McDowell County, West Virginia
Digital Equity Plan

September 2024

Acknowledgements

Key Acronyms:

WVDED	West Virginia Department of Economic Development (WVDED) is the state agency responsible for leading broadband and economic development initiatives, including the implementation of the Digital Equity and BEAD programs.
BEAD	Broadband Equity, Access, and Deployment (BEAD) is a federal program providing $42.45 billion to states for planning, infrastructure deployment, and adoption programs related to high-speed internet access. West Virginia's BEAD allocation plays a crucial role in its statewide broadband and digital equity initiatives
DEA	The Digital Equity Act (DEA) is part of the Infrastructure Investment and Jobs Act (IIJA) aimed at promoting digital equity and supporting digital inclusion activities through various grant programs.
GWV	Generation West Virginia (GWV) is an organization involved in digital equity initiatives and other programs aimed at improving opportunities and outcomes for young people in West Virginia.
RPDC	Regional Planning and Development Councils (RPDC) are organizations that play a key role in community engagement and the execution of listening sessions to gather data on digital equity needs across West Virginia.
ISP	Internet Service Provider (ISP) refers to companies that provide internet access to consumers and businesses. ISPs are critical stakeholders in deploying and improving broadband services across the state.
BSL	Broadband Serviceable Location (BSL) is defined as a business or residential location where fixed broadband internet access service is, or can be, installed. Understanding the location of BSLs is crucial for mapping and planning broadband infrastructure.
CAI	Community Anchor Institutions are community resources including entities such as a public school, a public or multi-family housing authority, a library, a medical or healthcare provider, a community college or other institution of higher education, a State library agency, and any other nonprofit or governmental community support organization.

Table 1. Key Acronyms

Table of Contents

List of Tables

List of Images

EXECUTIVE SUMMARY

Executive Summary

It is a changing world where access to the digital economy is becoming increasingly more critical as essential services like healthcare, education, business, and jobs move towards requiring quality connectivity. McDowell County faces significant challenges to broadband access. Despite the current barriers and stark digital divide, residents and organizations in the county have a clear vision for the future if, and when some of these challenges are met.

Meaningful internet connectivity is a community asset that enhances the quality of life for residents and catalyzes economic growth in the 21st century global marketplace. It facilitates e-commerce, remote work, distance learning opportunities, telehealth, entrepreneurial innovation, civic and social engagement, and more, all of which contribute to societal progress. There are many barriers for residents in our communities to benefit from these opportunities. In order to reach **Digital Equity**, the condition or place where all members of our community have access to the resources they need to participate in digital society and economy, it will take dedicated work and effort to minimize these barriers.

This project was a year-long planning effort in partnership with Generation WV and the McDowell County Digital Equity Steering Committee. This plan contains an examination of the current "State of the

Figure 1. McDowell County Courthouse

County" as it relates to digital equity, economics, the goals and vision for a connected McDowell County, as well as extensive appendices that outline the goals and vision for a connected community, and recommends practical strategies to achieve the goals and vision. The analysis and recommendations in the plan are supported by extensive appendices with key data, resources, and research for ongoing digital inclusion projects. This plan is just the start, it provides a baseline and puts forward solutions to improve broadband connectivity and affordability locally, and help prepare McDowell County for upcoming Digital Equity Implementation funds including the Digital Equity Act (DEA) federal funding programs.

Today's broadband users deserve a connection that is accessible, affordable, and reliable, which was amplified by the COVID-19 pandemic and its impact on day-to-day lives. This can be advanced by providing financial assistance for low income individuals and families, and by developing training programs for the community on device and internet use. This plan is just the beginning. "Internet For All",[1] continued planning, and Digital Equity programming will play a crucial role in achieving McDowell County's vision for the future.

Highlights

→ Broadband infrastructure in McDowell County remains a challenge with **20.9%** of households reporting **no broadband subscription at all.** The baseline lack of internet access is a key issue in the county however it does not paint the full picture of the need.

→ With **45.7% of County residents living at or below 150% of the national poverty threshold** and an average per capita income of $15,353, many challenges can be attributed to affordability however this is just one of many challenges identified in this plan.

→ **17.5%** of residents report no device at home. In several county tax districts, up to **19.7%of households do not have access to a device of any type**, including a smartphone. This indicates significant disparity within the county.

→ Low income residents (45.7%), aging residents (23.1%), residents with disabilities (30%), and the minority population (19.4%) make up significant percentages of the local population in McDowell County. **These residents face additional and specific barriers to accessing online resources** and likely require additional support and/or targeted solutions to meet their needs.

→ There are **low literacy rates (8.1% of the population)** in the county and these residents require additional support in learning to navigate text-based online resources

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[1] West Virginia Broadband Office Internet For All Campaign, https://internetforallwv.wv.gov/

Key Challenges	Possible Solutions
Low incomes and affordability challenges	**Affordability:** Financial assistance for low income residents
Lack of training and education,	**Digital literacy training:** Training for the community for device and internet use; Specialized training for those living with disabilities
Device access	**Increase device sources for residents** **Assistive technology support:** Speech compatibility on devices for disabilities
Frequent service disruptions due to weather.	**Increasing connectivity** through existing and new technologies.

Table 2.Top Digital Equity Barriers and Solutions in McDowell County

Digital inclusion projects in McDowell County would have a significant positive impact for key populations identified as having greater barriers to internet access. Low income residents (45.7%), disabled individuals (3%), aging individuals (23.1%), minorities (19.4%), and individuals with low literacy (8.1%) would most benefit by efforts to increase educational opportunities through training programs on internet and device usage, affordability through financial assistance and affordable device programs, and availability through improved infrastructure and telehealth access.

By establishing partnerships with stakeholders already working in the community, McDowell County can extend the impacts of proposed digital skills, literacy, and access programs in the community. McDowell County stakeholders will continue to engage and seek feedback and participation from covered populations to encourage and develop projects that create positive and measurable outcomes for the whole community.

