INTERNET FOR ALL WISCONSIN

Five-Year Action Plan

Public Service Commission of WISCONSIN

Wisconsin Broadband Office

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Internet For All Wisconsin

1 Executive Summary

The Bipartisan Infrastructure Law (BIL) provides $65 billion to connect all Americans to high-speed broadband internet that is affordable and reliable. Administered by the National Telecommunications and Information Administration (NTIA), the Broadband Equity, Access, and Deployment (BEAD) program will provide funding to the State of Wisconsin to expand high speed internet access by funding planning, infrastructure deployment and adoption programs.

Wisconsin's vision is that all Wisconsinites will have equitable access to affordable broadband service and the capacity to fully engage in a digital society. High-speed internet will benefit all residents and communities. This Five-Year Action Plan details the current state of internet access, adoption and affordability in Wisconsin. The plan identifies the needs and gaps and how Wisconsin can achieve universal service by 2030. Over the course of the past year the Wisconsin Broadband Office has engaged in robust outreach and engagement, data collection and technical assistance to create this comprehensive Five-Year plan that reflects community engagement, local coordination, and alignment with digital equity planning.

The goals of Wisconsin's Five-Year Action Plan are to:

- Achieve the highest possible level of broadband deployment and adoption.
- Deliver sustained, long-term impact on broadband access and digital opportunity for all Wisconsin residents.
- Increase the affordability and reliability of broadband service in Wisconsin.
- Ensure a sufficient and trained broadband workforce for internet service providers, contractors, and subcontractors to construct, operate and maintain current and new broadband infrastructure.

The Wisconsin Broadband Office will pursue implementation activities in five categories to realize Wisconsin's vision and achieve Internet for All Wisconsin:

- Leadership and Vision: Serve as the leader and coordinator of broadband and digital equity programs, data and deployment activities for the State of Wisconsin.
- Partnership and Capacity Building: Foster greater partnership and broadband planning collaboration with variety of stakeholders, state and local governments and Wisconsinites.
- Maps, Data Use and Analyses: Use data, maps and expert analysis to understand and deploy best use of funds and invest the optimal amount of public dollars in access, affordability and adoption to get the best impact and serve the highest need for sustained long term results for Wisconsin.
- Infrastructure Expansion: Deploy funding to eligible entities to construct new and improved broadband facilities for all unserved and underserved locations in Wisconsin.
- Digital Equity and Inclusion: Develop and support intentional activities and investments to grow digital opportunity, including internet affordability and adoption.

2 Vision

Vision: All Wisconsinites will have equitable access to affordable broadband service and the capacity to fully engage in a digital society. High-speed broadband will benefit all residents and communities.

3 Goals and Objectives

Goal	Achieve the highest possible level of broadband deployment and adoption.
Objectives	• Connect all Wisconsin homes and businesses to broadband with speeds of at least 100 Mbps download and 20 Mbps upload service by 2030. • Connect Community Anchor Institutions to one Gig symmetrical service. • Add or improve broadband service for at least 1 million people in the state by 2030. • Design and implement a Broadband, Equity, Access and Deployment (BEAD) program that invests in affordable, reliable broadband infrastructure with community support and that will best achieve the State's goals. • Increase the number of subscribers to broadband. • Prioritize locations in the state with the most need for broadband service.

Goal	Deliver sustained, long-term impact on broadband access and digital opportunity for all Wisconsin residents
Objectives	• Secure Wisconsin's future by encouraging the use of federal dollars on forward thinking and future proof solutions. Fiber should be prioritized. • Where practicable, place a priority on reaching speeds beyond 100 Mbps download and 20 Mbps upload, including reaching speeds of 100/100 Mbps, 1000/1000 Mbps, and more. • Plan, coordinate, and capitalize on the increasing federal funding dollars available, including those through the Bipartisan Infrastructure Law (BIL) such as the BEAD Program and Digital Equity Programs. • Braid federal funds with other funding sources such as local, state, private, philanthropic, and other federal to increase impact and sustainability. • Broadband and digital equity investments have community support.

Goal	Increase the affordability and reliability of broadband service in Wisconsin.
Objectives	• Promote the Affordable Connectivity Program (ACP) and other related resources for broadband affordability and adoption to increase adoption in Wisconsin. • Decrease the number of underconnected households and households without adequate broadband. • Invest resources in promoting adoption and digital literacy, scaling programs and community efforts that are working and initiating new efforts where most needed. • Households with income below 200% of the federal poverty level have access to fixed, home broadband at a cost of less than $30 per month. • Increase outreach and engagement with underserved populations such as aging individuals, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, individuals who are members of racial or ethnic minority groups, and individuals who primarily reside in rural areas to ensure all Wisconsin residents can make full use of the internet and that residents have voice in program design and evaluation. • Internet access is reliable, and networks are resilient and secure. Internet access is consistently available and designed to sustain through disasters and threats.

Goal	Ensure a sufficient and trained broadband workforce for internet service providers, contractors, and subcontractors to construct, operate and maintain current and new broadband infrastructure.
Objectives	• Support and include in the planning organizations such as workforce development boards, economic development, labor groups and unions, contractors, high schools, higher education and technical colleges, and State agencies. • Ensure that these organizations are being connected with internet service providers and telecommunications associations to increase awareness and create a sustainable and viable pipeline of talent. • Support equitable training and workforce development initiatives to create and retain both local and regional telecommunications workforce. • Provide critical pathways for improving geographical, cultural, and economic diversity to the telecommunications workforce

4 Current State of Broadband and Digital Inclusion

4.5 Wisconsin Broadband Office Overview

As part of the Public Service Commission (PSC), the Wisconsin Broadband Office (WBO) leads statewide efforts to expand broadband access, adoption, and affordability. WBO provides support to residents seeking internet access, manages broadband grant programs, compiles broadband service maps, and builds capacity through planning and outreach. To achieve the state's collective broadband connectivity goals, the WBO partners with a wide range of broadband stakeholders such as internet service providers, local communities, other state and federal agencies, economic development professionals, and more.

Broadband is an essential service. Broadband access, coupled with digital inclusion activities, are critical for economic and educational opportunities, and access to essential services.

4.5.1 Leadership and Vision

As the statewide coordinating entity for broadband and digital inclusion efforts, the WBO convenes broadband leaders, develops and implements Wisconsin's strategic vision for broadband deployment, and serves as a resource for communities and the public interested in broadband policy.

Governor's Task Force on Broadband Access

Description: WBO staff administer the Governor's Task Force on Broadband Access, created by Governor Evers in July 2020 via Executive Order #80, which advises the Governor and Wisconsin State Legislature on broadband actions and policy, including strategies for successfully expanding high speed internet access to every residence, business, and institution in the state; initiatives for digital inclusion; and pathways to unlocking and optimizing the benefits of statewide, affordable access to broadband for all communities in Wisconsin.

Outcome: The Task Force meets monthly, and its members are key stakeholders in broadband deployment efforts statewide. The Task Force prepares an annual report that reflects the Task Force members' priorities, highlighted challenges, and policy recommendations as it relates to broadband access and digital equity in Wisconsin. The 2023 report is available here. Task Force input and recommendations are key for BEAD and Digital Equity planning and implementation.

Wisconsin Broadband Stakeholders Group

Description: WBO staff convenes the Wisconsin Broadband Stakeholders Group quarterly to keep Wisconsin broadband stakeholders informed on current issues in broadband deployment and ensure alignment in WBO efforts. The Group consists of internet service providers, state agencies, economic development professionals, community advocates, state legislators, the University of Wisconsin – Madison, Division of Extension (UW Extension), and more.

Outcome: Regular engagement with key stakeholders to ensure broadband goals are aligned and accountable, and that broadband deployment efforts are smoothly implemented.

Internet for All Wisconsin Listening Tour

Description: In the spring of 2023, the WBO held a series of nine in-person and two virtual interactive meetings in different regions across the state to help develop the BEAD Five-year Action Plan and State Digital Equity Plan.

Outcome: Over 300 stakeholders attended these events, which created an opportunity for the public to share their experiences, ideas, and vision for a more connected Wisconsin. Feedback is included as part of the BEAD Five-year Action Plan and State Digital Equity Plan.

PSC Internet and Phone Helpline

Description: The PSC staffs the Internet and Phone Helpline to assist members of the public in getting online and to answer questions related to internet and phone services.

Outcome: The public has a clear point of contact to the Commission on issues related to accessing internet or phone service. As part of the Helpline, Commission staff regularly handles requests for information and addresses customer complaints.

4.5.2 Data and Maps

The WBO maintains a robust staff of geographic information systems (GIS) experts that collect, analyze, and publish broadband and digital equity data into online maps, public-facing dashboards, and other reports. Collection and analysis of geospatial data forms the foundation of broadband deployment and digital equity efforts. A brief description of broadband data and mapping tools is provided below.

Wisconsin Broadband Map

Description: The Wisconsin Broadband Map displays statewide internet access as declared by internet service providers through data collections by the PSC and the Federal Communications Commission (FCC). Members of the public can search their address and learn about possible broadband service providers in their area.

Outcome: This map is a public-facing tool demonstrating availability of broadband service and serves as an indicator on deployment progress.

Wisconsin Internet Self-Report (WISER)

Description: WISER is an internet survey and speed test that is used to advise Wisconsin's broadband planning efforts. The survey collects location and demographic information and asks questions about quality and affordability of service they experience at their home or business.

Outcome: Data collected from WISER informs Wisconsin broadband and digital equity planning and grantmaking by helping identify areas of need and understand affordability and adoption gaps. WISER data is also shared publicly and with communities to aid in local planning efforts.

Wisconsin Broadband Planning Map

Description: The Wisconsin Broadband Planning Map provides detailed views of broadband data in an interactive online format, for use by the public, communities, internet service providers, and other broadband stakeholders seeking to identify service gaps and plan deployment projects. The map layers include data on broadband coverage from the National Broadband Map, Wisconsin Broadband Expansion Grant award data, federal broadband funding award areas, and WISER and other speed test data.

Outcome: Members of the public and other broadband stakeholders have an easy to access interface to view and understand broadband data for their planning needs.

Wisconsin Broadband Grant Footprint

Description: This mapping tool provides an interactive online map view of Commission awarded broadband grants. Users can search for grants in their area of interest by performing an address search and navigating the map.

Outcome: The Grant Footprint allows for a transparent portal where members of the public can see where funding is awarded and if projects have been completed. The Grant Footprint also informs grantmaking and planning efforts.

Broadband Intelligence

Description: Broadband Intelligence is a comprehensive analysis on broadband access, affordability and adoption across the state at a granular geospatial level. It includes deliverables such as an accurate broadband serviceable location fabric map; an analysis of the affordability gap for end users throughout the state; a broadband construction cost or commercial viability index by location and technology and a tool to identify where fiber is likely to be impracticable or cost prohibitive.

Outcome: Broadband Intelligence is for the state to target best use of funds, maximize federal and private funding and invest the right amount of public dollars in access, affordability and adoption to get the best impact and serve highest need for sustained long term results for residents.

4.5.3 Strategic Investment in Infrastructure

The Wisconsin Broadband Office has been recognized by NTIA for its long history and experience in broadband grantmaking. Since 2014, the Commission has disbursed $319 million in grants for 458 projects to deploy broadband infrastructure, supporting new or improved service to over 450,000 homes and businesses in Wisconsin, and this work has accelerated dramatically since 2019. A brief description of each program is provided below.

State Broadband Expansion Grant Program

Authorized under Wis. Stat. § 196.504, the Commission began awarding state-funded broadband expansion grants 2014. Grants support the construction of broadband infrastructure in unserved and underserved areas of Wisconsin. Through the FY2023 grant round, the Commission has awarded 363 grants for approximately $214 million.

ARPA Broadband Access Grant Program

The ARPA-funded Broadband Access Grant Program used funding allocated to Wisconsin through the American Rescue Plan Act (ARPA) of 2021's State and Local Fiscal Recovery Funds allocated to the Commission by Governor Evers. The program awarded grants to build fiber to the premises service in underserved areas of the state. In 2021, the Commission awarded grants to 83 projects totaling approximately $100 million.

CARES Broadband Access Grant Program

The CARES Broadband Access Grant Program used funding allocated to Wisconsin through the Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020's Coronavirus Relief Funds. Funding was awarded to build fiber or fixed wireless service in underserved areas of the state. In 2020, the Commission awarded 12 grants totaling approximately $5.4 million .

Capital Projects Fund Broadband Infrastructure Program

The Capital Projects Fund Broadband Infrastructure Program is funded under the American Rescue Plan Act's Capital Projects Fund Program. CPF Broadband Infrastructure Grants will be awarded to support construction of infrastructure in areas of the state lacking access to 100/20 wireline connections. Grants will prioritize affordability and investment in communities disproportionally affected by the COVID-19 pandemic. Funding of $42,000,000 will be awarded through a competitive grant round anticipated to conclude in Spring, 2024.

Table 1: Other Federal Investments in Broadband

Program (Entity)	WI Funding Amount	Details
Enabling Middle Mile Broadband Infrastructure Program (NTIA)	$3,861,515	One award to a power cooperative that will build middle mile infrastructure in Wisconsin and two neighboring states.
ReConnect Grant Program (USDA)	$3,095,922	One award (2020) that will connect an estimated 184 households.
Tribal Broadband Connectivity Program (NTIA)	$36,527,118	NTIA-administered competitive grants that have been awarded to 9 of 11 federally recognized Tribes in WI.
Emergency Connectivity Fund (FCC)	$92,737,520	Funding to school districts, schools, and libraries for the reasonable costs of laptop and tablet computer, hotspots and broadband internet connections.
Rural Development Opportunity Fund (FCC)	$178,700,000	Funding distributed by the FCC's Universal Service Fund program to support the expansion of rural broadband access. The amount includes the current remaining authorized RDOF recipients in WI, all will build gigabit service in their committed project areas.
Alternative Connect America Cost Model (FCC)	*TBD*	Administered by the Universal Service Administrative Company under the FCC, provides funding to rate-of-return carriers that voluntarily elected to transition to a new cost model for calculating high-cost support in exchange for meeting defined broadband build-out obligations.
Affordable Connectivity Program (FCC)	$141,069,641	As of August 2023, approximately 387,312 households have enrolled.
ReConnect Loan Program (USDA)	$28,000,000	One loan (2023) that will finance projects to provide internet to 10,000 people.

4.5.4 Digital Equity and Inclusion Framework

The Commission recognizes there are significant barriers to meaningful participation in a digital society beyond physical infrastructure access. To address these barriers, the Commission promotes digital equity through convenings, best practice sharing, public-facing tools, and outreach and planning efforts.

Wisconsin Digital Equity and Inclusion Stakeholder Group

Description: The Digital Equity and Inclusion Stakeholder Group is an open convening of community connectors, state and local leaders, schools, libraries, non-profits, broadband providers, digital inclusion practitioners and other interested individuals. The group meets monthly, and most meetings are virtual. The group collaborates to share best practices, coordinate digital inclusion activities, and conduct planning efforts.

Outcomes: Through regular convenings, the group grows and strengthens the digital inclusion ecosystem in Wisconsin and facilitates the development of the State Digital Equity Plan.

Digital Equity Outreach Team

Description: Staff from the PSC and UW Extension meet weekly to coordinate digital equity outreach efforts, particularly aligning outreach efforts across covered population groups and coordinating to aggregate and analyze qualitative data. The Outreach Team serves as the primary coordinator of development of the State Digital equity Plan.

Outcomes: During 2023, the Outreach Team has conducted outreach to all of Wisconsin's covered populations identified in the Digital Equity Act, developed a digital equity asset map, promoted the Affordable Connectivity Program, collected and analyzed qualitative and quantitative digital equity data, and wrote the State Digital Equity Plan.

Digital Equity Outreach Grant Program

Description: As a subgrant of Wisconsin's Digital Equity planning funds, the Commission offered $335,000 in funding through a competitive grant to seven non-profit and digital equity-oriented organizations to conduct outreach and engagement activities to inform the State Digital Equity Plan and BEAD Five-Year Action Plan.

Outcome: The deliverables from grant recipients will include insights into digital equity needs and opportunities among Wisconsin's covered populations through comprehensive and diverse outreach efforts. Data and outreach results will be incorporated into the State Digital Equity Plan and BEAD Five-Year Action Plan and Initial Proposal.

Internet Discount Finder

Description: The Commission and the Wisconsin Department of Public Instruction (DPI) created the Internet Discount Finder website to help Wisconsin households find and access affordable internet. The new tool can assist in finding free and discounted internet service available to eligible Wisconsin residents.

Outcome: The Internet Discount Finder quickly matches eligible Wisconsin residents to low-cost home internet service and discount programs by entering their address and identifying

their eligibility criteria. The tool will show available plans and describe next steps for enrollment in ACP.

4.5.5 Partnership and Capacity Building

The WBO maintains a host of resources to support local units of government, providers, and other broadband stakeholders in the pursuit of internet for all. Resources include regular webinars, attendance and presentations at local and regional events, toolkits, and other planning resources.

BEAD Technical Assistance Team

Description: The BEAD Technical Assistance Team serves as the primary implementor of statewide technical assistance efforts to regions and local units of government related to broadband deployment under the BEAD Program. The Team consists of individuals from the PSC, UW Extension, and Wisconsin Economic Development Corporation's Office of Rural Prosperity. The BEAD Technical Assistance Team meets several times per month to plan and provide technical assistance to communities, regional economic development organizations, and other local partners as it relates to implementation of BEAD and DE.

Outcomes: Throughout 2022 and 2023, the Team has developed and distributed a comprehensive survey related to broadband planning and digital equity to all counties and Tribes in Wisconsin, hosted regular public webinars and events to educate the public and stakeholders about BEAD funding and implementation, helped develop, deploy, and implement BEAD Local Planning Grant efforts, developed and provided planning materials including community engagement guides and broadband planning toolkits, and hosted workshops for local leaders to learn about planning and deployment of broadband infrastructure. Further, the Technical Assistance Team serves as a direct resource for one-on-one consultation with local partners in planning and deployment efforts.

Broadband Forward! and Telecommuter Forward! Programs

Description: Created by 2015 Wisconsin Act 278, Broadband Forward! is a voluntary program for local units of government (city, village, town, or county) to signal that the political subdivision has taken steps to reduce obstacles to broadband infrastructure investment. Telecommuter Forward! was created by 2017 Wisconsin Act 342 and is a voluntary program for local units of government (city, village, town, or county) to signal that the political subdivision supports and commits to promote the availability of telecommuting options.

Outcome: These programs provide local units of government the opportunity to streamline administrative procedures by appointing a single point of contact for all matters relating to a broadband deployment and telecommuting opportunities. Certification in each program allows communities to demonstrate willingness to support broadband deployment and telecommuting jobs. As of July 25, 2023, 83 units of government are Broadband Forward! certified and 74 units of government are Telecommuter Forward! certified in Wisconsin.

BEAD Local Planning Grant Program

Description: As a subgrant of Wisconsin's $5 million in BEAD planning funds, $1.5 million in funding was awarded to counties, federally recognized Tribes, and Regional Economic Development Organizations to generate locally informed analysis of broadband needs and develop each community's vision for broadband development to feed into the PSC's statewide

broadband planning. Planning subgrantees work collaboratively within communities and with internet service provider partners to develop goals and a vision for broadband deployment, identify gaps and barriers, and plan project areas for BEAD deployment.

Outcome: Local Planning Grantees will have the capacity, vision, and expertise to support deployment of BEAD implementation funding. Communities will have a vision, completed a needs assessment, collected data and conducted outreach to ensure a robust, accountable, inclusive and locally informed deployment of BEAD funding. Surveys, data collection, interviews, needs assessments, and other project deliverables will inform the BEAD Five-Year Action Plan, State Digital Equity Plan, and BEAD Initial Proposal.

BEAD Workforce Planning Grant Program

Description: As a subgrant of Wisconsin's $5 million in BEAD planning funds, $100,000 in funding was awarded through a competitive grant to two non-profit, workforce-oriented organizations to plan workforce development strategies, convene workforce stakeholders, and assess Wisconsin's workforce readiness related to the coming federal broadband infrastructure funds.

Outcome: Grant recipient activities will support planning of workforce development strategies, mapping Wisconsin broadband workforce assets, diverse stakeholder engagement in the workforce ecosystem, and studying of policy and funding models to develop recommendations for workforce readiness in anticipation for BEAD implementation. Workforce planning grantees inform development of the Five-Year Action Plan and Initial Proposal to ensure all Wisconsinites have a pathway to career opportunities in broadband.

4.5.6 Broadband Office Staff

Table 2: Broadband Office Staff

Current / Planned	FTE % to BEAD	Position	Description of Role
Current	50%	State Broadband and Digital Equity Director	Leads all broadband and digital equity staff and programs.
Current	50%	Broadband Office Manager	Oversees broadband access programs and team of GIS, policy, and grant administration staff.
Current	10%	Federal Grants Program Manager	Oversees post-award functions for federal grants and team of federal grants management staff, including reimbursement, compliance, and monitoring.
Current	10%	Universal Service and Digital Opportunity Manager	Oversees universal service programs and assists with Digital Equity outreach efforts.
Current	25%	Broadband Intelligence Product Owner	Project manager for contracted consultants. Daily duties include expertise in GIS and data analysis.

Current / Planned	FTE % to BEAD	Position	Description of Role
Current /Planned	200%	Grant Specialists	Conduct day-to-day operations of grant program, including reimbursement of eligible awarded project costs, contract management, technical assistance, and reporting.
Current / Planned	300%	Grant Specialists Advanced	Conduct day-to-day operations of grant program, including reimbursement of eligible project costs, contract management, compliance, monitoring, technical assistance, database management, and reporting.
Current	10%	Outreach Specialist	Conducts outreach and stakeholder engagement with broadband stakeholders, including public education efforts, surveys, and events.
Current /Planned	250%	Program and Policy Analysts Advanced	Conducts program planning, policy analysis, outreach and stakeholder engagement, and grant award processes.
Current	50%	Program and Policy Analyst	Conducts program planning, policy analysis, and outreach functions.
Current	10%	Financial Specialist	Conducts budget management and accounting functions.
Current	75%	GIS Analyst	Conducts geospatial data analysis for broadband and digital equity purposes, including collecting, analyzing, and publishing.
Current	25%	GIS Lead Analyst	Conducts geospatial data analysis for broadband and digital equity purposes, including collecting, analyzing, and publishing. As Lead, also trains other GIS staff and coordinates agencywide GIS functions.
Planned	75%	Program and Policy Chief	Oversees a team dedicated to post-award functions of grant process, such as compliance, audit, reimbursement, contract management, and reporting.
Planned	100%	Financial Specialist Senior	Conducts budget management and accounting functions, including federal reporting and program planning.
Planned	100%	Environmental Assessment and Review Specialist - Advanced	Conducts environmental review efforts associated with NEPA.

Table 3: Other supporting staff from the Public Service Commission of Wisconsin

Current / Planned	FTE % to BEAD	Position	Description of Role
Current	3%	Deputy Administrator	Oversees work of Broadband and Digital Equity Director.
Current	5%	Fiscal Director	Oversees work of financial specialists, and all agency functions related to budget management, accounting, and planning.
Current	100%	Grant System Product Owner	Coordinates development of public-facing grant application system.
Current	10%	Attorney	Conducts legal analysis and provides legal advice.
Planned	50%	IS Data Services	Conducts development of applications related administration of funding and monitoring.

4.5.7 Current and Planned Contractor Support

Broadband Access and Affordability Consultant: Boston Consulting Group

Boston Consulting Group (BCG) has performed research, data collection and analysis related to broadband access and affordability in Wisconsin. BCG's deliverables inform Wisconsin's Five-Year Plan, Initial Proposal, challenge process, State Digital Equity Plan, and provide rich data and mapping resources for ongoing broadband planning and deployment. Key data collected includes cost analysis of broadband infrastructure, actual speeds experienced by residents, detailed understanding of cost burden and affordability gaps in Wisconsin, and refinement of location-level reporting of actual broadband service availability.

BCG's contract runs from 2023 through 2025, with the option for three one-year renewals. Key deliverables have been made available beginning in Summer 2023 and refreshed annually with additional data throughout the contract period.

Dashboards and Strategy Consultant: Michael Baker International

Michael Baker International (MBI) will develop public-facing broadband data dashboards showing gaps and progress towards Internet for All. Dashboards will include data about broadband access, affordability, and adoption as informed by BCG collection and analysis. Contracted support also includes additional strategy and expert consulting as needed.

MBI's contract runs from 2023 through 2028, with the initial Data Dashboards anticipated in early 2024.

Planned: Engineering inspection and certification contractor

WBO plans to seek contractor support to meet the following BEAD requirements: (1) certification that each prospective subgrantee is technically qualified to complete and operate their proposed project and (2) ensuring that prospective subgrantees network designs, diagram, costs and implementation timelines are correctly certified by a professional engineer.

4.5.8 Broadband Office Funding Sources

State Operations Funding

General administrative expenses are supported by general state operations funding of the PSC, appropriated under Wis. Stat. § 20.155(1)(g). This includes costs related to information technology, rent, payroll, fringe benefits, procurement, and other agency administrative functions. This excludes administrative and staff expenses directly attributable to a federal grant. Staff salary, fringe benefit, and supplies costs for state-funded positions are approximately $650,000 each year through June 30, 2025. State operations funding is provided as part of the biennial state budget and subject to future legislative action.

State Grants Funding

Funding for State Broadband Expansion Grants has been derived from various sources over time, including universal service fees, state general obligation bonds, and unspent information technology appropriations. From 2013-14 to 2022-23, State Broadband Grant Awards have totaled $214 million. The Wisconsin Legislature chose not to incorporate the Governor's proposal in his 2023-25 Executive Budget for an additional investment of $750 million in State Broadband Grant Expansion Funding to support build-out of modern, high speed broadband

infrastructure throughout Wisconsin and complement the important federal broadband investments made by the Biden administration. In the absence of this proposed funding, for the 2023-2025 biennium, State Broadband Expansion Grants are budgeted $2,000,000 each year derived from universal service fees. Budgeted funding may be supplemented by additional amounts from underspending of prior grants and other universal service programs.

Federal Grants

The WBO has administered numerous federal grants in recent years. Current and anticipated federal grant funding includes the following.

