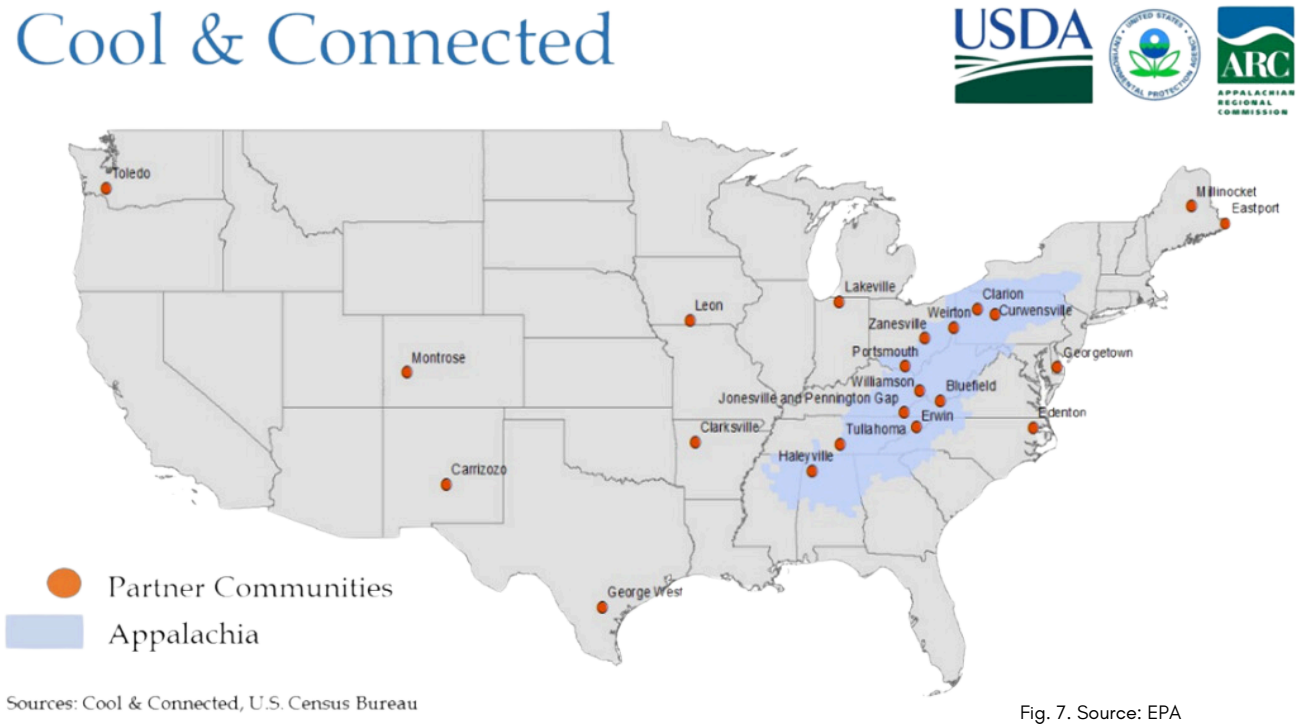


Fig. 7. Source: EPA

The Institute for Local Self-Reliance (ILSR) released a report highlighting the collaborative efforts of telephone cooperatives and private companies to build gigabit fiber networks across North Dakota. These efforts that began in the 1990s have resulted in the ability of local providers to leverage federal funds to create high-quality connectivity of fiber coverage across the state. More information and the full report can be accessed at https://ilsr.org/case-study-shows-how-local-providers-built-world-class-broadband-in-rural-north-dakota/.

Bland County, Virginia is geographically isolated in the Appalachian Mountains. Because installing fiber in these locations is not always feasible, fixed wireless deployments can be a useful strategy to provide significant coverage even in sparsely populated areas. Leveraging both planning and infrastructure grant funds, the community partnered with Gigabeam Networks to deploy fixed wireless broadband to its 6,800 residents. Broad-based community support was essential, as property owners were willing to lease their land to build the necessary tower infrastructure. The towers that are county owned and operated offer open access to any provider resulting in a successful public-private partnership.

Prince George County, Virginia has almost 40,000 residents, but it has both rural and urban areas. The rural parts of the county are less attractive to service providers; therefore, local leaders engaged in a collaborative relationship with Prince George Electric Cooperative. The co-op deployed fiber between their substations and set up a subsidiary, PGEC Enterprises, to offer broadband services. Moreover, other providers do have the opportunity to lease the co-op poles to provide services as well.

In Mississippi, Pascagoula built a Wi-Fi network in a 25-block area to drive more traffic downtown and give another option for businesses and individuals to have reliable internet access. People can do job searching, workforce training, and other things to educate themselves all while patronizing local businesses. Federal funds were leveraged to build out the network, but city officials noted how they intended to make this a long-term investment to improve the overall quality of life in the community. In Puckett, local officials leveraged federal funds to expand Wi-Fi access. Before the town of roughly 300 people expanded coverage, the only public Wi-Fi was at the library. One wireless gateway was installed on top of town hall and another at the park to enhance citizens' ability to access reliable internet service.

Broadband Funding

Over the past several years, a substantial amount of federal funding has been allocated to state/local governments and ISPs to bridge the digital divide and encourage greater deployment of broadband infrastructure and access to service. In addition, efforts such as the FCC's Affordable Connectivity Program provide subsidies to eligible households that help defray the cost of broadband service.

The Infrastructure Investment and Jobs Act of 2021 included an investment of $65 billion to help ensure than all Americans have access to reliable, high-speed internet, especially targeting the unserved (no broadband availability) and underserved (speeds of less than 100 Mbps downstream and 20 Mbps upstream) populations.

BroadbandUSA is a program housed within the NTIA that is designed to provide local, state, and tribal governments along with industry and nonprofit organizations seeking to expand broadband service. It has a listing of more than 70 federal funding opportunities from various federal agencies complete with a search tool and interactive guide. Access these funding sources at https://broadbandusa.ntia.gov/funding-programs.

Broadband Efforts in Mississippi

In 2022, the Mississippi Legislature created the Broadband Expansion and Accessibility of Mississippi (BEAM) office, which operates under the Department of Finance and Administration. While the BEAM office oversees various grants and projects throughout the state, the largest amount of funding will be received from the Infrastructure and Jobs Act of 2021 to bring broadband service to approximately 300,000 unserved locations.

Mississippi will receive $1.2 billion to help bridge the digital divide. BEAM is actively engaged in an extensive mapping effort to accurately reflect the state's broadband situation. A crowdsourced map is being populated to assist with data collection. Businesses and residents are encouraged to assist with this project by taking a speed test at www.broadbandms.com. Visit www.beam.ms.gov for more detailed information on how BEAM is leading the broadband expansion efforts in Mississippi.

In addition, the Office of Internet Activity and Growth within the NTIA recently released their 2023 Annual Report, which highlights each state broadband office. Excerpts from this report including an overview of Mississippi's efforts are included in the resource materials.

Looking Ahead

Nearly every aspect of the way we navigate society is significantly impacted by our ability to easily connect to adequate and reliable high-speed internet services. While rapid improvements have been made over the past decade, there are still more than 40 million Americans who lack access to broadband technology. Of these individuals, one in four have not subscribed to broadband service if it is available to them.

Community engagement is an essential component to bridging the digital divide, especially in our rural communities. Broadband barriers to access are often unique and evolve differently in communities. It is important for local leaders to work diligently in finding ways to build its engagement strategy with businesses, community anchor institutions, and residents alike to devise a plan of action. The projects developed must match prioritized needs where collaborative solutions will have impactful results to sustain long-term broadband access, availability, and adoption.

A project team needs to be passionate and committed to stay the course needed to build momentum and achieving success. Organizational capacity, such as that of a Main Street organization, is crucial in helping decide the scope of the project(s) undertaken. Stakeholders with the technical expertise of the intricacies of broadband is also important while engaging a broad-based support network of allied partners will help generate a ground swell of support. It is important to note that sustainable community projects do not end upon project completion. A follow-up strategy with specific action items is necessary to assess and deepen impacts and maintain momentum towards positive community change towards becoming a better connected and thriving community in today's increasingly complex digital age.

RESOURCE MATERIALS

Main Street Business and Organizations Survey Questions

Main Street Business and Organizations Survey Questions:

General Business Information Questions:

1. Name of your Business or Organization:

2. Which of the following categories best describes the type of business?
    a. Agriculture
    b. Technology
    c. Construction
    d. Manufacturing
    e. Retail
    f. Service
    g. Real Estate
    h. Other

3. What is your business' primary product and/or service?

4. Counting yourself, how many employees do you have (full and part-time)
    a. 1-5
    b. 6-25
    c. 26-50
    d. Over 50

5. How long have you owned and operated your current business?
    a. 1-5
    b. 6-25
    c. 26-50
    d. Over 50

Internet Access Questions:

6. Does your business currently have an internet connection?
    a. Yes
    b. No

7. What type of internet service do you currently have?
    a. Fiber
    b. Cable
    c. DSL
    d. Satellite
    e. Wireless
    f. Other

8. Is internet service currently adequate at this location?
    a. Yes
    b. No

9. If you do NOT use the internet for your business, please check reasons why?
    a. Internet access is too expensive in my area
    b. Internet access is not available in my area
    c. I don't need to use the Internet for my business
    d. I don't know what I would use the Internet for in my business
    e. I don't know how to make use of the Internet in my business
    f. I don't have time to learn the Internet technologies
    g. Using the Internet compromises my privacy
    h. I am afraid of identity theft
    i. Other (please specify)

10. How much does your business currently pay per month for internet service at this location?
    a. Under $100
    b. $100-$500
    c. Over $500
    d. Don't know

11. How much more would you be willing to pay per month to improve (or acquire) internet service
    this location?
    a. $0-$50
    b. $50-$100
    c. Over $100
    d. Don't know

12. Where do you most often access the Internet for your business-related activities?
    a. Work Computer
    b. Home Computer
    c. Library Computer
    d. Mobile device (Smart Phone, iPad, iPhone, etc.)
    e. Other (please specify)

13. Does your business have an online presence?
    a. No, neither website nor social media
    b. Yes, only website
    c. Yes, only social media
    d. Yes, both website and social media
    e. Other (please specify)

14. For each of the following questions, please indicate the extent to which use the Internet for the following BUSINESS activities?

(A). Do not use (B). Use to a slight extent (C). Use to a moderate extent (D). Use to a great extent

1. Access social media (e.g., Facebook)
2. Access information about products/services
3. Access research reports (e.g., University, Government)
4. Access information about do-it-yourself projects
5. Access financial information (e.g., banking)
6. Access health/medical information
7. Access online chat
8. Access online job listings
9. Access online maps (e.g., MapQuest)
10. Watch online TV /
11. Post online videos
12. Make phone / video calls (e.g., Zoom, Teams)
13. Create / maintain a blog
14. Comment on blogs or news items
15. Examine usage statistics for my BUSINESS website
16. Other (please specify)

15. To what extent are each of the following items barriers to you expanding e-commerce activities in your business?

(A). Not at all (B). To some extent (C). To a great extent

1. Knowledge of e-commerce practices
2. Lack of time to implement and/or maintain website
3. Cost of developing and maintaining an online presence
4. Lack of necessary technology skills
5. Lack of local companies to provide technical assistance
6. Risk of viruses/hackers accessing confidential information
7. Products/services aren't suited to online selling
8. Prefer personal contact with customers

16. On a scale of 1-5, how important is an internet connection to your business?
    a. Critical (5)
    b. Very important (4)
    c. Important (3)
    d. Somewhat important (2)
    e. Not important (1)

17. Please add any other information about your internet needs at this location

Community Anchor Institutions Survey Questions

Community Anchor Institutions Survey Questions:

General Information Questions:

1. Please provide your general contact information:
    a. Name
    b. Job title
    c. E-mail
    d. Phone number
    e. Organization name
    f. Organization address
    g. Organization website URL
    h. Organization's number of employees
    i. Please indicate if your organization serves statewide, regionally, or locally

2. Name of organization:

3. Anchor institution type:
    a. School (K-12)
    b. Higher education entity
    c. Public library
    d. Health clinic, health center, hospital, or other medical provider
    e. Public safety entity (fire stations, police stations, etc.)
    f. Public housing organization (including HUD-assisted housing and tribal housing organizations)
    g. Neighborhood organization and community center (e.g., YMCA, JCC)
    h. Faith-based organization
    i. Government office
    j. Veteran's organization
    k. Senior citizen services
    l. Civic organization (e.g., Rotary, Lions)
    m. Disability services
    n. Food bank
    o. Grocery store
    p. Other (please describe)

4. Approximately how many people does your organization support through your programs and services?

5. Address of anchor institution (required for geo coding) (if it has multiple sites, please provide the address for the location you represent)
6. City:
7. ZIP Code:
8. County:
9. Is this address within the Main Street/Historic District?
    a. Yes
    b. No
10. Lat/Long Coordinates (use smart phone app to obtain these) :
11. Name of person interviewed or contacted:

Internet Access Questions:

12. Does the facility have access to the internet?
    a. Yes
    b. No (skip to Question 23)

13. What type of internet connection does the facility currently have?
    a. None
    b. Dialup
    c. DSL
    d. Cable
    e. Wireless
    f. T1
    g. Fiber
    h. Satellite
    i. Not sure
    j. Other (please specify)

14. Connection Speeds (use MS broadband site to obtain connection speeds: Your paragraph text)
    a. Upload Speeds (in Mbps)
    b. Download Speeds (in Mbps)
15. Advertised Speeds (this information is available from the provider's monthly bills, contract, etc.)
    a. Yes
    b. No (skip to Question 23)

16. Does your organization allow the public to connect to WiFi?
    a. Yes
    b. No

17. How many computers are currently available for use by the public that allows them to access the internet?
    a. None (skip to Q 18)
    b. 1
    c. 2
    d. 3
    e. 4
    f. 5
    g. More than 5

18. On average, what percent of the time are these computers being used by the public?

19. Does the anchor institution offer any programs for the public that deal with topics such as computer literacy, computer applications, or the use of the Internet for online information and services?
    a. Yes
    b. No
    c. I don't know

20. How often does the anchor institution offer these classes?
    a. Just a few times a year
    b. Once a month
    c. About every two weeks
    d. Once a week
    e. Twice a week
    f. More than twice a week
    g. Other (please specify)

21. Does your organization participate in any government programs that subsidize the cost of broadband service?
    a. Yes
    b. No
    c. I don't know

22. How difficult is it for your organization to fit a monthly internet bill into its budget?
    a. Very difficult
    b. Somewhat difficult
    c. Not very difficult
    d. Not at all difficult

23. How much is your organization willing to pay monthly for the internet?
    a. $50-$100 per month
    b. $100-$150 per month
    c.$150-$200 per month
    d. More than $200 per month

24. What is the main reason there is no Internet in the facility (check all that apply)?
    a. Too expensive
    b. Lack of computer(s)
    c. Internet connection not available
    d. Internet too slow/unreliable
    e. Internet benefits not clear/not interested
    f. Other (please specify)

25. What is the main barrier(s) to broadband use and adoption by people in your community/region (check all that apply)
    a. Too expensive
    b. Lack of computer(s)
    c. Internet connection not available
    d. Internet too slow/unreliable
    e. Internet benefits not clear/not interested
    f. Other (please specify)

26. Are there any additional comments you would like to share regarding ways to enhance broadband usage?

FEDERAL COMMUNICATION COMMISSION

CONSUMER GUIDE

BROADBAND SPEED GUIDE

Broadband Speed Guide

Compare typical online activities with the minimum download speed (Megabits per second, or Mbps) needed for adequate performance for each application. Additional speed may enhance performance. Speeds are based on running one activity at a time.

For household broadband needs, use our Household Broadband Guide to compare minimum Mbps needs for light, moderate and high household use with one, two, three or four devices at a time (such as a laptop, tablet or game console).

For more information on broadband speeds, see our Measuring Broadband America report.

These numbers are rough guidelines and are not based on surveys or experiments conducted by the FCC. You should use your best judgment when choosing your broadband service.

Activity	Minimum Download Speed (Mbps)
General Usage	
General Browsing and Email	1
Streaming Online Radio	Less than 0.5
VoIP Calls	Less than 0.5
Student	5 - 25
Telecommuting	5 - 25
File Downloading	10
Social Media	1
Watching Video	
Streaming Standard Definition Video	3 - 4
Streaming High Definition (HD) Video	5 - 8
Streaming Ultra HD 4K Video	25

Federal Communications Commission · Consumer and Governmental Affairs Bureau · 45 L Street NE, Washington, DC 20554
1-888-CALL-FCC (1-888-225-5322) · TTY: 1-888-TELL-FCC (1-888-835-5322) · www.fcc.gov/consumer-governmental-affairs-bureau

Video Conferencing	
Standard Personal Video Call (e.g., Skype)	1
HD Personal Video Call (e.g., Skype)	1.5
HD Video Teleconferencing	6
Gaming	
Game Console Connecting to the Internet	3
Online Multiplayer	4

Consumer Help Center

For more information on consumer issues, visit the FCC's Consumer Help Center at www.fcc.gov/consumers.

Alternate formats

To request this article in an alternate format - braille, large print, Word or text document or audio - write or call us at the address or phone number at the bottom of the page, or send an email to fcc504@fcc.gov.

Last Reviewed 02/05/20

COOL AND CONNECTED

Case Studies

COOL & CONNECTED:
REVITALIZING LOCAL ECONOMIES WITH BROADBAND SERVICE

SUMMARY REPORT AUGUST 2016

Cool & Connected helps small towns use broadband to promote main street development. Beginning in September, ten coal-impacted communities in Appalachia will participate in ***Cool & Connected***. Five small towns from around the country are already participating in the program. USDA's Rural Utilities Service, EPA's Office of Sustainable Communities, and the Appalachian Regional Commission sponsor ***Cool & Connected.***

Sources: Cool & Connected
U.S. Census Bureau

Cool & Connected helps people leverage broadband to create walkable, connected, economically vibrant streets that improve human health and the environment.

Alabama

Haleyville, Alabama, will pursue a downtown broadband strategy that promotes business recruitment and development, diversifies the economy, and connects the library and City Hall to people through digital archives and e-government initiatives.