INTRODUCTION

Introduction

McDowell County has a rich economic and cultural history. McDowell County, located in the southwestern tip of West Virginia, was established in 1858 from part of Tazewell County, Virginia. It was named after James McDowell, a governor of Virginia. The county seat, Welch, was named after a surveyor and was established in the late 19th century. The discovery of coal in the late 19th century transformed McDowell County into one of the nation's leading coal producers, attracting a diverse workforce. The county's population peaked in the early 20th century but has since declined due to the mechanization of mining and the industry's downturn. The history and story of McDowell County provide valuable context and background for the current state of connectivity and digital equity and the connected future that McDowell County residents envision.
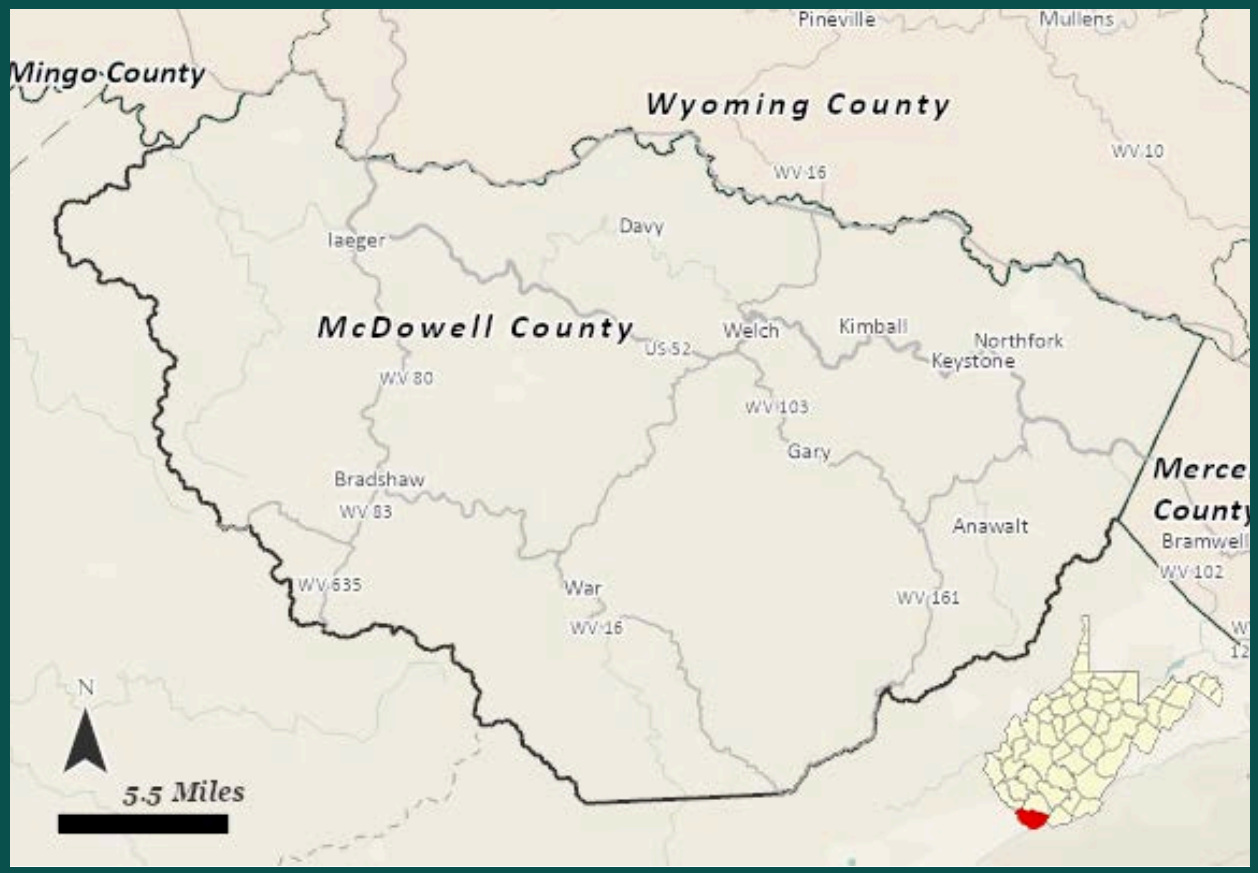
Figure 2.Map of McDowell County West Virginia

Why Broadband and Digital Equity?

When we talk about broadband connectivity, we often think exclusively of the physical infrastructure itself: the lines, wires, towers that bring broadband access to our communities. Adequate infrastructure is the critical first step to ensuring people have access to the internet and therefore, equitable access to the digital economy. However, access to internet infrastructure does not automatically connect

communities and residents to its benefits and make them participants of a digital economy. To do this, we need to address some of the economic, social, and other barriers facing our communities. This work is known as "Digital Inclusion" (or "Digital Equity").

Digital Inclusion programs will significantly contribute to realizing the vision for McDowell County. These initiatives aim to ensure that all residents have equal and affordable access to internet services. By providing access to digital tools and resources such as telehealth services, entertainment options, and educational opportunities, these programs can enhance residents' quality of life. They also support economic growth by enabling telecommuting and attracting new residents and businesses to the area. By prioritizing reliable broadband coverage and promoting digital literacy, device programs, and affordable access, digital inclusion programs will create a more connected and prosperous community, where everyone has the opportunity to thrive.

In addition, these programs help prepare communities for broadband expansion planned as part of the Infrastructure Investment and Jobs Act (for more information see "About this Project" below). Internet Service Providers (ISPs) determine their return on investment and long-term maintenance decisions on the number of subscribers they can count on in any given region. Especially in rural areas, digital inclusion efforts can dramatically increase the "take rate" or number of subscribers to the internet resulting not only in further opportunity for local residents, but also ensuring the longevity and return for the businesses providing the broadband internet service. Laying fiber up a rural valley with 10 households looks different if only 1 person on the road subscribes, versus 5 or 6 households subscribing since they may now have the skills, knowledge, affordability assistance, and/or reason to use the service.

About this project

In 2021, the Infrastructure Investment and Jobs Act (IIJA) was signed into law by President Joe Biden. Among many other provisions, the law established the Broadband Equity, Access, and Deployment (BEAD) Program, the federal government's most ambitious investment in high-speed, affordable internet to date with over $42 Billion dollars allocated nationally. Of this, 1.2 billion dollars is allocated to West Virginia. In addition, Congress passed the Digital Equity Act (DEA) for $2.75 billion that supports digital inclusion planning and programs across the United States. It is anticipated that over $9 million will pass through to West Virginia projects.

The West Virginia Department of Economic Development Office of Broadband (WVDED), guided by the Broadband Enhancement Council, has been working to meet National Telecommunications and Information Administration (NTIA) requirements to receive the $1.2 billion of broadband infrastructure funds allocated to West Virginia. As part of this requirement, all states were required to develop a [State Digital Equity Plan](). This plan provides an overarching umbrella and priority strategies for Digital Equity and Digital Inclusion in West Virginia. First published in 2023, the State Digital Equity Plan is informed by outreach to partners across the state, stakeholder feedback and community listening sessions, and provides the framework for state priorities around equity, adoption, and inclusion.

In 2023, Generation West Virginia (GWV) began coordinating state partners and facilitating digital equity planning across 18 counties in West Virginia, as part of an Appalachian Regional Commission (ARC) ARISE grant to Connect Humanity, a national nonprofit focused on broadband connectivity.
GWV worked closely with Regional Optical Communications (a consortium of 19 West Virginia counties spearheaded by Regions 1 & 4 Regional Planning Councils) and the WVDED Office of Broadband to reach out to county stakeholders and pull together the County Digital Equity Steering Committees. The McDowell County Steering Committee guided the outreach and planning efforts in the County, which included identifying community partners, overseeing outreach to the community, planning the community workshop, and providing direction to the planning process.