Federal funds currently administered by the WBO:

- $5.4 million in CARES Act funds for 12 shovel-ready broadband infrastructure projects to build new or improved service. Projects were completed in 2020.
- $100 million in ARPA State and Local Fiscal Recovery Funds for broadband infrastructure. Funding has been awarded and projects are underway with expected completion dates through 2025.
- $5 million in Bipartisan Infrastructure Law BEAD Program planning funds.
- $952,192 in Bipartisan Infrastructure Law Digital Equity Program planning funds.
- $42 million in ARPA Capital Projects Fund allocations for broadband infrastructure. A grant round opened in August 2023 for deployment of this funding, with infrastructure completed by 2026.

Federal funds anticipated by the WBO:

- $1,050,823,573.71 in funding under the BEAD program for infrastructure deployment, in addition to the previously allocated $5,000,000 for planning purposes. Funding is anticipated to be allocated beginning in 2024 and expended through 2030.
- Additional funding from ARPA Capital Projects Fund allocations for Digital Connectivity Technology Projects. Allocation of funding is pending U.S. Department of Treasury approval. Once awarded, funding will be deployed for use through 2026.
- $25 million to $30 million in Digital Equity State Capacity Grants to support implementation of the State Digital Equity Plan, anticipated in 2025 and expended through 2029.

4.6 Partnerships

4.6.1 State Agencies

University of Wisconsin-Madison, Division of Extension (UW Extension)

The WBO has partnered with UW Extension to implement key local coordination, capacity building, and outreach functions related to BEAD planning. Extension's effort includes webinars, workshops, and toolkits to develop local capacity to plan and implement broadband deployment projects. Further, UW Extension maintains one-on-one technical assistance for local units of government and other broadband stakeholders.

In spring 2023, UW Extension also worked in consultation with WBO staff to design and implement a comprehensive survey for counties and Tribes on broadband and digital equity. The survey collected qualitative and quantitative data related to local and regional broadband service needs and an inventory of assets related to adoption, affordability, equity, and access.

The survey collected data on local planning efforts, data, and active groups. The survey was sent to all 72 counties, Wisconsin's 11 federally recognized Tribes. The data and planning insights gathered from that survey have informed this plan and the Wisconsin Digital Equity Plan.

Wisconsin Economic Development Corporation (WEDC), Office of Rural Prosperity

The Commission entered into a memorandum of understanding with WEDC and they are currently implementing a technical assistance program consisting of targeted workshops, advising, and resources to support Regional Economic Development Organizations in planning for BEAD subgrants. Efforts engage regional economic development and planning leaders and cultivate expertise in broadband planning, including leadership training and provision of a resources for regions to build broadband planning capacity. The outcome of this activity will be improved capacity for regional leaders and economic development practitioners to facilitate broadband planning, ensuring expeditious allocation of funding that aligns with the vision and needs of local communities.

Wisconsin Department of Public Instruction (DPI)

DPI collected data from schools directly related to students access to the internet, access to internet enabled devices and performance of the internet access. The Commission has entered a data use agreement with DPI in order to gain access to data on measures of digital equity for households with school age children. The data will inform the Digital Equity Plan and future planning efforts. DPI has collaborated with the Commission for many years, assisting the PSC in the formation of a Digital Equity and Inclusion Stakeholder group. Further, DPI has a member that attends planning meetings with the Digital Equity Outreach Team.

4.6.2 Subgrantees

BEAD Local Planning Grant Program

Recipients of BEAD Local Planning Grant funds contribute to local coordination, outreach, and planning efforts to inform the Five-Year Action Plan, Initial Proposal, and State Digital Equity Plan. Subgrantees include:

- Centergy on behalf of Adams, Lincoln, Marathon, Portage, and Wood counties
- Madison Region Economic Partnership on behalf of Columbia, Dane, Dodge, Jefferson and Sauk counties
- Milwaukee 7 on behalf of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha counties
- The New North on behalf of Brown, Calumet, Door, Florence, Fond du Lac, Kewaunee, Manitowoc, Marinette, Menominee, Oconto, Outagamie, Shawano, Sheboygan, Waushara and Winnebago counties
- Prosperity Southwest on behalf of Crawford, Grant, Green, Iowa, Lafayette and Richland counties
- Visions Northwest on behalf of Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer and Washburn counties, and the Bad River Band of Lake Superior Chippewa

- Buffalo County
- Chippewa County
- Clark County
- Dunn County
- Eau Claire County
- Forest County
- Ho-Chunk Nation
- Jackson County
- Juneau County
- La Crosse County
- Lac du Flambeau Band of Lake Superior Chippewa
- Langlade County
- Monroe County
- Oneida County
- Pepin County
- Pierce County
- Polk County
- Red Cliff Band of Lake Superior Chippewa
- Rock County
- St. Croix County
- Taylor County
- Trempealeau County
- Vernon County
- Vilas County
- Waupaca County

BEAD Workforce Planning Grant Program

Recipients of BEAD Workforce Planning Grant funds conduct workforce planning and outreach work that will inform this Five-Year Action Plan and the Initial Proposal. Subgrantees include:

- Wisconsin Regional Training Partnership, Inc. (WRTP) - BIG STEP
- Urban League of Racine & Kenosha

Digital Equity Outreach Grant Program

Recipients of Digital Equity Outreach Grant funds conduct outreach to covered populations identified in the Digital Equity Act to understand the barriers and needs of these groups, which will inform the State Digital Equity Plan. Subgrantees include:

- United Way of Greater Milwaukee & Waukesha County
- River Valley Commons, Inc.
- Northwest Wisconsin Workforce Investment Board, Inc.
- Indianhead Community Action Agency
- United Way of Wisconsin
- Connect to Compete, Inc. (EveryoneOn)
- Urban League of Racine and Kenosha

4.6.3 Other Entities

Breaking Point Solutions

In partnership with North Central Wisconsin Regional Planning Commission and in support of the 9 Regions Broadband convening and local units of government, the WEDC has funded the purchase of the Breaking Point Solutions OptiMap software, a speed testing tool to identify areas of Wisconsin where actual service speed is insufficient. Software includes visualizations of speed test data, as well as other analysis dashboards for broadband planning purposes. OptiMap speed test data has been incorporated as part of the Commission's access analysis and statewide planning effort and has helped inform understanding of actual service experiences around Wisconsin. Funding for the software is provided by the PSC as part of Wisconsin's BEAD planning allocation.

CostQuest Associates

As a subgrantee and partner of NTIA, the U.S. Department of Treasury and FCC, the PSC leverages data related to the Broadband Serviceable Location Fabric (BSLF) to implement its planning and grantmaking efforts. The BSLF is a product maintained by CostQuest Associates and licensed by NTIA, FCC, and Treasury. The Fabric contains confidential information, and thus federal partners and CostQuest share this data through a license agreement with the Commission and selected broadband stakeholders in Wisconsin, including grant recipients, providers, municipalities, and nonprofits. BSLF data informs planning efforts, identification of areas lacking broadband service, and serves as the foundation for future grant allocation efforts.

4.7 Asset Inventory

Access to broadband remains challenging for a significant share of Wisconsin households and businesses, but the outlook is improving. Renewed urgency, heightened resources, and significant involvement from stakeholders at all levels of government and the private sector have built consensus and focus on universal deployment.

Through the PSC's ongoing broadband efforts and related partnerships, a diverse set of existing assets have been identified. Important insights from the Governor's Task on Broadband Access 2023 Report and the PSC's Internet for All Listening Tour have been incorporated. The PSC Digital Equity Outreach Team engaged both groups working to improve digital equity, and individuals who are experiencing digital inequities to understand what assets exist and what barriers persist.

PSC awarded $1.5 million in funding to county and regional partners to conduct planning and outreach efforts and has collected insights from that effort. The PSC engaged counties and federally recognized Tribes through a survey developed in partnership with UW-Extension. The survey was designed to collect critical information about broadband availability, access, and

adoption to strategically inform both BEAD and Digital Equity planning. In total, 70 of 72 Wisconsin counties and 6 of the 11 Wisconsin federally recognized Tribes completed the survey. PSC staff have engaged a diverse set of workforce stakeholders in preparation for BEAD implementation who have highlighted important assets in the state. The BEAD Workforce Planning Grant program awardees also provide preliminary insights into their specific outreach and data collection.

These valuable inputs have deepened our understanding of barriers, needs and the substantial gaps in broadband deployment, access, affordability and dimensions of digital equity. These insights, data from the WBO County and Tribal Broadband survey, county and regional planning Efforts, and PSC Digital Equity Outreach data is cited throughout the plan.

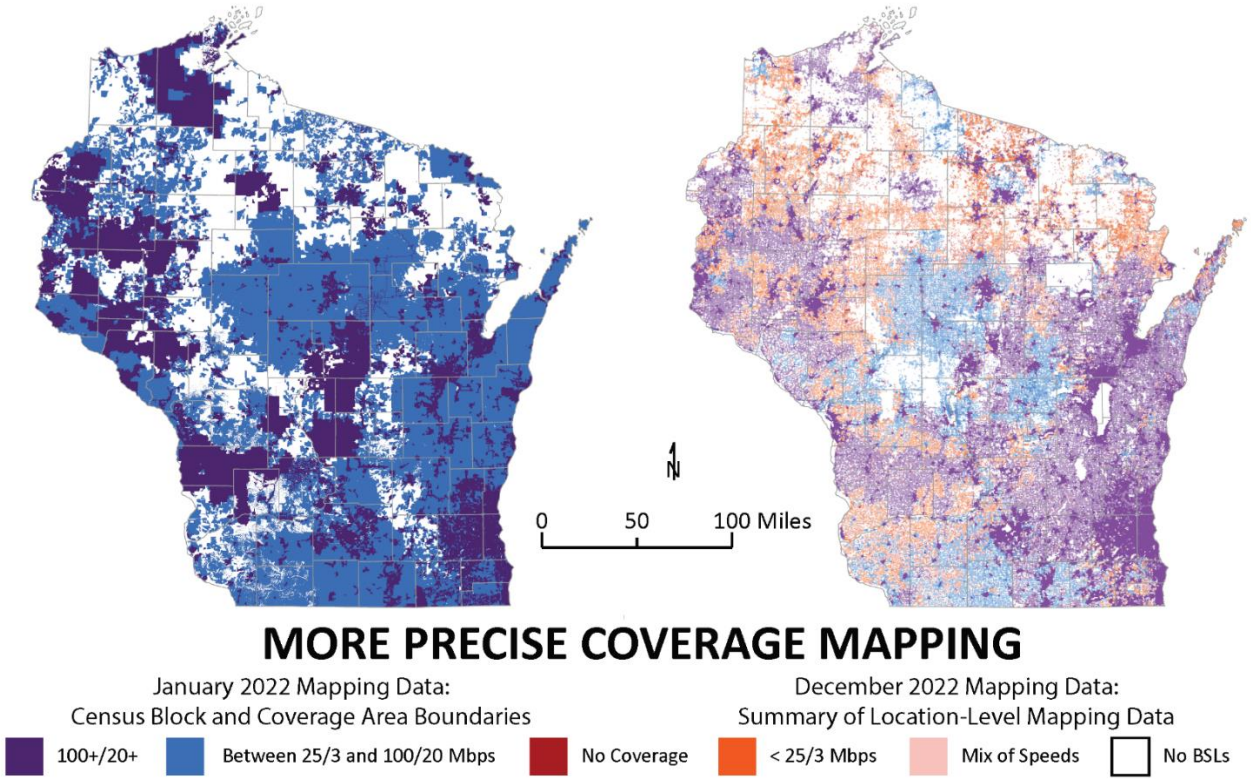
4.7.1 Broadband Access and Deployment Assets

PSC Mapping

With the FCC's shift to reporting the availability of broadband service from census-block based geography to individual location points, the ability of the Commission to identify gaps in availability and direct funding to build reliable service has greatly improved. The current National Broadband Map (version 2) reflects service availability as of December 31, 2022 and incorporates challenges and validation efforts by the WBO and others. The Commission, alongside countless stakeholders, the public, and internet service providers, undertook an extensive effort to evaluate, challenge, and improve the National Broadband Map through the Commission's Badger the FCC campaign.

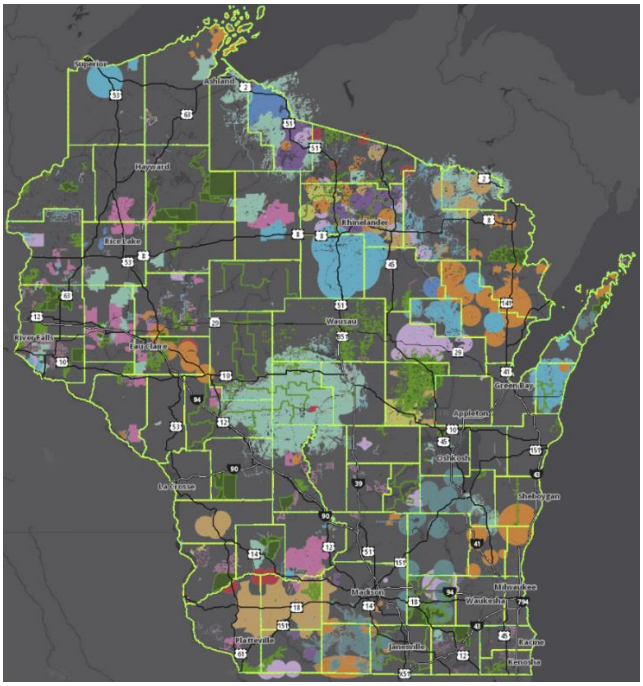
The Wisconsin broadband availability maps below in Figure 1 show the improved accuracy and granularity achieved in the last year. The map on the left from the 2022 Task Force report reflects the Commission mapping of availability based on a mix of census block and voluntary location-level reporting as of December 31, 2021, whereas the map on the right reflects a fully location-level reporting of availability of the FCC's version two map. This steadily improving availability map is a critical broadband deployment asset.

Figure 1: Map Broadband Available Map Improvements comparing Census block to Granular Location-Level Data



The Commission's Broadband Grant Footprint map, below in Figure 2, provides a look at the impact of broadband grant projects statewide. Users can search for grants in their area of interest by performing an address search and navigating the map. Grant projects can be looked at individually and in groups based on the grant round and technology type. A swipe bar tool is available to view completed projects separately from all in progress projects.

Figure 2: PSC Broadband Grant Footprint



PSC Broadband Planning Map

The Wisconsin Broadband Planning Map, Beta version released in May 2023, depicts statewide internet access as declared by internet service providers through the FCC Broadband Data Collection. This toll also shows connectivity summaries by geography and areas where broadband expansion funding has already been committed. Summary map layers from internet speed tests are also available.

Wisconsin Internet Self-Report (WISER)

WISER is an internet survey and speed test that is being used to advise Wisconsin's broadband planning efforts, including further informing actual speeds experienced by users. WISER will serve as a long-standing tool to track broadband service over time. In August of 2023, the Commission in conjunction with BCG, led a campaign to increase WISER survey responses, with over 10,000 survey responses from across the state received to date. The Commission has also partnered with communities to make locally focused surveys using WISER as a guide and will continue this effort. This information is helping shape the state's internet planning efforts as we continue to prepare for BEAD funding and connecting all of Wisconsin.

PSC Grants System

The PSC has created an online grants system that streamlines the application process, awarding, submitting reimbursements, and submission or reports and other documentation. This in-house system is a critical asset for ensuring thorough and transparent administration of broadband grant funding and creating a simpler process for grantees deploying broadband infrastructure across the state. The PSC maintains a Grant's System User Guide and has held webinars to provide technical assistance.

Broadband Forward!

Created by 2015 Wisconsin Act 278, Broadband Forward! is a voluntary program for local units of government (city, village, town, or county) to signal that the political subdivision has taken steps to reduce obstacles to broadband infrastructure investment. The PSC has created a model ordinance that satisfies the minimum requirements under statute to assist communities in pursuing the Broadband Forward! Certification.

9 Regions Broadband Group

The Commission regularly participates and collaborates with the 9 Regions Broadband Group, a convening of GIS and broadband planning professionals across Wisconsin. These relationships inform GIS and planning efforts and strengthen local capacity to leverage and improve broadband mapping data.

Wisconsin Broadband Stakeholders Workgroup

The Wisconsin Broadband Stakeholders Group consists of diverse stakeholders that are all invested in broadband deployment across the state. The Group has been meeting since 2015 and has been a critical advisory group for the Commission's broadband expansion efforts and will continue to inform plans for the BEAD program.

Workforce Outreach

Through its many stakeholder groups, the PSC has built important relationships and communication channels with broadband industry stakeholders, as well as those working directly in workforce development. Many successful workforce development initiatives exist across the state, many of which could incorporate broadband and telecommunication training components to their existing models. Table 4 below shows broadband-specific training programs in the state, which includes apprenticeship programs, credentialing programs, and degree programs in both virtual and in-person formats.

Table 4: Broadband Deployment Workforce Assets

Broadband Deployment Workforce Development Assets	Description
Northwood Technical College 1. Broadband Service Technician Apprenticeship Program 2. Online Broadband Academy 3. Telecommunications Industry Registered Apprenticeship (TIRAP) Program 4. Training Partnership with NTCA, The Rural Broadband Association	1. Provides the classroom training component for the registered apprenticeship program through DWD, listed in the last row of this table. 2. The online Broadband Academy is used by those in the apprenticeship program, as well as other trainees, and often adopted by employers to train their respective workforce. 3. The TIRAP program is an on-campus apprenticeship through the overhead and underground utility installer technician program. 4. Apprenticeship-like training program that provides badges that are recognized by industry partners across the country.
Northeast Wisconsin Technical College (NWTC) broadband and telecommunications training program	NWTC offers the Telecommunications Fiber Optic Engineering Technician Technical Diploma and a more comprehensive Telecommunications Engineering Technician associate degree program. NWTC focus on key elements of network design, fiber splicing and install, project data collection, and overall telecommunications engineering and design principles.
Southwest Wisconsin Technical College Fiber Optic Technician part-time certification	Certified Fiber Optic Technician (CFOT) program is a part-time certification course offering hands-on training, designed to accommodate the schedules of working individuals.
WI Department of Workforce Development (DWD) Broadband Service Technician Registered Apprenticeship Program	This registered apprenticeship is a one-year program and consists of 144 instructions hours and 2,000 hours of on-the-job training. Three broadband telecommunication companies are currently sponsors that coordinate with DWD to train apprentices.

The PSC has also dedicated a portion of BEAD planning funds to the BEAD Workforce Planning Grant Program. The two selected grantees are conducting activities such as defining workforce development strategies and assessing Wisconsin's workforce readiness. A subgrantee analyzed Bureau of Labor Statistic's Quarterly Census of Employment & Wages (QCEW) data, using the three applicable job codes related to broadband deployment: Telecommunications Equipment Installers and Repairers, Except Line Installers (49-2022), Telecommunications Line Installers and Repairers (49-9052), and Electrical Power-Line Installers and Repairers (49-9051). This interim report finds there are roughly 7,300 jobs under these codes in the Wisconsin, with an average annual salary around $61,000. Job growth for these three occupational codes decreased

less sharply over the past five years (-2.9 percent), as compared to the national average (-9.9%), and growth for the next five years is expected to keep pace with the projected national average.

In addition to the broadband-specific training and education programs, several institutions offer training related to the three job codes noted above, which have transferable skills applicable to broadband and telecommunications work. The figure below includes all the institutions with such programs and the number of people who have completed a program in 2021.

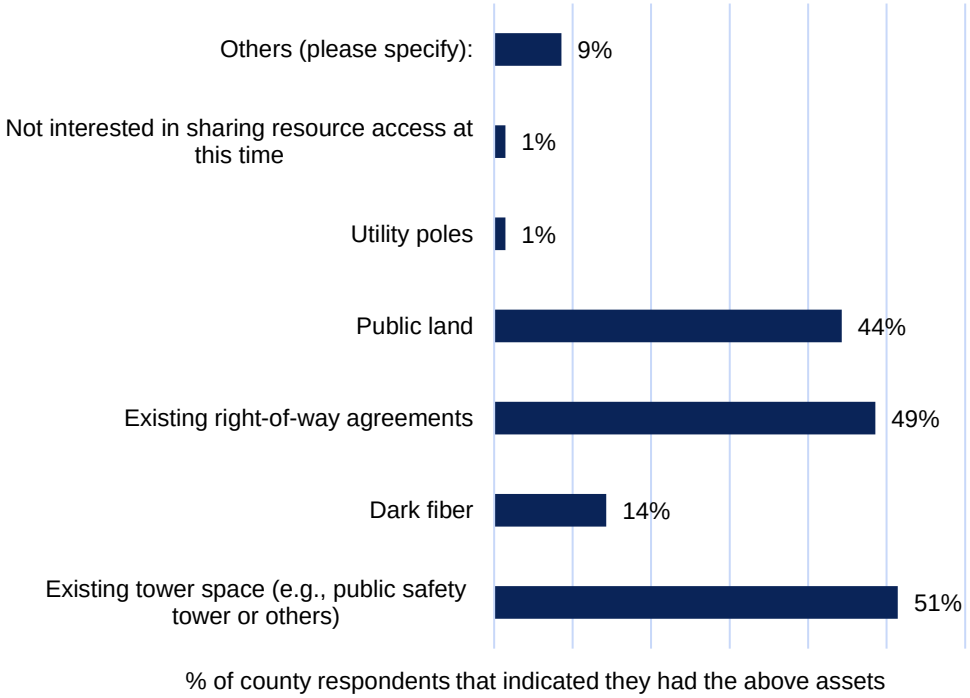
Figure 3: Wisconsin Institutions Offering Broadband and Broadband-applicable Training and Education Programs

Institution	Certificates (2021)	Degrees (2021)	Total Completions (2021)
Chippewa Valley Technical College	60	0	60
Northeast Wisconsin Technical College	43	0	43
Southwest Wisconsin Technical College	39	0	39
Northwood Technical College	32	0	32
Moraine Park Technical College	30	0	30
Northcentral Technical College	18	0	18
Herzing University-Madison	0	16	16
Blackhawk Technical College	14	0	14
Milwaukee Area Technical College	12	4	16
Waukesha County Technical College	9	0	9
Western Technical College	5	7	12
Mid-State Technical College	5	0	5
Nicolet Area Technical College	4	0	4
Rasmussen University-Wisconsin	0	2	2
Bryant & Stratton College-Wauwatosa	1	2	3
Herzing University-Brookfield	0	1	1

County Material Assets

In Figure 4, respondents to the PSC's County Broadband Survey indicated existing assets that local counties could provide through an appropriate agreement for broadband deployment. Over 50 percent of respondents indicated they have existing tower space and roughly 45 percent of respondents indicated existing public lands and right-of-way agreements that could be assets for broadband infrastructure projects.

Figure 4: Percent of County survey respondents that indicated the physical resources the county currently has that could be provided through appropriate agreement (%)



To best utilize resources, sometimes it is best to plan fiber deployment with other capital projects such as road construction, sewer system repair, or new building construction. The survey asked counties about any known upcoming capital projects that could be coupled with fiber deployment – 26 county participants indicated there are known future capital projects. Many shared plans for road and highway construction, as well as public safety projects, school projects, and planned utility work. Survey findings from the PSC Tribal Broadband Survey are covered in section 4.9.

BEAD Local Planning Grant Recipients

In addition to material assets at the county and local level, the BEAD Local Planning Grant program has enabled counties and regions to further or begin important broadband planning. Participating counties and regions (see Section 4.6.2) submitted interim reports in June, providing updates on their funded activities to date. Most counties and regions had begun convening stakeholder sessions and/or planning groups. Some shared interim broadband planning reports and planned next activities, indicating upcoming data collection efforts, stakeholder engagement, and planning in preparation for potential BEAD opportunities. This program has enabled broadband leaders to continue or start new planning activities, bolstering the important asset of local leadership capacity.

State and Federal Grant Programs

Since 2014, the PSC has awarded 458 grants totaling $319 million in funding. Wisconsin has a mature broadband grants program with clear documentation of the application and award process, earning the PSC the a 'Best in Class' award from NTIA for broadband grantmaking. Increasing amounts of 100/20 Mbps service availability are undoubtedly driven in part by

significant state investments in broadband grants in recent years. As grants take time from award to construction, service availability reported as of December 31, 2022 likely incorporates most of the impact of broadband grants from the FY2020 and FY2021 grant rounds, which included $52.4 million in state broadband investment. Further, construction for grant awards of $125 million and $16.6 million during the FY2022 and FY2023 grant rounds is still in progress and these awards will further improve service primarily by the end of 2025.

The PSC has administered Federal broadband grant programs from CARES Act funding (2020) and ARPA funding (2022), totaling roughly $105 million. This large injection and successful administration of federal broadband grant funding had a marked impact for Wisconsin residents, with 395,000 homes and businesses now with broadband access since 2019. The Commission's forthcoming administration of Capital Project Funds for broadband infrastructure will have further impact and will complement the targeted BEAD planning and program administration.

Public Wi-Fi, Libraries and Schools

Public libraries, school districts, and other community anchor institutions play an important role in providing access to communities, both through access to the internet via their wireless networks, and through access to their physical resources such as computer labs and device distribution. Schools and libraries have strategically used Elementary and Secondary School Emergency Relief (ESSER) Fund grants to purchase mobile devices and internet access for students. Wisconsin schools and libraries received federal Emergency Connectivity Funding (ECF) to purchase both devices and internet service for library patrons and students. The Wisconsin Department of Public Instruction estimates that all but 30 public schools and libraries have fiber internet connectivity.

4.7.2 Broadband Digital Equity and Adoption Assets

The PSC Digital Equity Outreach Team, consisting of individuals from the PSC and University of Wisconsin Division of Extension, meet regularly to coordinate digital equity outreach efforts, particularly aligning outreach efforts across covered population groups and coordinating to aggregate and analyze qualitative data. The Outreach Team serves as the primary coordinator of development of the State Digital Equity Plan.

Digital Equity Outreach Grants

Through a competitive application process, the PSC awarded $335,000 in Digital Equity Outreach Grants to nonprofit entities that have strong ties to local communities and other anchor institutions and provide existing services to the eight covered populations as identified in the Digital Equity Act. The grant recipients' projects span multiple regions across the state and utilize a variety of outreach and engagement strategies to best learn about the digital inequities and barriers faced by the covered populations they work with.