Ohio

Southern Ohio Port Authority in ***Portsmouth, Ohio,*** aims to use the historic and commercial districts' broadband and public Wi-Fi capabilities to increase the number of people who walk and open businesses, as well as connect downtown amenities to recreation areas by utilizing information kiosks and QR Code/smart phone technology.

Zanesville, Ohio, will receive planning assistance to increase new employment opportunities, support the emerging arts culture, and develop an app for visitors to explore the walkable downtown.

The World's #1 Coworking Space

Forbes magazine named Montrose, Colorado's Proximity Space the best place to cowork. Montrose is one of five ***Cool & Connected*** pilot partner communities.

"With a gigabit connection and main street frontage, Proximity Space has quickly become an anchor in the evolving downtown ecosphere," Proximity Space co-founder Dennis Lankes told *Forbes*. Coworking space allows people to access high-speed internet, conference rooms, and office equipment, and is one of many ways that small towns can leverage broadband to boost main street development.

Guppta, K. (2016, July 15). Where To Work? The 10 Best Coworking Spaces On Earth. Retrieved from Forbes: http://www.forbes.com/sites/kaviguppta/2016/07/15/where-to-work-the-10-best-coworking-spaces-on-earth/#c3ae23b7e9fe

Pennsylvania

Clarion, Pennsylvania, will receive planning assistance to increase their local communications capacity to market nature-based tourism, motivate people to invest along the historic Main Street, and create an incentive for students at Clarion University to stay in the community.

Curwensville Regional Development Corporation in ***Curwensville, Pennsylvania,*** plans to create a downtown coworking space for professionals, students, or entrepreneurs to use as an alternative to working from home or commuting long distances.

Community workshops allow everyone's ideas to be heard.

Tennessee

Erwin Utilities and ***Erwin, Tennessee,*** will receive planning assistance to construct a comprehensive marketing plan for their downtown broadband connection, aimed to attract young professionals, visitors, and investors.

Amenities like broadband, walkable streets, and parks help communities create more vibrant neighborhoods.

Virginia

Jonesville and Pennington Gap, Virginia, will receive planning assistance to market and develop Wi-Fi zones, extend broadband service, and promote main street development by attracting potential anchor tenants.

West Virginia

Bluefield, West Virginia, will help downtown businesses take advantage of broadband and promote startups under the city's new Creating Resilient Economies by Assisting Transforming Entrepreneurs (CREATE) initiative.

Broadband lets small, rural communities promote their businesses to a larger marketplace.

The Mary H. Weir Public Library and community partners in ***Weirton, West Virginia,*** will receive planning assistance to increase and expand broadband services and Wi-Fi zones to bring visitors, families, and businesses to the downtown area.

The Williamson Health and Wellness Center in ***Williamson, West Virginia,*** will leverage broadband access and Wi-Fi zones downtown and at educational institutions to cultivate a skilled workforce, help people open businesses, and enhance the use of heath care technology.

For more information: https://www.epa.gov/smartgrowth/cool-connected

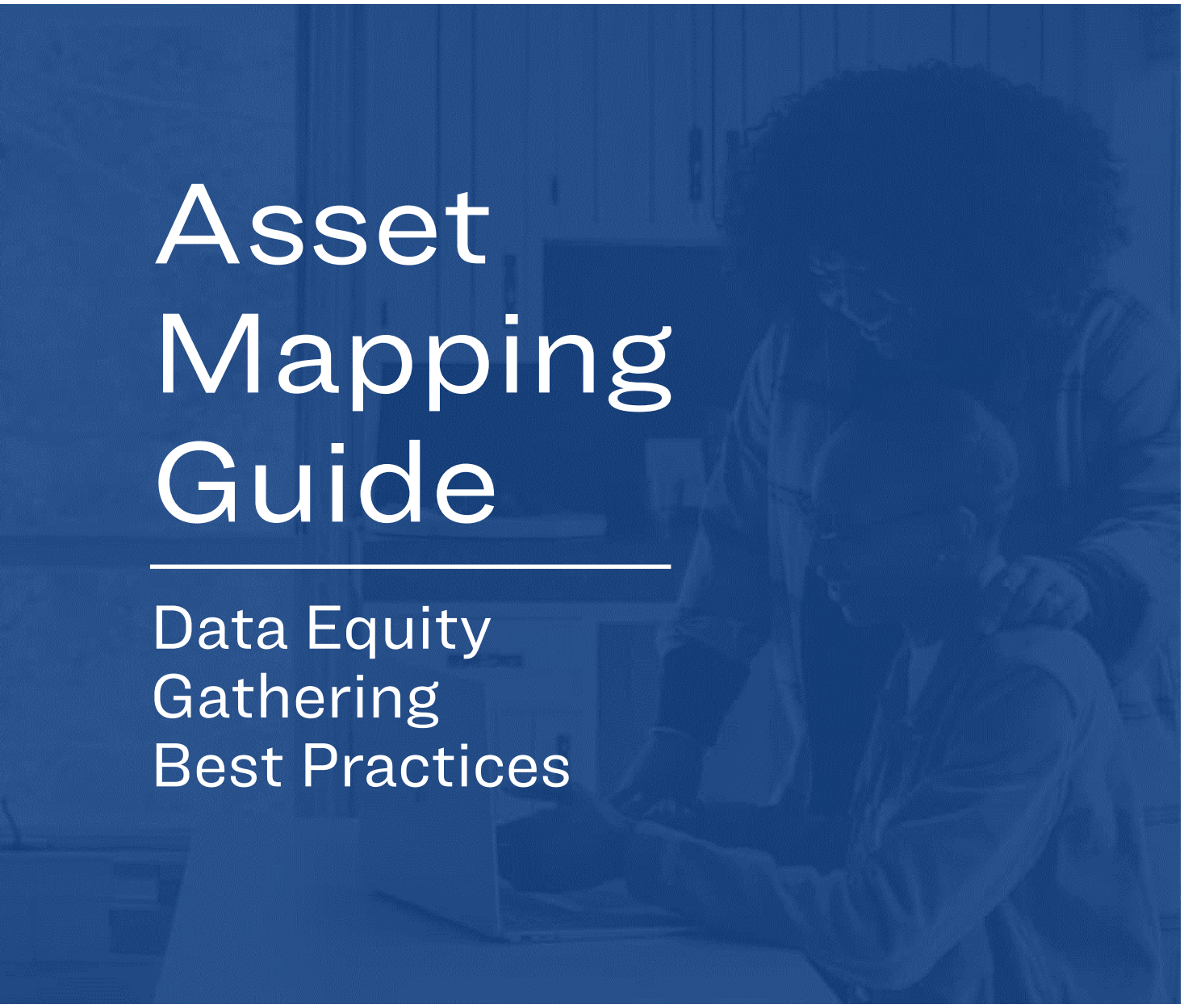
ASSET MAPPING GUIDE

DATA EQUITY GATHERING BEST PRACTICES

INTERNET FOR ALL

Asset Mapping Guide

Data Equity Gathering Best Practices



National Telecommunications and Information Administration

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Introduction

With the passage of the Bipartisan Infrastructure Law (BIL), the federal government is making historic investments in broadband technologies and infrastructure. The COVID-19 pandemic made it clear that too many households in America lack access to dependable, affordable, high-speed Internet. In many cases, Americans lack access because their home is in a location that is not connected to high-speed service, or they may be unable to afford the cost of a monthly high-speed internet connection.

To identify where high-speed internet is needed, an approach called asset mapping is used to collect, organize, and track data for building digital equity strategies and plans for new and improved infrastructure.

Whether focused on a single neighborhood or an entire state, digital inclusion coalitions, organizations, and public agencies across the country use asset mapping to identify resources, build partnerships, and plan for future work.

Through this guide and the accompanying Digital Equity Guide for States, the National Telecommunications and Information Administration (NTIA) has developed a set of practical guidelines designed to support asset mapping efforts by digital equity practitioners. The guidance and guidelines are comprehensive and flexible enough to accommodate varying geographic scales and levels of detail.

An Overview of Asset Mapping

Asset mapping at the state level helps to identify and build on the state's existing resources, networks, and strengths; these are the assets. This process helps emphasize capacity building and community-based solutions, and it works with community members and organizations as partners invested in solutions, rather than as problems to be solved. By mapping the connections of core assets in a region or community, and then expanding iteratively, the asset mapping process can generate a robust network of potential partners and stakeholders. Asset mapping is also particularly effective at uncovering resources in the community that would not otherwise have been invited to "a seat at the table" in a more traditional planning or engagement approach. Identifying the opportunities, interpersonal networks, and resources already present in a community will help identify areas to support and scale strategies that are already in place – which reduces duplicative efforts. In turn, asset mapping supports the empowerment of community institutions and people by sharing ownership in the local coordination efforts.

When undertaking any planning project or effort to bring about community change, understanding the current state through a needs assessment, existing conditions analysis, or another, similar method is a common early step. These approaches, however, often employ a deficit-based perspective - seeking to describe and quantify the problems to be fixed in a community (for example, poverty rate, people experiencing homelessness, or households without a broadband subscription). While typical, this approach to understanding and framing an issue has several inherent challenges:

- It marginalizes those most in need of support (such as people experiencing digital inequities) by emphasizing their adverse outcomes rather than the systems that contribute to those outcomes.
- It frequently pays insufficient attention to the resources and expertise within a community that can be leveraged to produce desired outcomes.
- And finally, it can lead to a bias toward external solutions imposed on a community rather than solutions built within and by the community.

Asset Mapping & the Bipartisan Infrastructure Law

Asset mapping can help local governments conduct more impactful, long-term, high-speed internet infrastructure and digital equity planning. Critically, asset mapping data can be used to help ensure that governments are able to incorporate the local, regional, and community needs, and elevates the voices/needs of underrepresented communities into planning and implementation efforts. By adapting and building on the opportunities and resources already present in the community, governments can avoid unnecessary duplicative work and intentionally build the relationships necessary for local coordination.

A Better Lens: Mapping Digital Equity

Whether gathering information on a single neighborhood, tribal lands, across a city or even statewide, an individual or entity seeking to identify community assets must first define their geographic parameters to sharpen focus. In addition to defining a geographic area, it is also helpful to categorize assets in the inventory by the type(s) of digital equity activities each relates to. Comprehensive mapping of digital equity assets allows communities to measure investments and the impact of those investments. Crucial to this process are the five elements of digital equity, which are:

- Affordable, robust broadband internet service;
- Internet-enabled devices that meet the needs of the user;
- Access to digital literacy training and advanced digital skills training;
- Quality technical support;
- Applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration.

Building the Network & Engaging New Partners

On top of compiling useful geographic and activity-type information about individual organizations and programs, the network-building aspect of asset mapping is vital to the digital equity field. Once coalition members, digital equity practitioners, and other obvious entities have been added, the research turns to finding individuals and organizations that are doing work (or that could be doing work) in at least one of the five elements of digital equity and engaging those individuals and organizations to build your network of resources to aid in the planning and implementation processes. For example, leveraging existing relationships with community anchor institutions, such as public libraries, helps broaden the asset map network to find, engage, and educate new partners.

In the case of an organization like a workforce development agency, they may see their work strictly through the lens of job seeking. For instance, helping an individual find gainful employment involves teachable moments such as cover letter and resume writing in a word processing application, understanding internet search engines, and how to use online employment application forms and job search sites. Not to mention the reality that in the COVID-19 pandemic, organizations began doing this work remotely, which commonly required supplying devices like laptops or tablets for their clients.

This approach covers five elements of digital equity: devices, digital literacy/digital skills-building, tech support, applications, and meaningful use or adoption. Therefore, if a workforce development agency is doing digital equity work, it should be invited to the table as an asset in workforce development and digital equity in any ongoing or future projects.

Digital equity asset mapping is not only about mapping resources in the community but also about identifying impact and desired outcomes digital equity initiatives at the community level.

Reaching the Right Populations

A strength of asset mapping is its ability to reduce the marginalization of vulnerable populations by lifting up community voices. Defining a diverse network of partners encourages outreach and engagement with a broad array of communities while limiting the emphasis on deficit-based approaches. This can be especially critical for reaching groups for whom engagement and trust in established institutions are challenging.

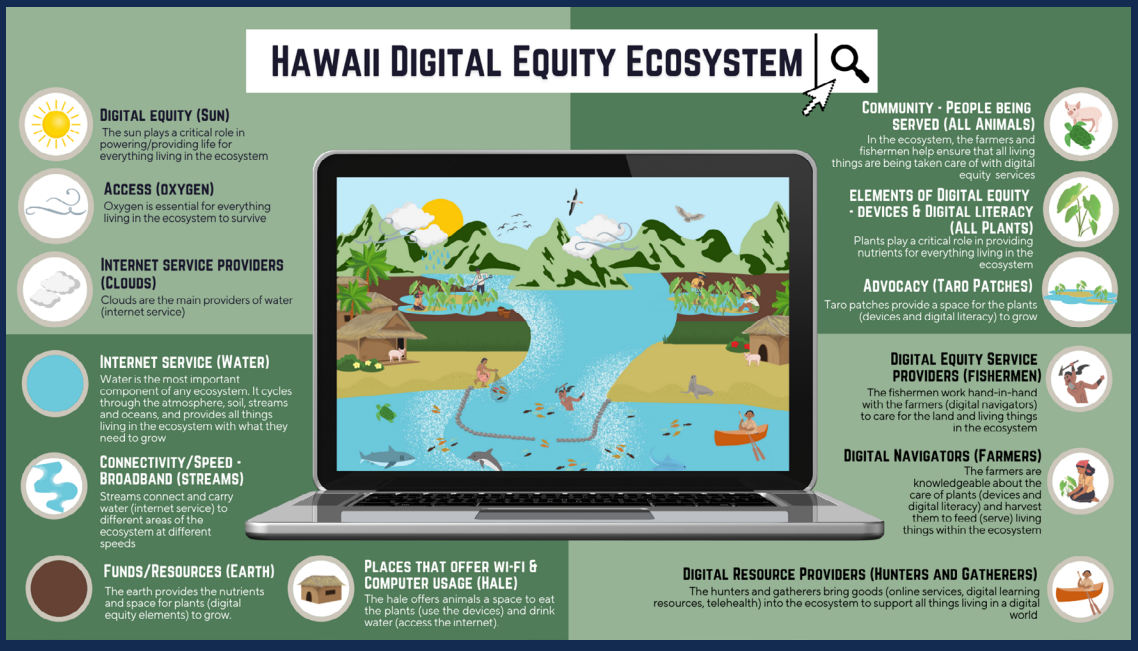
Identifying trusted entities, that can include community-based organizations, community anchor institutions, or even informal gathering places, brings these communities into the fold while also elevating the mission of a like-minded organization in the digital equity space.

Understanding the Digital Equity Ecosystem

When asset mapping is well organized, incorporates comprehensive data sources, and benefits from strong engagement throughout the community, the result is greater than a set of individual data points.

A "digital equity ecosystem" is a combination of programs and policies that meet a geographic community's unique and diverse needs. In a digital equity ecosystem, coordinating entities work together to address all aspects of the digital divide, including affordable high-speed internet, devices, and skills. One key component of an effective digital inclusion ecosystem is collaboration among partners to co-create solutions within the community rather than one entity designating actions from the top down. While the purpose of the asset mapping process is to document the resources in a community, it can also uncover the ecosystem that currently exists and help set the course for further evolution through continued network building and collaborative, community-based solutions. Informed by their own asset mapping efforts, the **State of Hawaii Broadband and Digital Equity Office** has developed infographics and a report detailing the components of the digital equity ecosystem in their state.

Figure 1: A Digital Equity Ecosystem[1]



1 State of Hawaii, Hawaii Broadband & Digital Equity Office, Digital Equity Ecosystem Map, https://broadband.hawaii.gov/deemap/.

Conducting Asset Mapping

To assist digital equity coalitions, organizations, state leaders, and others interested in better understanding the digital equity ecosystem in their community, NTIA has developed a set of asset mapping guidelines. Every community has a wealth of assets that contribute to the character and resources of a place: institutions, individuals, formal and informal networks, physical spaces, and shared culture, to name a few.

While all are essential components, NTIA's asset mapping guidelines are focused on documenting the organizations and programs that provide (or potentially could provide) digital equity services and support in a community.

It may also be beneficial to communities that have not previously conducted asset mapping to connect other communities who have experience in asset mapping for advice on potential outreach strategies. These suggested guidelines are designed to support a wide array of needs and experience levels.

Key Guidelines for Digital Equity Asset Mapping Initiatives

Establish standard data fields and terminology

Collecting the same types of information about digital inclusion resources and services across different communities will develop shared languages and understanding across the field. It will facilitate the comparison of strategies and best practices between communities and states and supply or development of the digital inclusion field. Use your communication and local coordination outreach activities to inform your data collection.

Maintain flexibility to meet specific user needs

Recognize the diversity of potential contributors; the asset mapping guidelines were designed to be customizable. There are bound to be varying interests in the types of assets gathered, levels of detail in the information collected about assets, and intended uses of the result.

Comprehensively include all components of digital equity work

Covering all types of digital inclusion services allows for information about various organizations and programs to be compiled in one place. Additionally, many organizations provide multiple services (e.g., affordable devices, training courses, and technical support), and it is vital to reflect all aspects of an organization's digital inclusion work.

Populating as much or as little information in the asset mapping guidelines as is necessary for user needs

Fields may be skipped, and standard response options may be overwritten by user organizations if desired. For example, a state broadband office may choose to only map organizations and the categories of digital equity work they do. In contrast, a local coalition may decide to track detailed information about each program in their community, resulting in some organizations appearing in the asset inventory multiple times.

Provide free and accessible resources

Extending resources to as many entities working for digital equity is fundamental to NTIA's work. NTIA encourages contributors to translate their choice of resources into whatever platform best fits their needs, the selected formats do not require additional software or subscriptions. Resources are accessible to contributors with moderate digital skills.

Information to Collect

For each asset mapped, governments can consider the type and granularity of information to collect.