In spring of 2024, each county hosted a community Workshop where the core planning team shared information about digital inclusion and presented county specific assets and data, and community members shared their knowledge to highlight barriers, goals, vision, and potential digital equity projects. McDowell County's community workshop was hosted at River View High School in Bradshaw, West Virginia on April 23, 2024 with eight attendees who provided valuable feedback and insight. The meeting emphasized the importance of addressing the digital divide and achieving digital equity in McDowell County. Participants discussed the need for reliable and affordable internet access, digital literacy, and access to devices. Key topics included the current state of digital inclusion, barriers such as affordability, lack of training, limited transportation, and physical disabilities, and potential solutions like community training programs, specialized training for disabilities, and financial assistance for low-income individuals. The vision for digital inclusion involved better access to education, healthcare, and job opportunities, particularly through telehealth, remote work, and improved connectivity for law enforcement and emergency responders. The meeting facilitated a comprehensive discussion among community members, providing valuable insights into the specific needs and challenges faced by McDowell County, guiding the development of targeted digital equity initiatives.

Figure 3. McDowell County Community Workshop, Bradshaw, West Virginia, April 23, 2024

Following the workshop, the Steering Committee analyzed meeting notes and identified and prioritized solutions to improve broadband connectivity and affordability locally, and to prepare McDowell County for the upcoming implementation of Digital Equity Act (DEA) federal funding programs.

Project planning and development efforts also took place in the spring/summer of 2024 in preparation for the West Virginia Office of Broadband State Capacity subgrant programs. McDowell County stakeholders were able to participate in project planning workshops with national expertise from Connect Humanity and the National Digital Inclusion Alliance, as well as access targeted technical assistance in developing project ideas.

Relation to State Digital Equity Planning

This plan is a focused and localized examination of the conditions in McDowell County and addresses content related to the State's Digital Equity goals. With three overarching goals identified by the state in mind, this plan helps highlight the barriers and potential solutions specific to the needs in McDowell County, and fills in the framework outlined by the West Virginia State Office of Broadband. This planning process also allowed the McDowell County Digital Equity Steering Committee to highlight potential solutions and inform future projects and state priorities. As outlined in the West Virginia Digital Equity Plan, the West Virginia Office of Broadband Digital Equity team is committed to continuing to work with counties and municipalities to further digital equity planning and project development. More information about State planning efforts are outlined in the section *Digital Equity and Connectivity in West Virginia* below.

Key Concepts

What does connectivity mean?

Connectivity refers to the ability of individuals and organizations to access and interact with the global network known as the internet. This connection allows for the transmission and exchange of data, enabling users to browse websites, send emails, stream videos, participate in social media, and utilize various online services and applications. Typical technologies used to connect to the internet are broadband via fiber, cable, and copper lines; fixed and mobile networks via towers; or satellite connections. In our changing world, internet connectivity is crucial for our communities because it enables access to vital information and services, enhances educational opportunities, and fosters economic growth across sectors. The internet allows people to connect with loved ones, access healthcare resources, participate in the digital economy, and fully participate as informed citizens.

Note on broadband speed.
Nationally, to be considered "served" by broadband service providers, a household needs to be able to access at least 100 mbps download and 20mbps upload speeds (100/20 mbps). The FCC increased required speeds from 25 mbps down and 3 mbps upload in March of 2024. These speeds ensure that there is enough connectivity for virtual meetings, data transfer and uninterrupted transactions.
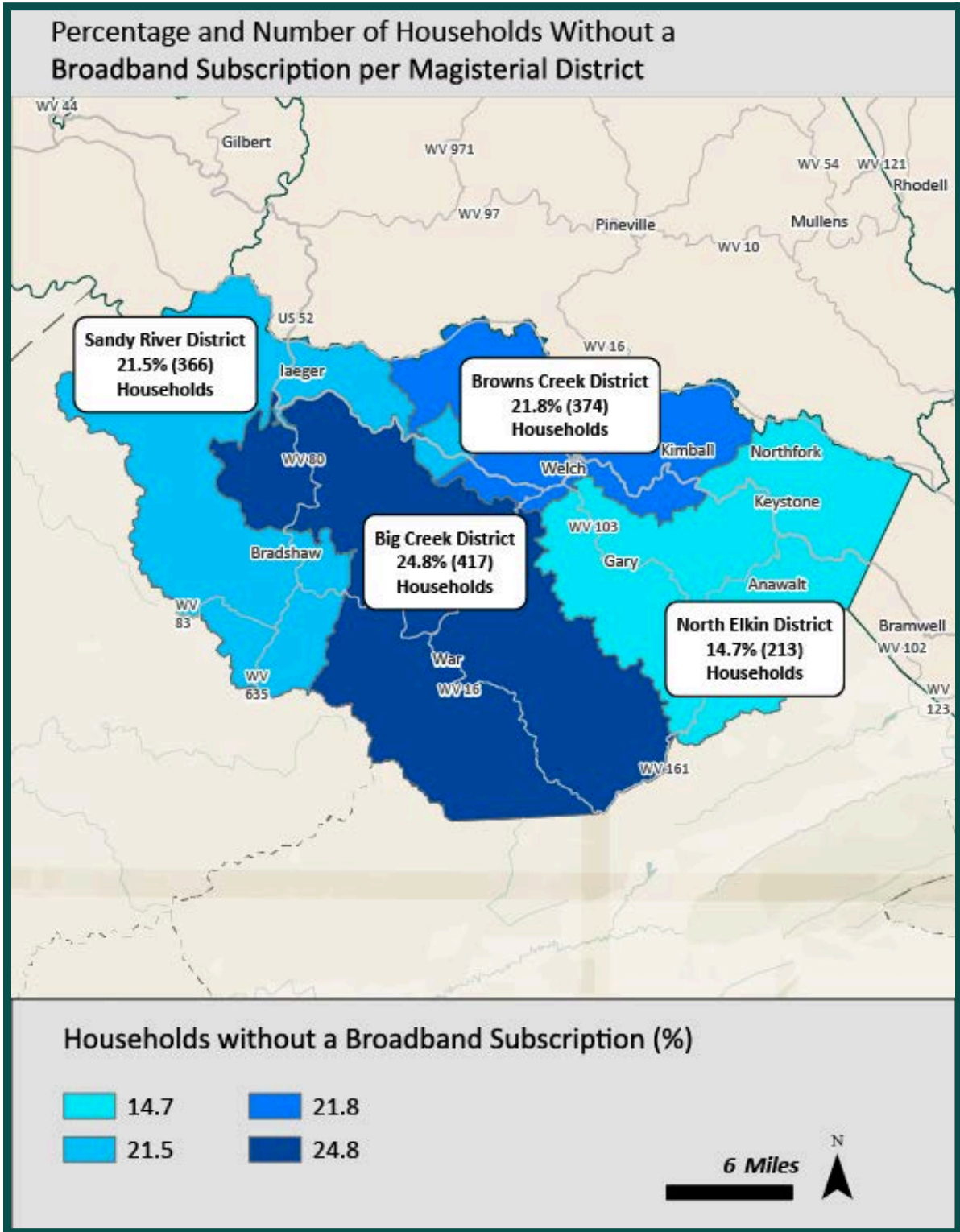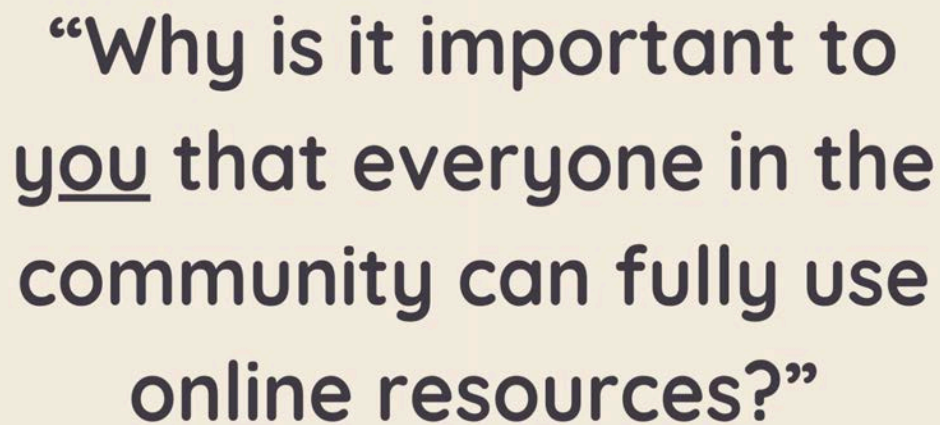
Figure 4. Map showing the percentage of households without a Broadband Subscription by Magisterial District.