Digital Equity and Inclusion Stakeholder Group

The Digital Equity and Inclusion Stakeholder Group is an open convening of community connectors, state and local leaders, schools, libraries, non-profits, broadband providers, digital inclusion practitioners and other interested individuals. The group meets monthly, and most meetings are virtual. The group collaborates to share best practices, coordinate digital inclusion activities, and conduct planning efforts. Through regular convenings, the group grows and

strengthens the digital inclusion ecosystem in Wisconsin and facilitates the development of the State Digital Equity Plan.

Individuals from the PSC and UW Extension meet weekly to coordinate digital equity outreach efforts, particularly aligning outreach efforts across covered population groups and coordinating to aggregate and analyze qualitative data. The Outreach Team serves as the primary coordinator of development of the State Digital Equity Plan. During 2023, the Outreach Team conducted outreach to all of Wisconsin's covered populations identified in the Digital Equity Act, developed a digital equity asset map, promoted the Affordable Connectivity Program, collected and analyzed qualitative and quantitative digital equity data, and wrote the State Digital Equity Plan.

4.7.3 Broadband Affordability Assets

ACP Outreach and Enrollment

As of August 2023, approximately 387,000 of the estimated 894,005 eligible households in Wisconsin enrolled in ACP. Approximately 41 percent of eligible households in Wisconsin are enrolled in ACP, as compared with an estimated 34 percent of eligible households enrolled nationally. Since the program's inception Wisconsin providers have received $141,069,641 in benefit funding to provide internet service to enrolled households. ACP enrollment is increasing over time, with many counties seeing participation double over the last year. The ACP has the twofold benefit of expanding connectivity for households in need of support to afford broadband, while also increasing subscription rates to broadband service. Because the ACP increases subscription rates, internet service providers are able to capture new customers and revenue that previously did not exist. As a result, higher subscription rates improve the business case for broadband deployment by increasing revenues and offsetting higher provider costs, making the cost-benefit calculation for internet service providers more feasible in areas of the state with more low-income households. Thus, the ACP allows for cost-effective broadband infrastructure construction in higher cost areas and supports low-income households to afford home internet access.

The Wisconsin Department of Public Instruction (DPI) was awarded an ACP Outreach grant of $353,300 from the FCC to support ACP enrollment events at libraries, schools, and other community-based organizations. These targeted outreach events will result in improved awareness and increased enrollment in the ACP in Wisconsin.

Internet Discount Finder

The Commission and DPI created the Internet Discount Finder website to help Wisconsin households find and access affordable internet. The new tool can assist in finding free and discounted internet service available to eligible Wisconsin residents.

The Internet Discount Finder quickly matches eligible Wisconsin residents to low-cost home internet service and discount programs by entering their address and identifying their eligibility criteria. The tool will show available plans and describe next steps for enrollment in the ACP.

Other Assistance Programs

The PSC administers a number of assistance programs that provide financial assistance and guidance that overall can help reduce monthly financial burdens for households. This includes the Lifeline program, which provides discounts for phone, cell, and internet services, and other

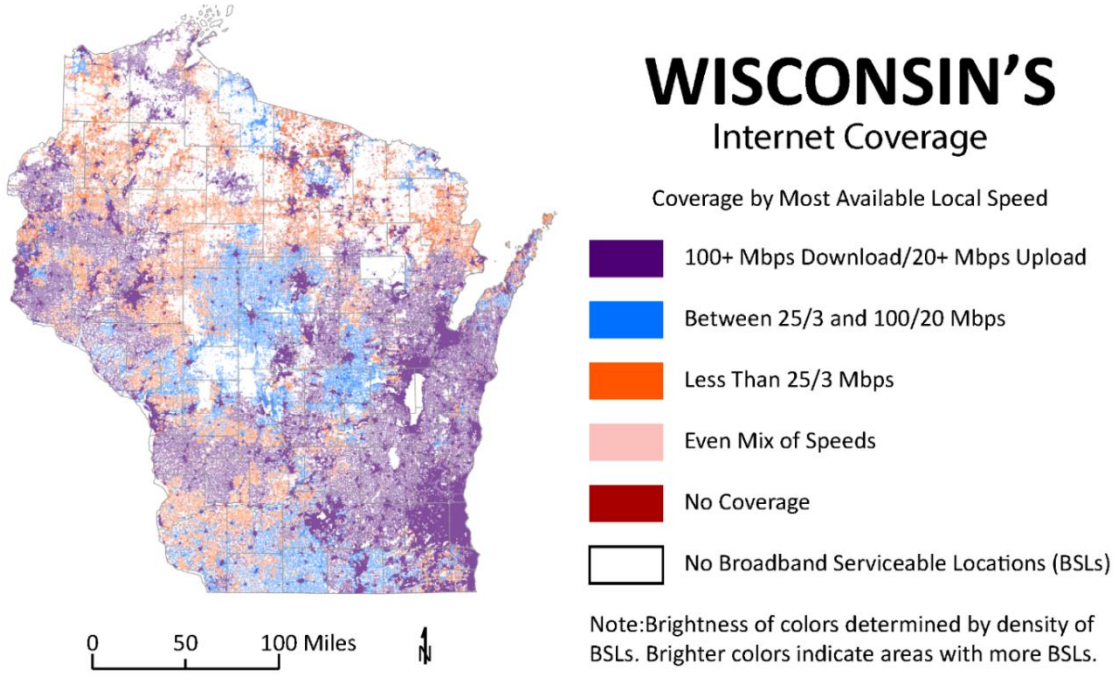
programs to provide telecommunications access to citizens with disabilities. The Commission also administers the Internet and Phone Helpline.

4.8 Needs and Gaps Assessment

4.8.1 Broadband Deployment and Access Gaps and Needs

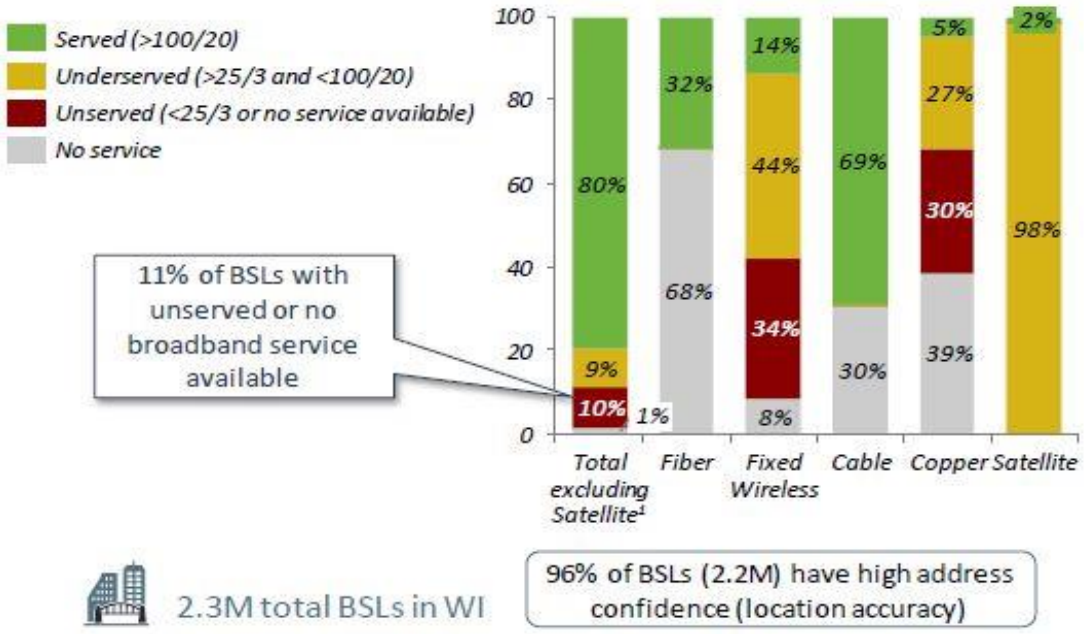
On June 30, 2023, the FCC released version two of the National Broadband Map. The updated map estimates that Wisconsin has **253,000 unserved broadband** serviceable locations. Unserved, for purposes of the BEAD program, is defined as lacking wired or licensed fixed wireless service with speeds of 25/3. A further **210,000 locations are estimated to be underserved**, which lack 100/20 speeds from a wired or licensed fixed wireless service. The map at Figure 5, below, shows the availability of service by speed throughout Wisconsin. Orange represents areas lacking 25/3, blue represents areas with 25/3 to 100/20, and purple areas with 100/20 or better. Darker, more saturated areas are those with a larger density of locations.

Figure 5: Wisconsin Broadband Internet Coverage



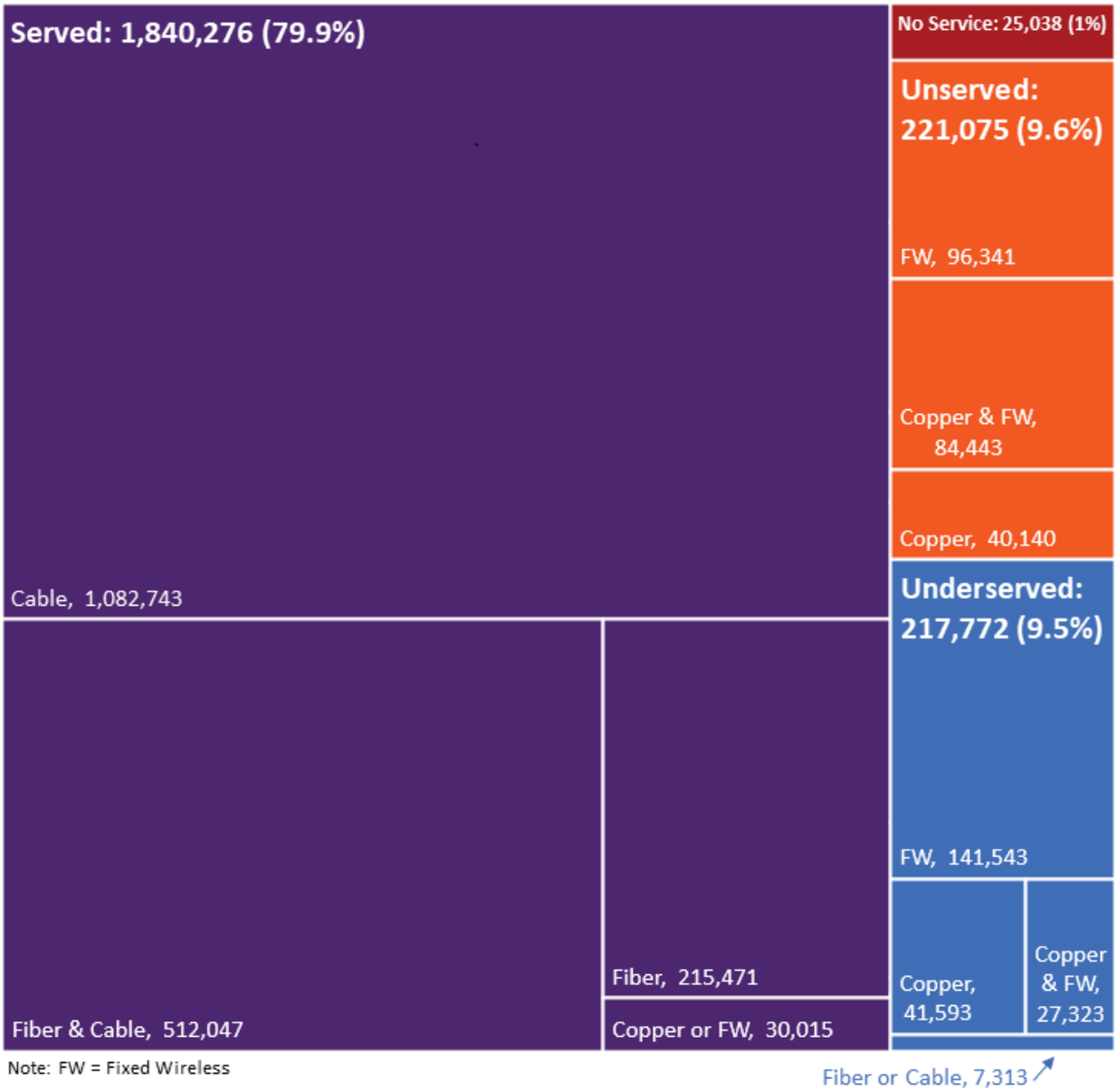
Currently, the National Broadband Map lists 2,304,161 broadband serviceable locations in the Wisconsin. That means that approximately **10.7% of households and businesses in Wisconsin lack basic 25/3 broadband service** from wired or licensed fixed wireless technology, and **20.1% lack access to high speed 100/20 broadband service** from wired or licensed fixed wireless technology – see Figure 6.

Figure 6: Percent of all Broadband Serviceable Location in Wisconsin by Technology and Served Status



Evolving data reporting underlying the National Broadband Map allows for insights related to the technology mix available in Wisconsin and the associated speeds. Figure 7 shows how these service offerings result in actual served locations using BEAD eligibility criteria and service reporting as of version two of the FCC map. For locations with access to high-speed service of 100/20 or better (purple boxes), most all have service from a provider of fiber, cable, or both. Approximately 30,000 locations with 100/20 service lack fiber or cable, and instead receive it from a copper or fixed wireless provider. For locations that are underserved with 25/3 to 100/20 service (blue boxes) and unserved with less than 25/3 service (orange boxes), most service is provided by fixed wireless or copper providers. Barely 1% of Wisconsin locations (red box) lack access to any wired or fixed wireless technology of any speed. Across these technologies, basic internet access is available to most all Wisconsinites, although not all technologies provide speeds sufficient for modern demands of entire households or growing businesses.

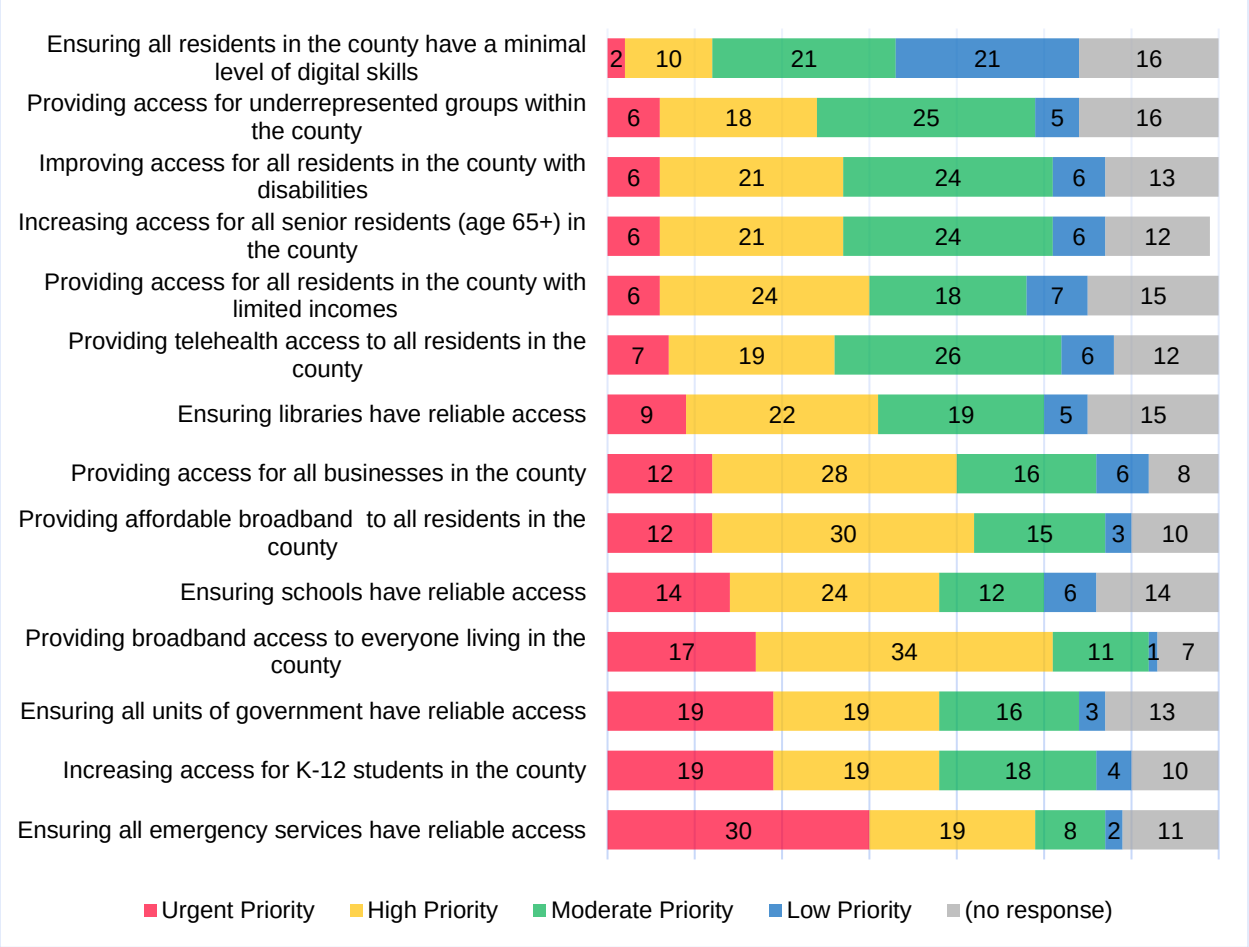
Figure 7 : Service Availability for 2,304,161 Wisconsin Locations



Access Barriers/Gaps from Survey

The PSC County Broadband Survey provides the important local government perspective on known and potential barriers to broadband access and deployment (Tribal findings are discussed in section 4.9). Counties broadband needs and priorities, from the local government, are displayed in Figure 8. Ensuring all residents, governments, schools, and emergency services have reliable access are indicated as the having the most urgent and highest priority. Affordability for residents is also a high priority for 30 of 70 counties, with 12 counties highlighting this as an urgent priority. The county perspective is primarily situated in physical access and deployment, with less priority or concern given to dimensions of digital equity – exemplified by the 42 counties that indicated ensuring all residents have a minimal level of digital skills as a low or moderate priority.

Figure 8: Number of counties that ranked each priority related to broadband accessibility below as urgent, high, moderate, or low priority for their respective county



Digital Equity Outreach Access Barriers

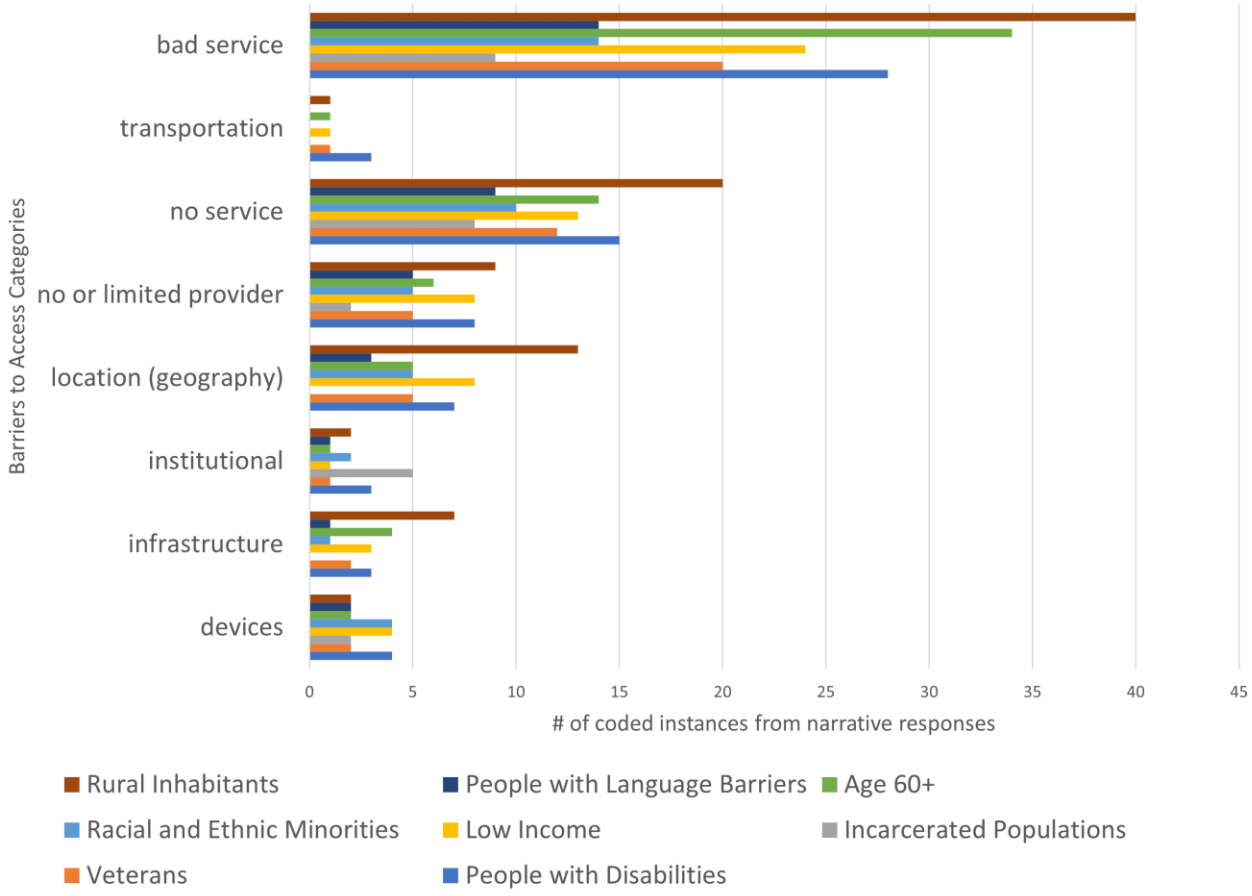
The PSC Digital Equity Outreach Team used an interview methodology to directly engage individuals or groups that either served or identified as one or more covered populations as identified in the Digital Equity Act in Wisconsin. The engagements evolved into conversations, for which team members took detailed notes. Responses were tracked in a database - binary (yes/no) responses were quantified, and the qualitative data gathered from the narrative questions and conversations were coded and analyzed. Qualitative responses were first coded as either access, affordability, or adoption barriers, and second assigned sub codes by types of access, affordability, and adoption barriers.

The PSC Digital Equity Outreach Team, consisting of staff from the PSC and UW- Extension, held over 100 engagements with groups or individuals that either identified as one or more covered population, or served individuals of one or more of the covered population groups.

Figure 9 shows that for most of the barriers to access categories have a proportional number of coded instances for each covered population, but 'location (geography)' has markedly more coded instances those identified as rural covered populations. Responses coded as barriers to access 'bad service' or 'no service' have the highest number of coded instances across all covered

populations. This highlights the reality that for many in the state, the primary barrier is quality or adequacy of the broadband being provided. Most of the barriers to access categories have a proportional number of coded instances for each covered population, but 'location (geography)' was mentioned as a barrier markedly more often by those identified as rural covered populations.

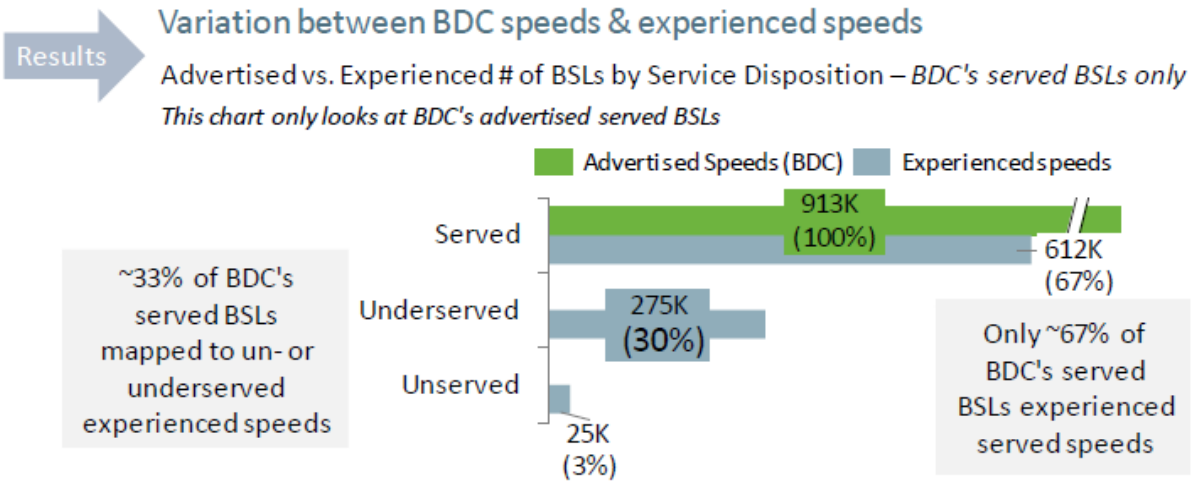
Figure 9: PSC Outreach Interviews, Responses coded as Barriers to Access by Categories across Covered Populations



Advertised versus actual speeds

The data collection and subsequent analysis of actual end-user broadband speeds of currently served households, compared to what the provider advertises as the served speed seems to substantiate these claims of service below what is advertised. From the current total of served broadband serviceable locations in Wisconsin, 67 percent experienced the advertised served speeds at or above 100/20 Mbps, while roughly 33 percent did not experience the advertised broadband speed and were experiencing un- or underserved speeds of less than 100/20 Mbps, as shown in the figure 10.

Figure 10: Variation between broadband data collection speeds and experienced speeds by Wisconsin Residents



Community Anchor Institutions without Gigabit internet

The Commission sent a formal request to state agencies to specifically learn about any existing broadband and digital equity plans, needs or initiatives that agencies may wish to have incorporated into the state planning. The goal was to compile a complete picture of the broadband and digital equity work and needs of agencies across the state to inform the BEAD and digital equity plans. The letter also served to inform other state agencies on BEAD and digital equity funding coming to the state and the related activities that will be taking place over the next 4-plus years.

Agencies were invited to submit a formal letter with information on their agency's activities, as well as recommendations for Wisconsin's broadband and digital equity planning through the Internet for All programs. The DPI submitted a letter detailing their existing work on Digital Equity data collection efforts and provided recommendations. Among other recommendations related to affordability and digital equity, DPI recommended that the PSC prioritize bringing fiber to connect K-12 schools and public libraries that currently lack 1GB fiber connections. The tables below provided by DPI, list all of the known libraries and schools without a 1GB fiber connection.