- **Basic Information:** This includes information such as organization name, website, point of contact, operating hours, organization mission or purpose, organization type, constituents, and website links.
- **Covered Populations:** Identify the groups that are already serving the covered populations in different localities and regions and areas of the state. Identify how these different organizations overlap to identify unserved populations and regions.
- **High-speed Internet specific data points:** These data points may differ based on organization type, but could include data points around the following:
  - Broadband access & affordability (e.g., local advocacy groups)
  - Device access (e.g., schools or other entities providing devices)
  - Digital skills & technical support (e.g., workforce development or job training organizations)
  - Public device & internet access (e.g., local libraries with community computer access)
  - Digital equity funding (e.g., local foundations funding digital equity efforts)
  - Digital equity/broadband adoption (e.g., meaningful use and improved outcomes data)
- **Other community assets:** such as existing partnerships, coalitions, and resources

Remember data collection is an iterative process and should be customized to meet the needs of the community. Using these best practices can help ensure a comprehensive approach that allows input from a wide range of stakeholders withing the community.

Guidance and Usage Tips –

Community Data Collection Tool

An asset map may be created by the state, a local or regional coalition representative, a statewide convening entity, or an individual or organization looking to find digital equity partners. The creation of a tool, like a spreadsheet or a fillable form, for an individual or small group to enter multiple records for different assets can help ensure comprehensive data collection. Ideally, the state will have a tool that will allow it to fill out the form on behalf of an organization, person, or resource, and will also permit people and community organizations to fill it out for themselves.

This tool, and all the data entered in it, can be owned and managed by the organization or entity compiling the information. Therefore, individuals within the organization or entity have complete control over access and editing controls of their copy of the tool. Currently, there is no national data repository for asset mapping tools, so each tool should be managed locally by the organization or entity compiling the information.

A data collection tool should have the following features:

- Be publicly accessible and either free or available at a nominal cost;
- Have an interactive, user-friendly query capability with downloadable data;
- The capability to integrate with other GIS information, such as broadband access and availability, to create visual overlays;
- Offer a companion training guide;
- Regular updates with tagged data sources and dates.

In addition to the features listed above, project teams must determine which features best fit their individual needs and resources. One method is to build out an initial asset mapping tool and expand upon its capabilities over several projects.

Project Execution

The asset mapping project leader should bring together a team with partners who can provide additional resources, knowledge, and connections. This will ensure the team captures all relevant assets, opportunities, and people. Executive buy-in from government leaders is helpful to encourage cooperation and raise the project's profile.

One office (e.g., Department of Transportation planning) should lead the asset mapping process. Key considerations for selecting project leadership include:

- Access to or ownership of public assets and data
- Existing relationships with relevant partners
- Data collection, curation, and visualization expertise

Asset Mapping Benefits from the Participation of Key Public and Private Sector Stakeholders

Project Leadership

One office should lead the process. It should:

- Have access to or ownership of public assets
- Leverage exisiting relationships with relevant partners
- Incluse data collect, curation, and visualization expertise

Partnerships & Project Team

The project leader should bring together a project team:

- Find partners who can provide additional resources, knowledge, and connections
- Ensure that they capture all relevant assets
- Create buy-in from government leaders

Data Use & Access

The project team should decide how to use the resource:

- Determine which information is appropriate to share:
  - Consider critical infastructure security concerns
  - Consider proprietary business data
- Have an internal version and a public version

Data Management

A successful asset mapping project needs to consider several elements of data management.

Data Management Elements

Managing the Process

The project leader should clearly communicate to stakeholders the ask, costs involved, and the data collection and transfer process. They should also listen to stakeholders and adjust processes as needed.

Data Collection

Standardize and validate the data collection process from the outset. This work may involve digitizing paper records, which usually require multiple agencies to provide access to the project team. In addition, the project team can include physical records and conduct field visits to physical assets as part of local coordination efforts.

The Asset Mapping Tool

The project team should be able to access data visualization capabilities to share information with stakeholders through the tool of their choice. Critically, they should have appropriate cybersecurity, data integrity, and privacy provisions while embracing collaborative and accessible tools.

Asset Mapping Data & Inventory

It is best to create a flexible framework for organizations to identify and organize digital equity resources, programs, and funding sources within a geographic area. Asset mapping information should be organized into sections and fields according to common types of digital equity work.

Given that not all sections of an asset map will be applicable to every organization, NTIA recommends that the organizations or individuals compiling the asset mapping tool populate only the fields and cells within the map that apply to a given asset. NTIA also suggests that if an organization or individual cannot edit the asset mapping tool to input their own information directly, the team should provide a way through which organizations can submit their own information or information about other organizations and programs they are familiar with. This approach can dramatically expand the digital equity resources captured during the asset mapping process.

The key takeaway is to create an asset mapping tool that permits the team to capture the information in whichever ways are most useful to understand how a key resource fits within the community and its relationship to state planning goals and needs.

Effectively capturing the relevant information about the resources, people, and organizations in the asset mapping tool should be done in ways that best fit the needs of the team. Information about a resource can be detailed in the asset mapping tool in a variety of ways with varying levels of specificity.

The following examples illustrate how information about the same asset might be captured in three different ways:

- A state library is conducting statewide asset mapping to identify which types of digital equity support each library system in the state offers. Given the scale of this effort, the state library would likely have a single record for each library system, with contact information for the library administration and the types of digital equity work the system does. Still, program information and other sections of the asset mapping guidelines may be left blank.
- A local digital equity coalition collects asset mapping information to create an online digital equity resource guide. As a critical community asset, the local library will be included. Because it would be necessary for organizations using the guide to know if a resource is close to them, the coalition will consist of each library branch location as a separate entry in the asset mapping tool. In this case, capturing days and hours of operation and crucial information about technical support, public device, and internet access would also be essential.
- Another coalition uses asset mapping to identify digital equity programming gaps in the community. Knowing that the local library offers a device loaning program, a digital skills program for older adults, and a program offering remote technical support, the coalition will document each program provided by the library as a separate record in its asset mapping. This means that the library will show up multiple times in the organization field, once for each program it offers. However, each record will only include information relevant to the program; the remaining areas will be left blank.

Examples

- **Capital Region Coalition for Digital Inclusion** (Sacramento, CA). The nonprofit mohuman worked very closely with community-based organizations and residents of digitally underserved regions to identify their needs and the digital services necessary to meet those needs. The result was the co-development of moDAT, the people's digital advocate and navigator. This iteration of moDAT, developed for the Capital Regional Coalition for Digital Inclusion to serve the Sacramento area, is an intelligent platform designed to help navigate the digital equity resources in their community.
- **Digital Inclusion Network** (Portland, OR). The Portland Digital Inclusion Network maintains a searchable directory of local digital equity resources. In the spirit of collaboration, the Portland Digital Inclusion Network encourages members to share materials; identify opportunities, challenges, and resource gaps; and develop solutions to better serve digitally disconnected residents.
- Representatives from the **Cleveland Foundation** described creating an infographic to visually communicate information collected from the asset mapping guidelines. They also stated their intention to integrate the asset mapping tool and resources collected into their existing website for their digital navigator's program. Representatives envision developing a network map to document Cleveland's local digital equity ecosystem.
- A **Kansas City Digital Drive** representative shared their vision to evolve the inventory from a list into a resource that tracks the digital skills and digital training continuum. They described using the resource to help guide learners along a path suitable and appropriate for their abilities and interests and cited how television streaming services can "suggest" a similar movie based on previous views. Most working groups indicated that implementing the tool would result in a public-facing resource.
- **Long Beach, California's** stakeholder engagement process convened a 50-person multidisciplinary committee that reflected the entire spectrum of digital equity. This committee provided strategic guidance to advance Long Beach's digital equity plan. The stakeholder committee developed a common agenda, engaged in asset mapping, developed a shared measurement system, refined draft strategies, and reviewed community input. The community engagement process collaborated with trusted community partners to engage individuals impacted by the digital divide. Long Beach engaged the community through pop-up events, workshops, interviews, and a community survey.

As more organizations and digital equity coalitions engage in network mapping, identify new use cases, and produce new guidelines from the results, NTIA will continue to share best practices and guidance as this essential aspect of digital equity work evolves. NTIA will work with different states and territories to provide technical assistance, support, data, or programmatic requirements 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.

Conclusion

NTIA is here to help states to identify existing resources, people, and partnerships to build robust plans for broadband access, adoption, affordability, digital equity, and digital inclusion across the state. NTIA also requires local coordination; asset mapping is an effective strategy to collect data that will be used to show how funding can support broadband access, adoption, and use, as well as broader social, community, and economic outcomes. Through these methods, NTIA will empower states, tribes, territories, and local communities to achieve digital equity and Internet for All.

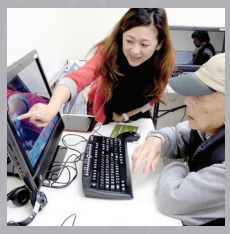
BROADBANDUSA

Public-Private Partnerships

PLACE MAP + DESIGN + BUILD

BroadbandUSA: An introduction to effective public-private partnerships for broadband investments

JANUARY 2015



Broadband is critical to the economic development and vitality of communities across the United States. Given its importance, many local leaders are exploring how to expand the availability and adoption of robust, high-quality and affordable broadband services in their communities. To reach these goals, many municipalities have utilized public-private partnerships. While no partnership structure is exactly like another, there are some common models and best practices that communities should research before embarking on a broadband partnership. The best approach for a particular community will depend upon several factors specific to each community.

This publication provides an overview of common broadband partnerships, the factors communities should consider in developing a successful partnership model, and tips and best practices NTIA has observed through its oversight of $4.5 billion in broadband grants to public, private and joint projects across the country.

NTIA U.S. DEPARTMENT OF COMMERCE · NATIONAL TELECOMMUNICATIONS & INFORMATION ADMINISTRATION

BROADBANDUSA
CONNECTING AMERICA'S COMMUNITIES

KEY QUESTIONS TO CONSIDER

DEFINITIONS

Community Anchor Institution (CAI): Schools, libraries, medical and healthcare providers, public safety entities, and other community support organizations and entities.

Last-Mile: Components of a broadband infrastructure project that provide service to end-user devices. In most cases, the last-mile connection goes to the end-user device in a home, business or a CAI.

Middle-Mile: Components of a broadband infrastructure project that provide broadband service from an Internet point of presence to one or more centralized facilities (i.e. the central office, the cable headend, the wireless switching station or other centralized facility), which allows a last-mile provider to provide Internet access to a home, business or CAI user.

Why is Broadband Important?

Broadband should be a necessary component of any community's economic development planning. Local communities typically promote broadband to improve productivity and reduce costs in schools, healthcare institutions, public safety, energy management and other vital functions. Citizens and businesses also benefit by gaining access to new services and information. As a White House report noted in 2012: "The build-out of broadband infrastructure itself is a major driver of American investment and job creation, but even more significant are the ways that connectivity is transforming a range of industries, from education to entertainment to agriculture to travel."[1]

Ongoing research clearly demonstrates the positive impact of broadband in America:

1. Students with access to broadband at home have "a big or moderate advantage in the classroom,"[2] teachers and parents overwhelmingly agree.
2. Farmers are using "smart farming" technology, which relies on real-time data analytics made possible by broadband, to reduce crop damage from weather events by up to 25 percent.[3]
3. Searching for jobs on the Internet shortens the duration of unemployment for individual workers by around 25 percent as compared to offline searches.[4]
4. Broadband enables medical specialists to treat patients in remote regions of the country. One study reports that "remote patient monitoring was associated with a significantly lower number of hospitalizations" for heart failure.[5]
5. Businesses across all industries generated $2.3 trillion in online sales in 2013.[6]

Broadband supports both individual and economic vitality. It is the lifeblood of our information society, fueling economic growth, innovation and civic engagement.

1. See "Four Years of Broadband Growth," Office of Science and Technology Policy and the National Economic Council, June 2013, page 2, *http://www.whitehouse.gov/sites/default/files/broadband_report_final.pdf*.
2. "Poll Finds Overwhelming Support for Use of Technology," Leading Education by Advancing Digital (LEAD) Commission, undated, *http://www.leadcommission.org/poll-finds-overwhelming-support-for-greater-use-of-technology-in-k-12-education-among-teachers-and-parents-a-diverse-sampling-of-u-s-teachers-and-parents-strongly-believe-schools-should-increase-ado/*.
3. "Precision Farming Gains Global Foothold (Op-Ed)," Lloyd Treinish, Livescience.com, June 12, 2013, *http://www.livescience.com/37400-smart-farming.html*.
4. Peter Kuhn & Hani Mansour, "Is Internet Job Search Still Ineffective?" IZA Discussion Paper (Sept. 2011), *http://ftp.iza.org/dp5955.pdf* (published in *The Economic Journal* Apr. 4, 2014).
5. C. Klersy, et al, "Economic impact of remote patient monitoring: an integrated economic model derived from a meta-analysis of randomized controlled trials in heart failure," Eur. J. Heart Fail. 2011 Apr. 13(4): 450-9, *http://www.ncbi.nlm.nih.gov/pubmed/21193439*.
6. Press Release, Connected Nation, "Connected Nation Business Assessment Reveals Significant Education and Skills Gap in Workforce," *http://www.prweb.com/releases/2014/09/prweb/2194345.htm*.

Dark and Lit Fiber: In a fiber network, a provider or lessees may not be actively using every individual fiber strand. Those that are in use are considered "lit," while those that are unused are "dark."

Wholesale Services: Services sold by one service provider to another service provider. Services sold directly to end-users are "retail" services. Wholesale services may involve lit or dark capacity.

Why Should Communities Pursue Broadband Partnerships?

Communities develop or support broadband partnerships for a variety of reasons. Certain communities, especially those in rural areas, may confront significantly higher deployment costs due to low population density, lengthier middle-mile networks or challenging terrain. A partnership can address such economic challenges through sharing capital costs, enhancing revenue potential (e.g., finding anchor tenants and aggregating community demand, and removing regulatory barriers to expedite deployment). In other cases, communities create partnerships to foster high-speed, affordable broadband solutions for government and community facilities (e.g., schools, libraries). These institutions may find that the total cost of ownership, over the long-term, may be less through a network dedicated to serving such segments. Although local, state or federal funding may be available to support community broadband efforts, it rarely covers the entire cost of a project. A partnership with commercial operators, however, can complement public funding opportunities, while also bringing expertise on particular technical issues to an initiative. In all these cases, successful partnerships can leverage public financing, community assets and local leadership, in collaboration with private-sector expertise and capital, to expand broadband.

What Are the Types of Broadband Partnerships?

GENERAL PARTNERSHIP MODELS:

An effective broadband partnership spreads the risks and costs related to necessary capital investment, execution challenges and adoption hurdles between the private and public sector. While the structure of each community's partnership reflects local needs and circumstances, most follow one of three models:

PRIVATE SECTOR-LED:

A commercial operator (private or non-profit) builds, owns and operates the network. Community Anchor Institutions (CAIs) and economic development authorities support the business case by contributing planning, monetary and regulatory support, and by aggregating demand and securing customer commitments in advance.

GOVERNMENT-LED AND PRIVATE SUPPORTED:

A public entity (e.g., state, county or city government, municipal electric utility or rural coop) owns the network and private partners construct, operate and/or maintain the network in exchange for financial and in-kind support, as well as the types of contributions described in the private-sector led model. The public entity may either use an existing organization, such as a municipal electric system, or create an entirely new one.

JOINT-OWNERSHIP MODEL:

A commercial operator(s) (private or non-profit) and the public enterprise jointly invest in the network and share capacity. Both partners also contribute a mix of financial, in-kind and other support to the project.

KEY SUCCESS FACTORS:

Regardless of which model a community chooses, the partners play important roles that are often critical to success:

- **Broadband Leadership and Catalytic Role by Government:** Local and state government entities may serve as leaders and catalysts to garner community support, identify needs, develop innovative solutions and attract private investment through rights of way (ROW) access, streamlined permitting processes and financial support.
- **Private Sector Ingenuity and Funding:** Private network service providers, equipment vendors, developers and technology firms bring expertise, resources and innovation in network deployment and operations, customer support and new broadband applications to support the work of local government.
- **Support from Community Forces:** CAIs, non-profit groups, research, education and government networks can drive initial demand and promote capacity building over the long-run.

South Dakota Network crews deployed a fiber network to connect local anchor institutions — schools, hospitals, public safety agencies and government offices.

Public-Private Partnerships and Broadband Adoption

If increasing broadband adoption is a priority for a community, partners should develop an adoption plan at the beginning of the project and not wait until the network is built. Adoption programs have many variations. Through its oversight of $250 million in investments from its broadband adoption grant program, NTIA identified these important practices that are keys to success:

- Digital inclusion — helping people get online — is a multi-faceted challenge that requires a multi-pronged approach. Each community's needs and assets are unique, and communities should engage a wide range of stakeholders to better understand where there are gaps in broadband adoption and develop solutions.
- Developing an adoption plan and integrating a community's adoption goals into local economic development and technology plans at the beginning of the project, rather than after the network is built, ensures that these needs are taken into account.
- Private sector partners can boost public awareness, augment training and contribute discounted broadband services or equipment. Communities should consider how best to encourage their involvement.
- Leveraging public assets, such as libraries, schools, workforce centers and websites, to promote broadband adoption is an effective tool for success.
- Trusted local organizations — community centers, youth centers, faith groups and other grass-roots organizations — are essential to reaching hard-to-serve populations, and communities can benefit by exploring partnerships with these groups.
- Small businesses benefit greatly from using online tools but require targeted assistance to increase broadband adoption.
- Low income citizens need convenient, affordable training and public access programs to spur their adoption of broadband technology.

To learn more about broadband adoption, see NTIA's Broadband Adoption Toolkit: *http://ntia.doc.gov/toolkit*.