What is Digital Equity and Digital Inclusion?

These terms at their core mean that no matter their background or where they live, all people have the skills, tools, and opportunities to use technology in their daily lives. This work encompasses several key elements. First, the concept of the Digital Divide. The Digital Divide is the gap that exists between those that do have access, skills, devices, and the means to access online resources - and all of those that do not. Digital equity is the condition or place that we hope our communities reach where all members of our community have access to the resources they need to participate in digital society and economy. Digital inclusion is the work, or the activities necessary to reach the condition of digital equity. These activities include 1) having reliable broadband access; 2) having the skills to use it; 3) having the devices to access it; 4) having the financial means to afford it; and 5) having access to technical support when something goes wrong.[2]

Fully accessing online resources looks very different based on each individual situation. For example, an individual with vision or mobility challenges with access to a standard device without the knowledge of how to change font size settings and/or use audio playback and dictation features faces a significant barrier to accessing online resources. Another example is there are programs that provide low income or at-risk residents with a device, however, without additional support on affordability, they may not be able to fully utilize these resources and/or be unable to maintain the subscriptions necessary for effective use. Additionally, even within the solutions, different populations may have different learning needs. For example, an individual transitioning to a new industry mid-career who never needed to use a computer for work before will have different training needs than a young adult for whom computers and screens have been present their entire life.

"Why is it important to you that everyone in the community can fully use online resources?"

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[2] National Digital Inclusion Alliance, Definitions (Accessed June 2024) https://www.digitalinclusion.org/definitions/,

Covered Populations

Throughout this plan, and across digital equity planning, the term "covered populations" is used to refer to individuals in our community who face additional barriers to broadband access and getting on the internet. These groups are prioritized in grant-supported initiatives and strategic planning by NTIA in the Digital Equity Act. The Digital Equity Act identifies these individuals as the following eight "covered populations" that are disproportionately affected by digital inequity:

- Individuals in households with incomes at or below 150 percent of the poverty line
- Individuals aged 60 or older
- Veterans
- Individuals with disabilities
- Individuals facing language barriers (including English language learners and those with low literacy)
- Members of racial and ethnic minority groups
- Individuals living in rural areas
- Individuals incarcerated in non-federal correctional facilities

These populations face challenges in accessing the internet due to a variety of often overlapping reasons. For example, an individual may face accessibility barriers due to sight or mobility reasons as a disabled person, but may also be part of an aging population and struggle with fixed income and therefore affordability challenges.

Throughout the planning process, the Steering Committee and GWV project team have tried to keep in mind the key populations present in McDowell County, and want to highlight the crossover barriers that these individuals face. This list above is also not exhaustive. These are the individuals defined in federal code; however, there are often other populations in our communities that may face challenges. Some examples residents brought up in the community workshop include youth, formerly incarcerated and those in recovery.

Digital Equity and Connectivity in West Virginia

West Virginia's leadership recognizes the importance of broadband connectivity. In 2016 the West Virginia Legislature created the Broadband Enhancement Council for the overarching goal of expanding broadband to reach un- and underserved residents in the state. In 2021, the West Virginia Office of Broadband within the West Virginia Department of Economic Development was established. The comparatively early focus on broadband infrastructure allowed the state to focus on research, speed testing, and infrastructure investment through the West Virginia Broadband Investment Plan, a $236 million initiative with nearly 40 projects awarded to date, touching 40 counties. These efforts set the office up for successful planning and implementation of the upcoming BEAD funds, with $1.2 billion allocated to the State of West Virginia for broadband infrastructure development.

State of Broadband Infrastructure in West Virginia:

The rural nature of the state, mountainous terrain, and challenging economic conditions have all led to the disparity in broadband connectivity for West Virginia residents[3]. West Virginia comes in 50th for broadband connectivity, according to a 2023 Broadband Now Report[4] with more than 19% of the population unable to access an internet plan of at least 25/3[5]. With a total population of 1,792,967, this means one in ten West Virginia residents is not able to purchase an internet plan of at least 25/3. Since publication, the official definition from the Federal Communications Commission (FCC) of broadband has been increased from 25/3 to 100/20 to account for greater data needs of today's digital world. As of December 31, 2022, only 64.8% of West Virginia's "broadband serviceable locations'' are fully served under the new federal standard, with at least one internet service provider offering speeds of at least 100/20[6]. US News and World Report's Internet Access Rankings places West Virginia last on their list as well, with broadband subscription rate and access to gigabit internet as large factors for its ranking.[7]

Economic Impacts

It is difficult to discuss challenges in West Virginia without mentioning the decline of the coal industry. This decline has, and continues to cause, generational impacts across the State: communities that have suffered major job losses now face increased disparities in wealth, income, educational attainment, and employment outcomes relative to the rest of the country. During the COVID-19 pandemic, the digital divide became starker than ever, as the lack of broadband access in West Virginia communities stifled economic activity, disrupted services, and widened educational achievement gaps, derailing years of efforts to address disparities caused by coal decline. **Economic diversification, a key path forward for West Virginia communities and the State as a whole, requires access to high-speed internet.**