Table 5: Libraries without 1 Gigabit Internet Service

Library System	Library
Manitowoc County	Brillion Public Library
Winnefox	Ethel Everhard Memorial Library Brandon Public Library
Indianhead	Fairchild Public Library Hawkins Area Library Ogema Public Library Cadott Community Library Colfax Public Library

	Thomas St. Angelo Public Library Geraldine E. Anderson Village Library Elk Mound Branch Rusk County Community Library D.R. Moon Memorial Library St. Croix Falls Public Library
Wisconsin Valley	Edgar Branch Marathon Branch Joseph Dessert Branch Spencer Branch Stratford Branch
Southwest	Montfort Public Library Allen-Dietzman Public Library Dwight T. Parker Public Library Gays Mills Public Library
Winding Rivers	De Soto Public Library Hauge Memorial Library Readstown Public Library

Table 6: Schools without Gigabit Internet

School District	School
Horicon	Van Brunt Elementary
Lake Mills	Lake Mills Middle School
Mauston	Lyndon Station Elementary
Mukwonago	Eagleville Charter School
Plymouth	Fairview Elementary
Poynette	Arlington Elementary
Reedsville	Reedsville Elementary/Middle School
Saint Croix Falls	Dresser Elementary
Shorewood	Atwater Elementary Lake Bluff Elementary
Whitefish Bay	Richards Elementary
Dover J1	Kansasville Elementary
Downtown Montessori	Downtown Montessori (Milwaukee)
Rocketship Southside Comm Prep	Rocketship Southside Comm Prep (Milwaukee)
Yorkville J2	Yorkville Elementary

DPI has data to better understand the reasons why student households are unconnected through ongoing comprehensive survey and data collection. Through a data use agreement with DPI, WBO staff were able to analyze student household lack of access, which revealed that 62 percent of student households lack internet access due to availability while the remaining 38 percent lack access due to affordability.

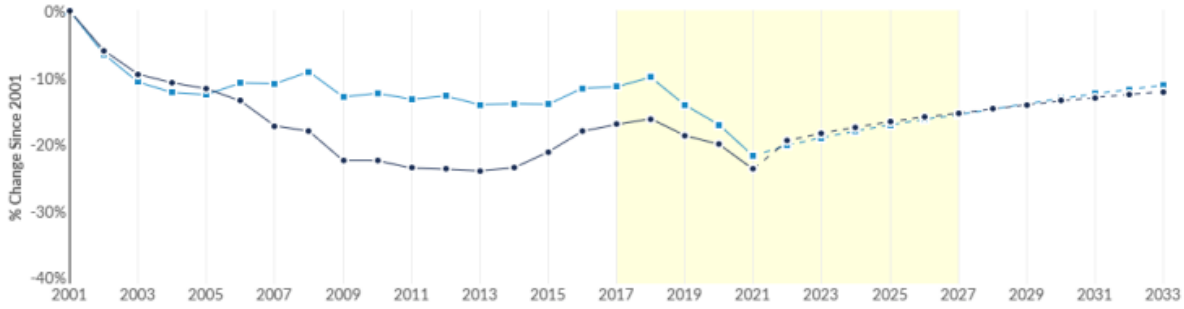
Provider Engagement Needs – Listening Sessions

During the PSC's Wisconsin Internet for All Listening Tour, participants emphasized the importance of facilitating conversations, connections, and potential collaboration among key stakeholder groups to improve broadband access, affordability and adoption across the state. Participants noted the need to convene the right stakeholders, facilitate trust building, break down silos among the important stakeholders, share resources and knowledge, and ultimately improve planning efforts. In particular, staff heard that bridging communication divides between providers, communities, and local governments is key to improve planning efforts. The PSC County Broadband Survey heard from 31 of 70 counties that provider participation was either a major or moderate obstacle to broadband access for county residents. Conversely, Tribal survey respondents noted high levels of different types of engagement with providers, detailed in section 4.9. Intentional engagement across sectors and stakeholder groups, particularly with providers, will help design more inclusive and expansive initiatives, stretching efforts to more people and communities as collaboration grows.

Workforce Gaps

As noted in section 4.7.1, subgrantees analyzed Bureau of Labor Statistic's Quarterly Census of Employment & Wages (QCEW) data, using the three applicable job codes related to broadband deployment: Telecommunications Equipment Installers and Repairers, Except Line Installers (49-2022), Telecommunications Line Installers and Repairers (49-9052), and Electrical Power-Line Installers and Repairers (49-9051). Growth is projected at about a five percent increase through 2027, as shown in Figure 11 below. This projection doesn't factor in cross-industry need for these positions in the state leading to a likely deficit, and doesn't yet account for other key positions such as engineers, electricians, truck operators, trenchers, and locating services. Wisconsin's initial and subsequent final proposal will further detail projected deficits across these key positions in the state.

Figure 11: Past and Projected Broadband-Related Job Growth



Region	2017 Jobs	2022 Jobs	2027 Jobs	Change	2017-2022 Growth %	2022-2027 Growth %
Wisconsin	7,604	7,383	7,760	156	-2.9%	5.1%
Nation	478,080	430,744	455,354	-22,726	-9.9%	5.7%

Commission Staff conducted early preliminary outreach to broadband workforce and workforce development stakeholders in late 2022 to both better understand specific gaps and needs, as well as to build relationships and lines of communication regarding BEAD planning. After roughly 20 meetings with state entities, private entities, nonprofits, and unions some clear gaps and needs surfaced. Primarily, a limited number of workers in a shrinking labor pool was the foremost obstacle for those we spoke to. The Commission also heard that due to a limited number of existing companies or specific workers, some segments of providers build out timeline experience significant delays – specifically it was noted that underground locating services were in high demand with the few operating companies in the state having limited capacity.

Those who have been trained and certified for specific positions are in high demand and new recruits for both training programs and direct employment with training on-the-job were increasingly hard to find. Many noted that simply getting the message out that these well-paying positions exist is a challenge, and further there was a noted broadband workforce development capacity problem. There are a few successful broadband workforce training programs in the state (See Table 4 above), but not enough to meet the overall anticipated demand, or enough options geographically across the state.

4.8.2 Broadband Affordability Gaps and Needs

Many residences throughout the state do not have internet at home because it is cost prohibitive. The Pew Research Center found that nationally although only 1 percent of adults with annual incomes over $75,000 do not use the internet, 14 percent of those with annual incomes under $30,000 are not online. The EducationSuperHighway Report No Home Left Offline estimated that Wisconsin's broadband affordability gap prevents 273,415 households from accessing the internet at home and impacts 650,000 people in the state.

The PSC's WISER survey responses and subsequent analysis related to affordability revealed that a significant portion of households not online cite cost as a barrier. Figure 12 shows online WISER survey responses, 13 percent of respondents who were not using internet cited cost as a barrier. Figure 13 shows WISER responses gathered via postcard – 304 or approximately 28 percent of respondents who were not using internet cited cost as a barrier.

Figure 12:Barriers to internet use from WISER Survey

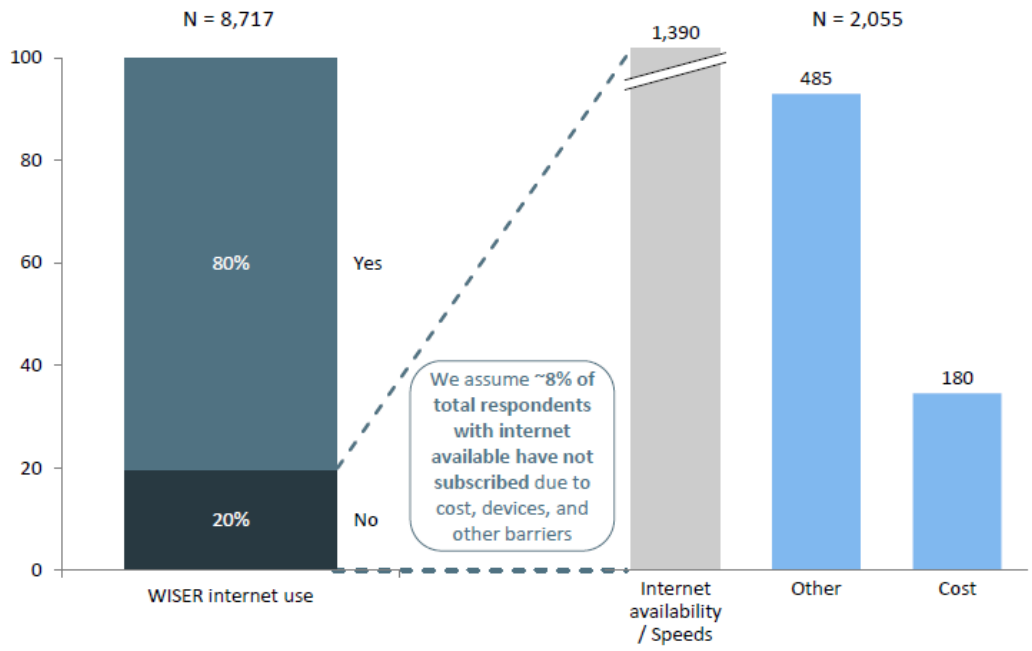
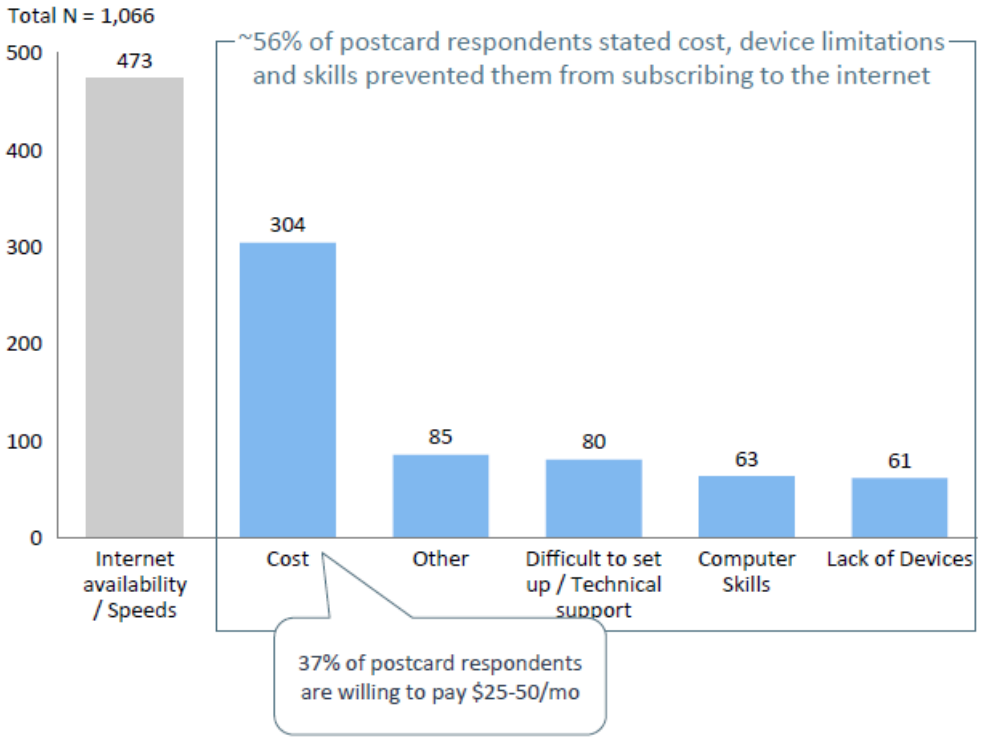


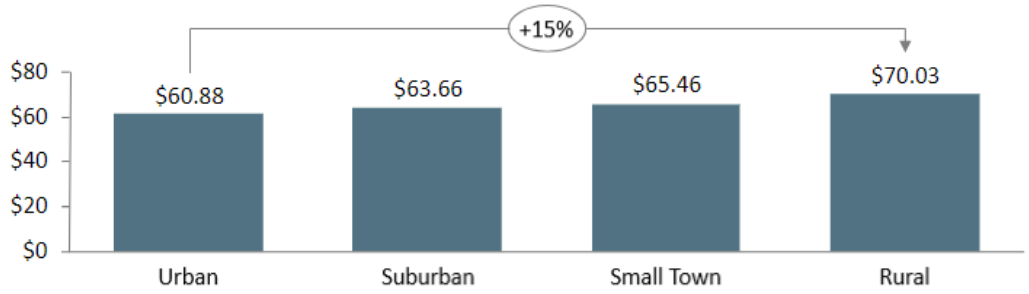
Figure 13: Barriers to internet subscription from WISER Survey, postcard respondents



Across the state, on average broadband subscription prices are less affordable in rural areas, compared to urban and suburban localities. Affordability analysis found that the median subscription cost was about $10 more in rural areas compared to urban, and the range in rural

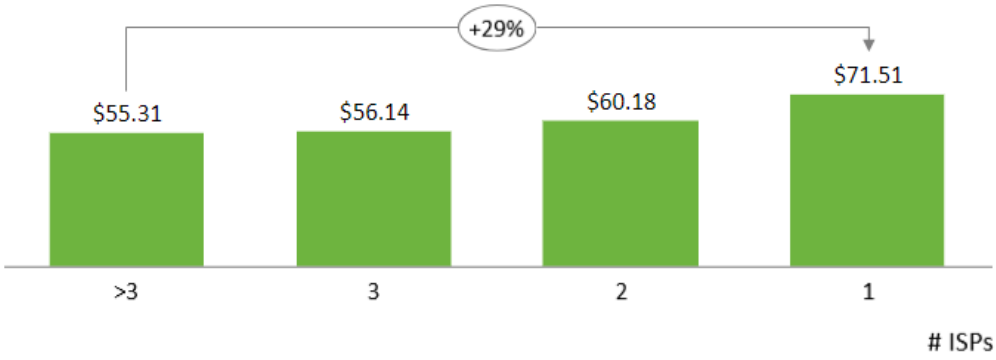
areas much larger, with the lowest available cost subscription price in some areas around $150 per month, compared to $90 in urban areas (see Figure 14 below).

Figure 14: Average minimum price for served speeds by urbanicity (census block)



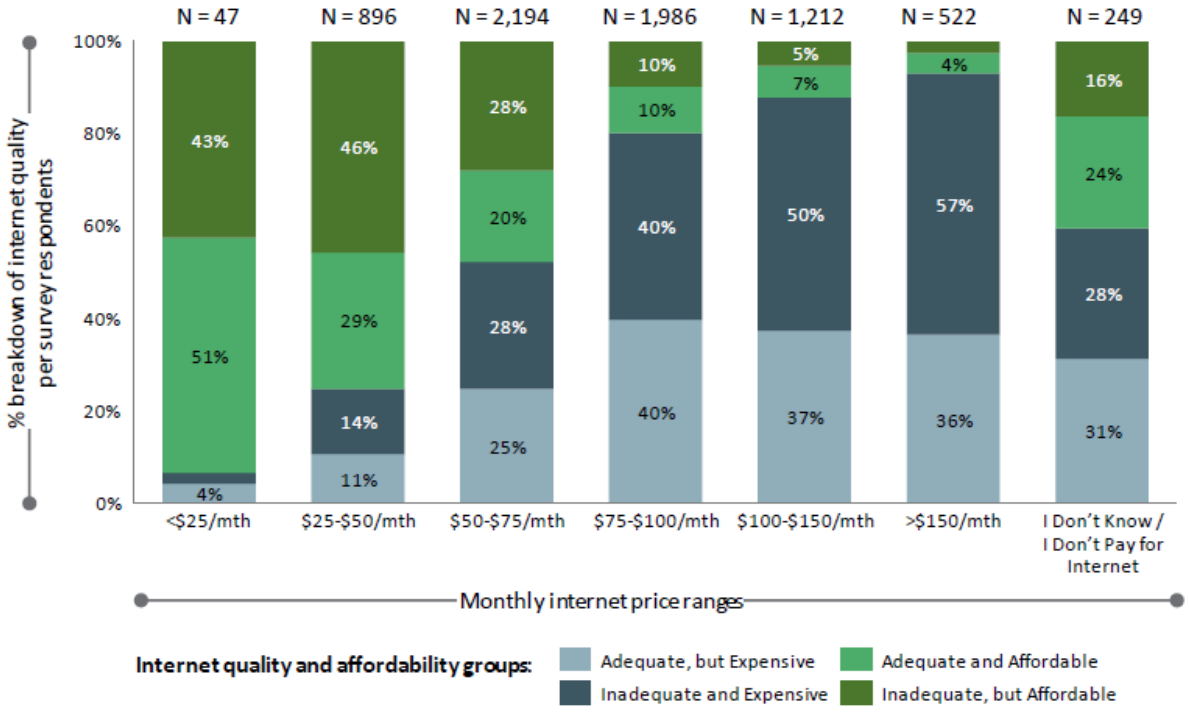
Provider competition plays a role in affordability of subscription plans across the state. Figure 15 shows a clear correlation between the number of providers and the average minimum price for broadband subscriptions. Census blocks with only one provider on average have subscription prices approximately 25 percent higher than census blocks with 3 or more provider options.

Figure 15: Average minimum price for served speeds by # of ISPs present (census block)



To understand what's considered both affordable and adequate internet service, our WISER survey asked respondents to rank both affordability and performance. Figure 16 shows responses, categorized by subscription price range. For respondents paying more than $75 monthly, upwards of 80 percent noted it was expensive, with roughly half reporting the service is inadequate.

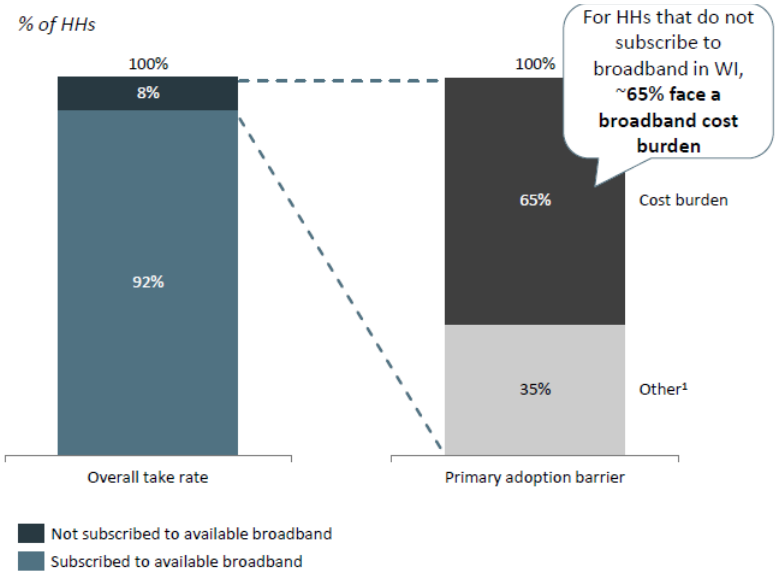
Figure 16: WISER Survey Responses when asked their opinion of their internet service in relation to cost



Affordability and Cost Burden Data

Most households in the state that do not subscribe to available broadband service ('underconnected households') are burdened by the cost. Using the state median monthly income and establishing the analyzed threshold of 1.17% of monthly gross income, Figure 17 below indicates that about 65 percent of unsubscribed households are cost-burdened, meaning their monthly subscription costs exceed 1.17% of median monthly income. Broadband subscription cost analysis also confirms the assumption that cost burdened households make less annually than those not burdened – specifically households making less than $50,000 annually make up 57 percent of the cost burdened households, while only 20 percent of not cost burdened households make less than $50,000 annually. Relatedly, non-white households are also disproportionately cost burdened, as they fall into the previous category of more often making less than $50,000 annually compared to white households.

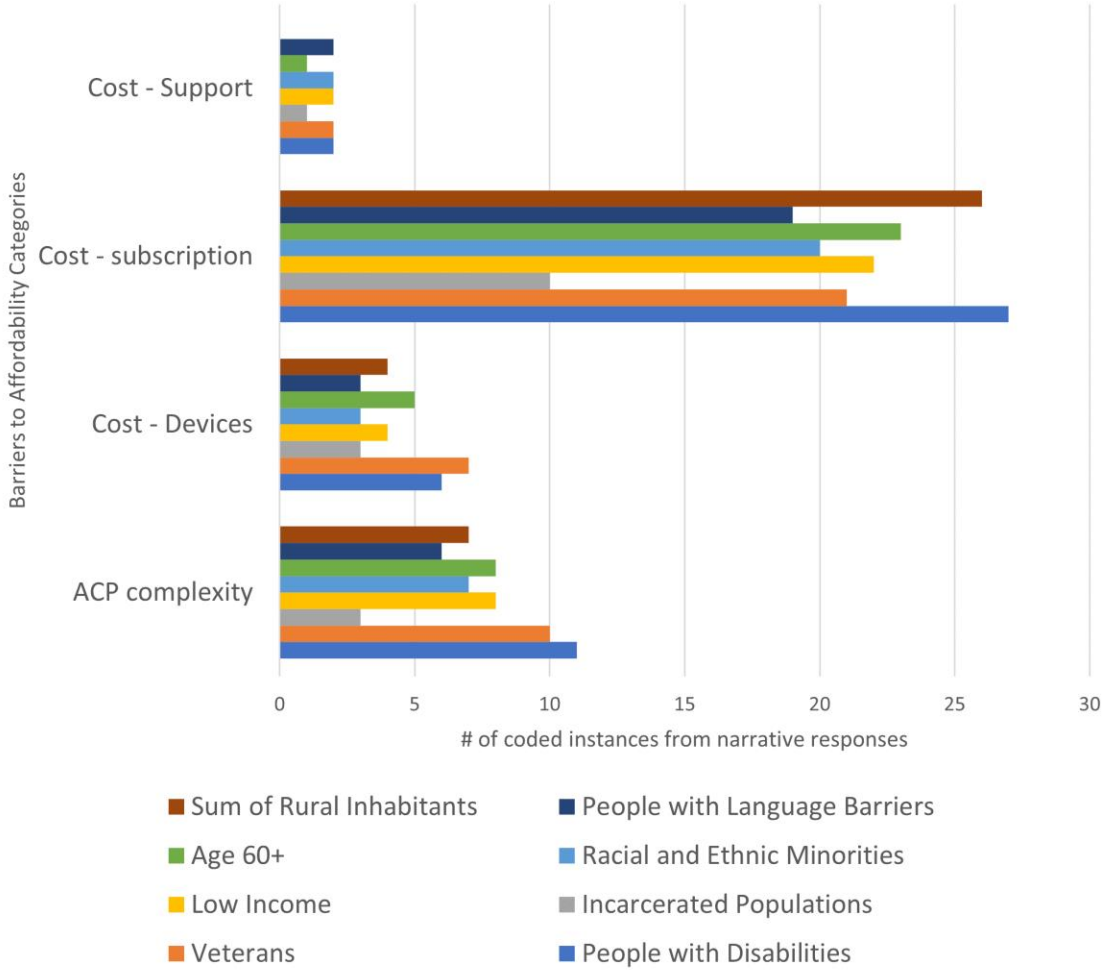
Figure 17: Adoption Barriers for Households that are not Subscribed to Available Broadband



1. Other can include device ownership, digital literacy, perception, relevance, awareness, and other barriers.
Source: Acxiom; BCG analysis

The PSC Digital Equity Outreach Team saw this cost burden reflected in outreach to covered populations in Wisconsin. Figure 18 shows that for all qualitative responses coded as barriers to affordability, the vast majority were attributed to cost of broadband subscriptions across all covered populations identified in the Digital Equity Act, apart from incarcerated populations.

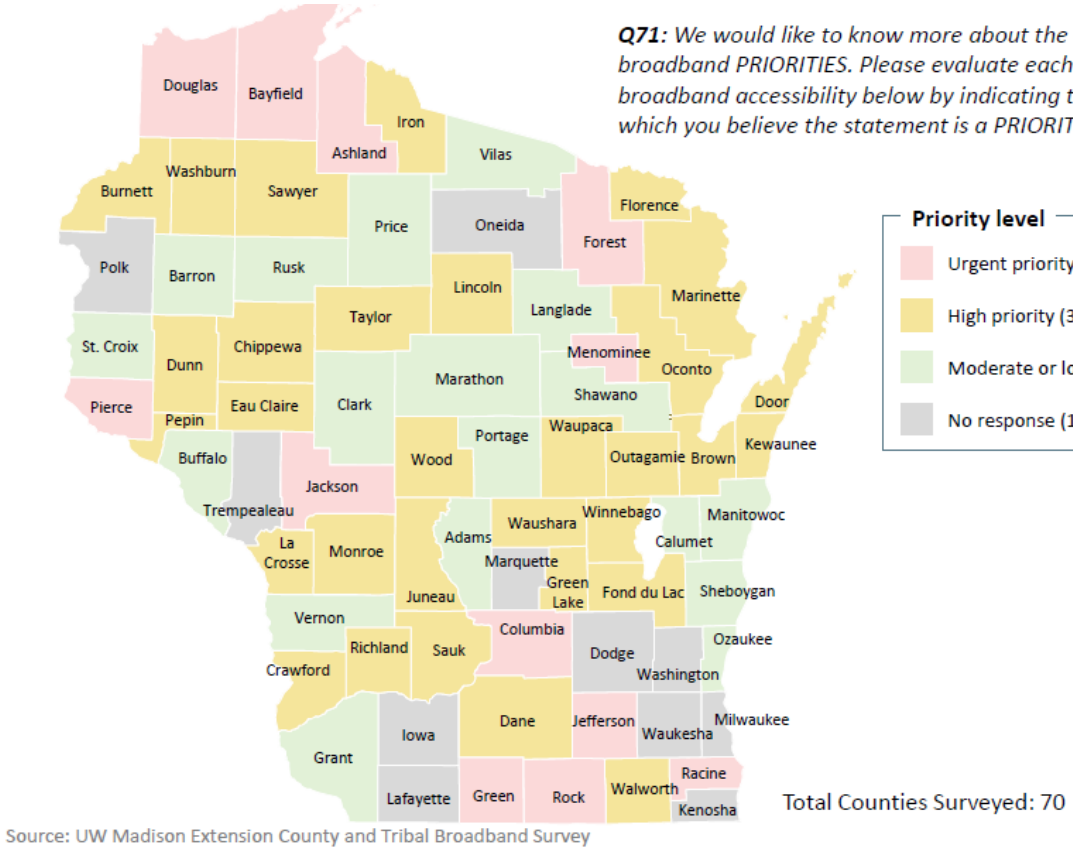
Figure 18: PSC Outreach Interviews, Responses coded as Barriers to Affordability Categories, by Covered Population



County Survey - Affordability

The importance of affordability is not lost on Wisconsin counties. The PSC County Broadband Survey found that 42 of the 70 counties that completed the survey ranked broadband affordability as an urgent or high priority (Tribal survey responses covered in Section 4.9).