CASE STUDY: SHO-ME TECHNOLOGIES, MoBroadband — PRIVATE SECTOR LED (COOP) MODEL

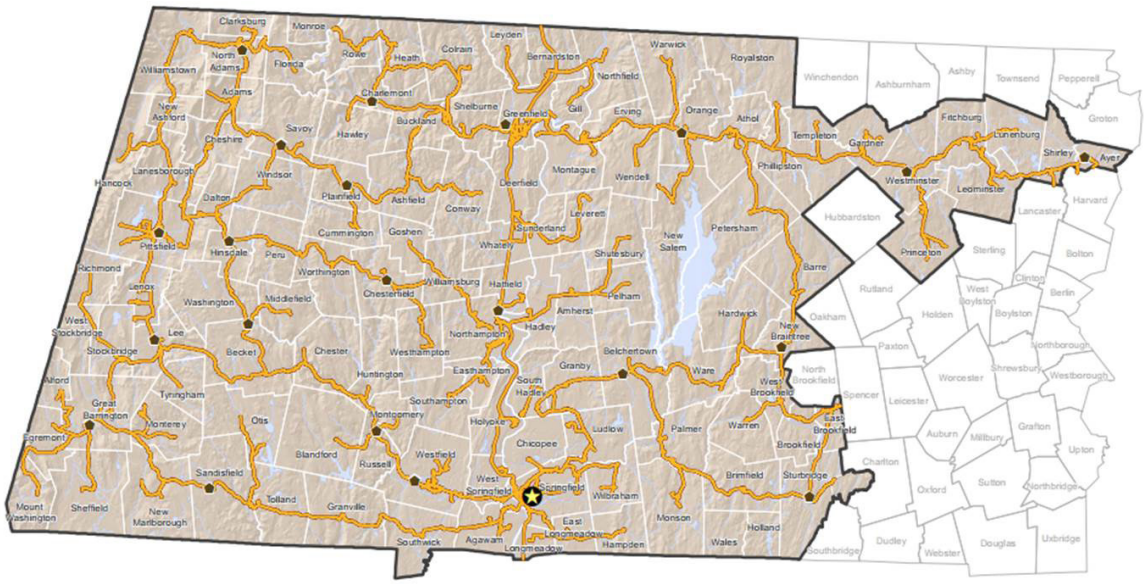
OVERVIEW: Prior to NTIA's Broadband Technology Opportunities Program (BTOP), south-central Missouri relied on copper-based broadband access and needed significantly higher speeds to enable distance learning, telehealth and public safety applications. NTIA provided a $26.6 million grant to Sho-Me Technologies to deploy a 1,494 mile network connecting 101 anchor institutions across 30 counties. The origins of the project date back to 1997, when Sho-Me Power Electric Cooperative, a public entity, created a technology subsidiary, Sho-Me Technologies, to leverage its existing internal advanced optical communications network to offer high quality, high bandwidth connections to both internal and external customers, particularly rural communities. Sho-Me collaborated with the State of Missouri to develop the project's network design and identify the unserved and underserved areas to target its network build. The project forms an integral part of Governor Jay Nixon's MoBroadband Now initiative, launched in 2009. For its BTOP award, Sho-Me Technologies contributed 954 miles of existing fiber, valued at $8.8 million, and $2.6 million in cash.

BUSINESS MODEL: This project reflects a private-sector-led model capitalizing on the expertise and resources of an electric cooperative. Sho-Me Power Electric Cooperative created Sho-Me Technologies as a subsidiary in order to expand and leverage its advanced networks to offer high bandwidth solutions. Sho-Me Technologies expanded broadband and fostered SmartGrid applications in partnership with electric co-ops for more efficient, secure energy use. The company also improved student education by connecting K-12 schools, improved government services limited by budget cuts and strengthened public safety services by connecting regional law enforcement databases. In addition, by offering last-mile broadband providers low interconnection pricing, Sho-Me's middle-mile network enabled them to extend enhanced broadband services to customers at affordable prices.

CASE STUDY: MassBroadband 123 — GOVERNMENT-LED AND PRIVATE-SECTOR SUPPORTED MODEL

OVERVIEW: Massachusetts Technology Park Corporation (MTPC) is a state economic development agency responsible for promoting growth in technology-based sectors in Massachusetts. MTPC recently completed a fiber project that connects 123 towns and over 1,100 community anchor institutions across Western Massachusetts. NTIA provided a grant of $45.4 million, and MTPC contributed $44.2 million.

BUSINESS MODEL: This project reflects a public-private partnership in which the state government owns the network and develops strategic policies but authorizes commercial operators to deliver service. The "open access" architecture allows any Internet service provider to purchase wholesale services and backhaul capacity. To avoid potential conflicts of interest, MTPC does not offer any retail services. Through a competitive procurement process, MTPC contracted with Axia, a private firm, to operate the network and market wholesale services. A profit-sharing arrangement incentivizes Axia to execute as many wholesale agreements as possible. MTPC's profits are used to expand the network to unserved areas. This effort, combined with this revenue-sharing open access model, has attracted over 20 broadband providers to purchase capacity. Customers include an incumbent local exchange provider, community broadband operators and wireless Internet service providers. MTPC chose this partnership model to respect its primary mission as an economic development arm of the Commonwealth of Massachusetts. In this context, its strategy helps incentivize many providers to compete for retail services and allows MTPC to focus on other economic development programs, while still performing critical oversight and governance roles over the project.



MASSBROADBAND123 SERVICE AREA AND NETWORK POINTS OF INTERCONNECTION

CREATING A PUBLIC-PRIVATE PARTNERSHIP

1. Start by Planning

Variations in local government structures, private sector firms, community forces, state laws and local conditions bring a unique set of circumstances to each broadband deployment. As a result, communities should initiate a planning process that encompasses a comprehensive effort from all community stakeholders. Communities should seek input from businesses, residents, government leaders, public safety officials, community institutions and non-profits. A comprehensive community approach helps identify all unserved and underserved areas and leverage all existing resources.

A community should consider pursuing the following activities before it determines the most relevant partnership model:

- Establish a Diverse Project Team Led by Community Champions: A project team that represents a cross-section of key stakeholders is a necessary component of community planning. Case studies from BTOP show that having one or more "community champions" significantly enhances the potential success of the project. These champions often possess three key traits. First, they foster inclusivity, which helps bring many groups and disparate voices together. Second, they are problem solvers and can apply sound business judgment, policy acumen and creativity to help surpass the many obstacles that will likely arise during the planning and deployment phases. Third, they exemplify passion and patience, which are both imperative given the complexity, time and obstacles likely to be encountered in establishing a public-private partnership and launching a broadband network.
- Set Community Goals: Identifying the community's economic and social development goals, and defining the role broadband plays in helping the community attain such goals, is an important next step in the planning process. These goals may pertain to attracting or retaining businesses, expanding private investment, fostering workforce development, improving educational outcomes, promoting access to healthcare or other targeted goals.
- Define Broadband Network Requirements: Accurately defining the scope and specific requirements of the broadband project, such as targeted end-user segments, geographic coverage, required services, minimum speeds and pricing objectives, helps set a community's expectations and provides the framework to guide the project to completion.
- Perform an Inventory of Existing and Planned Assets and Services: An inventory of existing communications infrastructure and available services should include both last-mile and middle-mile services. A community's inventory assessment should include telecommunications assets that can be shared, including conduits, towers, poles and colocation facilities. Communities should also consider including non-telecommunications assets, such as gas and electrical conduits, abandoned sewer or water mains and water towers, in the assessment.

- Identify Gaps Revealed by the Inventory Assessment: The gap between a community's broadband today (existing infrastructure, including capacity, speed and pricing, and level of adoption) and its needs will drive the type, technology, size and scale of the project.
- Perform a Feasibility Study: Commissioning an independent firm to conduct a feasibility study or assessment, which involves a detailed analysis of the technology options and their comparative strengths and limitations (e.g., performance, costs, time to implement, revenue estimates and regulatory issues) ensures that the community receives an objective analysis of the project's advantages and disadvantages.
- Solicit Partnership Interest: Determining the willingness of potential partners to participate in the project is a critical step in the planning process. Potential partners will have varying levels of interest in taking on key project roles, such as investment participation, capacity purchasers, network operations and marketing/sales of services. Some communities issue Requests for Information (RFI) to gauge partnership interest in the project.

2. Build the Business Case and Financial Plan

The business case uses all of the information gathered during the planning phase to develop a financial model for the project. A community should always keep the goals it previously identified, combined with the knowledge of its own assets and limitations, at the forefront of any decision.

In most cases, communities should explore a number of potential funding sources for infrastructure or adoption projects. Some of the funding sources include: state, federal and foundation grants; bonds (revenue or double barrel); low-interest loans; tax deferment or reduction; and tax increment financing districts. Grants and other subsidies (the Federal Communications Commission's Universal Service Fund and state funding programs) have the advantage of not having to be repaid; therefore, they take on increased importance when private investors cannot otherwise achieve a reasonable return on investment. However, a community may have to meet certain eligibility requirements to qualify for grants or other subsidy programs, which may limit their availability as a reliable funding source. Commercial and private debt tends to be a more readily available funding source to communities, but it has the disadvantage of increasing the financial risks as cash flows are then required to pay back principal and interest. However, many lenders — like the Rural Utilities Service and rural-focused banks — have special programs to manage such risks. Examples include longer-term loans, lower interest and reduced restriction on financial thresholds. Communities should weigh the pros and cons of each option before selecting their funding methods.

Deployment Enablers

State or local governments also encourage deployment through:

- Revising ROW requirements by including reforms such as "dig once" policies
- Adding conduit to all street and parking lot projects
- Streamlining permitting and zoning processes
- Reducing or eliminating fees and rents (ROW fees, physical structures, fiber, conduit and manholes) in exchange for services or use of infrastructure (fiber, wireless)
- Compensating a partner's participation by offering capacity on unused fiber (indefeasible right-of-use (IRU) agreements)
- Providing access to a local Geographic Information System (GIS)

Communities should also consider whether to incorporate demand aggregation into their model, in which residential and institutional customers commit to purchasing service in advance of construction. Such commitments provide certainty to potential investors regarding market size and pricing, and leverage the buying power of customers, allowing them to negotiate more advantageous contracts.

Partnership Arrangements

Since a partnership is more than just a financial transaction between two parties, the business case may rely on additional obligations for each partner. Below are common examples:

- In exchange for providing financial, in-kind and policy support, a public entity may require a private partner to offer affordable rates, minimum broadband speeds, quality of service guarantees, help in increasing broadband adoption or open access obligations, through which any provider may purchase wholesale capacity and offer retail services.
- Partners may build and own a fiber network together, each controlling and managing a certain number of fiber strands.
- Partners might share the cost of trenching roadway, but each could install its own fiber.
- One partner may own the network, but commit to sell long-term leases for dark fiber to other investment partners, including public, non-profit, academic and commercial service providers.
- Partners may jointly lease network capacity to multiple broadband providers, which then provide last-mile service to residential and business customers.

3. Determine Responsibilities

The partners' technical experiences in deploying, operating and maintaining networks, as well as management's background in governing a partnership, are critical to a successful project. In addition to strengths in project management and partnership governance, partnerships should assess each partner's ability across three functions: construction, operations and adoption.

Staff Skillsets in a Broadband Partnership

- **Construction**
  - Design and engineering
  - Construction technique (e.g., aerial fiber, buried fiber, overlash or microwave)
  - Knowledge of local topography
  - Project management
- **Operations**
  - Retail sales
  - Wholesale sales
  - Customer support
  - Network Operations Center and monitoring
  - Response and repair
  - Billing
- **Adoption**
  - Training and support capacity
  - Outreach and marketing effectiveness
  - Community knowledge and trust

A community may already have a partner (an existing broadband provider or a municipal electric utility) ready to help; otherwise, it should determine which activities it can take on itself and find partners to take the lead on other functions. Once a community and its partners have assessed both the public and private sector assets and challenges, they can develop a partnership that reflects community need, financial capacity and partner experience.

CASE STUDY: SCOTT COUNTY, MINNESOTA — JOINT PUBLIC/PRIVATE INVESTMENT APPROACH

OVERVIEW: Scott County, Minnesota began assessing its options for building a broadband network after observing a neighboring county reap financial benefits from its municipally owned network. It determined that the annual interest and principal payments on a bond, which could fund a fiber ring, would be lower than the annual charges for using slower, copper-based leased lines. To implement this vision, the County entered into a collaborative partnership with commercial providers and the State of Minnesota. In 2007, Scott County developed its 90-mile ring for $3.3 million and expanded the network to 11 adjacent counties. The network connects all county-owned facilities, including schools, libraries, city halls, police and fire departments and public safety towers. It also interconnects with the state's high capacity backbone and with multiple private providers. Scott County saw significant benefits as a result of this investment: schools tripled their broadband capacity for 35 percent of what they previously paid, and fiber has helped to attract and retain businesses, driving the County's economic development.

BUSINESS MODEL: Scott County provided the upfront deployment costs and owns the fiber network. It partnered with three commercial middle-mile network providers to maintain and manage the network because it lacked the capacity and experience to do so by itself. The commercial providers maintain the network at no charge to Scott County in exchange for including their own fiber strands in the buried conduit — a significant construction-cost saving. Scott County also partnered with the State of Minnesota's Office of Enterprise Technology (OET) to operate the network and provide services to its own facilities and schools. The OET provides these services at no charge in exchange for fiber capacity across connected counties in which the state network serves government and community enterprises. OET found that the cost of operating its total network would be less than its cost for leased lines.

CASE STUDY: MAINE FIBER COMPANY, THREE RING BINDER PROJECT — A PRIVATE-SECTOR LED MODEL

OVERVIEW: Maine Fiber Company (MFC) is a private company that leases dark fiber to other broadband providers. The company was formed in 2010 to oversee the construction, maintenance and leasing of a high-capacity fiber optic network to enhance middle-mile fiber access for carriers seeking to provide quality broadband services to customers throughout Maine, with connections into Canada, New Hampshire and Massachusetts. The State of Maine and the state's legislature collaborated with the project, providing regulatory certainty to MFC by passing a bill that created a specific type of dark fiber public utility. This action allowed MFC to enter the marketplace. NTIA provided a $25.4 million grant, and the company contributed $6.1 million in investor-funded cash to deploy a 1,211 mile network connecting 100 anchor institutions.

BUSINESS MODEL: This private-sector led project is an example of a unique collaboration between a state government and a private company to remove barriers to market entry. In 2010, Maine enacted a new law that established "dark fiber provider" as a new category of public utility. This legislation enabled MFC to offer service, providing fiber for carriers to supply service to their customers. The company's customers include national and international telecommunications carriers, local broadband service providers, wireless providers and business or public sector entities with a high demand for data transmission.

TIPS FOR SUCCESS: LESSONS LEARNED FROM NTIA BROADBAND GRANT RECIPIENTS

NTIA has identified a number of key lessons learned and best practices as a product of managing over 100 broadband infrastructure projects that have built a total of 112,000 broadband network miles. Grantees have applied these practices to meet their community broadband goals, while completing projects on-time and within budget. These practices have also supported the long-term goals of financial viability and scalability of broadband projects and increased competition in broadband availability and affordability.

Partnership Agreements

- Partners must determine reporting standards and performance metrics and codify them in contracts and service level agreements (SLAs) before construction begins.
- If an agreement includes strong contract oversight, partnerships may improve capital efficiency by using a partner or a contractor in the planning, design, engineering and construction phases.
- As the network matures, a community may seek additional control or flexibility and should consider the needs for these options as it designs its contracts.

Staffing

- If a community lacks expertise in a particular area, consider retaining staff with skills to oversee that specific aspect of the partnership.
- Billing, customer service and marketing are critical to success. For this reason, a partnership may find that sales, repair service and customer service representative (CSR) functions are best performed by employees who are locally trained and located.
- A local IT department with experience running its own network may still consider working with an external partner for 24/7 maintenance and network repair — generally a more cost-effective approach due to larger-scale efficiencies of the partner.

Financing

- Communities with their own broadband infrastructure have a powerful asset that they can leverage to spur interest from potential partners. Use of assets may include economizing excess capacity; sharing supporting infrastructure like conduit, ROW and existing transmission infrastructure; providing dark fiber as a form of compensation; and partnering with last-mile providers and new market entrants to deliver services to end users.
- To ensure assets are fairly valued, communities should conduct an independent appraisal of local assets.
- If funding is required for a partnership, the community may want to evaluate whether a single partner has more financing to commit than several smaller partners.

- Local and state governments should review their rules that determine in-kind grant eligibility. NTIA's broadband programs allowed non-traditional assets because they were critical to the success of projects. In some cases, a private firm would have to pay cash for these assets; in other cases, the government's contribution resulted in reduced processing and wait times, thus saving the project money.

Business Models

- Broadband partnerships should assume that the market will respond to their entrance. For example, existing providers may improve their service or introduce more competitive rates.
- Prospective middle-mile and institutional customers often require evidence of capability and performance, so communities need to consider the value of building out networks incrementally to demonstrate success at each level of construction.
- Local CAIs likely already have contracts with a broadband provider, and these preexisting contracts may not expire for several years. This makes it imperative that partnerships entering the wholesale fiber market obtain partners and develop business plans that reflect revenue diversification beyond anchor institutions and other direct customers.
- Communities should consider offering wholesale services to established broadband providers. For example, a new public-private partnership could provide existing carriers with fiber links to wireless towers and commercial buildings or provide diversity and redundancy for their existing fiber routes.

BEST PRACTICES

Engage a Comprehensive Set of Partners:

A broad set of commercial, government and community partners provides advantages in executing ambitious projects and ensuring long-term sustainability. Close collaboration with other local and state government agencies can help streamline permitting and ROW access, especially for middle-mile networks that intersect many jurisdictions. Or, a partnership with a consortium of schools and libraries can aggregate demand for a long-term, bulk purchase contract. An alliance with commercial operators can invite investment support or capacity purchase commitments and support for network maintenance and operations. For example, a middle-mile operator may require capacity to connect wireless towers or interconnect adjacent backbone networks. A local provider may want to serve specific pockets of residential or business customers. Or, a research and education network may fund the connections to universities and other high-revenue anchor clients. A state government may operate its own network to connect government facilities.

Establish Early Measures to Facilitate Coordination:

A large number of partners increases the complexity of coordinating the project, resolving conflicts and governing the operations over the long term. During the planning stage, the community should document each partner's contribution and role in the project. A Memorandum of Understanding (MoU) is a good initial instrument and may be binding or conditional. If non-binding, the community should establish a legal contract before funds are transferred and project construction starts. During network deployment, the community should consider engaging an independent firm to manage the project and provide objective status reports. For every phase, a robust governance model will assist the partners in making critical decisions, resolving conflicts and fostering inclusiveness, transparency and overall accountability.