Digital Equity Statewide

As a key factor to the success of infrastructure expansion, and the national goal of connecting all citizens, the BEAD program required all states to complete a digital equity plan in order to obtain BEAD funding. The WVDED established a position at the State Office of Broadband focused on the Digital Equity Act and began a year-long planning process to identify barriers and goals, leading to the creation of a digital equity plan covering the entire state. The West Virginia Digital Equity Plan was first published for public comment in July 2023, with a final draft submitted to NTIA and made publicly available in December 2023. As a part of WVDED's ongoing plan implementation, the West Virginia Digital Equity Plan will receive annual updates through the duration of the program. This plan was the first comprehensive

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[3] West Virginia Broadband Enhancement Council, West Virginia State Broadband Plan (2019) Available online: https://broadband.wv.gov/resources/west-virginia-broadband-plan/
[4] Broadband Now, Accessed June 2024, https://broadbandnow.com/research/best-states-with-internet-coverage-and-speed
[5] Previous definition of broadband. FCC updated the definition to 100mbps down/ 20 mbps up March 2024.
[6] West Virginia Broadband Office BEAD 5 Year Action Plan (2023)
[7] Regional Optical Communications, 2023 Statewide Broadband Study Report (2023).

examination of digital equity in the state. With the highest percentage of covered populations (96.6%) nationwide[8], and over 35% of its citizens living in unserved or underserved areas, digital equity initiatives have great potential to move the needle in West Virginia.

The West Virginia Digital Equity plan, available at **broadband.wv.gov**, provides a clear picture of the needs and opportunities for change in the state. The vision defined by the Office of Broadband is as follows:

WV Vision For Digital Equity:

"Ensure that all West Virginians have the resources they need to participate in the digital world and achieve the numerous benefits of digital equity."

In order to reach this vision, the State has lined out a series of goals and outcomes which are listed below in Table 3. These overarching goals provided a framework and guideposts for this project, and the potential solutions, projects, and initiatives that McDowell County considered as part of their community planning.

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[8] U.S. Census Bureau| National Telecommunications and Information Administration, Digital Equity Act Population Viewer,(Accessed June 2024) https://www.census.gov/programs-surveys/community-resilience-estimates/partnerships/ntia/digital-equity.html

WVDED Office of Broadband Digital Equity Goals:

Goal 1: Realize Affordable Connectivity

Objective 1.1: Increase enrollment in the Affordable Connectivity Program (ACP)[9]

Objective 1.2: Complete broadband deployment as a part of the BEAD Five-Year Action Plan to increase the number of available internet service providers and increase competition

Goal 2: Secure Device Access and Affordability

Objective 2.1: Create a sustainable program to provide device distribution, lending, and recycling

Objective 2.2: Ensure citizens receive technical assistance for their newly acquired devices

Goal 3: Elevate Digital Skills and Accessibility of Public Services

Objective 3.1: Make digital literacy training in cybersecurity, privacy, telehealth, and more, available to all West Virginians, including all covered populations.

Objective: 3.2: Ensure websites and online services hosted by state agencies are accessible for all West Virginians

Note that a fourth goal supporting Local Digital Equity Planning has been proposed, however final priorities from the State Digital Equity Plan are pending approval from NTIA.

Table 3. WVDED Office of Broadband Goals and Objectives, V.1, January 14, 2024

The success and sustainability of digital inclusion efforts are dependent on community participation and feedback. The McDowell County Steering Committee greatly appreciates the support of the West Virginia Office of Broadband in providing support and guidance throughout this planning process.

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[9] The ACP expired in May 2024 and has not been renewed. The WVDED Office of Broadband is updating State Digital Equity Goals to reflect this change As of time of publication the updated plan has not been released.

Overview: Digital Equity in McDowell County

What story does our data tell us about connectivity and how our communities access the digital economy?

In order to better understand the situation for residents of McDowell County, it is important to examine some key indicators and understand the barriers as experienced by those living in the community. This data was gathered between November 2023 and June 2024.

Snapshot: Demographics

McDowell County is home to 18,911 residents located within 535 square miles, having an average of 35 people per square mile. It is a very rural county, with a USDA Rural-Urban Continuum Code (RUCC) of 9, which indicates a very rural area with little to no urban population and is not adjacent to any metro areas. Any county with a RUCC code between 4 and 9 is classified as rural and McDowell is considered rural based on US Census population data. Rural residents and businesses often face basic infrastructure and logistics challenges to accessing quality internet. Approximately 97% of West Virginia's total residents are classified as rural.

There are 6,547 households in McDowell County. The county is majority white, with the minority population at 19.4%. The county is majority English speakers with 2.3% being English language learners . Literacy rates in the county are 8.1%. The county has high poverty, qualifying as a "Persistent Poverty County" according to the USDA, which defines persistent poverty as having 20% or more of the population living in poverty over the last 30 years.[10] High instances of poverty are a significant barrier that affect the ability of residents to access and use online resources.

The Appalachian Regional Commission has designated McDowell County as distressed based on three economic indicators: high unemployment rates, low per capita income, and poverty rates that are at least 150% of the national poverty threshold. Counties designated as distressed fall within the lowest 10% of counties out of the 423 counties in the Appalachian region according to ARC's rating. The number of residents living at or below 150% of the national poverty threshold is 7,759 (45.7%). The average per capita income is $15,353, and the unemployment rate is 6.3%. The need is clear. Digital inclusion efforts play a key part in boosting incomes and job access. A report on digital skills published in 2023[11] found that 92% of jobs require digital skills, highlighting how digital literacy is a critical baseline in today's economy and has a direct impact on the success of workforce and economic development initiatives.

As mentioned above, the county does have a long active history related to the coal industry. ARC scores the impact of coal as 0.318, indicating minimal negative impacts from coal industry changes so far. However, given the very high dependence it faces future economic vulnerabilities with a very high risk score of 36.912. In 2022, McDowell, West Virginia had an average decrease in coal production of 1,498,694 tons compared to the adjusted average production from 2000 to 2022. In addition to the major economic indicators, it is also important to consider some key indicators that can define the need and opportunities around Digital Equity and Digital Inclusion efforts.

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[10] Decennial census data and the American Community Survey 5-year estimates
[11] Bergson-Shilcock, Amanda; Taylor, Roderick Closing the Digital Skill Divide, 2023

Broadband Connectivity and Adoption in McDowell County

The baseline to understanding challenges to accessing broadband include understanding where there is broadband connectivity in the county, where there isn't, and if adoption rates can tell us anything about the barriers our community faces.