Figure 19: PSC Broadband Survey, County Priority Levels for Broadband Affordability

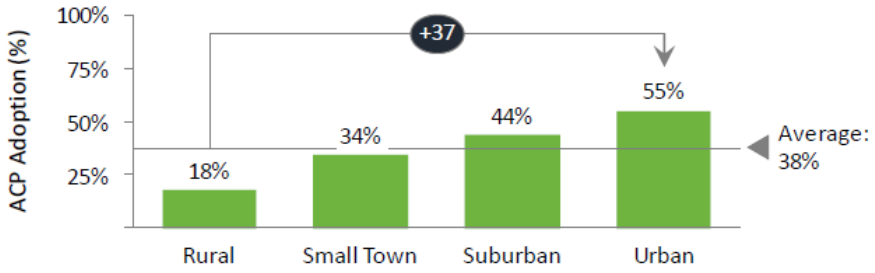


Source: UW Madison Extension County and Tribal Broadband Survey

Affordability Program Needs and Gaps

Approximately 41 percent of eligible households in Wisconsin are enrolled in the ACP. Through the PSC and its Broadband Intelligence Contractor's data collection and analysis, some dimensions of the remaining unenrolled households were identified, and geography was one of the most pronounced indicators. Figure 20 shows that average ACP adoption rate decline as urbanicity (by zip code) moves from urban to rural – ACP adoption is 37 percent higher in urban zip codes compared to rural.

Figure 20: Average ACP adoption rates by urbanicity (zip codes)



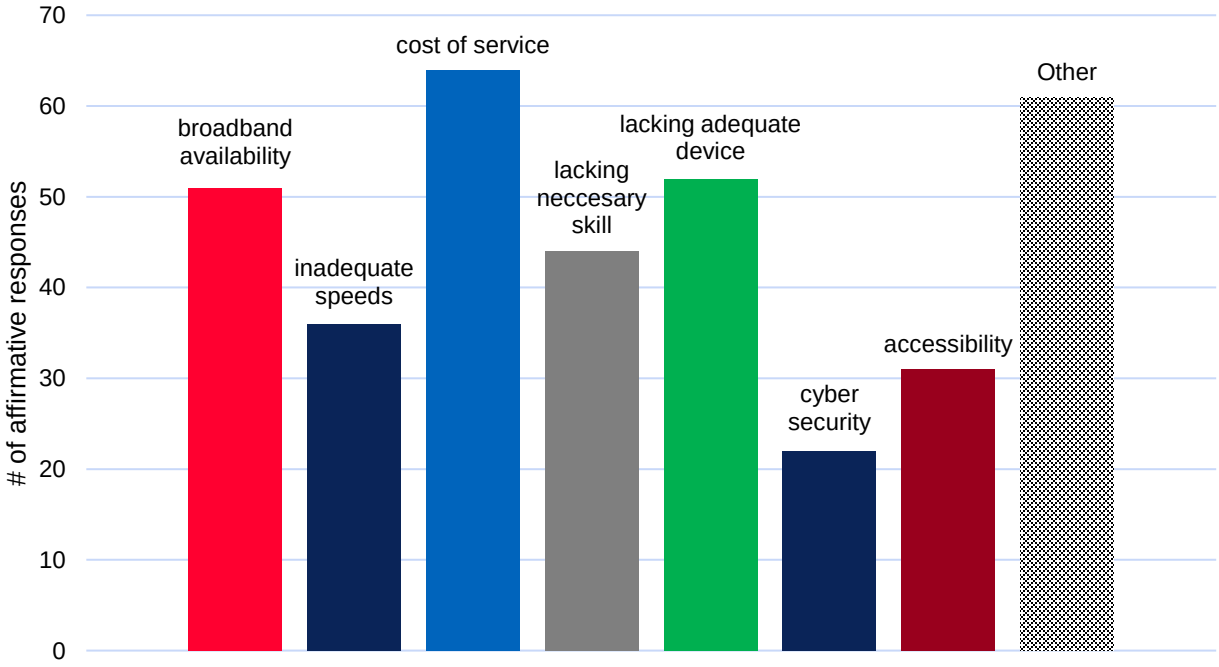
4.8.3 Broadband Digital Equity and Adoption Gaps and Needs

Digital Equity Plan and Goals

Wisconsin's Digital Equity Plan is targeted to address key gaps and needs in digital equity and adoption, as well as to support the access goals the BEAD program aims to achieve. Beyond improving physical access to the internet, the Digital Equity Plan has created measurable goals and objectives related to affordability, adoption, trust, and sustainability. The goals and objectives were created with, and were informed by, a broad group of stakeholders, while also aligning with the Governor's Task Force on Broadband Access' Digital Equity goals detailed in the 2023 report. The PSC Digital Equity Outreach Team, data and analysis from the broadband intelligence consultant, and findings from the PSC County and Tribal Broadband Survey assisted in pinpointing these needs and gaps that have informed these goals and objectives. These findings are explained throughout this section to illustrate these needs and gaps.

The PSC County Broadband survey revealed that a potential gap to improving digital equity is the lack of capacity or low prioritization at the local county government level to address these issues – 6 of 70 participating counties indicated they have a dedicated position related to achieving digital equity; 20 indicated they partnered with agencies, organizations, institutions, or neighboring Tribal communities to address digital equity.

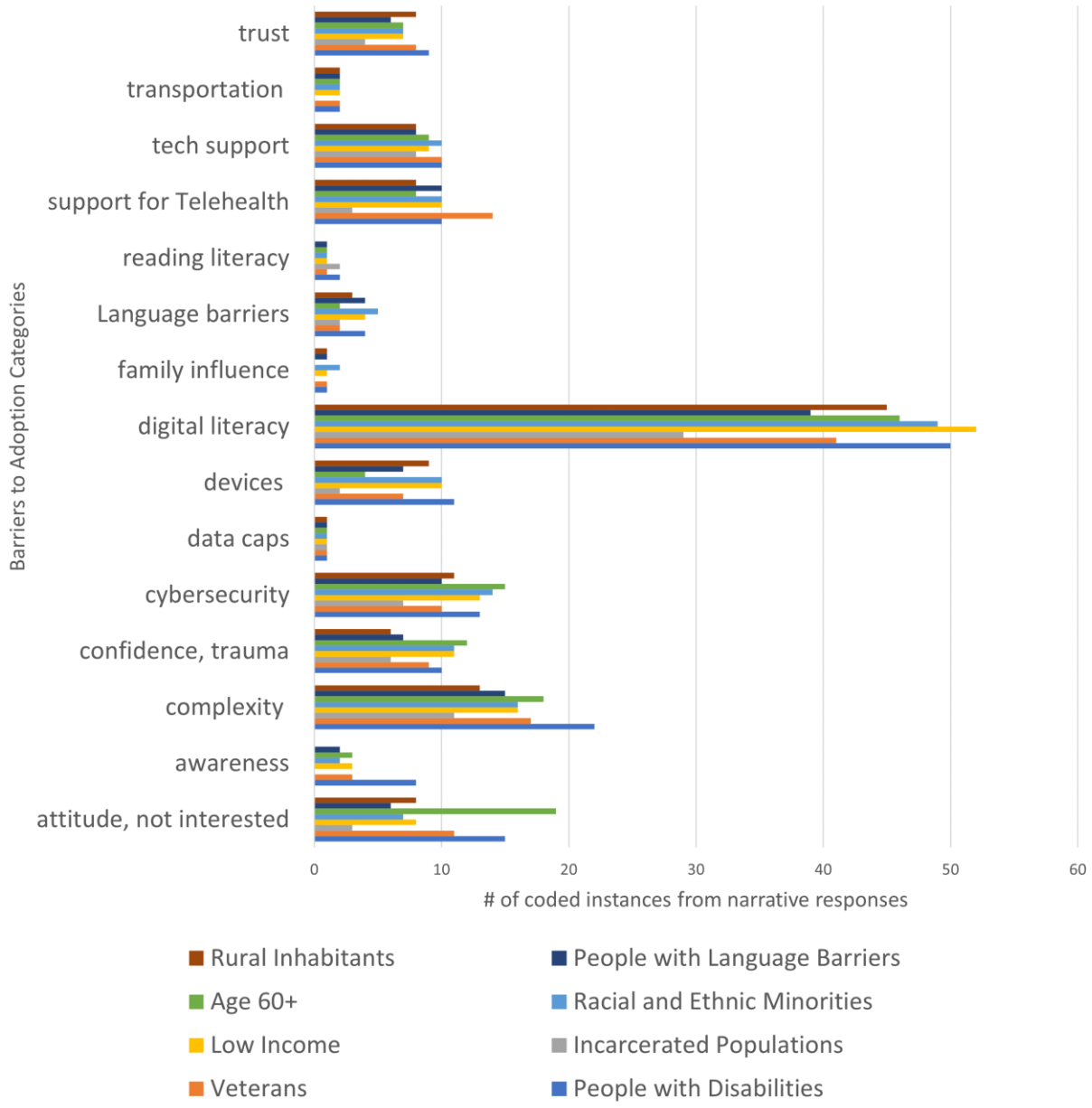
Figure 21: Individuals and groups engaged asked what prevents them (or those they work with) from using the internet to meet their needs.



The PSC Digital Equity Outreach gathered responses about barriers and needs of covered population. What follows is analysis of the PSC Digital Equity Outreach Team's qualitative data, displaying the number of coded responses from individuals and groups, separated by covered population groups, regarding barriers to adoption, with delineated specific subcodes. Digital skills or literacy was a prominent barrier across all covered populations identified in the Digital Equity Act, shown clearly in Figure 22. The analysis also shows the number of coded instances of

adoption barriers related to complexity, technical support, and cyber security concerns to be relatively high.

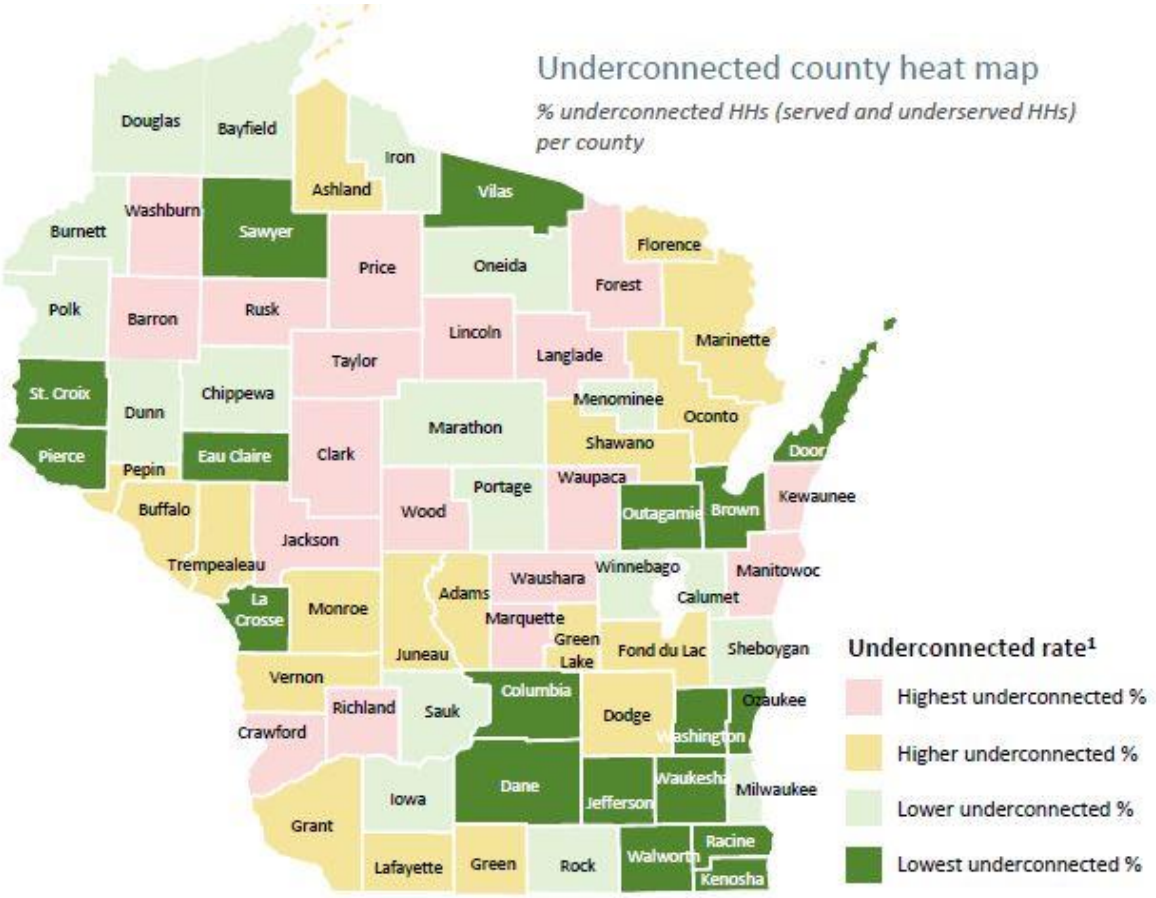
Figure 22: PSC Outreach Interviews, Responses coded as Barriers to Adoption Categories, by Covered Population



Underconnected and Digital Literacy

BCG's analysis found that when a broadband service is available, and households choose not to take service – termed 'underconnected' households - an estimated 46 percent are either not digitally literate or lack necessary digital skills, suggesting level of digital literacy affect broadband adoption rates. The map shows the percentage of underconnected households by county in Wisconsin (Figure 23).

Figure 23: Percent of households with broadband available, served and underserved



4.9 Federally Recognized Tribes: Broadband Assets, Needs, and Gaps

The Commission greatly values the opportunity to listen and learn about the experiences of Wisconsin's Tribal nations and is grateful for the ongoing engagement regarding broadband planning across the state. In January 2023, the Commission participated in a formal Tribal consultation to discuss upcoming BEAD and Digital Equity planning. The consultation was facilitated by the Great Lakes Inter-Tribal Council, Inc. and included representatives from 8 of Wisconsin's 11 federally recognized tribes. Tribal members shared challenges, details about future BEAD implementation, and Digital Equity issues. Much of the consultation centered around understanding the planning processes for the BEAD and Digital Equity programs and how each Tribe can prepare for the forthcoming funding opportunities. See Appendix II for a summary of this consultation.

Coordination with Tribes is important to ensure Tribal consent and sovereignty are respected throughout implementation of the BEAD and Digital Equity programs. In February, the PSC contacted each federally recognized Tribe to invite them to participate in the BEAD Local Planning Grant program. Five of these federally recognized tribes have elected to participate in the BEAD Local Planning Grant program, and the PSC will continue to engage all Tribes in Wisconsin to incorporate their insights and feedback into BEAD and Digital Equity planning.

As detailed in Section 4.6.1 UW Extension led the development and implementation of the Tribal Broadband Survey, which largely mirrored the survey designed for counties. The goal was to better understand existing broadband and digital equity planning and activities, needs and challenges, and priorities for each federally recognized Tribe in Wisconsin. For the six tribes that completed the survey, some important insights were gained about broadband assets, needs, and gaps.

The survey showed that of the 6 federally recognized Tribes that responded, 5 have worked with internet service providers and 4 have collaborated with neighboring counties to address broadband-related issues. Some Tribes indicated that ISPs have assisted with mapping and data efforts, provided in-kind staffing, and provided letters of support for grant applications.

Figure 24: Number of WI Federally Recognized Tribe Respondents (6 of 11) that are currently, or have in the past, worked with the local and regional partners below on broadband-related issues such as broadband internet access, adoption, or affordability.

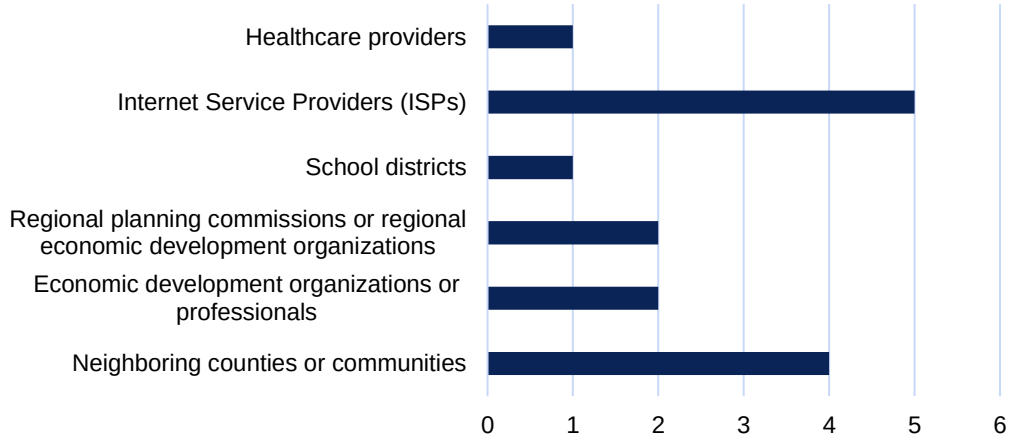
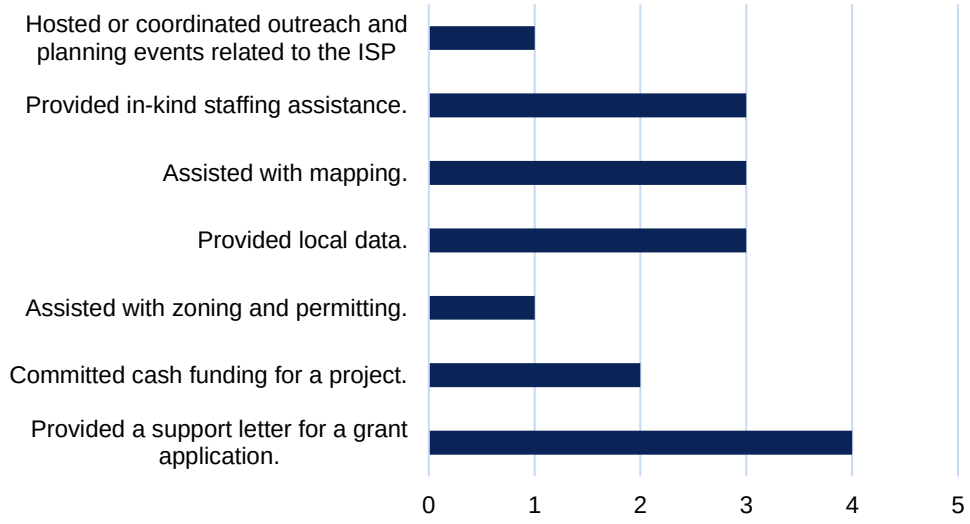
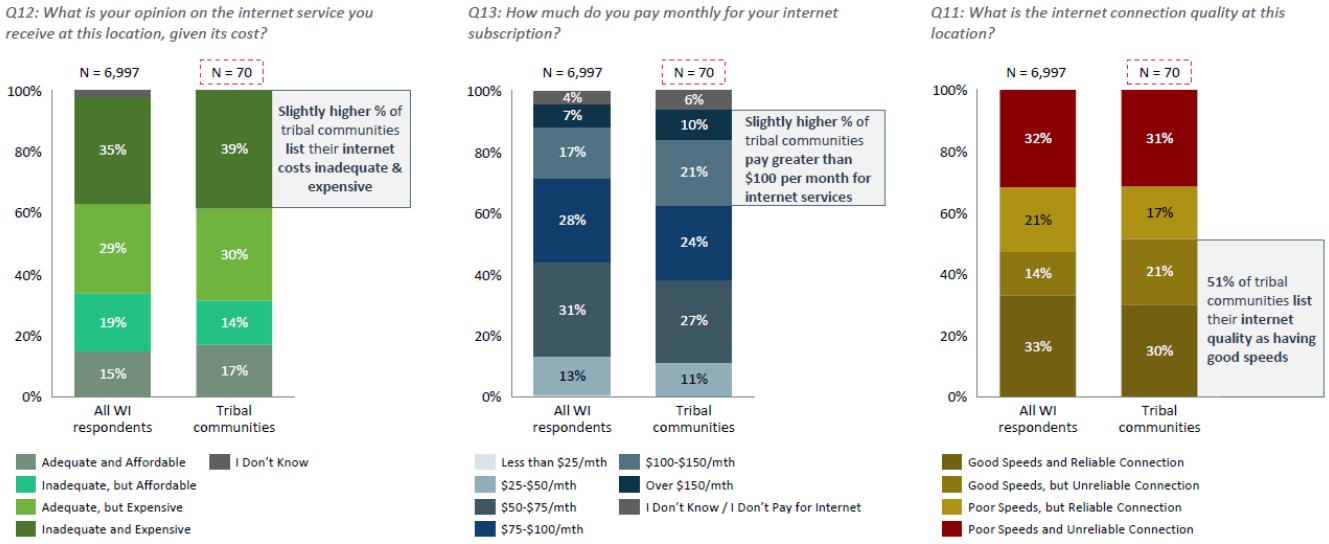


Figure 25: Activities that Participating Tribes Indicated Internet Service Providers have completed to support efforts to expand Internet infrastructure within the respective respondent's Tribal community



BCG conducted a separate survey across Wisconsin, which included individuals of Tribal communities, in part to understand the perception of quality and reliability for those that do have internet. The responses from Tribal community members were largely aligned with responses from all Wisconsin residents – shown in Figure 26 – with the caveat that there were a lower number of responses from Tribal community members.

Figure 26: Cost and perception of quality and reliability of internet, Tribal community responses compared to all WI responses.



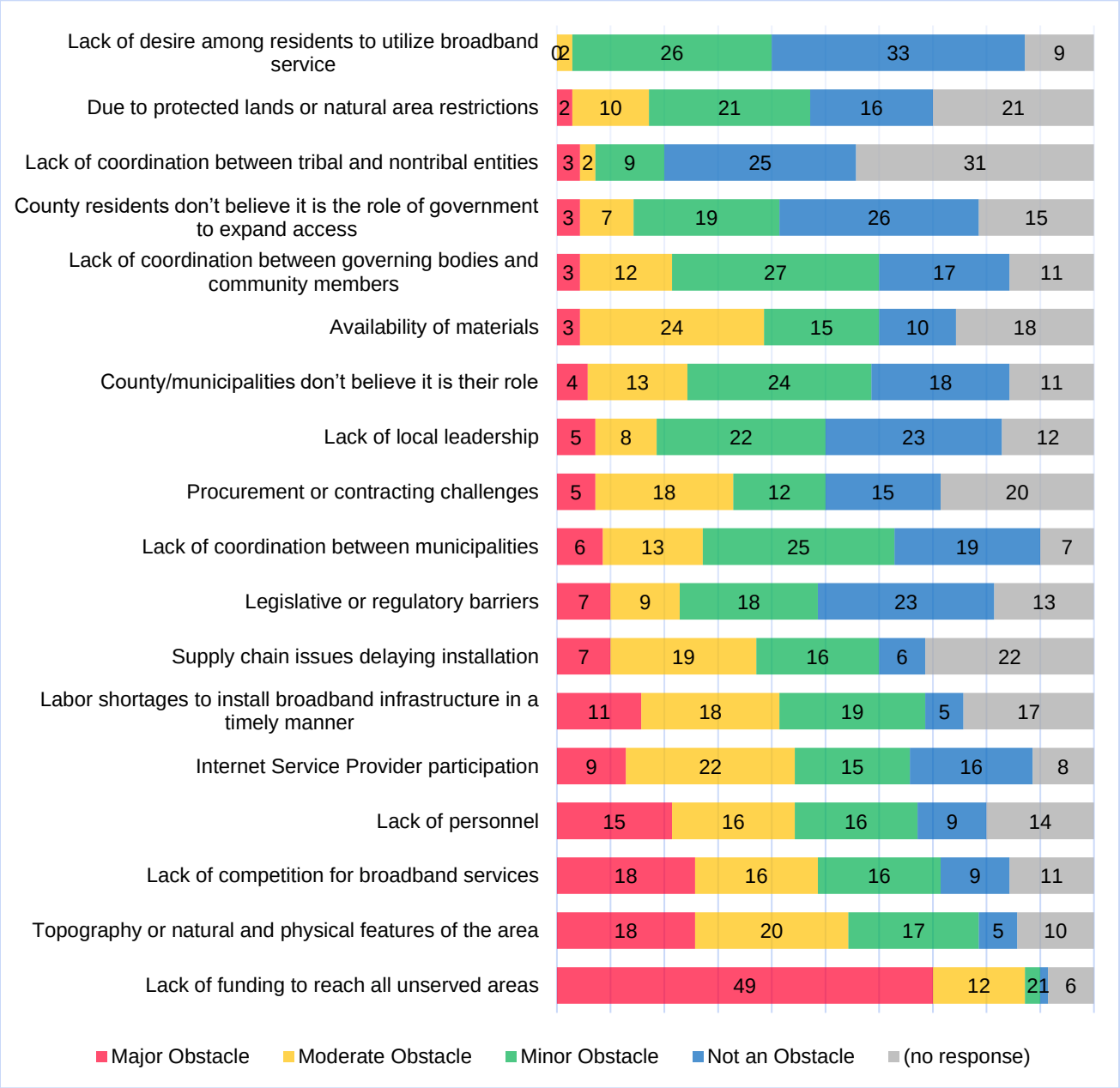
Note: Tribal community respondents were identified by respondent selections for question six (e.g., Native American Reservation) of the online and call-in surveys. Data analysis for monthly internet costs will include respondents who bundle plans with cable/phone and respondents who do not bundle
Source: WISER online survey data 2023, data accessed July 18, 2023 at 12:00 PM PT; BCG analysis

Low confidence in results due to low number of responses

5 Obstacles or Barriers

The PSC County Broadband Survey provides an important local government perspective on known and potential barriers to broadband deployment and digital equity. Figure 27 below shows that lack of funding to reach all unserved areas is the most frequently cited major obstacle. Counites also indicate that workforce, provider competition, and topography and/or physical features of area are major or moderate obstacles. 59 of 70 counties either see lack of desire among residents to utilize broadband service as either a minor obstacle, or not an obstacle at all.