Future Proof with Extra Capacity:

A network built with extra capacity offers many advantages. First, it "future proofs" the network, given that data demand will very likely continue to grow. Second, in the case of a fiber network, the marginal cost of installing extra fiber is minimal relative to the deployment cost. Third, the extra capacity can serve as a cost-effective way to acquire bandwidth from providers through fiber swaps or trades, for example, rather than having to pay cash or build new infrastructure. Finally, extra capacity becomes a critical asset that the investment partners can leverage to attract new partners or to develop new business models if the original model fails to achieve the targeted objectives.

CONTACT US

A successful public-private partnership for broadband is a valuable tool to increase a community's ability to succeed in the digital economy. If you have additional questions about public-private partnerships or this publication, contact us for more information: *broadbandusa@ntia.doc.gov*.

ABOUT NTIA

The National Telecommunications and Information Administration (NTIA) is the Executive Branch agency principally responsible for advising the President on telecommunications and information policy issues. NTIA's programs and policymaking focus largely on expanding broadband Internet access and adoption in America, expanding the use of spectrum by all users and ensuring that the Internet remains an engine for continued innovation and economic growth.

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BROADBANDUSA
CONNECTING AMERICA'S COMMUNITIES

OICG

Office of Internet Connectivity and Growth

2023 ANNUAL REPORT

PLACE MAP + DESIGN + BUILD

OICG

Office of Internet Connectivity and Growth

2023

Annual Report

Department of Commerce

National Telecommunications and Information Administration

Office of Internet Connectivity and Growth
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https://www.internetforall.gov/

For questions or comments about this Annual Report, please contact **BroadbandUSA@ntia.gov**

Internet for All - Welcome Letter

The Internet is now the essential tool for communication in our modern world. It is essential for access to work, access to education, access to healthcare, and access to public services and justice. And yet today millions of people throughout America remain unconnected.

We have been talking about the digital divide in this country for more than 20 years. Thanks to the Bipartisan Infrastructure Law (BIL), we finally have the resources to do something serious about it.

The BIL provided a nearly $65 billion investment for a simple, but very ambitious, mission: to connect everyone in America to affordable, reliable, high-speed Internet service. At the National Telecommunications and Information Administration (NTIA), we refer to this initiative as “Internet for All,” and we’ve made considerable progress already.

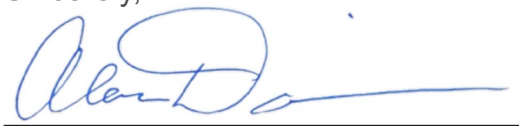
NTIA spent 2022 meeting this historic moment by crafting program rules and policies, engaging with stakeholders, and awarding billions in planning, infrastructure, and adoption and use grants through programs to support states, territories, Tribes, minority-serving higher education institutions, for profit and not-for-profit service providers — including over $1.8 billion awarded to connect Tribal communities that year alone.

In 2023, NTIA supported states and territories as they prepared to receive a historic level of federal funding through the Broadband Equity, Access, and Deployment (BEAD) program and to administer previously funded projects. By working with the states, territories and the District of Columbia, NTIA is laying the foundations necessary to ensure that America can successfully close the digital divide.

Implementing the BIL and Consolidated Appropriations Act, 2021 (CAA) programs over the past two years has been both challenging and rewarding. By effectively targeting our resources, partnering with other federal agencies, employing individualized oversight, and engaging with local stakeholders, NTIA and the Office of Internet Connectivity and Growth (OICG) are building upon years of experience and partnerships to lay the strong foundations needed for states, territories, and Tribal governments to deliver on the promise of Internet for All.

Thanks to the foresight of Congress, our country is making an unprecedented investment in connectivity over the next few years, and we are pleased to provide this report detailing the progress we are making to ensure that everyone in America has the connections and the tools they need to thrive in the modern digital economy.

Sincerely,



Alan Davidson
Assistant Secretary of Commerce for
Communications and Information and Administrator
National Telecommunications and Information
Administration

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REPORT INTRODUCTION

Since the advent of the Internet age, Americans have struggled to overcome the **"digital divide,"** the gap between those with and without access to the Internet.

In 1998, the U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA) identified a "persisting 'digital divide'" finding that despite the significant growth in computer ownership and usage, the "digital divide" between certain groups of Americans had increased between 1994 and 1997.[1] Nearly 30 years later, the Office of Internet Connectivity and Growth (OICG), an office within NTIA, is leading the charge to connect everyone in America to the Internet and close the digital divide.

Access to affordable, reliable, high-speed Internet service is a necessity, and is vital to work, learn, and prosper in the 21st century. As of 2022, approximately one in five, or 24 million, U.S. households do not have a high-speed Internet service connection, preventing them from fully participating in modern life.[2] The Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL), committed $65 billion to bring affordable, reliable, high-speed Internet service to everyone in America.[3] OICG oversees the administration of $48.2 billion of this historic investment, as well as $1.7 billion in broadband programs funded by the Consolidated Appropriations Act, 2021 (CAA). OICG also fulfills its other duties as outlined in the ACCESS BROADBAND Act, including connecting with communities that need access to high-speed Internet, holding regional workshops across the country to promote broadband access and adoption, and developing training and publications to promote strategies to expand broadband access and adoption in a variety of communities, among other legislatively mandated responsibilities.[4]

As digital technology has become a necessity of everyday life, the need to provide high-speed Internet for All is imperative. The digital divide continues to be based on race, age, income, location, and other demographic characteristics. OICG is closing the digital divide by strategically deploying its grant programs and working with states and territories to use those funds to address the many unique obstacles to

providing affordable, reliable, high-speed Internet service for everyone in America. This report will cover OICG's efforts throughout 2023 to connect the country and close the digital divide.

About this Report

The ACCESS BROADBAND Act requires OICG to submit to relevant congressional committees and publish on its website an annual report that contains a description of OICG's work for the previous year and the number of U.S. residents connected to broadband through federal broadband support programs and the Universal Service Fund Program.[5] The OICG Annual Report describes the work of OICG, fulfilling the statutory requirement of the ACCESS BROADBAND Act.

The 2023 OICG Annual Report provides an overview of the work accomplished by OICG across its initiatives over the prior calendar year as it administers the BIL and CAA federal broadband grant programs. This is the third report prepared under the requirements of the ACCESS BROADBAND Act.

The ACCESS BROADBAND Act also mandates that OICG report on "how many residents of the United States were provided broadband by which universal service mechanism or which Federal broadband support program," and include an "estimate of the economic impact of such broadband deployment efforts on local economies, including any effect on small businesses or jobs."[6] NTIA's forthcoming Federal Broadband Funding Report fulfills the remaining ACCESS BROADBAND Act requirements. Detailed data on broadband investments made by the Federal Communications Commission (FCC) and the rest of the Federal government will be available in NTIA's forthcoming Federal Broadband Funding Report. This data will also be available as an interactive dashboard on NTIA's website. The 2022 Report and Dashboard can be found on NTIA's website.

[1] See FALLING THROUGH THE NET II: NEW DATA ON THE DIGITAL DIVIDE, https://www.ntia.gov/report/1998/falling-through-net-ii-new-data-digital-divide, (last accessed Feb. 5, 2024).

[2] See NTIA blog post "Switched Off: Why Are One in Five U.S. Households Not Online?" https://www.ntia.gov/blog/2022/switched-why-are-one-five-us-households-not-online

[3] Infrastructure Investment and Jobs Act, Pub. L. No. 117–58 (Nov. 15, 2021), https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf

[4] Consolidated Appropriations Act, 2021, Pub. L. No. 116-260, Division FF, Title IX, Sec 903(c)(1), (Dec. 27, 2020), https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf

[5] See id.

[6] Id.

AGENCY OVERVIEW

The Office of Internet Connectivity and Growth (OICG), which is housed within the Department of Commerce's National Telecommunications and Information Administration (NTIA), strives to achieve digital equity and ensure universal broadband access. OICG embodies this commitment through four interconnected core pillars: funding broadband infrastructure and digital inclusion efforts; leveraging data to make informed program management decisions; facilitating broad stakeholder coordination to enhance understanding beyond data; and building the capacity of communities to actively shape their connected future.

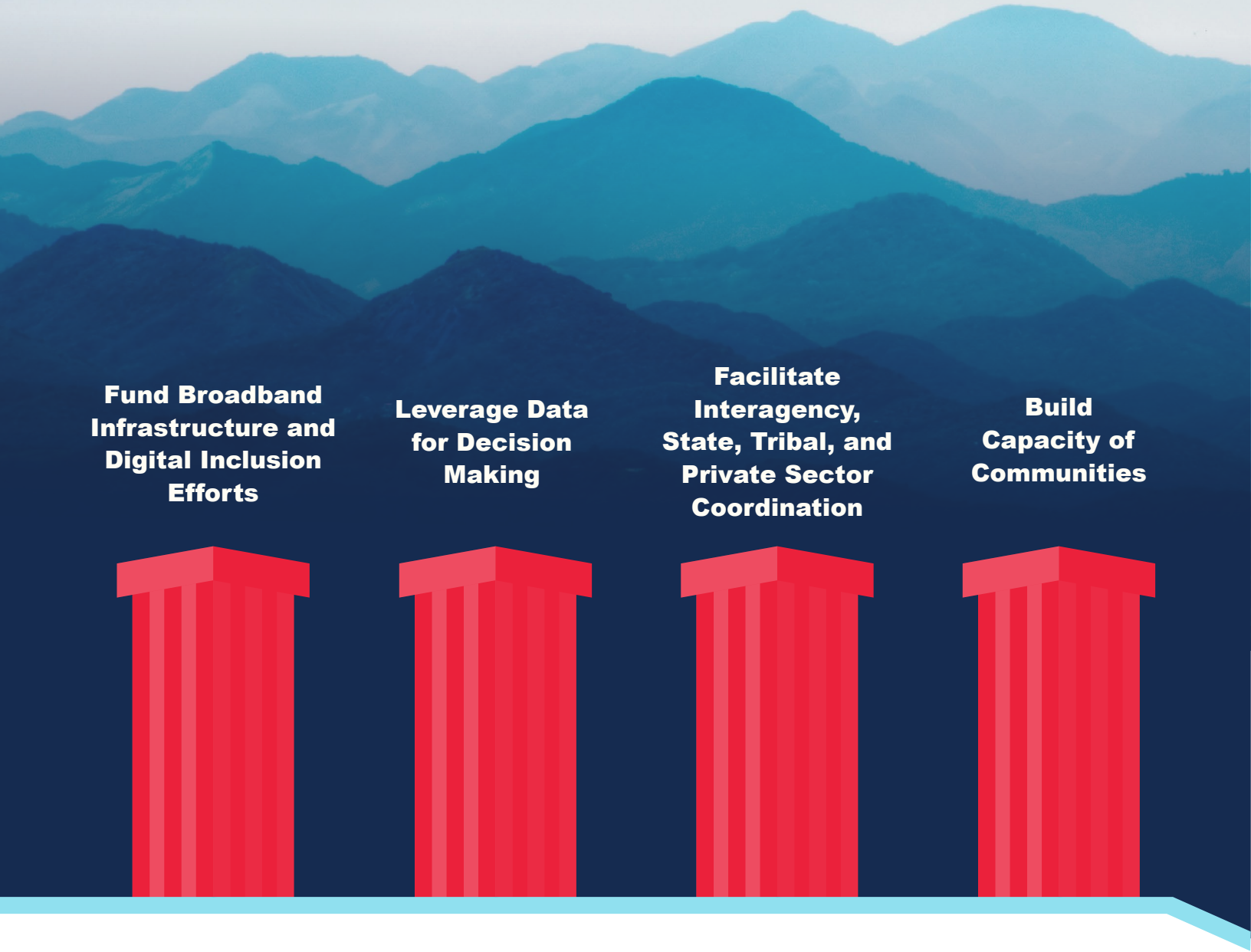
OICG prioritizes data-driven decision-making, employing resources to ensure federal broadband infrastructure grants benefit unserved and underserved areas, as directed by the Bipartisan Infrastructure Law (BIL). OICG furthers the deployment and use of broadband technology, which lays the groundwork for sustainable economic growth, improved education, public safety, health care, and the advancement of other national priorities.

OICG's Vision

OICG envisions an equitable and inclusive future where everyone in America is connected to affordable, reliable, high-speed Internet service; enabling each person to fully participate in the modern, digital society by accessing opportunities and information only available online.

OICG Pillars

Four interconnected core pillars drive OICG's initiatives, strategy, and key accomplishments: 1) Fund Broadband Infrastructure and Digital Inclusion Efforts; 2) Leverage Data for Decision Making; 3) Facilitate Interagency, State, Tribal, and Private Sector Coordination; and 4) Build Capacity of Communities.



Fund Broadband Infrastructure and Digital Inclusion Efforts

OICG funds broadband infrastructure and digital inclusion efforts to empower a variety of stakeholders including states, territories, Tribes, unserved and underserved populations, community anchor institutions, and service providers to invest directly in their communities. These funds support tailored approaches to provide infrastructure and access to affordable, reliable, high-speed Internet service. They also support digital inclusion projects and the tools and resources needed for full participation in our 21st century economy and society. OICG also provides eligible entities and subgrantees with technical assistance that supports their participation in NTIA broadband grant programs and success in awarded grant applications. These technical assistance resources include tools, materials, one-to-one and one-to-many direct support, and public-facing tools and resources.

Leverage Data for Decision Making

Using an inclusive and data-driven method, OICG devotes significant resources to ensure that federal dollars are invested wisely. This approach is especially important to ensure adequate investment in unserved and underserved areas. OICG works directly with federal and state partners to coordinate interagency activities and to obtain and share data for grant awards and pending application areas (as appropriate) in common mapping tools, including the FCC's Broadband Funding Map. These mapping efforts allow federal agencies to identify potential areas of duplication and make informed funding decisions.

Facilitate Interagency, State, Tribal, and Private Sector Coordination

OICG coordinates efforts amongst federal agencies, states, Tribes, and the private sector through information sharing to enhance the availability, adoption, and use of high-speed Internet service. These facilitated interactions can lead to more accurate understandings of where unserved and underserved communities are and how to overcome digital divide barriers in those communities. This coordination is central to a holistic deployment of federal and private resources that address connection deficiencies and close the digital divide.

Build Capacity of Communities

OICG builds the capacity of communities through outreach and communications efforts, including holding regional workshops and local coordination events, publishing tools and guides on effective strategies to expand broadband access and digital equity, and convening stakeholders. OICG continues to provide support to different communities of stakeholders to promote impactful and efficient education and knowledge sharing.

OICG facilitates several cohort groups including the Federal Funding Workstream (FFWS), the State Broadband Leaders Network (SBLN), the Digital Equity Leaders Network (DELN), the Connecting Minority Communities Learning Network (CMC-LN), and the Tribal Broadband Leaders Network (TBLN). OICG also develops technical assistance and informational resources and leads outreach efforts to assist states, territories, and Tribal governments with developing plans to provide affordable, reliable, high-speed Internet service for all.

INTRODUCTION TO FUNDING PROGRAMS

The Consolidated Appropriations Act, 2021 (CAA) and the Bipartisan Infrastructure Law (BIL) authorized eight broadband grant programs, providing investments to bring affordable, reliable, high-speed Internet service to everyone in the country and to promote the adoption and meaningful use of high-speed Internet service.

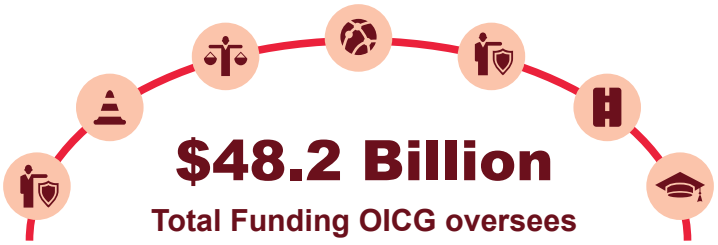
The BIL authorized $65 billion in broadband initiatives of which the Office of Internet Connectivity and Growth (OICG) oversees five, totaling $48.2 billion.

These include...

- **The Broadband Equity, Access, and Deployment (BEAD) Program,**
- **3 Digital Equity Act programs,**
- **The Enabling Middle Mile Broadband Infrastructure (Middle Mile) Program,**
- **And additional funding for the Tribal Broadband Connectivity Program (TBCP).**

In addition, the CAA provided over $1.5 billion in funding for three broadband grant programs managed by OICG:

- **The initial TBCP investment,**
- **The Broadband Infrastructure Program (BIP),**
- **And the Connecting Minority Communities (CMC) Pilot Program.[7]**



[7] *Total appropriated funds may differ from total grant funding due to administrative set asides and budgetary rescissions.*

As of December 2023, OICG has awarded and allocated over $2.5 billion in funding across five programs with an additional $3.6 billion to be awarded through the State Digital Equity Capacity Grant Program, the Digital Equity Competitive Grant Program, and the remaining TBCP funds. In 2023, OICG announced allocations for all 56 states and territories as part of the $42.45 billion in BEAD funding.

All 50 states, five territories, and the District of Columbia received a portion of the $254.5 million in available BEAD Program planning funds to develop individualized Five-Year Action Plans and a portion of the $53.7 million available in Digital Equity Planning Grant Funding to develop digital equity plans.

States and territories are required to develop digital equity plans to access their portion of the $1.44 billion funding available through the State Digital Equity Capacity Grant program. These plans collectively highlight how the state or territory intends to use funding to close the digital divide and address a variety of other challenges such as improving State Broadband Office capacity, asset mapping, outreach, and providing technical assistance to potential subgrantees.

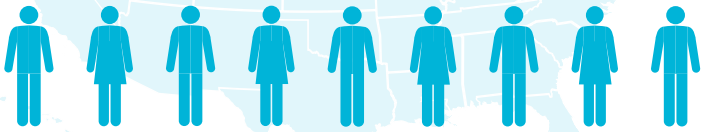
To find the most up-to-date information on the National Telecommunications and Information Administration's (NTIA) programs, award recipients, and progress on state and territories plans please visit the BroadbandUSA website.