The map below outlines the highest reported speed provided by providers in McDowell County as of 2023. The speeds may not be the actual speeds provided, but are the highest option a provider reports that they could offer. For reference, the federal definition of "broadband" is now 100/20. For this map, any shades lighter than the middle orange do not technically qualify as broadband. Highest speeds tend to follow major road routes. The shading beneath is a measure of broadband adoption, or the number of households in the district that report subscribing to the internet. As you can see, sometimes high rates of households without internet are due to lack of infrastructure; However, it is important to note that this may not be the whole story. This map shows the county divided into the magisterial districts illustrating the disparity of broadband adoption even within the county. The darker the shading, the higher the percentage of people without a broadband subscription. These disparities could potentially be due to a variety of reasons such as lack of availability, affordability, lack of education about technology or needs, or other reasons. The total number of households that lack a broadband subscription is 1,370 (20.9%).
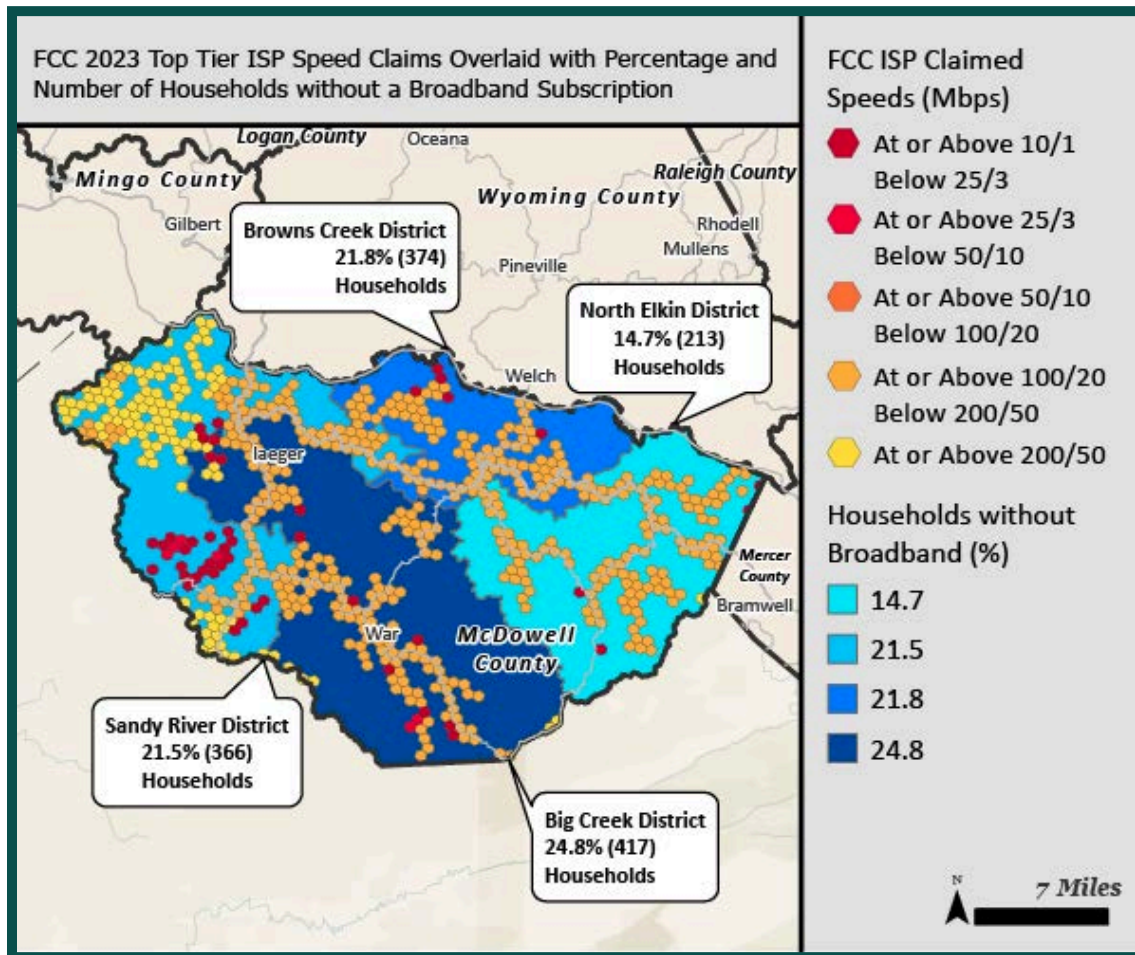
Figure 5. Adoption of Broadband and FCC Availability and Speed Data by Magisterial District in McDowell County

For more information, including some maps of the current reported infrastructure as well as example maps please see Appendix C. Broadband Adoption and Infrastructure on page 76.

Device adoption

Another way to look at the county's access to online resources is to examine measures of device adoption. According to the American Community Survey estimates and the NTIA Internet Use Survey, there are 1,145 households, or 17.5% of the 6,547 households in the county, that report having no internet-enabled devices at all.[12][13] As you can see in Figure 6, This map shows the county divided into the magisterial districts illustrating the disparity even within the county of those without a device of any type such as desktop computer, laptop, tablet or smartphone. The darker the shading, the higher the percentage of people without a device. These disparities could potentially be due to a variety of reasons such as lack of available internet service, affordability, lack of education about technology or needs or other reasons.
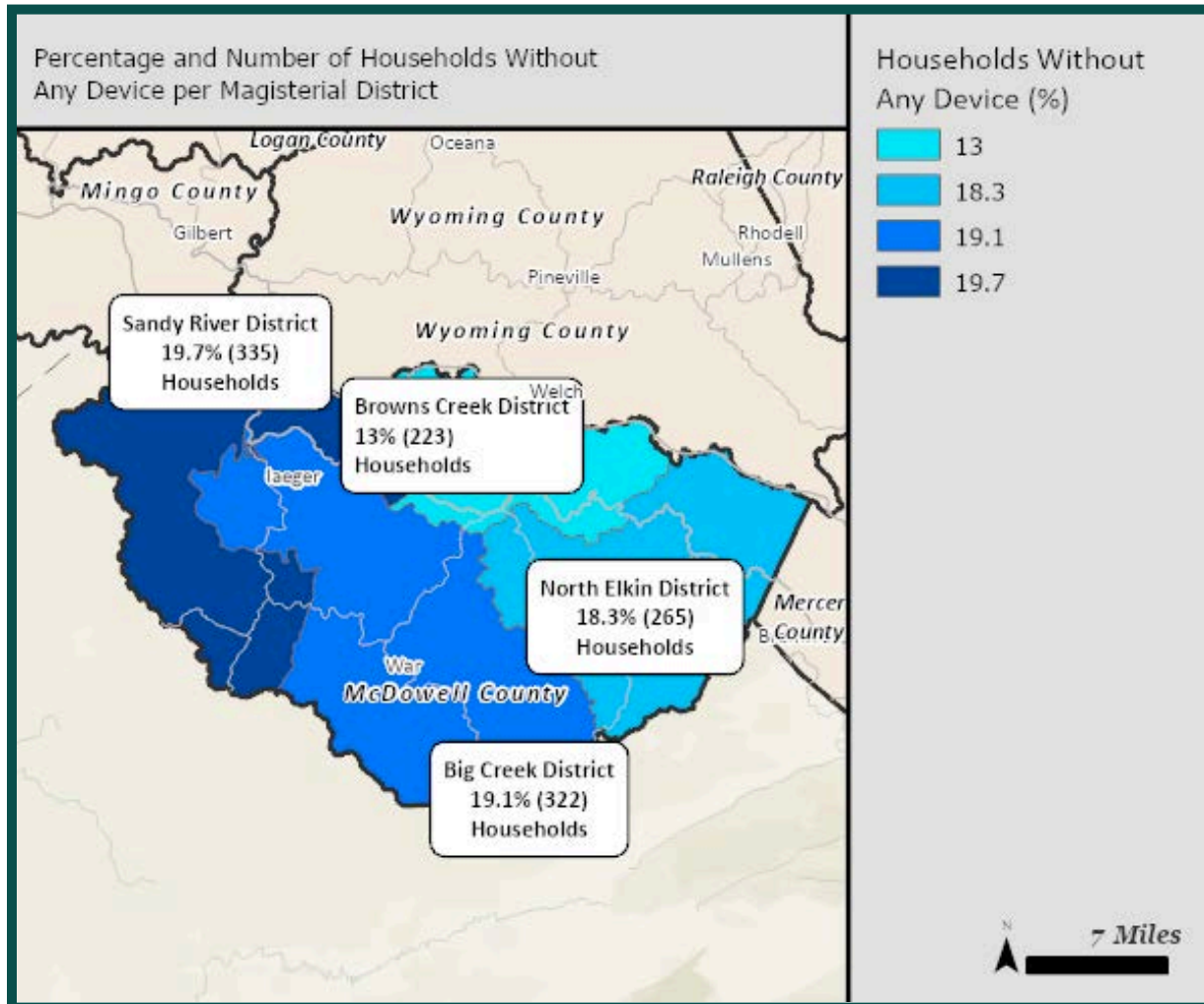
Figure 6. Households without a device of any type in McDowell County