Figure 27: Number of counties that ranked each potential barrier below as a major, moderate, minor, or not an obstacle to broadband access for all in their respective county



The subsections that follow discuss in more detail obstacles or barriers from the perspective of the PSC, providers, and private entities, and/or consumers - including the obstacles highlighted by counties through survey responses, as well as others uncovered through outreach and data collection.

5.5 Deployment Obstacles or Barriers

5.5.1 Funding

Wisconsin has approximately 253,000 unserved and 210,000 underserved locations. At present, the PSC estimates that there are approximately 150,000 to 210,000 existing enforceable broadband commitments. This includes the assumption that all ACAM locations will accept ACAM enhanced and build the location with a BEAD qualifying broadband technology. There are potential challenges with having enough available BEAD funding to adequately serve all of these locations, given that some of the most challenging locations – high-cost locations - will require significantly more investment. This potential obstacle of lack of funding is applicable to these BEAD public funds, as well as faced by the providers who are required to provide at least a 25 percent match, with preference going to those applicants that provide minimum BEAD outlay, providing as much private capital as feasible per location and project, to best utilize BEAD funds. As noted above, counties perceive lack of funding to be a major obstacle, and during the Wisconsin Internet for All tour, providers shared this same concern, noting specifically that smaller providers have limited capital and ability to obtain substantial lines of credit for high-cost locations and projects.

An obstacle for the PSC will be to design BEAD programs to ensure the funds are deployed in the most efficient, effective, and equitable manner. Additionally, the PSC will also grapple with best designing other funding programs to best complement BEAD in order to reach all of these locations with the given funds in the short time frame.

5.5.2 Geography and Topography

Wisconsin has many locations that are considered rural and 97 percent of the unserved and underserved broadband serviceable locations (BSL) are in rural areas of the state. These locations come with numerous obstacles, the most immediate being the amount of space or distance needed to traverse to reach these locations. Many rural locations also have challenging terrain such as wetlands, forests, hills, and valleys that may require more time and specialized techniques to build the needed broadband infrastructure.

5.5.3 Data

Even with the ever-improving national FCC data and the use of location-specific geographic data, gaps and inconsistencies persist. During the Wisconsin Internet for All Listening Tour, consumers and providers both named inaccurate or missing data as a barrier to full adoption. Many expressed frustration with the challenge process established by the FCC to build their most recent version of the Broadband Serviceable Location Fabric, which informed the allocation of BEAD funds to states.

The PSC anticipates ongoing obstacles with obtaining the most accurate and up-to-date data on broadband availability, speeds, and other important metrics, but has taken important steps to

reduce the information and data gap as quickly as possible through the process of BEAD implementation.

5.5.4 Provider Participation and Contracting

Through the ongoing engagement process with providers and other important stakeholder groups, the WBO has heard repeatedly that small to medium sized providers are unsure of their ability or capacity to apply for BEAD funding for a few key reasons. These potential BEAD applicants may have limited capacity to comply with the requirements of the BEAD program, have limited access to capital, limited matching funds due to the program's preference for minimal BEAD outlay which may translate to the largest match gaining preference in many cases, and the requirement for a secured pre-award Letter of Credit. These challenges are further pronounced for projects attempting to reach some of the most challenging and costly locations, many of which are rural and in closest proximity to smaller providers that lack this capacity. Lastly, procurement processes and securing contracts with all the necessary parties can be time-consuming and may be seen as infeasible given BEAD requirements for providers with limited existing funding and capacity.

5.5.5 Supply Chain, Materials, and Construction

Limited availability of materials, due to supply chain, manufacturing constraints, and others, has heightened costs and timelines for broadband projects in recent years. This obstacle was most burdensome at the height of the COVID-19 pandemic, but the effects and potential barriers to accessing needed materials for broadband infrastructure are still present and anticipated for the next few years. It is also anticipated that with the increased volume of broadband infrastructure projects across the nation, competition will heighten for procuring materials nationally, potentially putting a strain on key materials such as semiconductors, batteries, network switches, fiber, and conduit – which may disproportionately impact smaller providers without bulk purchasing capabilities.

The construction season for broadband infrastructure projects in Wisconsin is highly dependent on the weather, particularly the length of the winter season. This is especially a challenge for fiber construction which requires burying underground conduit and fiber which cannot occur once the ground has frozen. Wisconsin's limited construction season also exacerbates procurement and competition for services and contractors, such as directional boring and locating services. In Wisconsin, locating services have been a substantial challenge for fiber build out projects due the need for additional labor and workforce capacity, detailed further below.

5.5.6 Workforce and Labor

Broadband infrastructure projects require a wide range of positions beyond simply construction to ensure the successful deployment and ongoing operation of networks built with BEAD funding. As noted in the Broadband Deployment Gaps and Needs section of this Plan (4.8.1), Wisconsin will likely see a broadband workforce demand deficit across multiple occupational roles, and the Commission anticipates gaps in available expertise in roles such as trenchers and engineers.

Throughout the PSC's Wisconsin Internet for All Listening Tour, providers echoed these projections, noting that workforce issues are increasingly a barrier to full expansion of broadband throughout the state. Organizations that work towards increased broadband

connectivity and digital equity noted that financial barriers resulting in a limited workforce capacity impeded much of their work, specifically lacking workforce capacity to apply for grants and administer their respective programs.

5.5.7 Policy and Regulatory

In Wisconsin, most local governments must satisfy a number of statutory requirements in order to construct, own, or operate any facility providing video service, telecommunications service, or broadband service to the public, directly or indirectly. Section 66.0422 of Wisconsin state statute requires local governments to (1) hold a public hearing on the proposed ordinance or resolution, (2) notice of the public hearing to those that would be affected, and (3) 30 days before the public hearing the local government must provide a detailed analysis of the costs and revenue projected for the project, as well as a cost benefit analysis on at least three-year timeline. This process does not apply if the governing board of the local government votes to send the question to advisory referendum vote to allow the local government to operate such a facility. The other way to bypass the public hearing process, outlined in WI State Statute Section 66.0422(2), is for the local government to ask all existing providers if they currently, or within nine months, will serve the proposed area. If no written responses are received within 60 days, or the local government proves the letters they received were not accurate, then the local government may enact an ordinance or adopt a resolution. While local government owned or operated broadband networks are not outright prohibited, these requirements establish complex and time-consuming procedures for any local government considering this option for a BEAD broadband project. Some smaller providers may also see policy rules and requirements put forth in the BEAD Notice of Funding Opportunity as an obstacle or barrier.

State and local permitting as it relates to environmental, cultural and historical protections may pose an obstacle for some potential projects, particularly in communities that have not completed the Broadband Forward! Certification (see Section 4.7.1), which works to streamline administrative procedures by appointing a single point of contact for all matters relating to a broadband network project, adhering to a timely approval process, charging only reasonable fees for reviewing applications and issuing permits, imposing only reasonable conditions on a permit and not discriminating between telecommunications service providers.

5.5.8 Local Capacity

Successful broadband deployment projects require extensive local coordination, planning, and leadership. The PSC has been diligently working to convene key stakeholders to improve local and regional capacity, and to provide resources and technical support to ensure communities are equipped to both begin broadband planning at whichever stage they are at and take advantage of the broadband expansion opportunities coming through the BEAD program. For this reason, the PSC used a significant portion of its BEAD planning funds for the BEAD Local Planning Grant Program, to provide a formula allocation of planning funds to counties and Tribes that opted into the program. This additional funding helps bridge the funding gap and potentially the subsequent capacity gap, but the PSC also recognizes that a one-time funding award will not solve the long-term local capacity challenges related to broadband planning and collaboration.

5.6 Digital Equity Obstacles and Barriers

5.6.1 Digital Skills/Literacy

To inform Wisconsin's Digital Equity Plan, PSC staff and UW-Extension have conducted over 100 outreach events to covered populations across the state through the Digital Equity Outreach and Engagement initiative. The data and insights gathered have highlighted critical insights around digital equity needs and broadband access. 79 percent of Wisconsin's population falls under one or more covered population category – most respondents identified as more than one covered population group, but the largest covered population group is rural Wisconsinites.

Respondents were asked to identify what prevents them from using the internet in the way they would like to. Broadband availability and cost were most frequently indicated by respondents, with various other obstacles and barriers captured in the 'other' category, including trust and security concerns, language barriers, and complexity. After access and affordability barriers, several dimensions of digital literacy were a clear obstacle for covered populations in the state. The data collection and analysis from the WBO's broadband intelligence consultant also finds digital literacy to be a substantial barrier when they looked at underconnected households. Affordability is a driving factor BCG's analysis found that of the households deemed underconnected, nearly 50 percent may lack necessary digital skills or literacy.

5.6.2 Affordability

Broadband affordability is an enduring obstacle for many Wisconsinites, with more pronounced barriers for some specific groups. Section 4.8.2 discusses the details of the PSC's analysis of broadband affordability gaps and needs. Responses to the PSC's WISER survey helped reveal that for those who do not currently subscribe to broadband, 28 percent cited cost as a barrier. When looking closer at adoption barriers, analysis showed that approximately 65 percent of households that do not adopt broadband face a cost burden, where the percentage of monthly costs for broadband service are deemed burdensome for the household. Cost burdened households in Wisconsin overall tended to be poorer and disproportionately black and Hispanic. Rural households also face on average higher broadband subscription prices, the median cost being roughly $10 more per month than in urban areas, and maximum subscription prices being around $60 more than urban areas. Ensuring affordable broadband subscriptions are tailored to all Wisconsin residents is an obstacle.

The ACP's future is a considerable unknown factor in determining the best path forward in ensuring affordable broadband service for all Wisconsinites. Uncertainty about whether federal funding will be continued or renewed for ACP is an obstacle for considering affordability thresholds for service from BEAD networks at the state level. In the near term, there is a substantial gap in ACP adoption in rural areas – a 37 percent lower adoption rate as compared to urban areas.

During the Internet for All Wisconsin Listening Tour, affordability was repeatedly listed as the foremost barrier to equitable access and adoption of high-speed broadband. Often, a location has only one internet service provider. Lack of competition may lead to high internet subscription costs. Consumers noted lack of provider interest in expanding service to less populated areas of the state. Citizens also relayed a lack of trust in providers as a barrier to full adoption. Many noted concerns about potential price increases. Some also expressed uncertainty about the sustainability of the ACP subscription discount.

5.6.3 Messaging and Communication

Ensuring consistent and accessible communication and messaging regarding all the opportunities, needs, and benefits of BEAD expansion is a challenge for the PSC and its partners and collaborators. It will be a challenge to ensure that applicants fully understand the BEAD requirements. During Internet for All Wisconsin Listening Tour events, participants echoed this, expressing that local, state and federal government outreach and messaging around grant programs, opportunities for feedback, and education about ongoing developments related to broadband could be improved.

The PSC also heard from consumers during these events that providers were hard to engage, that data and information sharing was limited, and that pricing and subscription packages were often unclear to consumers. Increasing engagement and transparency of providers and other stakeholders beyond the purview of the PSC is a potential obstacle.

6 Implementation Plan

6.5 Stakeholder Engagement Process

The PSC has many long-standing stakeholder groups it facilitates and regularly engages for collaboration to inform broadband planning efforts. With the arrival of BEAD and the Digital Equity Programs, these groups have pivoted their focus and efforts to this historic opportunity and are actively informing the PSC's planning efforts. The Governor's Task Force on Broadband Access (Task Force) was established by Governor Tony Evers in 2020 via Executive Order 80 and he appointed its members. The Task Force is charged to "Advise the Governor and Wisconsin State Legislature on broadband actions and policy, including strategies for successfully expanding high speed internet access to every residence, business, and institution in the state; initiatives for digital inclusion; and pathways to unlocking and optimizing the benefits of statewide, affordable access to broadband for all communities in Wisconsin.

The Task Force is a key group of diverse stakeholders that help to inform broadband and digital equity planning at the Commission. In 2023, the Task Force aligned their discussions and preparation with Internet for All programs to ensure successful planning and implementation of both BEAD and DE programs. The 2023 Task Force Report looked to the federal funding opportunities on the horizon and made some key recommendations, that have been integrated and aligned with this BEAD Five-year plan. The PSC will continue to rely on this diverse group of stakeholders through the BEAD planning and implementation process, engaging through monthly public meetings.

The PSC partners with UW Extension, DPI, and with other interagency groups, to engage and provide support to all populations in the state. Collaborative outreach and engagement with these partners – including the county and Tribal survey, webinars, the Internet for All Listening Tour (see Appendix I), and direct outreach to covered populations identified in the Digital Equity Act - substantially informed this BEAD Five-Year Plan and the Wisconsin's Digital Equity Plan. These partnerships and engagement efforts are ongoing, with collaboration picking up pace to ensure community understanding and engagement with the BEAD program, and

encourage communication and engagement from local governments, providers, and relevant organizations.

The PSC regularly engages industry groups and local providers regarding broadband programs and funding opportunities and has been proactively communicating updates and progress regarding the development of Wisconsin's BEAD program. Throughout this process we've provided opportunities for feedback and maintain open channels of communication with our state's provider community. The PSC's broadband grant program, established in 2014, has fostered many of these ongoing important channels of communication, and the PSC intends to continue actively engaging providers, providing support and guidance to ensure a successful BEAD program.

The PSC Digital Equity Outreach Team and the Digital Equity Outreach Planning Grant awardees actively engage underrepresented groups and covered populations in the state to understand the evolving barriers and needs of Wisconsin's diverse population. The Outreach team has met with over 100 individuals and groups across all covered populations to better understand their needs and barriers that have deepened our understanding of quantitative data analysis across the key metrics of access, affordability, and adoption. Digital Equity Outreach Planning Grant awardees are groups embedded in their communities working directly with underrepresented groups, who are integrating outreach efforts into their existing activities to inform this BEAD Five-Year plan, the Digital Equity Plan, and planning going forward. These efforts have created an important foundation for trusted engagement that the PSC intends to continue through the BEAD planning process and into implementation.

Staff have worked proactively with the PSC Tribal liaison to ensure timely and respectful outreach to Wisconsin's Tribal Nations regarding the BEAD and Digital Equity programs and the state's planning process. The PSC has a working relationship Wisconsin's 11 federally recognized Tribes, and has engaged with Tribal nations through formal consultation facilitated by the Great Lakes Inter-Tribal Council (see Appendix II for summary of the consultation). The PSC in collaboration with partner UW Extension has engaged five federally recognized Tribes through the BEAD Local Planning grant program and will continue to work closely with these Tribes to both provide resources and technical support regarding BEAD, and to incorporate their planned efforts and vision into our BEAD planning.

Across all stakeholder engagement functions, PSC has leveraged its long-time relationships within the Wisconsin broadband ecosystem, and sought to expand its reach to a broader set of individuals and organizations impacted by lack of broadband. Efforts related to technical assistance, location coordination, workforce planning, and digital equity outreach will continue into the implementation phase of BEAD.

6.5.1 List of Stakeholder Engagement Activities

See Appendix III for a complete list of stakeholder engagement activities.

6.6 *Priorities*

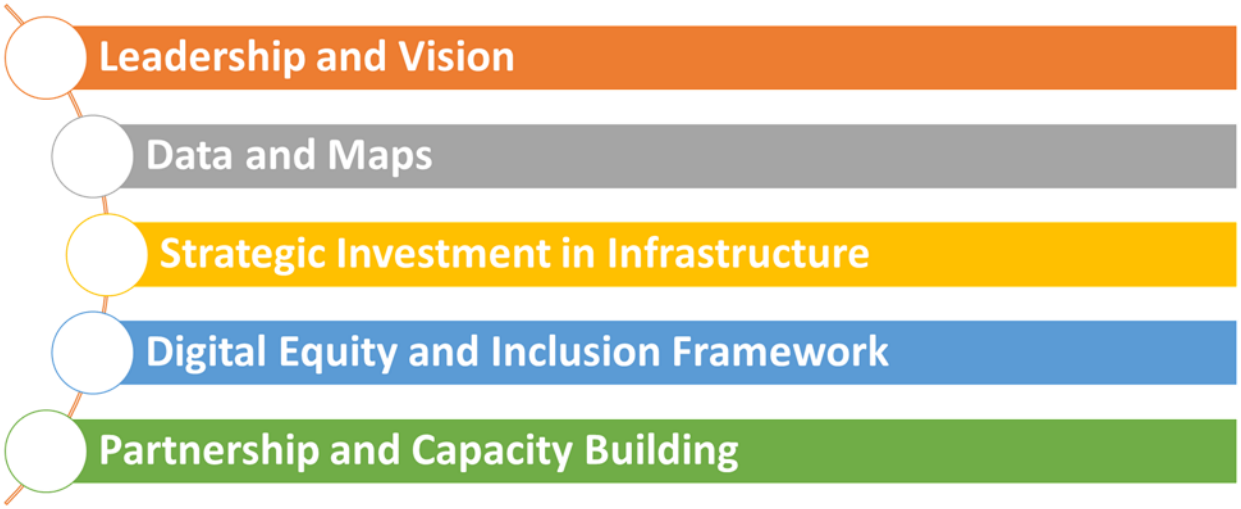
Table 7: Priorities for Broadband Deployment and Digital Inclusion

Priority	Description
Leadership and Vision	Serve as the leader and coordinator of broadband and digital equity programs, data and activities for the State of Wisconsin.
Partnership and Capacity	Foster greater partnership and broadband planning collaboration with variety of stakeholders, state and local governments and Wisconsinites
Maps, Data Collection, and Analysis	Use data, maps and expert analysis to understand and deploy best use of funds and invest the optimal amount of public dollars in access, affordability and adoption to get the best impact and serve the highest need for sustained long term results for Wisconsin
Infrastructure Expansion	Deploy funding to eligibility entities to construct new and improved broadband facilities for all unserved and underserved locations in Wisconsin.
Digital Equity and Inclusion	Develop and support intentional activities and investments to grow digital opportunity.

6.7 *Planned Activities*

The PSC will pursue specific achievable goals and objectives listed section 2.2 under the five implementation categories of priority activities: leadership and vision, partnership and capacity building, data collection, maps and analysis, infrastructure expansion, and digital equity and inclusion. The goals and objectives are informed by the PSC's extensive stakeholder engagement.

Figure 28: Five implementation categories



6.7.1 Leadership and Vision Activities

- Serve as the leader and coordinator of broadband and digital equity programs, data and activities for the State of Wisconsin.
- Staff the Governor's Task Force on Broadband Access and provide expertise, information and data as the Task Force executes their charge to recommend policy, programmatic, and funding pathways that advance broadband goals and digital equity.
- Provide interagency leadership, information and alignment of Broadband goals, data and strategies across the state.
- Ensure that Wisconsinites and broadband stakeholders are aware of federal and state funding opportunities by way of technical assistance, sharing best practices, webinars, workshops, newsletters, local, regional, and statewide in-person meetings, providing general assistance, and supporting applications.

6.7.2 Partnership and Capacity Building Activities

- Update and publish a playbook as a resource for communities and technical assistance providers.
- Promote community certification programs, such as Broadband Forward! and Telecommuter Forward! and provide support for communities through the process.
- Support broadband technical assistance work, facilitate connections between communities and providers and between projects and funders.
- Foster greater partnership and broadband planning collaboration with counties and Federally recognized Tribes through the BEAD Local Planning Grant program
- Work in collaboration with the PSC Digital Equity Outreach Team to couple outreach and engagement efforts with the BEAD program objectives
- Support and include organizations such as workforce development boards, economic development, labor groups and unions, contractors, high schools, higher education and technical colleges, and State agencies.

6.7.3 Maps, Data Collection, and Analysis Activities

- Continue to update and improve the Wisconsin Broadband Map (WBM), Wisconsin Broadband Planning Map, and the Wisconsin Broadband Grant Footprint.
- Promote the Federal Communications Commission's (FCC) National Broadband Map and the opportunities for the public and stakeholders to challenge availability and location data within the map. Align state mapping efforts and products with the federal government.
- Support statewide surveying via the Wisconsin Internet Self-Report (WISER) survey.
- Use data collected through broadband intelligence by contracted consultant, other agencies, crowd-sourced data and the National Broadband Availability Map (NBAM) to continue to improve understanding of access, performance and costs in the State.
- Use American Community Survey and other data to provide information regarding whether broadband is equitably available and affordable for covered populations identified in the Digital Equity Act and between urban and rural populations.
- Effectively utilize the Broadband Intelligence Contractors data deliverables and BEAD planning grant patterners, Digital Equity Outreach grant partners and local government

to inform BEAD program planning as well as provide data publicly for community planning and transparency.

6.7.4 Infrastructure Expansion Activities

- Fully deploy federal funds to achieve all the needed broadband infrastructure expansion and improvements to achieve internet for all Wisconsin residents, businesses and organizations by 2030.
- Promote public-private partnerships and other community supported efforts prioritize high performance projects and leverage additional public and private investment in resilient broadband infrastructure that will be affordable for residents.
- Coordinate and when appropriate braid federal, state, local, and private dollars to broadband infrastructure investments for unserved and underserved locations and as needed for middle mile projects.
- Plan, coordinate, distribute, and capitalize on Bipartisan Infrastructure Law (BIL) programs including the Broadband, Equity, Access, and Deployment (BEAD) Program and Digital Equity Programs.
- Leverage local planning resources and GIS expertise to ensure all homes and business receive service, even in cases where they are surrounded by served locations or fall outside proposed project construction by using line extensions and creative grantmaking processes.
- Actively engage and coordinate with industry and workforce development stakeholders to ensure timely workforce development efforts to support BEAD infrastructure projects

6.7.5 Digital Equity and Inclusion Activities

- Publish the Wisconsin Digital Equity and Inclusion Plan informed by stakeholder input and data.
- Align Wisconsin's BEAD program with the goals and objectives in Wisconsin's Digital Equity Plan along the five core digital equity values – access, adoption, affordability, sustainability, and trust.
- Disseminate best practices for broadband access, affordability, devices, internet adoption, digital literacy skills training, and other objectives in conjunction with Wisconsin's Digital Equity Plan.
- Develop and support intentional activities and investments to reduce and eliminate historical, institutional and structural barriers to broadband access and the use of information technology.
- Continue and scale outreach and promotion of the Affordable Connectivity Program (ACP) to reach the highest possible levels of participation in Wisconsin.

6.8 Estimated Timeline for Universal Service

The following page shows an estimated timeline for deployment of BEAD program funding. The BEAD Program can be broken in two phases, a planning phase and an implementation phase. The planning phase began in May 2022 with the publication of the program's Notice of Funding Opportunity, and concludes with the opening of the Subgrantee Selection Process, estimated to begin in June 2024. The implementation phase begins approximately at the determination of Wisconsin's BEAD allocation, which occurred on June 30, 2023.

6.8.1 Planning Phase

- Notice of Funding Opportunity / Letter of Intent: The program initiated with the release of the NOFO. On May 17, 2023, the Governor submitted a letter of intent to NTIA indicating Wisconsin's intent to participate in the program and designating the Wisconsin Broadband Office and Public Service Commission of Wisconsin as the administrator of the program.
- Planning Application Development: The Wisconsin Broadband Office developed an application for $5 million in initial planning funds.
- NTIA Review of Planning Application: The NTIA reviewed and approved Wisconsin's BEAD Planning Application.
- Five-Year Plan Development: Beginning on December 1, 2022, Wisconsin had 270 days to prepare its BEAD Five-Year Plan, this document.
- Local Planning Subgrant: As part of its planning effort, Wisconsin offered $1.5 million in subgrantee funds to Wisconsin's 72 counties, 9 Regional Economic Development Organizations, and 11 federally-recognized Tribes to facilitate visioning, outreach and coordination, data collection, and planning efforts by local partners.
- Workforce Planning Subgrant: As part of its planning effort , Wisconsin offered $100,000 in subgrantee funds to plan workforce development strategies and assess Wisconsin's workforce readiness related to BEAD implementation.

6.8.2 Implementation Phase

See Figure 29 below: Broadband Equity, Access and Deplyment Sequence and Timeline

6.8.3 Assumptions and Challenges

Key assumptions

The WBO is making a key assumption that the timeline it created for provision of universal service is correct. The WBO acknowledges that there are many variables in achieving the timeline it laid out, including but not limited to: NTIA approval, National Environmental Policy Act (NEPA) compliance and other regulatory hurdles, and variable construction timelines.

Key challenges

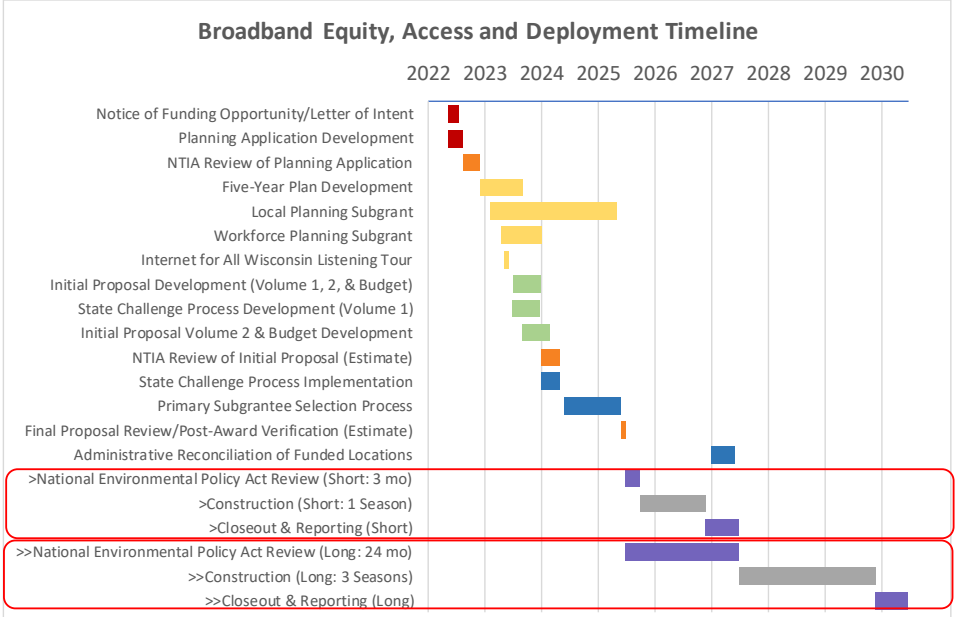
The WBO recognizes that there will be many challenges to achieving universal service in the timeline it laid out. Workforce challenges are prevalent throughout the state. Providers have noted that finding a qualified workforce to complete projects is difficult. Supply chain shortages may also present a challenge in meeting the timeline. NEPA compliance may present a challenge, as well. Ideally, the WBO would like projects to meet the finding of no significant impact (FONSI) standards of NEPA review. However, if an environmental assessment EA or environmental impact statement (EIS) is necessary for projects, the timeline will be delayed. The WBO recognizes that not all areas that are underserved or unserved have incumbent providers who are able to meet the need and willing to participate in BEAD. This will be a challenge to timely provision of service.