Supporting States

In 2023, OICG prioritized its on-the-ground and local approaches to entities receiving federal broadband funding by building on its previous work in 2022 and setting the foundations of the BIL and CAA programs in the states.

Recognizing the benefit of closely partnering with states, territories, and local communities to understand their specific needs,

OICG employs state and territory Federal Program Officers (FPOs), who support the implementation and post award of the BEAD



and Digital Equity programs in all 50 states, Washington, D.C., and the territories.

NTIA also employs other teams of FPOs to assist in the implementation and post-award of its other CAA and BIL grant programs, including specific digital equity, infrastructure, and other programmatic FPOs. In recognition of the unique and separate needs of Tribal governments, OICG employs Tribal-specific FPOs, of which the majority are enrolled Tribal Citizens. These FPOs assist Tribal entities with OICG-specific funding and topics through engagements such as Tribal Consultations and dedicated technical assistance to support Tribes' navigation of these programs.

FPOs across all grant programs serve as liaisons between NTIA, states, territories, Tribes, and awardees. They also work to encourage community engagement and serve as subject matter experts and points of contact between local stakeholders and NTIA. In addition, they monitor grant awards in their jurisdiction, create relationships, and act as a conduit to the federal government for OICG grant programs.

“BIL authorized $65 billion in broadband initiatives…”

NTIA organized and hosted two FPO Broadband Academies in 2023 to provide state and territory FPOs with consistent and universal quality training, which ensured they provide the best assistance to applicants and grant recipients.

The training gave state and territory FPOs the tools and resources needed to continue building relationships with state and local stakeholders and advance the Agency’s effort for an on-the-ground approach to the Internet for All programs. NTIA hosted the February Academy in conjunction with the State Broadband Leaders Network (SBLN) Winter Summit in Washington, D.C. The August Academy took place as a stand-alone event in Washington, D.C. focused on interactive exercises, tabletop training, and preparation for BEAD Initial Proposal and Digital Equity Plan submissions. These events provided an opportunity for state and territory FPOs physically located in the states and territories, as well as NTIA staff and OICG leadership in Washington, D.C., to interact with each other, creating a cohesive team environment and establishing a common understanding of the Agency, program rules, and its approach to its broadband programs.

OICG’s partnership with all 56 states and territories, as well as its other grantees, provides the opportunity for entities receiving federal broadband funding to tailor the foundations of the grant programs they need to bring affordable, reliable, high-speed Internet service to their communities. OICG’s targeted resources and individualized oversight are laying the foundations necessary in achieving Internet for All.

Broadband Grant Programs

Broadband Equity, Access, and Deployment Program

The BEAD Program provides $42.45 billion to expand access to affordable, reliable, high-speed Internet by funding planning, infrastructure deployment and adoption programs in all 50 states, Washington D.C., Puerto Rico, and the additional U.S. territories. It prioritizes funding for connecting unserved locations, specifically those that have no Internet access, lack reliable broadband service, or access to speeds under 25/3 Megabits per second (Mbps), and underserved locations that only have access to speeds between 25/3 and under 100/20 Mbps. In June of 2023, NTIA announced allocations for all 56 states and territories. Program rules required states and territories to submit Initial Proposals describing how they propose to engage with their communities and subgrant funds to address the unserved and underserved locations by December 27, 2023. All 56 Eligible Entities met this deadline, and their proposals will be reviewed for approval through 2024. The program's rules required that each state and territory include plans for a BEAD "state challenge process" in their Initial Proposal. In the challenge process, a unit of local government (including Tribal governments), nonprofit organizations, or Internet Service Providers may challenge whether a location or community anchor institution is eligible for BEAD funding, including whether a location has limited (underserved) or no qualifying Internet service (unserved). On November 1, 2023, NTIA released a programmatic waiver that modifies the requirement of an irrevocable standby Letter of Credit (LOC). This waiver promotes inclusivity by encouraging competition among Internet service providers of all sizes and allows credit unions to issue LOCs, permits the use of performance bonds as an alternative to LOCs, and provides flexibility in reducing the LOC requirement over time to address concerns and promote broader participation in the BEAD program.

Digital Equity Act Programs

The Digital Equity Act of 2021 established three grant programs, totaling $2.75 billion. These programs focus on providing the skills, technology, and capacity needed for all people and communities to reap the benefits of the digital economy.

The State Digital Equity Planning Grant is a $60 million formula grant program for recipients to develop Digital Equity plans. Of the eligible state and territory Digital Equity applicants that submitted applications for Digital Equity planning funds, 56 grants have been awarded totaling approximately $54 million.

The State Digital Equity Capacity Grant Program is a $1.44 billion formula grant program for states, territories, and Native Entities. It will fund an annual grant program for Fiscal Years 2022 through 2026 in support of Digital Equity projects and the implementation of State and Territory Digital Equity Plans. NTIA will allocate funds for states and territories based on the formula provided in the Digital Equity Act. Awardees will use these funds to implement the plans developed through the State Digital Equity Planning Grant Program. Grant awards to Native Entities will be awarded on a competitive basis under criteria outlined in the forthcoming Capacity Notice of Funding Opportunity (NOFO). OICG will release the NOFO for the Digital Equity Capacity Grant in March 2024.

The Digital Equity Competitive Grant Program is a $1.25 billion grant program that will fund annual grant programs in Fiscal Years 2022 through 2026. This program will develop and implement digital inclusion activities and Digital Equity projects. The program will be open to certain entities, such as political subdivisions of states, Native Entities, nonprofits, community anchor institutions, local educational agencies and workforce development organizations. OICG expects to release the NOFO for the Digital Equity Competitive Grants in 2024, after the first State Digital Equity Capacity Grant is awarded.

Enabling Middle Mile Broadband Infrastructure Program

The Middle Mile Program provided nearly $1 billion to expand middle mile Internet infrastructure and reduce the cost of connecting unserved and underserved areas. NTIA received over 235 applications totaling over $5.5 billion in funding requests during the application window. The Middle Mile program is key to increasing the resilience of Internet infrastructure in the United States by promoting the creation of alternate network connection paths designed to prevent single point broadband network failures. All projects use future proof fiber as the primary technology.

In 2023, OICG awarded $980 million to expand middle mile high-speed Internet infrastructure covering more than 370 counties across 40 states and Puerto Rico. These projects will deploy more than 12,500 miles of new fiber that will pass within 1,000 feet of 7,125 community anchor institutions.

Tribal Broadband Connectivity Program

The TBCP is a $3 billion grant program dedicated to Tribal governments to be used for broadband deployment on Tribal lands, as well as for use and adoption activities such as expanding and increasing telehealth, distance learning, broadband affordability, and digital inclusion. The TBCP was created by the CAA as a $1 billion program. In the initial application window, OICG received over 300 applications requesting over $5 billion from the Tribal Broadband Connectivity Program. In recognition of the overwhelming need shown by TBCP applications, the BIL provided $2 billion in additional funding.[8] As of 2023, OICG has awarded more than $1.86 billion to 226 Tribal entities. Construction on these projects is ongoing and expected to connect approximately 140,000 unserved Native households and 1,000 Native community anchor institutions. Use and adoption projects are also ongoing and have distributed more than 4,000 digital devices and pre-paid broadband services for more than 5,000 Tribal homes.

OICG also announced the second TBCP NOFO in July 2023 to distribute the remaining approximately $980 million in funding. In this second NOFO, NTIA will award funding for broadband infrastructure deployment projects on Tribal Lands, targeting projects between $1 million and $50 million and Internet adoption projects between $100,000 to $2.5 million. Over the course of 2023, the TBCP team focused on preparing and supporting eligible Tribal entities for the second round of grant applications. The application window for the second NOFO will close in March 2024. NTIA anticipates announcing awards beginning in 2024. The TBCP FPO's also provided post-award oversight and Technical Assistance to its 226 awardees to support their compliance with federal award conditions, project success and to monitor for waste, fraud and abuse of federal funds.

Broadband Infrastructure Program

The Broadband Infrastructure Program (BIP) is a $300 million program to support infrastructure deployment in areas lacking broadband, especially rural areas. The application window for this program closed August 17, 2021, with more than 275 applications submitted requesting over $2.8 billion in grants. BIP granted 14 awards in 2022, totaling over $282 million.[9] The 14 awards allocated all grant funds appropriated for the program. BIP recipients partnered with 38 different service providers to execute their projects. Construction on these projects is ongoing and expected to connect more than 140,000 unserved households, 6,700 businesses, and 585 community anchor institutions by deploying over 4,500 new miles of fiber across 13 states and one territory. By the end of 2023, BIP infrastructure deployment made service available to more than 33,500 households. The BIP FPOs also provided post-award oversight and Technical Assistance to its awardees to support their compliance with federal award conditions, project success, and to monitor for waste, fraud and abuse of federal funds.

[8] Total appropriated funds may differ from total grant funding due to administrative set asides and budgetary rescissions.
[9] Total appropriated funds may differ from total grant funding due to administrative set asides and budgetary rescissions.

The Office of Minority Broadband Initiatives and the Connecting Minority Communities (CMC) Pilot Program

NTIA established the Office of Minority Broadband Initiatives (OMBI) within OICG, as directed by the CAA. Through OMBI, NTIA directly addresses the lack of broadband access, connectivity, adoption and equity among Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs) and Minority Serving Institutions (MSIs), and in their surrounding anchor communities in the United States. To make this happen, OMBI collaborates with federal agencies that carry out broadband Internet access service support programs; state, local and Tribal governments; and stakeholders in the communications, education, business, and technology fields.

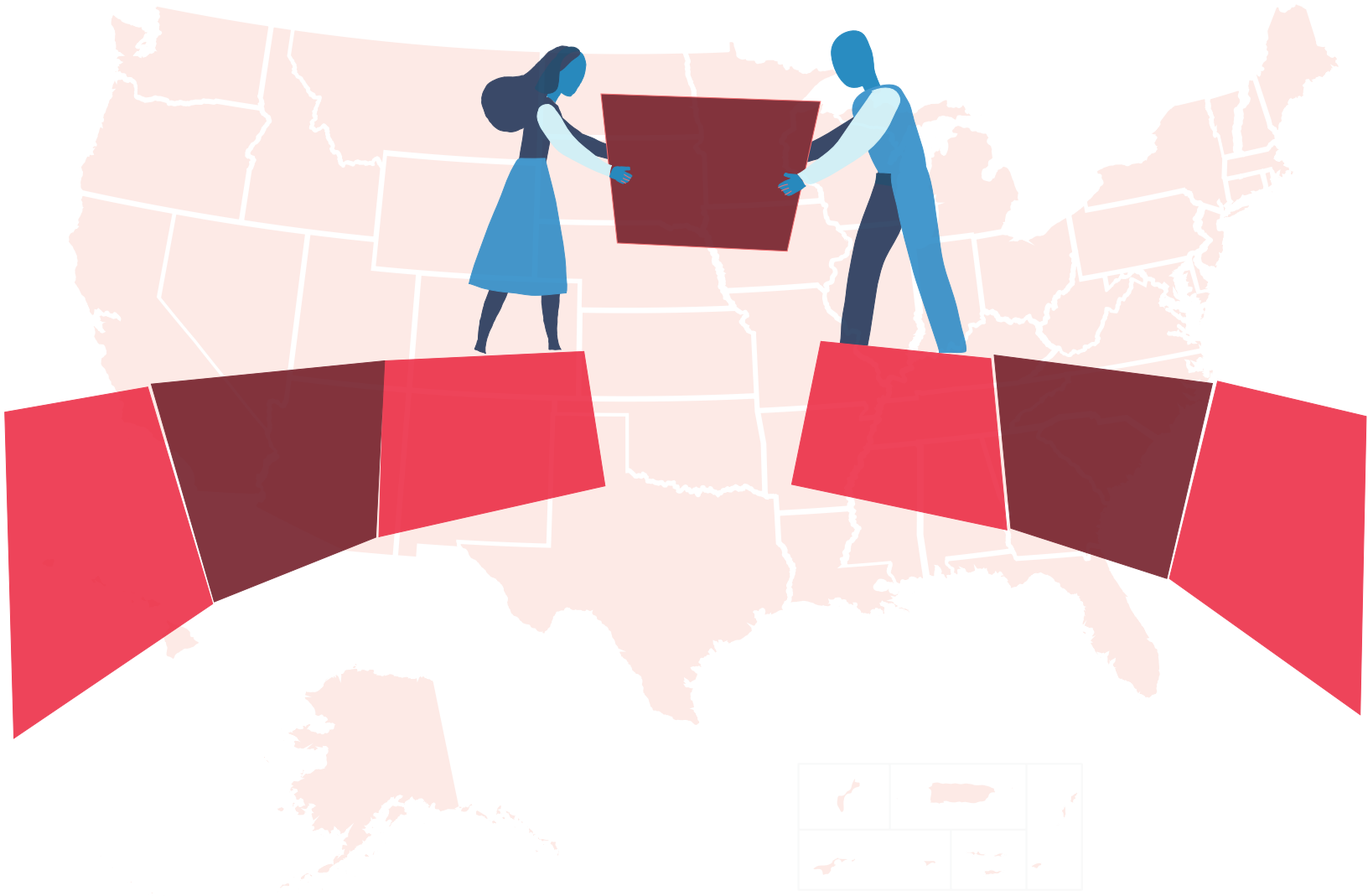
OMBI oversees the administration of the Connecting Minority Communities (CMC) Pilot Program. CMC is a $285 million grant program for HBCUs, HSIs, TCUs, and MSIs to purchase broadband Internet service and eligible equipment, and to hire and train information technology (IT) personnel. During the application window, which closed December 1, 2021, NTIA received more than 200 applications requesting over $833 million in funding for the CMC Pilot Program. In 2023, CMC awarded more than $262 million to 74 colleges and universities in 30 states and four territories.[10] With these grants, NTIA awarded all available funding from the CMC Pilot Program. OICG ensured the final allocation of grant funds satisfied the statutory requirement to distribute at least 40 percent of funds to qualifying HBCUs, with at least 20 percent of funds distributed to applicants that provide high-speed Internet access service and/or eligible equipment to their students. In total, CMC awarded funds to 93 colleges and universities, including 43 HBCUs, 31 HSIs, 21 MSIs, and 5 TCUs.[11] Through CMC funding, over 37,000 computers and 18,000 hotspots were distributed; 35,000 staff received professional training and over 200,000 received digital literacy and/or workforce training.

As a part of the CMC Pilot Program, OMBI launched the CMC Learning Network (CMC-LN), a forum where CMC awardees interact and collaborate on a regular basis to share ideas and discuss best practices as they work through their grant projects, as well as receive Technical Assistance from the CMC FPOs, and OICG's Grants and Compliance Division. In 2023, OMBI held three webinars for the CMC-LN membership, educating attendees on procurement and tangible property management, environmental and historic preservation compliance and the Build America, Buy America Act. Additionally, OMBI facilitated five Meet and Share meetings in 2023, which provided grantees the opportunity to talk about their own projects, ask each other questions and participate in related discussions. The CMC FPOs also provided post-award oversight and Technical Assistance to its more than 90 awardees to support their compliance with federal award conditions, project success and to prevent waste, fraud and abuse of federal funds.

To learn more about OMBI and the CMC program see the forthcoming 2023 OMBI Annual Report which can be found on ntia.gov.

[10] Total appropriated funds may differ from total grant funding due to administrative set asides and budgetary rescissions.

[11] This designation count reflects universities that hold multiple designations (e.g., TCU and MSI). This multiple designation is reflected in the individual designation count listed, the number of CMC recipients is 93.



THE WORK OF OICG:
FOUNDATIONS LAID - PART 1

Introduction

The National Telecommunications and Information Administration (NTIA) established the Office of Internet Connectivity and Growth (OICG) with a dedicated purpose to realize digital equality and universal broadband access. OICG's efforts are supported by tools like the National Broadband Availability Map (NBAM). Furthermore, OICG collaborates with over 25 federal agencies, convening stakeholders across various sectors to inform program priorities and design. Through its work, OICG promotes digital equity and invests in partner communities by providing outreach, communications, Technical Assistance, and resources to expand broadband access. OICG's multifaceted approach contributes to the deployment and utilization of broadband technology, underpinning sustainable economic growth, improved education, public safety, healthcare, and the advancement of national priorities.

Technical Assistance

OICG facilitated

- **Development of solution-neutral guides and resources**
- **Technical guidance**
- **Programs and funding through Notices of Funding Opportunities (NOFOs)**
- **Frequently Asked Questions (FAQs)**
- **Webinars**
- **Mapping and online tools**
- **Model guidance**

This also includes a myriad of other resources through 2023. OICG also facilitated several one-on-one meetings to assist eligible entities through the process of successfully applying for funding and implementing their awards and meeting programmatic goals.

The Technical Assistance Program provides guidance to grantees on how to use their funding efficiently and promote project implementation success, as well as providing federal grants compliance support. Over the last year, OICG consolidated its Technical Assistance resources for grantees and eligible entities into a one-stop-shop in a Technical Assistance Hub on the BroadbandUSA website. This resource hub includes information such as FAQs, NOFOs, and programmatic resources. The BroadbandUSA website is maintained by OICG and provides programmatic information to stakeholders seeking to expand Internet connectivity and promote digital equity and inclusion. OICG also hosts local and regional coordination workshops that offer opportunities to convene broadband stakeholders across the country and share information and best practices.

Webinars

To efficiently distribute information to large groups of interested parties, OICG consistently engaged with a range of stakeholders including states, territories, Tribal governments, community anchor institutions, industry members, and underserved and minority communities and institutions on issues relevant to them. Throughout 2023, OICG designed and hosted a variety of webinars to provide concise information on program-related aspects of broadband infrastructure and policy and programs relevant to the general public. These resources assist states and localities in navigating the NTIA grant programs and inform stakeholders of important steps NTIA is taking to support and implement the vision of Internet for All.