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[12] U.S. Census Bureau, 2022 5-Year American Community Survey (ACS) Estimates
[13] National Telecommunications and Information Administration (NTIA), 2021 NTIA Internet Use Survey

Poverty and covered populations

The McDowell County Digital Equity planning process has contributed to its understanding of unique barriers to achieving digital equity across a wide range of covered populations. To understand the barriers, it can be helpful to understand how the specific populations may be distributed across the county.

Population	State Total	County Total	Big Creek Dist.	Browns Creek Dist.	North Elkin Dist.	Sandy River Dist.
Low Income Individuals	467,366 (26.1%)	7,759 (45.7%)	2,160 (48.4%)	1,919 (49.3%)	2,001 (43.9%)	1,679 (41.2%)
Aging Individual (65+)	366,444 (20.4%)	4,375 (23.13%)	910 (20.4%)	1,080 (19%)	1,341 (28.7%)	1,044 (25.6%)
Disabled Individuals	335,936 (18.7%)	5,102 (3%)	1,235 (27.7%)	1,202 (30.9%)	1,240 (27.2%)	1,425 (34.9%)
Veterans	114,894 (6.4%)	899 (6%)	237 (6.9%)	215 (4.5%)	285 (7.6%)	162 (5.2%)
Minorities	167,551 (9.3%)	3,662 (19.4%)	328 (7.3%)	1,537 (27%)	1,720 (36.8%)	77 (1.9%)
English Language Learners	42,714 (2.4%)	408 (2.3%)	50 (1.2%)	248 (4.5%)	110 (2.5%)	0 (0%)
Individuals With Low Literacy	46,114 (2.6%)	1,114 (8.1%)	291 (9.3%)	279 (6.2%)	199 (6%)	345 (12.3%)

Figure 7. Covered Populations in McDowell County, West Virginia by Magisterial District.

McDowell County has a poverty rate of 33.3% with a median household income of $28,235. As outlined in Figure 7 the blue shading represents the percent of households living at or below 150% of the poverty level (For 2022 this figure was 45.66% of total households earning an average of $15,353 per capita).

When considering digital inclusion efforts, it is important to examine and consider the demographics of the local population, and what specific challenges they might face in accessing broadband. The chart below shows the covered populations in McDowell County. Note that these percentages will not add to 100% as an individual may be in several categories.[14]

Covered Population	Presence in McDowell County	Description	Barriers to Digital Access
Individuals who live in covered households	45.66% of the population are either below the poverty line or considered low to medium income (150% of the poverty threshold)	Households with incomes at or below 150% of the national poverty level.	Affordability, device access, and limited transportation to access spots or training classes are significant barriers.
Aging individuals	23.13% of the population are aging individuals 65 years or over.	Individuals aged 65 years or older*(Note that the Digital Equity Act uses 60+ to define aging.)*[15]	Difficulty in learning, need for training on how to use the internet, and physical barriers such as poor eyesight and dexterity issues are barriers.
Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility	1.37% of the county's population is incarcerated in the regional correctional system.	This includes individuals currently or formerly incarcerated (excluding those in federal correctional facilities).	Lack of device access, affordability, and limited transportation to training classes are significant barriers.
Veterans	6% of the population are veterans	Individuals who served in the active military, naval, air, or space service, and who were discharged or released under conditions other than dishonorable.	Affordability, need for training on how to use the internet, and physical barriers caused by disabilities are significant barriers.
Individuals with disabilities	30% of the population have a	Individuals with a physical or mental	Physical barriers caused by disabilities, affordability of

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[14] U.S. Census Bureau, 2022 5-Year American Community Survey (ACS) Estimates
[15] For this plan data was not available so age 65+ is used throughout. The Digital Equity Act Population Viewer includes full data as defined by NTIA. (https://www.census.gov/data/data-tools/digital-equity-act-population.html)

Covered Population	Presence in McDowell County	Description	Barriers to Digital Access
	disability of some type. 10.5% have hearing difficulty and 10.8% have cognitive difficulty which could potentially contribute to language barriers.	impairment that limits one or more major life activities, a record of such an impairment, or being regarded as having such an impairment.	assistive devices, and limited transportation to access training are significant barriers.
Individuals with a language barrier: English language learners	2.3% are English Language learners.	English Learners (ELs) are individuals who are not proficient in English and are in the process of acquiring the language skills necessary to achieve fluency.	Difficulty in learning, need for training on how to use the internet, and affordability are significant barriers. Need for training on how to use the internet, affordability, and device access are significant barriers.
Individuals with a language barrier: Those with low levels of literacy	8.1% have low literacy rates.	Individuals with low levels of literacy have limited ability to read, write, and comprehend text.	Difficulty in learning, need for training on how to use the internet, and limited access to devices are significant barriers.
Individuals who are members of a racial or ethnic minority group	19.4% of the population are minorities.	This includes racial and ethnic minorities.	Affordability, device access, and limited transportation to access training classes are significant barriers.
Individuals who primarily reside in a rural area	100% of the individuals in this county would be considered to reside in a rural area.	Areas other than cities or towns with a population greater than 50,000 inhabitants.	Damage to infrastructure caused by weather, limited transportation to access spots, and affordability are significant barriers.
Other priority populations	*Targeted data collection needed.*	Children and youth, individuals in recovery and the homeless are examples of other populations that could greatly benefit from Digital Equity programs.	Other populations may face unique barriers such as affordability, difficulty in learning, and lack of physical address.