Figure 29: Broadband Equity, Access and Deplyment Sequence and Timeline

Broadband Equity, Access and Deployment Sequence

Pre-Application
NTIA Review
Outreach & Planning
Program Development
Subgrantee Selection
Compliance
Construction

Steps		Dates		
Task		Start Date	Duration (Days)	End Date
Notice of Funding Opportunity/Letter of Intent		5/13/22	66	7/18/22
Planning Application Development		5/13/22	94	8/15/22
NTIA Review of Planning Application		8/16/22	106	11/30/22
Five-Year Plan Development		12/1/22	270	8/28/23
Local Planning Subgrant		2/1/23	820	5/1/25
Workforce Planning Subgrant		4/17/23	258	12/31/23
Internet for All Wisconsin Listening Tour		5/8/23	29	6/6/23
Initial Proposal Development (Volume 1, 2, & Budget)		6/30/23	180	12/27/23
State Challenge Process Development (Volume 1)		6/28/23	180	11/1/23
Initial Proposal Volume 2 & Budget Development		8/29/23	180	12/27/23
NTIA Review of Initial Proposal (Estimate)		12/28/23	125	5/1/24
State Challenge Process Implementation		1/1/24	120	4/30/24
Primary Subgrantee Selection Process		6/1/24	365	6/1/25
Final Proposal Review/Post-Award Verification (Estimate)		6/1/25	30	7/1/25
Administrative Reconciliation of Funded Locations		1/1/27	151	6/1/27
>National Environmental Policy Act Review (Short: 3 mo)		7/1/25	92	10/1/25
>Construction (Short: 1 Season)		10/1/25	426	12/1/26
>Closeout & Reporting (Short)		12/1/26	211	6/30/27
>>National Environmental Policy Act Review (Long: 24 mo)		7/1/25	730	7/1/27
>>Construction (Long: 3 Seasons)		7/1/27	884	12/1/29
>>Closeout & Reporting (Long)		12/1/29	211	6/30/30

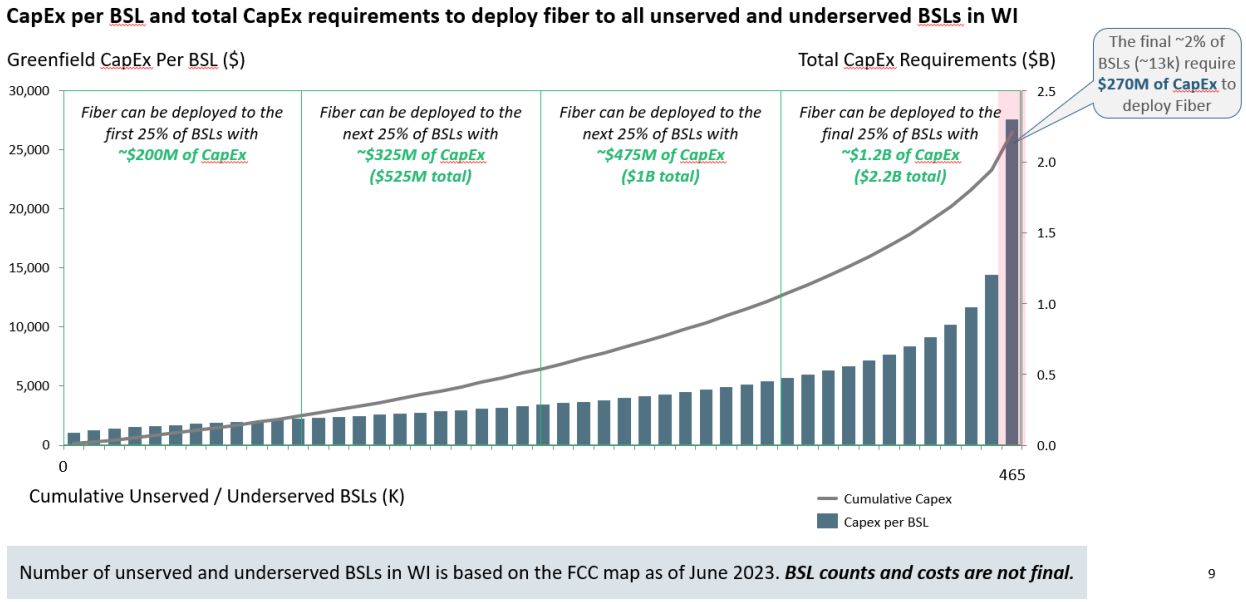


The WBO estimates that universal service will be achieved in or before 2030. The WBO estimates that the initial proposal will occur in 2023, and the state challenge process will be implemented in 2024. Subgrantees will be selected from 2024 to 2027. Construction will run from 2025 to 2028. Closeout of and reporting on the BEAD funding will occur through 2030.

6.9 *Estimated Cost for Universal Service*

The estimated cost of universal service varies significantly based on the preferred mix of technologies for provision of service. As the proportion of locations that will be supported by fiber increases, the universal cost of service increases. Based on initial modelling from a contracted consultant, it is estimated that it would cost approximately $2.2 billion in investment to service all locations with fiber assuming the most efficient deployment. As seen in Figure 30 below, this cost per location grows significantly for the last 2% of underserved BSLs.

Figure 30: Estimated Capital Expenditure required to deploy fiber to all unserved and underserved BSLs in Wisconsin



Number of unserved and underserved BSLs in WI is based on the FCC map as of June 2023. ***BSL counts and costs are not final.***

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This estimate assumes approximately 464,000 locations are in need of new or improved service or are in progress. As the Commission prepares for and conducts its State Challenge Process, it is likely that the count of locations eligible for BEAD funding will increase. For example, contracted consultant analysis indicates that 33% of Wisconsin locations that are advertised as served on the National Broadband Map experience actual speeds below 100/20 based on over 4 million speed tests from Ookla, OptiMap, and WISER. This data suggests that there are significantly more locations in need of new or improved service to reach meaningful universal service. While experienced speeds less than 100/20 may be sufficient for basic uses of broadband internet, the BEAD program goal is to provide service of 100/20 to all locations.

The necessary public investment represents a proportion of the total capital expenditure necessary to build broadband to all locations. As the capital expenditure cost per location increases, public subsidy must represent a higher proportion of total project cost, up to and including 100% of the initial construction cost. This is because maintenance and operating costs may be significantly higher in remote locations, and the revenue generated from subscriptions may only be sufficient to cover operating costs and not allow for a provider to recoup any of the

initial investment cost. In some locations, even if public subsidy covered 100% of construction costs, operating and maintenance costs are too costly to support fiber construction. Thus, as the required public subsidy for fiber installation reaches 100% of construction costs, other technologies must be considered. The result is a need for an "optimal mix" of technologies of fiber, fixed wireless, and satellite that allows for construction of fiber up to a public subsidy of 100% of construction costs, and then fixed wireless or satellite as is cost effective and technologically feasible due to topography or other characteristics.

The estimate is also subject to other variables that drive uncertainty. The model anticipates if construction of service began in 2023, whereas construction of BEAD-funded infrastructure will likely not begin until fall of 2025. While the model includes baseline inflation assumptions, it is expected that labor and material costs may increase significantly faster than inflation over that time period as historic investments drive scarcity in resource availability. For example, based on modelling, a 5% increase in labor rates would increase the deployment cost by $83 million, and a 5% increase in materials costs would increase the cost of deployment by $28 million. Compounded over several years, this could increase the cost of universal service by perhaps $100 to 200 million.

The most difficult to anticipate cost of deployment, which is not included in the estimate above, is the difficulty to recruit providers to build service in the most remote locations not adjacent to their existing service territory. In an unregulated market, the Commission lacks the ability to compel a provider to build service at actual construction cost (i.e. engineering and design, construction labor, materials, administrative costs). While the model may estimate a location costs $10,000 to build, an internet service provider must consider other variables. Providers generally prefer to expand their service to adjacent territories and in areas that are most cost-effectively served and thus present the highest opportunity for profit. As providers focus their efforts of construction on those preferred locations, it will require an increasingly higher offer of funding to compel them to focus their time and effort on more remote locations. Even as providers develop more capacity for construction, they must decide how to allocate scarce resources of workforce, managerial capacity, engineering and design expertise, limited capital, the tradeoff of investing in less profitable areas, and others. Thus, while the actual construction cost to build a location may be $10,000, a provider may need to forgo construction of other more profitable locations to pursue that location and may require additional funding to offset their lost opportunity for more favorable locations. It is not unreasonable to estimate that this "opportunity cost" may increase the cost to serve these remote locations by up to several thousand dollars per location.

6.10 Alignment

The BEAD Five-Year Action Plan is strategically aligned with the Wisconsin State Digital Equity Plan, both of which, through their primary goals of connecting all Wisconsinites and respective and overlapping planning activities, will enable economic and workforce development, digital skill education, improved digital services such as telehealth and digital learning, and ultimately will improve the livelihoods of Wisconsinites. The alignment of these BEAD and Digital efforts run alongside and are naturally enmeshed in the PSC's standing longstanding goal of universal service adoption and digital equity, evidenced by the Commission's history of successful state broadband programs and all of the outreach and technical support that supports this effort.

Outreach and engagement with counties and Tribes through both the survey and the BEAD Local Planning Grant program has attuned the PSC to upcoming capital projects and economic initiatives that BEAD can both bolster and that may conversely benefit the efficiency and reach of BEAD projects in communities across the state. This ongoing alignment with local governments and Tribes is also critically important so that the state can sync their planning efforts with existing and developing local broadband planning. Many counties have shared their planning reports and working engagement outputs through the PSC Broadband survey, and the Local Planning Grant program will continue to actively involve county and Tribal governments in state-level BEAD planning.

The PSC's priority is to ensure BEAD and Digital Equity Plan components align and complement the existing and aligned efforts across Wisconsin state agencies. The Commission sent a formal request to state agencies to specifically learn about any existing broadband and digital equity plans, needs or initiatives that agencies may wish to have incorporated into the state plan. The letter also served to inform state agencies on BEAD and Digital Equity funding coming to the state and the related activities that will be taking place over the next 4-plus years, to ensure on-going communication and alignment of relevant efforts.

Agencies were invited to submit a formal letter with information on their agency's activities, as well as recommendations for Wisconsin's broadband and digital equity planning through the Internet for All programs. The table below summarizes recommendations from agencies, particularly related to the BEAD program.

Table 7: Recommendations from State Agencies Related to BEAD

Agency (Link to Comment Letter)	**Recommendations**
Department of Public Instruction (DPI)	1. Require BEAD recipients to provide high-speed internet access at $30/month maximum to customers who qualify for the federal Affordable Connectivity Program (ACP). 2. Install fiber to connect our K-12 schools and public libraries that currently lack 1GB fiber connections. 3. Classify schools and libraries with less than 100/20 service as "underserved" and thus qualify for funding in this category. 4. Support funding for an internet-accessible device for every student and devices for library patron checkout. 5. Support funding for Wi-Fi on school buses. 6. Provide open education resources to support digital skills education.
Department of Health Services (DHS)	1. Improve access to telehealth services 2. Ensure affordable broadband access for Medicaid members 3. Improve broadband access for people with disabilities 4. Align efforts with the digital equity goals of the Governor's Task Force on Broadband Access

Department of Corrections (DOC)	1. Increase fiber infrastructure across the state to expand broadband availability

Technical assistance: Helping Regional Economic Development Organizations align economic development to broadband planning

The BEAD Local Planning Grant program has enabled counties and regions to further or begin important broadband planning. Participating counties and regions (see Section 4.6.2) submitted interim reports in June, providing updates on their funded activities to-date. Most counties and regions had convening stakeholder sessions and/or planning groups. Some shared interim broadband planning reports and planned next activities, indicating planned data collection efforts, stakeholder engagement, ability to align with current or planned economic development efforts, and steps in preparation for potential BEAD opportunities.

7 Appendices

Appendix I: Internet for All Wisconsin Listening Tour Summary

Internet for All Wisconsin Listening Tour Summary
In the spring of 2023, the State of Wisconsin Public Service Commission (PSC) held the Internet for All Wisconsin Listening Tour, a series of nine in-person and two virtual interactive meetings designed to help develop the state Five-year Action Plan and Digital Equity Plan.

The events held place in the following locations:

In person		
Date	***Location***	***Attendance***
Monday, May 8 1:00-3:00p.m.	UW Stout Memorial Student Center Menomonie	25
Tuesday, May 9 8:30-10:30a.m.	Seven Winds Casino Lodge and Conference Center Hayward	24
Tuesday, May 9 2:30-4:30p.m.	The Pines Event Center Rhinelander	36
Tuesday, May 9 1:00-3:00p.m.	Milwaukee 7 Milwaukee	9
Monday, May 15 1:00-3:00p.m.	La Crosse Public Library La Crosse	25
Friday, May 19 10:00a.m.-12:00p.m.	Fox Valley Technical College-Appleton Appleton	22
Tuesday, May 23 9:00-11:00a.m.	Madison College Truax Campus Madison	26
Tuesday, May 23 1:00-3:00p.m.	Platteville Public Library Platteville	24
Thursday, June 1 3:00-5:00p.m.	Mid-State Technical College Wisconsin Rapids	28
Virtual		
Date	***Location***	***Attendance***
Monday, May 22 6:00-7:30p.m.		33
June 6 8:30-10:00a.m.		72
Online Survey		Responses
Available May 1 – July 1		41

The PSC held these events after consulting with Wisconsin's nine regional economic development partners about the best way to engage local citizens. The events featured remarks from a representative from the regional economic development partner, a video from Governor Evers, and a welcome from a PSC Commissioner. Governor Evers attend in person at the La Crosse event. The events were well attended. Attendees included elected officials and their staff,

local government, non-profit organizations, representatives from internet service providers, and citizens. PSC staff gave a brief presentation at each event, and then participants moved to small group discussions.

The participants discussed the following questions:

- Why the participant decided to attend the listening tour event
- What barriers exist to providing access to high speed broadband for all homes and businesses within the state of Wisconsin?
- What would success look like for the people, businesses and organizations if Wisconsin had Internet for All?
- In locations where broadband infrastructure is not an issue, what other challenges exist to the everyday use of the internet?
- What can the Wisconsin Broadband Office do to facilitate making high-speed broadband available for all homes and businesses in the state?

At the in-person events, after discussing the questions, the attendees used stickers to assign priority to various themes that emerged throughout the discussion. That exercise informs this report.

Wisconsin's Connected Future

Listening Tour participants were excited to share their vision for a connected future with PSC staff. Participants shared the various ways full internet access and adoption would improve their lives. Among the most common positive outcomes were: telehealth and improved health outcomes, the ability to age in place, remote work opportunities and participation in a global marketplace, increased tourism and rural economic development, and educational opportunities.

Telehealth and improved health outcomes

Improved health outcomes were repeatedly mentioned as a positive outcome of a connected Wisconsin. Participants spoke out about the desire to access telehealth services. Particularly in rural areas, staff heard that telehealth provides a much more convenient, accessible option as opposed to driving to appointments in nearby towns and cities. Participants were excited about improved health outcomes throughout the state as a result of more citizens utilizing telehealth services.

Aging in place

Participants also spoke of the ability to age in place as a benefit of full internet access and adoption. Many participants emphasized their love for where they chose to live, and a desire to stay in that location as they age. They shared that many services available through the internet will enable them to stay in their homes, including telehealth, delivery services and more.

Remote work opportunities and participation in a global marketplace

Many participants spoke of remote work opportunities as a benefit of a connected Wisconsin. The ability to get online allows residents to have access to more job opportunities, regardless of their geographic location. Residents who want to work from home will be able to take advantage of the growing number of work from home opportunities. Additionally, staff heard that citizens could start small businesses and market their goods and services online regardless of where they were located in the state. This ability to participate in a global marketplace was one of the most exciting aspects of a connected Wisconsin.

Increased tourism and rural economic development

Participants were clear that tourism would increase as a result of a more connected state. Rural communities without internet would see more tourism if visitors were able to use the internet. Those visitors may even stay longer if they were able to work remotely from a location with internet access. Rural economic development is an added benefit of an online population. More rural citizens would be likely to open businesses if they could advertise and sell online. Rural economic development and increased tourism go hand in hand.

Educational opportunities

Access to online educational opportunities was frequently cited as a benefit of a more connected state. The COVID 19 crisis taught us that citizens should be able to access education from their homes if needed. Remote educational opportunities would also help those that might not otherwise be able to get advanced educations return to school. The ability to get a higher education from home on one's own time would be a benefit of a fully connected state.

Barriers and Considerations

Cost of broadband subscriptions

Listening Tour participants overwhelming cited the cost of broadband subscription as the foremost barrier to equitable access and adoption of high-speed broadband. Many shared that this high cost was often due to having only a single internet service provider option and that lack of competition leading to inflated subscription prices in their area, often for a service with inadequate speed offerings. Participants that were sharing their perspectives as consumers noted that there is a lack of provider interest to build needed broadband infrastructure in more challenging and expensive areas of the state, some noting that their disregard for these areas is due to seeing limited profit margins. Providers shared that for some small to mid-sized providers, having sufficient upfront capital expenditure to undertake these expensive infrastructure builds is a substantial barrier, as well as ongoing maintenance costs which cannot be funded by some government grants.

More broadly, participants shared that cost is a challenge across the state even where there is more than one option with some existing market competition. Many households and individuals shared that broadband subscriptions are often relegated to a lower priority for lower income households, where housing, food, childcare, and healthcare costs often take precedent. Many acknowledged that existing broadband subscription subsidies are impactful but felt not enough people were enrolled due to simply not knowing about the benefit or experiencing challenges when attempting to enroll. Participants also brought up trust issues, noting apprehension with ISP pricing tactics and felt there was limited transparency regarding subscription price tiers and associated fees, as well as uncertainty about the sustainability or permanence of the ACP subscription discount.

Business case and financial challenges, Location and Geography

At all the Listening Sessions, barriers associated with geography were repeatedly mentioned. Challenging topography increases the cost of building broadband infrastructure and often deters providers from pursuing high-cost locations in these areas. These communities are often left unserved or underserved with inadequate broadband service due to outdated technology and/or deteriorating network components, or they simply do not have service at all. The other geographical theme that arose repeatedly was lack of high-speed broadband access due to living in a rural area with low population density. Low population density areas may also have higher upfront capital costs and providers often see less return on their investment (ROI) in these

areas. These challenges are defined as geography barriers, but topography and population density are only encumbering factors due to the costs they require to overcome. Many participants acknowledged that the core issue related to geography and population density is the minimal return on investment for providers, at least over a near term time horizon.

Workforce and Labor

Organizations that work towards increased broadband connectivity and digital equity noted that financial barriers impeded much of their work, specifically lacking workforce capacity to apply for grants and administer their respective programs. Providers and private-sector participants across all of the Listening Tour sessions noted their challenges with finding a retaining an adequate labor force across all positions, but particularly roles related to construction of infrastructure.

Infrastructure, technology, and Supplies (access + adoption)

Infrastructure or lack thereof is often directly connected to the reality of return-on-investment projections for specific regions. Providers noted that the lack of infrastructure was also due to the rising costs of materials and supply chain delays. End-user technology and supplies were highlighted as a challenge from both subscribers and users, the latter not having access to the needed devices and equipment. Providers shared that subscriber's outdated end-user equipment – routers and devices – often hampered the broadband service delivered to households.

Data accuracy and availability of information (outreach and delivery of information for adoption)

A reoccurring barriers theme to access and adoption was lack of information and inaccurate or missing data. Many of the engaged participants explicitly called out the inaccuracy of broadband availability maps, both in the data that describes broadband performance levels and more simply where people have access to broadband service. Participants also expressed frustration with the challenge process established by the FCC to build their most recent version of the Broadband Serviceable Location Fabric, which informs the allocation of BEAD funds to states. Beyond accuracy of data and maps, participants felt there was a lack of clear information from both government and providers, primarily a lack of transparency as well as limited outreach and messaging. Participants highlighted that many providers were hard to engage, that data and information sharing was limited, and that pricing and subscription packages were often unclear to consumers. Some expressed that local, state and federal government outreach and messaging around grant programs, opportunities for feedback, and education about ongoing developments related to broadband were lacking.

Education, outreach, digital skills, and personal barriers

Participants were clear that there are several barriers beyond physical access, technology, and cost. Broadly it was noted that a lack of digital skills was an impediment for many when trying to access the internet successfully. We heard particularly that for older populations, there is often a limited understanding of key digital skills and that digital education opportunities were often limited. For all specific communities and groups across the state, participants highlighted a need for tailored digital education and technical support to meet each communities need that includes multilingual support and accessibility measures.

Another challenge faced by both providers and those working to connect specific communities is understanding the specific internet use cases across the state – more specifically understanding the groups that are uninterested in adopting available broadband. In these scenarios, often the core issue is education about the benefits of broadband access based on the specific needs of

each individual, but participants noted limited capacity to overcome these mental barriers of certain populations through outreach and education.

Status quo/resistance to change: existing policy, leaders, partnerships, and providers

Participants also noted some resistance to change from leaders in government and from providers. Participants expressed that many elected officials face a knowledge gap when it comes to issues about broadband access and digital equity. We heard both that local governments shouldn't be expected to provide what is provided by private companies in a private market, and others noted that because of the essential nature of broadband that it should be regulated as a utility. Existing policies and requirements from federal and state grants also posed challenges, with participants specifically calling out challenging timelines and limitations on use of grant funds. More broadly, we heard from some participants that there is a power imbalance where the state and local governments are not able to hold providers accountable.

Trust and Security

Relatedly, many expressed that many populations often experience a lack of trust in relation to providers, technical assistance, and generally accessing the internet. This lack of trust can stem from many places – fear of security or surveillance, concern from undocumented households about personal security, and fear of hackers or online scams. Cyber security concerns were highlighted numerous times and the need for increased education and resources for all populations in the state to have the correct skills and knowledge to feel safe online.

Role of the Wisconsin Broadband Office

Communication, learning, messaging, guidance, tech assistance

A thread that ran through all the Listening Sessions was the expressed need for increased and more effective communication to all stakeholders, particularly with the public. Participants noted a need for more robust messaging around grant program opportunities, guidance, and technical assistance that is available. We heard that the Wisconsin Broadband Office maintains a high level of transparency, but that clearer messaging and consistent guidance regarding grant programs would be a positive step forward. Participants highlighted the existing technical assistance as valuable but underlined the need for more accessibility of resources and messaging about said resources. [*equity*] It was highlighted that the WBO should center their outreach, messaging, and guidance around equity – meeting people where they are in terms of enabling trusted messengers as well as ensuring accessibility. This requires ongoing engagement with diverse groups and stakeholders to continue learning about how needs change and maintaining awareness of how our efforts are being received.

Simplify

Increasing communication and tailoring messaging was a pivotal takeaway, and in tandem with this, participants noted the need for simplification and streamlining of WBO processes where possible. Many attendees recognized the inflexibility of federal requirements for certain grant funded programs, but nonetheless asked the WBO to work towards streamlining and simplify processes related to applying for grants, reporting, and submitting grant reimbursement requests. For pieces of the process that are not easily streamlined, we heard recommendations for increased technical support related to generally reoccurring barriers for broadband deployment, interpreting contracts, and understanding federal regulations. Related to messaging and availability of information, participants noted having a central hub for broadband related resources would make navigation easier for communities. Attendees also

expressed challenges navigating the Commission's ERF system and the WI Broadband Map. Moreover, the greater ask was for improved clarity in required processes, increased useability of online resources, and more robust technical assistance and guidance resources.

Facilitation, collaboration, building connections

Through the act of doing the Listening Tour as well as hearing directly from participants, the Broadband Office learned that we can do more to facilitate conversations, connections, and potential collaboration among key stakeholder groups to improve broadband access, affordability and adoption across the state. Participants noted the need to convene the right stakeholders, facilitate trust building, breakdown silos among the important stakeholders, share resources and knowledge, and ultimately improve planning efforts. Particularly we heard that bridging communication divides between ISPs and communities and local governments is key to improve planning efforts. It was noted that this sort of intentional engagement across sectors and stakeholder groups will help design more inclusive and expansive initiatives, stretching efforts to more people and communities as collaboration grows.

Planning, deployment, grant programs

Finally, participants largely focused on how the broadband office can improve processes to benefit provider and community planning, improve broadband infrastructure buildouts, and improve the WBO's broadband grant programs. Regarding grant programs, participants highlighted a need for clear requirements and expectations that match realistic timelines, robust monitoring, accountability measures for grant recipients, and simply more funding for broadband deployment. Many agreed that rural areas should be prioritized in grant funding decisions, which often have the most expensive locations to connect. Relatedly, accurate data and maps should be a continued effort to inform this important work, particularly to get better granularity in rural areas of the state. Participants from local government recommended the use of incentives or policy tools to better help local governments navigate funding opportunities and plan broadband projects, particularly when they are unable to engage an ISP partner. Lastly, with the influx of BEAD funding in mind, participants noted the need to focus funds on connecting unserved locations first and foremost.

Top 50 answers or themes to the question: What barriers exist to providing access to high-speed broadband for all homes and businesses within the State of Wisconsin?