OICG held a total of 30 webinars for stakeholders throughout 2023 with a cumulative total of 8,856 registrants and 4,880 attendees. These OICG-hosted stakeholder webinars were a combination of public meetings, meetings for awarded grantees and those held specifically for groups representing potential grant program applicants. Topics varied widely across OICG's scope of work, including closing the digital skills divide; cybersecurity and supply chain risk management; leveraging digital equity Technical Assistance resources; BIP one-year anniversary celebration; subrecipient monitoring; how local governments can get involved in the Broadband Equity, Access, and Deployment (BEAD) and Digital Equity programs; and how schools and libraries are partnering on digital equity for students.

OICG held

- **30** Webinars for Stakeholders throughout 2023
- **8,856** Cumulative total of registrants
- **4,880** Attendees

Highlights Included:

- The Internet for All Public Webinar Series, Introduction to the BEAD Challenge Process, recorded the highest attendance for a webinar this year. This event provided critical information about the BEAD state challenge process and how local governments, nonprofit organizations, and broadband service providers may participate. This hour-long webinar had a total of 1,316 registrants and 763 live attendees.
- The Tribal Broadband Connectivity Program (TBCP) Round 2 Webinar Series began in August 2023 to educate all potential eligible applicants about the new NOFO and how they can prepare high-quality applications. Across eight webinars, this series covered the following: a general overview of the NOFO, mapping requirements, project narratives and budget narratives. There was a total of 678 registrants and 365 live attendees throughout the series.

NTIA Requests for Comment

On March 2, 2023, NTIA issued a Request for Comment (RFC) that sought broad input and feedback from interested stakeholders on the Digital Equity Act Programs. NTIA specifically solicited comments on the design and implementation of two components of that grant program: the $1.44 billion State Digital Equity Capacity Grant Program and the $1.25 billion Digital Equity Competitive Grant Program.[12] Through the RFC process, NTIA received more than 250 submissions reflecting the voices of more than 400 stakeholders.

To help bolster participation in the Digital Equity Act RFC, the Digital Equity team held four public virtual listening sessions in April 2023.

These virtual listening sessions drew in over...

790 CUMULATIVE REGISTRANTS

420 LIVE ATTENDEES

who provided general feedback on the Digital Equity Act programs, as well as specific comments on the following topics: assessing digital equity plans; ensuring equity in the BEAD program; workforce and subcontracting opportunities; measuring for success and transformative impact; and the State Digital Equity Competitive grant program.

In April 2023, NTIA sought feedback from the public on the BEAD Challenge Process Policy Notice to provide Eligible Entities with additional guidance on how to design and conduct their BEAD challenge process and a Model BEAD Challenge Process. Sixty-one stakeholders filed comments.[13]

On July 5, 2023, NTIA issued an RFC that invited all interested stakeholders to provide input on any exemptions from the Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards (2 CFR Part 200) (Uniform Guidance) that might help facilitate the implementation of the BEAD Program.[14] This allowed stakeholders to voice comments on issues and questions relating to the relationship between the Uniform Guidance and the BEAD Program.

On June 2, 2023, NTIA issued an RFC for the public and other federal agencies to add 65 questions to the November 2023 edition of the U.S. Census Bureau's Current Population Survey (CPS).[15] This collection of questions is known as the NTIA Internet Use Survey and is referred to as the CPS Computer and Internet Use Supplement. NTIA has sponsored 16 such surveys since 1994. Data from the NTIA Internet Use Survey informs policies aimed at achieving digital equity so that the Internet's benefits are accessible to everyone in America.

[12] See 88 Fed. Reg. 13101, March 2, 2023, https://www.federalregister.gov/documents/2023/03/02/2023-04242/digital-equity-act-of-2021-request-for-comments

[13] See National Telecommunications and Information Administration, BEAD Challenge Process, Policy Notice, April 2023, https://broadbandusa.ntia.doc.gov/sites/default/files/2024-02/BEAD_Challenge_Process_Policy_Notice_v1.3.pdf

[14] See 88 Fed. Reg. 42918, July 7, 2023, https://www.federalregister.gov/documents/2023/07/05/2023-14114/tailoring-the-application-of-the-uniform-guidance-to-the-bead-program-request-for-comments

[15] See 88 Fed. Reg. 36282, June 2, 2023, https://www.ntia.gov/sites/default/files/publications/2023-11726.pdf; See November 2023 NTIA Internet Use Survey Draft for Public Comment, can be found here https://www.ntia.gov/sites/default/files/publications/2023-ntia-internet-use-survey-public-comment.pdf

Program Evaluation Framework

In 2023, NTIA developed a program evaluation framework for the BEAD, Digital Equity and Middle Mile Programs. The program evaluation strategy builds on a logic model, conceptual framework, evidence review, and dashboard of economic indicators developed in response to the ACCESS BROADBAND Act and presented in Federal Broadband Funding Reports. This body of work identifies the metrics and methods used in research and practice to evaluate the economic impacts of broadband expansion over the last two decades. OICG also relies on feedback from the March 2023 RFC which presented a specific series of questions focused on program measurement, evaluation and reporting that received over 230 comments. Informed by the ACCESS BROADBAND Act work and feedback from the RFC, OICG is identifying key performance indicators (KPIs) across broadband access, affordability, equity, adoption and sustainability for broadband programs. These KPIs will help assess desired outcomes and impacts over a program's period of performance across categories that include, but are not limited to, digital equity and inclusion, economic and workforce development, education, healthcare, civic and social engagement, and delivery of other essential services.

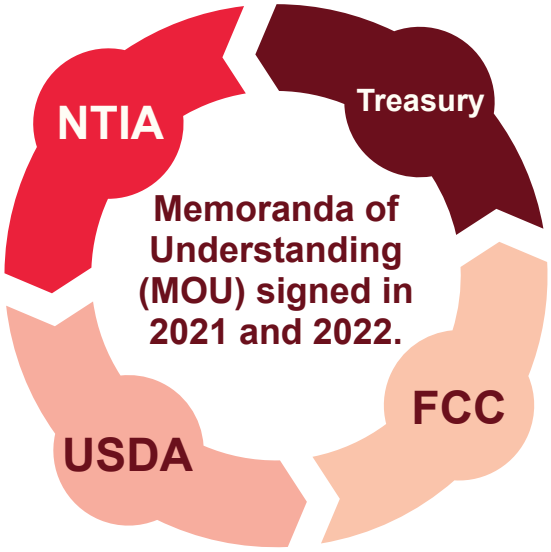
Interagency Coordination

OICG staff led the federal government's interagency coordination efforts to promote a whole-of-government approach to connect everyone to affordable, reliable, high-speed Internet; align on common policies and practices; and fulfill statutory coordination activities.

Maximizing federal support, reducing duplication, and promoting efficient use of funding:

To promote the effective use of federal funds, NTIA, the U.S. Department of Agriculture (USDA), the U.S. Department of the Treasury (Treasury), and the U.S. Federal Communications Commission (FCC) met regularly under the auspices of interagency coordination Memoranda of Understanding (MOU) signed in 2021 and 2022.[16] NTIA led the development of a standard high-level deduplication process across projects funded by the parties to the MOU, and continues its policy of information sharing to assist in the most effective deployment of federal broadband dollars.

NTIA also coordinated with FCC as they developed the Broadband Funding Map to reduce or prevent duplication of federal funding with NTIA's obligations under the ACCESS BROADBAND Act. This interagency coordination also ensured that federal agencies were aware of their obligations to contribute relevant data to the map. This map supports BEAD and other federal funding programs by providing a public facing tool that overlays information about federal funding commitments to deploy broadband services onto the broadband availability data being collected as part of the FCC's Broadband Data Collection.



[16] *See Interagency Agreement Between The Federal Communications Commission, U.S. Department Of Agriculture, And The National Telecommunications And Information Administration Of The U.S. Department Of Commerce, June 25, 2021, https://www.rd.usda.gov/sites/default/files/bicasection904iaafcc_ntia_usdasigned.pdf; MOU between The Federal Communications Commission, U.S. Department Of Agriculture, And The National Telecommunications And Information Administration Of The U.S. Department Of Commerce, and the U.S. Department of the Treasury, May 9, 2022, https://www.ntia.gov/sites/default/files/publications/interagency_broadband_mou.pdf*

Supporting the success of NTIA's grant programs and stakeholders by serving as a liaison with interagency colleagues:

To promote greater coordination across the country with regional and state-level federal counterparts, OICG scheduled "meet and greets" between regional or state-level agencies, NTIA regional staff, and Federal Programs Officers (FPO) to build relationships and support states and territories in developing their BEAD and Digital Equity plans. This included facilitating interagency briefings and inviting federal agencies to participate in stakeholder gatherings, including the local coordination events. OICG also answered questions from federal agencies about NTIA's grant programs and processes to promote awareness and encourage consistency.

Collecting interagency data for Federal Broadband Funding Report and Dashboard:

To promote awareness of federal broadband funding trends and economic impacts, OICG published the annual "2022 Federal Broadband Funding Report and Dashboard," which highlights investments in federal broadband and Universal Service Fund (USF) programs in 2021. OICG began development of the forthcoming 2023 report in coordination with 12 federal agencies covering over 68 programs that funded broadband in 2022. The report summarizes the federal broadband investment landscape, outlines the current state of measuring investments and connection across federal broadband and USF programs, provides recommendations to improve efforts to track broadband spending and outcomes, and provides a framework for analysis of economic impact. The development of the annual Federal broadband Funding Report and Dashboard supports OICG's overall program evaluation work and identifies the metrics and methods used in research and practice to evaluate the economic impacts of broadband expansion over the last two decades.

NTIA also partnered with the Census Bureau to develop the ACCESS BROADBAND Dashboard, which includes a series of maps showing different broadband access and adoption measures as well as local and regional economic outcomes that research suggests could be influenced by expanding access to broadband.

In April 2023, OICG facilitated the annual update of the BroadbandUSA Federal Funding Website. The Federal Funding Website is a "one-stop" site for federal broadband funding opportunities across the federal government. The site includes over 80 programs across 13 agencies. The information collected as part of the annual update informs the development of the Federal Broadband Funding Report.

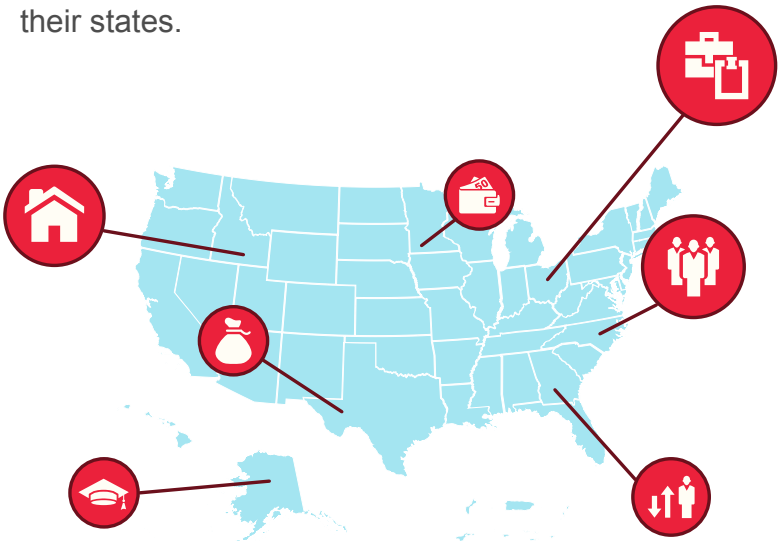
Permitting:

NTIA has significantly increased its capacity to address environmental and other permitting requirements associated with its actions. Over 2023, NTIA reviewed and revised its environmental compliance approach, and proposed new streamlining measures and programmatic tools to increase efficiency and reduce permitting risks to broadband deployment. The Department of Commerce is grateful for the Federal Permitting Improvement Steering Council's (FPISC) support and funding for its permitting and environmental review priorities for its offshore wind, broadband, and semiconductor manufacturing programs.

NTIA received FPISC Environmental Review Improvement Fund (ERIF) funding for hiring and data-sharing efforts supporting broadband permitting. FPISC funds supported the addition of environmental and permitting staff, including National Environmental Policy Act (NEPA) specialists that started in November 2023, permitting coordinators, and geospatial information system (GIS) permitting specialists. NTIA also received ERIF funding to distribute National Broadband Availability Map (NBAM) licenses to federal permitting agencies, Tribes, and states, and developed a suite of GIS permitting tools to support federal agency colleagues in planning for anticipated surges in broadband permit applications. In addition, NTIA has developed permitting and environmental templates within NBAM to help users to identify potential permit requirements and environmental factors for NEPA reviews.

In 2023, NTIA laid the groundwork for a significant permitting win early in 2024. In October 2023, NTIA requested that the Advisory Council on Historic Preservation amend its 2017 Broadband on Federal Lands program comment to enable its application for Internet for All grant projects – and use by all other federal agencies – both on and off Tribal lands. NTIA supported the Council in conducting December consultation meetings and incorporating public comments into a March 2024 amendment that retitled it as the "Federal Communications Projects Program Comment."

NTIA also developed and began implementing an Interagency Broadband Permitting Coordination strategy to promote awareness of anticipated surges in permitting applications and to establish relationships and protocols to handle project-specific issues as they arise. Since September of 2023, NTIA has held interagency broadband permitting meetings in each BEAD region with the federal permitting agency real estate and environmental review staff for each state, to discuss implementing state (or territory) based "broadband permitting roundtables" as BEAD progresses. These meetings have ensured awareness of Internet for All programs and infrastructure types and introduced NTIA's state FPOs to the federal officials permitting projects in their states.



Mapping

Over the past year, NTIA connected data sets across the NBAM, NTIA Internet Use Survey, the American Community Survey, and the Census Bureau to create the ACCESS BROADBAND Dashboard. Released in February 2023, the ACCESS BROADBAND Dashboard shows indicators of broadband availability and adoption alongside economic indicators that research suggests could be impacted by broadband expansion. The map displays statistics on employment, small businesses, wages and income, poverty, home values, population change and migration, educational attainment, and gross domestic product.

Over the past year, NTIA developed and published tools in the NBAM to support its programmatic implementation. As of December 2023, 48 states and five territories used the NBAM platform. The tools within the NBAM include the NTIA Public GIS Data Site, the BEAD broadband availability map, Permitting and Environmental templates, and the Eligible Entity Planning Toolkit.

- The NTIA Public GIS Data Site provides geospatial data published by NTIA including data, web maps, and applications covering grant awards from NTIA.
- The BEAD Broadband Availability Map, hosted within the secure NBAM platform, reflects data from the FCC's National Broadband Map with an overlay of the BEAD definition of reliable broadband. This map enables NTIA to better understand where unserved and underserved broadband serviceable locations are across the country.
- The Permitting and Environmental templates created using public sources allow NBAM users to understand their potential permitting and environmental and historic preservation requirements for broadband projects. The templates are not exhaustive and are meant to be an initial starting place to identify what may be required for a potential project.
- The Eligible Entity Planning Toolkit includes multiple capabilities that directly support Eligible Entities in completing their BEAD Initial Proposal requirements. This toolkit allows users to obtain the total number of unserved and underserved locations based on a select version of the FCC's National Broadband Map, identify potential broadband serviceable locations recently funded by other federal grant programs and explore the cost to deploy broadband to unserved and underserved locations in each Eligible Entities' jurisdiction. The toolkit is hosted within the secure NBAM platform and is only available to Eligible Entities.

Local Coordination and Engagements

Under the requirements for the BEAD and Digital Equity programs, states and territories are required to coordinate with a variety of stakeholder groups and must document their local coordination and outreach activities. NTIA supported 17 state and territory broadband offices in meeting this requirement by co-hosting day-long workshops to convene key stakeholders from the state or territory, local governments, community groups, and industry. These workshops were intended to open lines of communication between the state and territories and local stakeholders as they conducted programmatic planning. The events were also meant to launch a process for ongoing communications, outreach, engagement, and coordination strategies with these stakeholders in the development of these plans.

NTIA outlined the following requirements to jointly co-host these workshops with the state and territory broadband offices:

1. Secure the support of the state's county, municipal and/or township associations.
2. Build an inclusive invite list.
3. Develop a relevant agenda.
4. Create an event that encourages participation.
5. Maintain ongoing communication.

Between August 2022 and July 2023, NTIA co-hosted local coordination events in 16 states and in the U.S. Virgin Islands with 48 different co-hosts. NTIA offered to co-host events with all state broadband offices and were able to host these 17 events due to interest and logistics. Additional states held similar events and while NTIA was not a co-host, NTIA did participate when invited. Altogether, these engagements connected NTIA with thousands of local and regional broadband stakeholders with representation from the following key partner groups: federal, state, and territory government, Tribal corporations/communities, academic institutions, community development groups, nonprofit organizations, telecommunications service provider and equipment industry members, media, and others. These events covered a range of topics and panels including: Workforce Development, Planning for Connectivity, Local Coordination: How to Get Involved, Telehealth, Why Digital Equity Matters, Strategies for Broadband Infrastructure Development, State Broadband Office Overview, Mapping Update, Tribal Coordination and more.

In 2023, NTIA also held over 4,000 stakeholder engagements. An engagement is when NTIA interacts with one or more external stakeholders in one of any number of events, including one-on-one meetings, Tribal consultations, public webinars, speaking at a national conference, and many others. NTIA staff participated in approximately 600 public speaking engagements, where NTIA staff were given an opportunity to educate, inform, and promote awareness of the Internet for All programs and other OICG activities. Staff held over 3,200 group sessions, which are planned, real-time gatherings with individuals from one or more external organizations to offer stakeholders the chance to meet NTIA representatives and ask questions, give feedback, or share experiences related to broadband connectivity and deployment amongst the individuals or groups they represent. Additionally, NTIA held more than 140 listening sessions for NTIA representatives to attend and listen as individuals or organizations expressed their views, challenges, needs, and ideas related to ensuring everyone in their area has access to affordable, reliable, high-speed Internet.

Impact of Local Coordination Events

The infographic below outlines the impact of the 17 local coordination events NTIA co-hosted.

5,045

Stakeholders Engaged

- **39%** Government (Federal, State, & Local)
- **5%** Tribal Corporations/ Communities
- **3%** Community Development Groups
- **12%** Nonprofit Organizations
- **6%** Academic Institutions
- **31%** Industry
- **4%** Other

24

Technical Assistance resources shared

5

Federal partners participating as presenters

- Federal Communications Commission
- U.S. Department of Agriculture
- U.S. Department of the Treasury
- U.S. Department of Housing & Urban Development
- U.S. Department of the Interior

Several of these events are featured in-depth in the State Pages.

Leadership Networks, Federal Partners, and Industry Engagement

State Broadband Leaders Network

The State Broadband Leaders Network (SBLN) is a community of practitioners who work on increasing Internet deployment and access at the state level. OICG coordinates the group and convenes participants to share priorities and best practices, discuss emerging telecommunications policy issues, link states and local jurisdictions to federal agencies and funding sources, and address barriers to collaboration across states and agencies. OICG also worked with the SBLN to deliver technical assistance in support of states and territories participating in the BEAD and Digital Equity programs. This included facilitating interactions with communities, businesses, and organizations at the state and local levels.

In 2023, SBLN hosted two in-person summits and 26 virtual meetings, including bi-monthly virtual meetings and ad hoc special topic sessions. OICG hosted the 2023 Winter SBLN Summit at its headquarters in Washington, D.C., and brought together 141 state and territory broadband staff from 51 states and territories to share priorities, receive technical assistance, and discuss best practices and emerging telecommunications policy issues. OICG held the 2023 Summer SBLN Summit in Indianapolis, Indiana, and brought together 187 state and territory broadband staff from 51 states and territories. This event focused on technical assistance of the Digital Equity and BEAD Programs and the submissions of required documentation, specifically requirements associated with the announcement of BEAD state allocation amounts and next steps with the Initial Proposals as well as the submission of State and Territory Digital Equity Plans. In addition to the summits and virtual meetings, OICG delivered approximately 30 weekly newsletters for SBLN participants. These newsletters, “SBLN Scoop,” were sent via email to SBLN and NTIA staff and include information on programmatic updates, new Technical Assistance resources, details about upcoming events, and external resources and events that might be of interest to the SBLN.

Digital Equity Leaders Network

The Digital Equity Leaders Network (DELN) is a community of practitioners focused on increasing digital equity, digital inclusion, and access at the local, county, state, regional, and community levels. Participants include primarily government staff from local, regional, Tribal, and state digital equity and broadband offices. DELN provides a monthly forum to strengthen policy and program connections among local and state jurisdictions and federal agencies to improve funding coordination, align policies and strengthen collaboration across stakeholders. In 2023, the DELN hosted 15 virtual meetings representing 390 local, regional, state, and Tribal governments.

DELN hosted joint meetings throughout 2023 with SBLN and the Tribal Broadband Leaders Network (TBLN) to encourage cross network engagement and best practice sharing with other cohorts. In addition to the virtual meetings, DELN hosted Deep Dive sessions focused on specific digital equity topics raised by attendees. These topics included digital equity in rural and smaller communities, health equity and digital equity, digital equity in Tribal communities, and a series of DELN sessions focused on covered populations. From these meetings, OICG developed Technical Assistance resources to help digital equity leaders understand issue areas, provided federal, state, local, and national resources, and examples of best practices that can help digital programs as they develop their programs. NTIA staff also created the monthly "DELN Download" newsletter which featured meeting topics, resources, news articles, and events on digital equity. As a result of these efforts, NTIA staff completed 40 "digital equity scans" of local cities and counties and created a digital equity contact directory to help attendees connect with each other.

Tribal Broadband Leaders Network

The Tribal Broadband Leaders Network (TBLN) is a community of Tribal practitioners dedicated to expanding connectivity on Tribal lands. The TBLN allows NTIA to receive ongoing feedback on the TBCP and provide pre- and post-award technical assistance support for NTIA's grant programs, including those not specifically focused on Tribal governments. The TBLN connects Tribal leaders and their staff across the country to address common barriers and present potential solutions and best practices; discuss emerging telecommunications policy issues; and identify engagement strategies with state broadband leaders. OICG also sent out the monthly Tribal Broadband Newsletter to the TBLN which featured meeting topics, notes from the previous meeting, Tribal resources, and upcoming events. The TBLN hosted its first in person Summit in Phoenix, Arizona, in March 2023, with over 200 Tribal Broadband Leaders in attendance. This forum provided a space for Tribal entities to interact with OICG and other Tribal broadband leaders from across the country.

Interagency Engagement

Federal Funding Workstream meetings

NTIA hosted over 20 Federal Funding Workstream (FFWS) meetings in 2023, bringing together over 20 federal agencies with broadband initiatives to share and learn about the work being done to expand high-speed Internet access. NTIA co-chairs the FFWS with the United States Department of Agriculture (USDA). Coordination and collaboration to achieve Internet for All require timely and accurate knowledge and data about federal broadband funding programs to inform decision making. After each meeting, NTIA drafted an email summarizing the updates, which was shared with representatives from over 20 federal agencies, the Office of Management and Budget (OMB), and other Executive Office of the President staff. These interagency updates are also shared with NTIA's FPOs and other NTIA staff, who use the information in their engagements with State Broadband Offices (SBOs).

Interagency Stakeholder Engagement

OICG invited its interagency partners to participate in SBLN Winter and Summer Summits, virtual meetings, and Office Hours for SBOs to learn about updates to federal programs and additional funding sources. Over the course of the year, NTIA FPOs facilitated hundreds of meetings with interagency partners including USDA, the FCC, United States Department of Treasury, Economic Development Administration, and many others to promote local engagement and help states and local communities learn how to blend various sources of federal funding, leverage federal resources regarding cybersecurity, workforce development, telehealth and begin to coordinate with federal agencies involved in permitting.

Industry Engagement

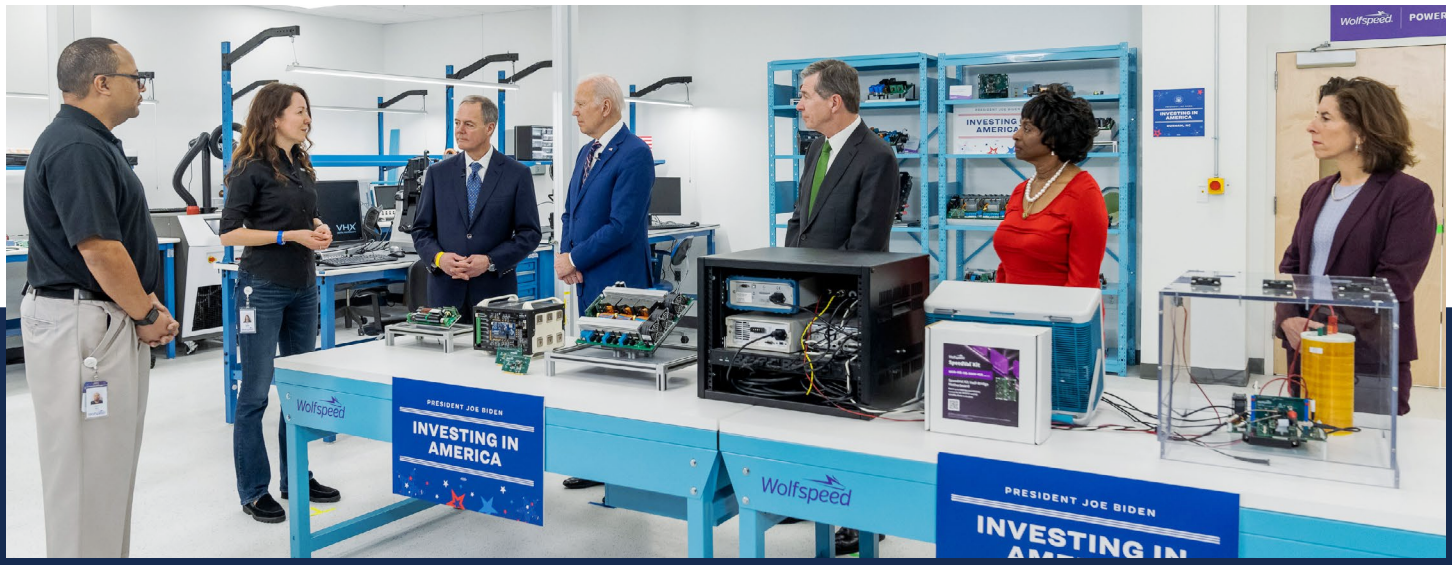
Through 2023, OICG also continued to engage with industry, unions, community organizations, and workforce training providers to create a diverse broadband workforce. This engagement also helps to prepare the domestic supply chain to support infrastructure deployment projects and prepare Internet Service Providers (ISPs) to pursue BEAD network deployment grants to foster a competitive process that will result in the best and most affordable service for all consumers. These efforts can be seen in NTIA's Communications Supply Chain Risk Information Partnership (C-SCRIP) that helps identify potential risks for local providers and suppliers so they can make informed investment decisions, helping to stabilizable the domestic supply chain and prevent future "rip and replace" programs.

To meet the workforce needs of the Internet for All programs, OICG continued to inform states, territories, and industry stakeholders on best practices to develop a skilled, diverse workforce for high-speed Internet deployment projects. OICG conveyed this information through the release of the Workforce Planning Guide that provided strategies to meet BEAD program requirements, examples, and next steps for establishing a diverse broadband workforce. In addition to the Guide, OICG developed workforce-focused technical assistance resources for BEAD Eligible Entities, including state-specific workforce data analysis that supported Eligible Entities as they anticipate potential labor gaps and a childcare resource which provides strategies and best practices to promote childcare access to reduce barriers to employment in telecommunications. OICG convened a panel of industry associations during the 2023 Summer SBLN Summit to address emerging workforce and permitting topics to support BEAD implementation. In early 2023, OICG also launched a monthly industry newsletter to deliver critical Internet for All programmatic updates, new technical assistance materials, and information on upcoming events.

Build America Buy America (BABA) Act

The Build America Buy America (BABA) Act, enacted as part of the Infrastructure Investment and Jobs Act, established a domestic content procurement preference for all federal financial assistance obligated for infrastructure projects after May 14, 2022. The domestic content procurement preference requires that all iron, steel, manufactured products, and construction materials used in covered infrastructure projects are produced in the United States. The U.S. Department of Commerce is working with the OMB Made in America Office to coordinate compliance with these procurement requirements.

NTIA is strictly enforcing BABA requirements outlined in the Bipartisan Infrastructure Law (BIL) and the Internet for All NOFOs. On August 22, 2023, NTIA published a limited and targeted draft BABA waiver for the BEAD Program. This proposed waiver was the result of months of careful analysis of market conditions and sustained outreach to industry and stakeholders. The draft waiver was open to public comments for 30 days and closed on September 21, 2023. NTIA received comments from 66 unique stakeholders including manufacturers, Internet service providers, trade associations, and labor groups. Following several months of additional analysis, research, and engagement, NTIA released the final version of the Buy America waiver for the BEAD Program on February 23, 2024. This limited waiver proposes a firm approach to enforcing BABA requirements while balancing the realities of complex supply chains. This limited waiver has already spurred $100 million in new domestic manufacturing investment and the creation of thousands of new jobs. It's NTIA's expectation that this domestic investment will continue following the release of the final draft of the waiver.



On April 19, 2023, NTIA issued a BABA waiver for the Middle Mile Grant program. In drafting the waiver, NTIA reviewed and addressed the 11 comments received during the public comment period. The waiver is effective for the period of performance of all Middle Mile program grants awarded from March 1, 2023, until March 1, 2024, beginning on the date of issuance for each award.

The investment in broadband infrastructure combined with the BABA requirements has spurred many companies to expand or move manufacturing and jobs to the United States. In 2023, communities across the country are seeing these investments up close; some are listed in the state pages in the following section. A selection of these investments is listed below as well as captured in this map:

- In March, Corning officially opened its newest optical cable manufacturing campus in Hickory, North Carolina, which will help accelerate U.S. buildouts of high-speed fiber broadband networks. This campus will add hundreds of jobs to Corning's existing North Carolina workforce of more than 5,000.
- In June, Prysmian invested $30 million to transition its Jackson, Tennessee, plant from copper cables to fiber-optic cable. Prysmian remained dedicated to its workforce, retaining nearly 90 percent of employees. Prysmian expects to hire an additional 40 workers to meet the projected demand for fiber-optic cable driven by the BEAD Program.
- At an August event in Kenosha, Wisconsin, Nokia announced that it will move production of key fiber-optic broadband electronics to the United States to comply with the Buy America requirements. This investment will result in up to 200 new workers being hired.
- In August at their global HQ in Huntsville, Alabama, Adtran announced it will expand domestic production of key broadband electronics and move additional manufacturing from Asia back to the United States. This is expected to result in the creation of close to 250 new jobs in Huntsville.
- In November, Belden's PPC Broadband Solutions Business announced an investment of nearly $10 million to reshore production of fiber-optic cable to their Syracuse, New York facility. This reshoring will drive close to 200 new jobs in central New York.
- In November, Ciena announced an investment in U.S. electronic manufacturing to support BEAD-funded projects. This investment will drive close to 200 new jobs.

NTIA reviewed and addressed the 11 comments received during the public comment period.


Northeastern University
Northeastern University

BUILDING


INVESTING
AMERICA

COMMUNITY


SAFETY SUMMIT


AXIOS
AT&T
AXIOS
AT&T
AXIOS
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dband
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IMPLEMENTATION:
PARTNERING IN THE FIELD - PART 2

State Pages

Connecting everyone in America, by its very nature, requires the National Telecommunications and Information Administration (NTIA) to support Internet connectivity efforts in every state and territory. The work of the Office of Internet Connectivity and Growth (OICG) takes place across the country, in states, territories, towns, rural communities, and on Tribal lands. The following section highlights some of the tailored support that OICG has provided as a foundation to states and territories over 2023. OICG's goal continues to be assisting states on an individualized level to help them effectively connect their populations to affordable, reliable, high-speed Internet.

While most information included in these state and territory pages focuses on work conducted in 2023, due to overlap and continued impact of funding information from previous years may also be included. The following section provides a selection of highlights from each state and territory and will be updated yearly. These highlights do not represent a comprehensive list of all of the awards and funding in each state or territory supported by NTIA. To learn about all awards and funding and to find the most up-to-date information, please visit the BroadbandUSA and Internet for All websites.

For information on NTIA's Tribal Broadband Connectivity Program (TBCP) and regional highlights related to Tribes and Tribal entities, please see Tribal Regional Summaries.

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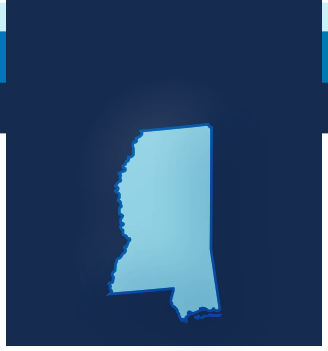


MISSISSIPPI

Public Engagement

Mississippi used the Digital Equity Planning Grant to conduct over 80 community engagement events, including events in the most rural parts of the state. The state tailored each event for its community, which helped Mississippi determine the needs of its constituents beyond maps and numbers. Stakeholder engagement and local event participation included:

Connecting through College:

Stakeholder engagement and local event participation included working with the state's community colleges to conduct in-person workshops and gather information on existing digital skills programs in their respective counties.

Resourcing Nonprofits:

Fostered relationships with nonprofits in the state to guarantee that small communities (which are mostly economically distressed) will have access to the resources they need during the challenge process and to assess the need of their communities.

Working with Mississippi State University:

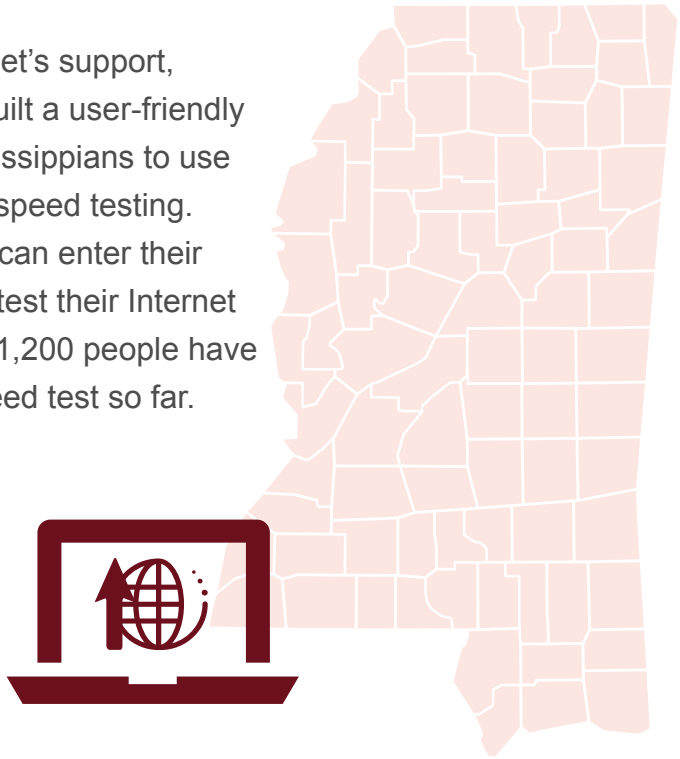
Developed a partnership with Mississippi State University Extension Service to catalog existing digital skills training programs, device loan programs, and other important digital asset programs.

Promoting Federal Partnerships

The State of Mississippi received $151.4 million through the Capital Projects Fund (CPF). The state received over 100 applications during the challenge period. This funding, coupled with Broadband Equity, Access, and Deployment (BEAD) Program funding, will help the state reduce the number of unserved locations and achieve Internet for All Mississippians.

Mapping

With Ready.net's support, Mississippi built a user-friendly map for Mississippians to use and conduct speed testing. Constituents can enter their address and test their Internet speed. Over 1,200 people have taken the speed test so far.



Award Type	Amount Awarded
BEAD Program	$1,203,561,563.05
BEAD Planning Grant	$5,000,000.00
Digital Equity Planning Grant	$875,586.00
Middle Mile Program	$13,688,241.00
BIP Program	$32,696,322.55

State Broadband Office:
The Mississippi State Broadband Office is housed under the Broadband Expansion and Accessibility of Mississippi, which is under the Department of Finance and Administration.

Website:
https://www.beam.ms.gov