1. Density of population
2. Affordability of service
3. Quality / accuracy of maps
4. Cost to construct
5. Topography, geography, terrain
6. Supply chain
7. Materials shortages for broadband infrastructure construction
8. Challenges getting accurate information /speed data from end users
9. Satellite service, weather cost issues
10. In this area, there is no new infrastructure and no fiber,
11. No middle mile,
12. burden falls on the counties who don't have matching funds
13. Cost of materials
14. Workforce (labor construction, technical jobs)
15. Providers are profit motivated, not impact motivated
16. Lack of funds
17. Need waivers
18. Cost prohibitive for ISPs to build and to operate.
19. Competition little providers needed too
20. Not regulated like public utility
21. Can't keep up and catch up with developing programs
22. Security/willingness barrier
23. Access to devices
24. Lack of tools, trying to use phone and assumes everyone has internet
25. Too expensive, low-income neighborhoods have less choice.
26. Lack of competition. Impasse with ISP and they have no other choice.
27. Resident reporting of gaps in service.
28. Infrastructure logistics (geography, construction season)
29. Trust
30. Tech skills (programs, knowledge)
31. knowledge gap not just a wire
32. Local government understanding buy in
33. Cost per mile, home passing
34. Don't have local telco: ISPs are they only ones willing to work in this area
35. Don’t even have access to 25/3
36. Reliability for video visits! Crucial for reaching folks in rural areas for telehealth.
37. “Once in a generation opportunity” – focus on those with nothing, first.
38. Build 21st century technology that will last until next century.
39. Availability of middle mile. Can’t provide last mile without middle mile.
40. Lack of educational opportunities. Awareness!

41. Folks need to understand the possibilities of internet. Services and digital literacy.
42. Spectrum licensing – wireless is not as reliable but improving.
43. Limited number of providers, competition is better for consumers.
44. Not economically feasible for providers to place fiber in low-density areas
45. Match funding- rural, high poverty, large geography + local gov can't provide
46. Scoring criteria from PSC – rural areas don't score as well
47. Wealthier counties are getting the funding not fair
48. Permitting and pole attachments
49. Small companies don't have enough to do what big companies should be doing
50. Service providers not applying for grants

Top 50 answers or themes to the question: What would success look like for the people, businesses, and organizations if Wisconsin had Internet for All?

1. Internet is as reliable and available as electricity and water and other public utility/essential service
2. Broadband seen as an infrastructure
3. Connecting community and improved social wellbeing.
4. Need future proof service speeds.
5. Equal digital access regardless of geography
6. "When speeds don't matter, we've accomplished the goal"
7. Barriers removed (food, affordability, healthcare, housing, education, utilities, transportation)
8. Anyone who wants it, has internet available to them
9. People not feeling trapped by service providers
10. Retaining and growing population
11. Service available everywhere, ISPs have success for business + end users
12. One stop shopping for internet, it is simple to arrange for service and easy to make changes to service
13. Any build out ensures that future operations can be sustainable maintained.
14. Telehealth
15. Create economic development, business "meta universities"
16. Get more folks to move to rural Wisconsin
17. Agriculture is increasingly driven by tech. More knowledge, more responsible, more efficient use of chemicals, better timing of products to market.
18. Education opportunities improve - remote options for place-bound people
19. Business growth due to more reliable service – all Wisconsin business access the global marketplace
20. Wisconsin has centralized locations for comprehensive internet connection and digital skills training and in-home assistance
21. Rural areas as leaders and not followers in technology and innovation
22. New business and startups in rural areas
23. Healthy competition in the internet marketplace for consumers
24. Economic development and economic opportunity
25. Wisconsin is a mecca for remote workers
26. Seniors and older adults stay in their homes longer and can age in place

27. The internet is affordable
28. Fewer barriers to knowledge
29. Easier to build and maintain personal and professional connections
30. Rural Health care – everyone has access to the wi-fi and medical care they need
31. Meaningful and real competition for ISPs, better pricing, and customer service
32. Reliability – redundancy for the internet, minimal outages that are promptly fixed
33. Everyone in the state of Wisconsin can watch every Packer game.
34. Smaller carbon footprint and less ecological impact, technology can reduce driving and improve efficient water use
35. Improved value of homes in rural areas, people can sell their home with ease
36. People can live in rural area and easily find work
37. Improved health outcomes
38. More stable tax base, more people live in Wisconsin
39. Internet Service Providers need less or zero government subsidies to operate
40. Funds are distributed based on need not based on who submits the best application
41. People are less lonely and more connected to others, increased sense of belonging
42. No data caps
43. Vibrant economy, longer vacations, less time driving and waiting and more time with family and creating wealth
44. Increase educational opportunity, any student can access any class, for homeschool, for virtual snow days, for advanced learning, to learn languages and specialized skills.
45. Not just smart cities, but smart communities – where transportation and government services are more efficiently managed.
46. People can live and work where they choose.
47. People with disabilities have better access to community, government services, education and economic opportunity.
48. Classes to learn to use the internet and computers would be free, available and in person.
49. 911 and mapping works in every location in the state.
50. People are safer, property can be monitored, emergency services are better.

Top 50 answers or themes to the question: In locations where broadband infrastructure is not an issue, what other challenges exist to the everyday use of the internet?

1. Frustration with ISPs
2. Cybersecurity/risks. Security risks only get tougher
3. Advertised rate are incorrect
4. Individual training (how to use internet)
5. More technical support
6. Artificial Intelligence (AI) is coming
7. Adaptability
8. Equipment limitation
9. Training on how to use technology
10. Education & training is necessary to create interest and adoption
11. Digital literacy skills
12. Need better service and support from ISPs
13. Education to adopt broadband - need to expand networks but with people

14. Affordability
15. Non digital natives need more and different support
16. $20-40 price range for low income houses needed
17. Speeds- underserved are not served
18. Lack of equipment
19. Isolated locations make even getting to certain locations difficult
20. Lack of competition between providers: leaves communities vulnerable
21. Lack of equipment at home to use internet
22. Workforce challenges for enough instructors
23. Need for regional spaces for instruction of digital skills
24. Keeping up of technology is a lot, ready to throw up your hands
25. Security versus willingness - opens up to risk or theft
26. Education
27. Safety
28. Lack of stability of government programs
29. Switch to virtual reduces services in an area
30. Modes of information
31. No reason to take subscription
32. The United State has most expensive broadband
33. Lack of devices
34. Cost of devices
35. What's safe to access on internet?
36. Lack of Americans Disability Act (ADA) compliance online
37. Lack of trouble shooting knowledge
38. Fair and reasonable looks different for everyone
39. Potential for polarization via online communities
40. Pushed to buy higher speeds to get discounts
41. No matching funds, can't afford even with discount
42. Digital capability - need to learn how to use it
43. Misinformation!
44. Affordable Connectivity Program ACP only goes so far - is set to expire, need state-wide cost issue program. Need to figure out!
45. Towns that have great internet complain about the pricing, but do not realize that they at least have an option. Too many government officials do not realize that people in rural areas (less than 10 miles from a city) cannot get quality internet
46. Seasonal residents
47. Safely navigating the Internet, preventing scams, assessing site truthfulness. How to navigate different applications such as job application, telehealth, zoom, finance
48. Seasonal internet options - why pay annual contract if only at location for part of year?
49. Pride keeps folks from using ACP/local government programs - "no handouts for us"
50. Bundling services - need transparency/labeling of services - introductory prices / long-term pricing

Top 50 answers and themes to question: What can the Wisconsin Broadband Office i.e., State government do to facilitate making high-speed broadband available for all homes and businesses in the state?

1. Internet is a basic right
2. Broadband intervention zones - bonus points if a provider includes high need areas
3. Help bring funds to communities
4. Provide admirative support (writing grant proposals, applying)
5. Be thoughtful about how we define served/unserved
6. Better maps with more content: Where are gaps, where is fiber in the ground, speed tests, pockets of grant eligible, what providers are local, who to work with?
7. Convene stakeholders regularly
8. Road permitting - does fiber require extensive permitting – can we reduce this?
9. Strategy for closing the broadband gap
10. Some areas can't get providers to help
11. ISPs should be required to report "Actual" not "up to" speeds
12. Encourage and prefer high-performing providers
13. Money, Money, Money
14. Create connectivity between communities for planning/coordination
15. Bulk purchase of internet service, then provide that out to those with highest need at low cost
16. Put out an RFP for a statewide rollout of high speed broadband. Strength in numbers.
17. Having consistent data at the state level- shared
18. Enable regional and local partners to layer on other local data and make decisions on where to spend money
19. Don't forget individuals- find a way to reach every house- not just population clusters
20. Provide advice for local officials on technical issues
21. Expand CDBG – make all CDBG areas eligible for broadband
22. Dedicated or clear preference for rural areas in grant making
23. Put a dollar amount for every house to serve them
24. More grant options to suit more situation, fill in gaps, some communities struggle to get a provider on board
25. Accountability over match and places served
26. Be cognizant of administrative burdens and hoops to jump through.
27. Having to navigate rules bogs down/complicates internet for all.
28. Accurate/ actual map able to accept crowdsourced data
29. Finish the job
30. Plan for 50 years out
31. "Get in the fray" with underperformers
32. If 25/3 is ok- shame on all of us
33. Financial penalties for not reaching all locations - ISP grant recipients
34. Fix right of way ROW/ easement issues
35. Need public engagement and education on digital skills
36. Simplify and speed up processes for grants
37. Focus affordability of service
38. Private sector should not receive public funds when they are not providing for underserved
39. Regulate ISPs
40. Reduce red tape
41. More accountability for providers after award is made
42. Provide more training on federal regulations

43. Money is equally distributed based on need and cost to build across the state
44. Keep engaging with the people and coordinating efforts
45. Encourage the fill in
46. Link middle mile and local last mile needs
47. Speed up reimbursement
48. Get rid of fiber requirements so there is room for innovation/flexibility. On flipside, fiber is the best investment today
49. Public/Private partnerships - whatever state agency can get business partners in room to make plans to get service available locally.
50. Don’t overbuild competition is great, but prioritize for those who have nothing

Appendix II: Tribal Consultation Summary

Summary of Tribal Consultation with Public Service Commission of Wisconsin

Details:

Great Lakes Inter-Tribal Council, Inc.

January 11, 2023

Special Board of Directors Meeting -Tribal BEAD Consultation

Lac du Flambeau, Wisconsin

Attendance:

Bad River: Daniel Wiggins, Tribal Council Member
Forest County Potawatomi: Manny Johnson, Treasurer
Ho-Chunk Nation: Mark Leonard, Executive Director, Office of the President
Lac Courte Oreilles:
Lac du Flambeau: John Johnson, Tribal President
Menominee: Ron Corn, Tribal Chairman
Oneida: Tehassi Hill, Tribal Chairman
Red Cliff: Chris Boyd, Tribal Chairman
St. Croix: Michael Decorah, Senior Intergovernmental Affairs Specialist
Sokaogon Chippewa:
Stockbridge-Munsee:

GLITC CEO Bryan Bainbridge
GLITC IT Director Jake Valliere
Wisconsin Broadband Office Staff: Alyssa Kenney and Rory Tikalsky
National Telecommunications Information Administration Staff: Carah Koch and Theron Rutyna

Themes and Notes

Challenges

Broadband and Cellular Connectivity Needs

The critical need for affordable, comprehensive broadband access was consistently voiced by every Tribal leader attending the consultation. Broadband access is seen as important to learning, health care access via telehealth, employment, economic opportunity, cultural preservation and access to more affordable goods and services. Several leaders expressed specific interest in fiber to home service or ensuring that residential locations have business class service available. During the consultation a few Tribal leaders discussed the need for not just for fixed broadband service to homes and business but also cellular service or mobile broadband. One leader indicated thick tree cover impacting the quality of cellular service. Another Tribal leader indicated the public safety concerns associated with poor cellular service. There was interest in developing a coordinated approach to both fixed broadband and cellular service where practical.

Affordability

Throughout the consultation several Tribal leaders expressed concerns about the current cost of internet service, one leader cited monthly bills exceeding $140 as common among members. Another leader noted that members are held hostage by the local internet service provider, forced to pay increasing amounts for poor service. For several leaders ensuring affordability of service was a top concern and identified as a social justice issue for Tribes.

Tribal leaders were interested in how upcoming federal funding takes into account affordability in its prioritization and allocation of funding. Questions were raised about PSC's ability to regulate broadband rates, and concern expressed from Tribal members about the inability of PSC to regulate affordability.

Several members expressed that existing internet service providers have excessively high costs, are unreliable, or that advertise speeds that are not achievable.

One leader expressed concern that there was too much red tape and paperwork to access the Affordable Connectivity Program (ACP)benefit. They expressed concern about those requirements limiting access to the program. However, they also expressed that ACP is proving to be impactful for those in need.

Devices

In the case of one Tribe, that spent CARES money to build infrastructure, they quickly learned that many people did not own internet enabled devices. Access to subsidized devices was important for some households to make use of the newly constructed internet. For other Tribes, access to libraries with devices and internet access was indicated as important.

Impact and Importance

Future Pandemic Preparedness and Response

A number of Tribal leaders spoke about the profound impact of the pandemic on their communities. One leader indicated that the transition to online school was a total failure for many of their students and that many young adults in their community were now without a high school diploma as a result. Another Tribal leader indicated that the pandemic caused trauma for their community and leaders were still processing the impact of this sustained stress. Tribal leaders indicated more pandemics will come, and broadband connectivity may be critical to keep people alive. Broadband access is part of pandemic preparedness.

Tribal leaders told stories of maintaining community and connection during lockdowns because of broadband access, and the profound impact and struggle for households lacking that access. Several Tribal leaders expressed profound concerns that broadband was a matter of personal and cultural safety and vitality, and that lack of broadband threatened the lives of their members.

Multiple leaders expressed the value of telehealth for supporting their Tribal elders both physical and social wellbeing.

Language and Cultural Preservation and Learning

For one Tribe that invested CARES funding into broadband infrastructure, access served to expand and accelerate language and cultural programming. Online attendance in language and culture classes during the pandemic was over 300 people, a much larger reach than the in-person class. Internet access was also a way to connect members on the Reservations with members off the Reservation. Broadband has allowed the Tribe to cultivate a vibrant online community and stay connected with both their younger, tech savvy, and older, previously isolated, members.

Another leader emphasized the opportunity for the internet to support preservation of culture and collect the extensive knowledge of Tribal elders. It was noted that, while some cultural knowledge is best shared face to face, the internet will be crucial for future generations connection to their culture and language. The internet may be able to serve as a repository of cultural knowledge.

Economic Prosperity

Through the consultation, some leaders indicated the important connection between broadband connectivity and economic prosperity for members. Tribal leaders provided examples of Bear Creek candle company and Red Cliff Fish Company as local businesses that were able to grow and expand because of the internet. One leader noted the contrast between their Tribe and the nearby County, whereas the County had focused economic development on mining, the Tribe was focusing on broadband connectivity as an economic development strategy.

Several leaders expressed broadband as essential for management of their businesses and for reaching, and being competitive in, a global market.

Environmental Sustainability and Longevity

Another issue that was discussed was the impact of broadband infrastructure deployment on the environment. Broadband deployment should not destroy the Anishinaabe way of life. Likewise,

historical preservation review will be required for projects funded with federal money. A common thread through the consultation sustainable planning for long term success. The more people that are connected to service the more sustainable the network becomes.

One Tribal leader explained that access to broadband would allow for more successful and sustainable development of the economy and society of Tribal communities. The leader explained that economic opportunities in and around Tribal lands have historically been extractive industries with environmental side effects such as damage to watersheds, but that broadband provides opportunities for creative and constructive industries and economic development. Several Tribal leaders see broadband as a way to pursue prosperity without damaging their environment.

One Tribal leader explained that access to broadband has allowed the Tribe to organize and advocate for protection of the environment and Native lands. Through connectivity, that leader has seen strength in coordination and advocacy, whereas prior to broadband access, Tribal members were disconnected and dispersed and more easily silenced.

Implementation

Tribal Ownership of Broadband Facilities and Spectrum Licenses

One Tribal leader expressed that it was a priority for their Tribe to own and operate the broadband facility that serves their members. This allows the Tribe to design and construct their own network and to keep monthly costs down for members. A number of Tribes mentioned winning 2.5 GHz spectrum in the FCC Rural Tribal auction and wanting future broadband expansion to complement and extend this spectrum.

Tribal ownership was mentioned as a matter of sovereignty, allowing Tribes to better respond to crises, such as the pandemic, and ensure sustainable, long-term service and support for Tribal members. One Tribal leader talked about how Tribal ownership allowed them to avoid disconnections during tough economic times brought on by the pandemic.

One leader suggested that Tribal ownership allows broadband networks to serve goals other than profitability, such as cultural preservation and education, economic opportunity, educational services, and universal access.

Building Partnerships with Internet Service Providers and Counties

While some leaders spoke about the importance of Tribal ownership of the broadband facility others considered partnership with internet service providers to connect their members. Different Tribes have specific geographic considerations, with a few Tribal nations having a checkerboard of Tribal Land that may make ownership of facilities more challenging. Some Tribes also indicated an interest in working with the adjacent counties to ensure broadband connectivity across a region and to take advantage of joint purchasing power.

Mapping

Tribal members expressed frustration with poor broadband availability maps and data. One Tribe described their experience compiling and submitting challenges to the FCC's map, and submitting written feedback to FCC on the map.

One Tribe found the FCC challenge process difficult and confusing to navigate.

Questions were raised about the process to build out and fill in the most remote locations, and concerns expressed that existing funding efforts only support deployment in areas adjacent to dense areas.

Federal Funding

Multiple Tribes expressed concern about rising costs of construction for grant projects related to workforce issues and supply chain issues, and sought advice and guidance on how to resolve cost overruns.

Several leaders discussed their NTIA Tribal Connectivity Grants, and expressed that those grant opportunities allowed them to "think big" and pursue ambitious broadband deployment goals in a way they have not before.

One Tribal leader talked about how their Tribe used federal COVID relief funding to make significant investments in broadband deployment. The Leader was concerned that they would not receive BEAD or TBCP funding because they had already invested COVID funding. While they were grateful for the opportunity being shared with their Tribal neighbors, they felt it was unfair their prior investments and diversion of scarce resources towards broadband deployment would limit their access to future broadband funding.

Planning for Federal Funding

Tribes asked questions and learned about the State's planning process for federal funding. Several leaders emphasized that each Tribe's experience with broadband has been different, and that planning and outreach must be individualized in order to understand each Tribe's needs.

Tribal leaders were interested in learning more about funding opportunities under the BEAD program and asked about what entities would be responsible for administering and distributing BEAD funding, as well as the planning process and their opportunities for input in the state Five Year Plan.

Several Tribes expressed difficulty planning, coordinating, and applying for federal and state funding because of the dispersed nature of the Tribes across multiple counties and municipalities.

Appendix III: List of Stakeholder Engagement

BEAD Stakeholder Engagement

Local coordination and engagement meetings and events to inform the 5-year action plan with WBO		
Internet for All: Connecting Wisconsin Kick-Off Event	Winning with Wisconsin's Workforce	University of Wisconsin Law and Entrepreneurship Clinic
Bay Area Workforce Development Board	Forest County Broadband Public Meeting	Wireless Internet Service Providers Association Listening Session
Wisconsin Community Action Program (WISCAP)	Jobs for the Future	Polk County Broadband Event
Nsight Telecommunications	Mount Horeb Telephone Company on FCC Challenge	County Association Regional Leadership Council
KES Excavating Services	UW-Extension Oneida County	Brightspeed Listening Session
International Union of Operating Engineers 139; Construction Business	Bug Tussel on FCC Challenge	AT&T Listening Session
Department of Workforce Development Bureau of Apprenticeship Standards	Wisconsin State Telecomm Association (WSTA) Listening Session	2 Virtual Internet for All Listening Sessions
Superior Days	Kenosha County Broadband Committee Kickoff	7 In Person Internet for All Listening Sessions
Wisconsin Department of Workforce Development and Northwood Technical College	Brightspeed/Lumen on FCC Challenge	Monthly Governor's Task Force on Broadband Access Meetings
Wisconsin Counties Association Annual Conference	Frontier on FCC Challenge	Farm Bureau
International Brotherhood of Electrical Workers (Local 2150 and 953)	Fox Valley Workforce Development Board	Columbia County Broadband Open Meeting
Urban League of Greater Madison	Blackhawk Technical College	Wisconsin Technical College System
Latino Academy of Workforce Development	Broadband Alliance	Wisconsin Land Information Association
Wisconsin Rural Partners Summit	JRM Advisors	Wisconsin Cable Communication Association
Wisconsin State Telecommunications Association Annual Meeting	Iron County Broadband Meeting	Wireless Internet Service Provider Association (WISPA) and Ethoplex
New North Broadband Study Event	WDA 11; WDA 7	West Central Wisconsin Broadband Alliance

Ho-Chunk Nation	Wisconsin Department of Corrections	Broadband Stakeholder Group
9 Regions Broadband Meeting	Urban League of Racine and Kenosha	Nsight Telecommunications and Wisconsin Broadband Stakeholder Group
Techquity Advisory Council	Communication Workers of America	Eau Claire Broadband Committee Meeting
Technical assistance and presentations to inform about the 5-year action plan by WBO		
Broadband Equity, Access, and Deployment (BEAD) Funding for Wisconsin Counties & Tribes Webinar	Wisconsin Rural Broadband Connectivity Initiative Virtual Event	BEAD Local Planning Webinar
Next Steps in Broadband Equity, Access, and Deployment (BEAD) Planning for Counties, Tribes, and REDOs Webinar series	League of Wisconsin Municipalities Broadband Webinar	Office Hours for Local Planning
Tribal Webinar, Information Technology (DOA hosted)	Wisconsin City/County Managers (WCMA) Broadband Professional Development Webinar	UW Extension BEAD Community Planning Webinars
	Wisconsin Counties Association Broadband Webinar	Wisconsin Rural Partners Network Webinar

Digital Equity Stakeholder Engagement

Local coordination and engagement meetings and events to inform the 5-year action plan and Digital Equity Plan with Covered Populations and WBO		
Aging and Disability Resource Center, Door County, Forest County & Vilas County	Aspirus, Rural Health Care Provider	Center for Deaf-Blind Persons
Agriculture & Natural Resources Institute	Augusta Senior Center	Chippewa Valley Technical College
American Association of Retired Persons (AARP), Wisconsin	Benedict Center	Cia Siab, Inc.
American Parkinson's Disease Association	Black and Brown Womyn's Power Coalition	ColorBold Business Association
The ARC, Wisconsin	Boulder Junction Senior Meals Site	Council of Chief State School Officers
Council of Chief State School Officers	Boulder Rural, Eagle River Rural, Phelps Rural	Council on Libraries and Network Development
WI Association of the Deaf	CAP Services	Council on Physical Disabilities
YWCA Madison	Center for Deaf-Blind Persons	Crandon Senior Meal Site

Council on Libraries and Network Development	Disabled American Veterans	Feeding America (Second Harvest Food Bank)
Council on Physical Disabilities	Disability Rights, WI	FoodWIse program Region Metro 2/3 (Milwaukee and Madison), North, South
Crandon Senior Meal Site	Door County, Door County Broadband Task Force, Do Good Door County, Veterans Services	Forest County, Senior Meal Site
Dane County	Eagle River Senior Meals Site, Volunteer Firefighters	Freedom, Inc.
Department of Aging	Eau Claire County, County Jail	Great Lakes Inter-Tribal Council, Inc.
Department of Public Instruction, Migrant Education, Public Libraries, School Libraries	Eau Claire Triomphe, LLC	Greater Wisconsin Agency on Aging Resources (GWAAR)
Jackson County	Ex-Incarcerated People Organizing (EXPO)	Hmong American Women's Association
Jefferson County Veteran Services Officer	Fairchild Public Library	Independent Living Centers of WI
Land O'Lakes Senior Meals	Family Resource Center of Sheboygan County	Iron County Extension Youth Development
Legal Action: Wisconsin Farmworkers Coalition Dairy Subcommittee	Family Voices	Pepin County Board
Latino Academy of Workforce Development	Farmer Interviews, Iowa County, Argyle, Lodi, northern WI	Prairie Lakes Library System, Outagamie Waupaca Library System (OWLS)
Literacy Chippewa Valley	United Way of Greater Chippewa Valley, Greater Milwaukee and Waukesha County, Door County	Portage Area Workforce and Service Connection (PAWSC)
Local Initiative Support Corporation (LISC), Milwaukee	United Way, Milwaukee, Techquity Meeting	River Valley Broadband Coalition, River Valley Commons
Madison Metropolitan School District Library/Tech Team	Urban League of Greater Madison	Rural Iowa County Wisconsin farmer
National Association for the Advancement of Colored People (NAACP), Milwaukee	Veteran Farmers Coalition	Town of Colfax Plan Commission
Neighbor to Neighbor Resources Fair for Hispanic Families	Veterans of Foreign Wars (VFW), Districts, 1, 2, 4, 9, 10	WI Board for People with Developmental Disabilities
Office of Deaf and Hard of Hearing	Vilas County residents	WI Chief Technology Officers Clinic
WI Educational Technology Leaders Association (WETL)	Voices de la Frontera	WI Council for the Deaf and Hard of Hearing
Wisconsin's Independent Living Centers	Wabeno Senior Meal Site	Wisconsin's Independent Living Centers

WI Technical Colleges System	WI Prison System, Stanley, Taycheedah, Green Bay, Oakhill	WI Inter-Service Family Assistance Committee (ISFAC)
Wood County Digital Equity Solutions Team		
Technical assistance and presentations to inform about the 5-year action plan and Digital Equity Plan by WBO		
Augusta Area Digital Learning Fair	Rock County Ad Hoc Broadband Committee	WI Department of Administration: Enterprise Technology Cyber Security
Common Sense Media	UW Extension, Chippewa County, Door County, Forest County, La Crosse County, Oneida County, Portage County, Sheboygan, Taylor County, Agriculture and Natural Resources Institute, Human Subjects, Local Government Education Center	WI Department of Corrections, Employment and Education
Educational Communications Board	Vilas County Economic Development Corporation	WI Digital Navigators (4)
Rock County Ad Hoc Broadband Committee		WI Primary Health Care Association