Table 4. McDowell County Covered Populations

Priority Populations

Based on demographics, internet usage and feedback from residents of McDowell County, the following covered groups have been identified as priority populations most at risk for being impacted by the digital divide:

- **Low Income Residents:** McDowell County has a high population of low income residents with the county average falling at 45.7% of the population falling into this category. These residents have been identified as having higher barriers to accessing the internet.
- **Disabled Individuals:** McDowell County has a high population of disabled individuals with the county average falling at 3% of the population falling into this category. These residents have been identified as having higher barriers to accessing the internet.
- **Aging Individuals:** McDowell County has a high population of aging individuals with the county average falling at 23.1% of the population falling into this category. These residents have been identified as having higher barriers to accessing the internet.
- **Minorities:** McDowell County has a high population of minorities with the county average falling at 19.4% of the population falling into this category. These residents have been identified as having higher barriers to accessing the internet.
- **Individuals with Low Literacy:** McDowell County has a high population of individuals with low literacy with the county average falling at 8.1% of the population falling into this category. These residents have been identified as having higher barriers to accessing the internet.

There are other populations in the county that face barriers. It is also important to remember that many of these populations are not mutually exclusive; individuals often fall into several categories, and the specific barriers are often similar.

This project is the first step towards moving towards a comprehensive County Digital Equity Plan. More time and effort needs to be spent with future outreach efforts to the priority populations, as well as organizations that already serve them, to gain a more complete understanding of needs.

Note on the Affordable Connectivity Program

The Affordable Connectivity Program (ACP) was an affordability program that provided low income residents with a monthly stipend to assist with broadband affordability. The ACP ended May 31, 2024 due to lack of additional funding from Congress. This program served 35% (128,571) of eligible households in West Virginia.[16] In lieu of this program ending, affordability measures and efforts on the local level will likely be important to ensure that our most vulnerable can still access affordable internet resources.

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[16] Education Superhighway, Accessed July 2024
https://www.educationsuperhighway.org/no-home-left-offline/acp-data/

Challenges, Opportunities and Goals for McDowell County

While the data for McDowell County paints an important picture of the Digital Equity landscape in the county, it is also critical in any planning process to collect the "ground truth" and work with residents to identify the top barriers and challenges based on their lived experience. The McDowell County Digital Equity Steering Committee and GWV project team would like to thank stakeholders for providing their candid and honest feedback around the barriers in the county. This feedback was gathered through the McDowell spring 2024 County Community Workshop, stakeholder phone conversations, and through feedback from stakeholders who attended Project Planning workshops in June 2024.

Challenges

In McDowell County, the biggest challenges identified as part of this project included affordability, lack of training and education, device access, frequent service disruptions due to weather. Many different factors affect the ability of McDowell County residents to equitably and consistently access broadband resources.

Access to high-speed internet is limited, especially in rural areas where poor connectivity and inadequate infrastructure hinder digital inclusion. However, even the best networks still won't solve the digital divide if residents are unable to afford services. With 45.66% of households classified as low-income, financial constraints significantly impact residents' ability to afford internet services and necessary devices. This is further compounded by the fact that 17.5% of households report having no device at home. 79.1% of residents report having access to broadband and significant disparities remain, as more than 21% of households in three of the four tax districts lack broadband access.

A lack of digital literacy presents another significant challenge. Many residents, particularly the aging population (23.13%) and those with low literacy levels (8.1%), struggle to understand and use digital platforms effectively. This issue is exacerbated by limited transportation options, which make it difficult for individuals to reach internet access points or attend training locations. Moreover, infrastructure damage from weather-related events frequently disrupts internet access, adding another layer of complexity to the county's digital inclusion efforts.

Accessibility issues further hinder digital inclusion in McDowell County. With 30.0% of the population being individuals with disabilities, physical barriers and mobility issues limit access to digital resources. Additionally, the county's significant minority population, which constitutes 19.36% of the total population, may face unique challenges in accessing and utilizing digital resources. These multifaceted barriers highlight the urgent need for targeted interventions to improve affordability, enhance digital literacy, bolster infrastructure, and address specific accessibility issues. A comprehensive approach is essential to ensure all residents of McDowell County can benefit from digital inclusion and access the opportunities that come with it.

Top barriers identified by covered populations:

Population	Top Barriers
Rural Residents	Affordability, lack of access, need for training, limited transportation to access spots or training classes, damage to infrastructure caused by weather
Aging Individuals	More accessible locations to access the internet, affordability, difficulty in learning, limited transportation to access spots or training classes, damage to infrastructure caused by weather
Incarcerated/ formerly incarcerated	Lack of access to financial support, no personal devices, lack of knowledge of where to find resources
Veterans	Trust issues around technology, lack of training, lack of affordable devices, need for help navigating veteran-specific resources online, disabilities limiting their access
Individuals with Disabilities	Fixed income, need for assistive devices, chronic pain and limited mobility, illiteracy, lack of transportation
Language Barrier	Limited access to training, educational skills
Racial or ethnic Minority Groups	Affordability, lack of transportation, need for training programs
Low income residents	Affordability, low literacy rates as a barrier, price and availability of devices, lack of quality education

Table 5. Top Barriers Identified during stakeholder outreach

The challenges in McDowell County are widespread. However, solutions and resources in the community exist and there is an opportunity to leverage these assets to increase access now, even before broadband expansion has been completed. In fact, acting now to address the County's digital equity barriers can help increase uptake of broadband service as it is extended to unserved areas, and will ensure that residents are able to fully benefit from broadband access when it becomes available to them.

Opportunities/Assets

McDowell County has many resources to build upon to address these barriers to equitable connectivity. The first point to highlight is that McDowell County, like many others, has many individuals and organizations that are already doing digital inclusion work, though they may not call it that. The school system does this already for the youth population and libraries have become de-facto providers of digital literacy resources by offering connectivity to those on premise. Any organization that is actively helping residents sign up for online resources, access online portals, log in to an email address, etc., is already in the work of providing digital literacy skills.

There are five libraries in the county with a total of 30 computer terminals. In addition, there are several food pantries which could serve as places to reach residents needing training including No Hunger Food Pantry and Operation Charity (New Vision), Big Creek People in Action and Five Loaves & Two Fishes Food Bank. Faith communities, especially those that are service minded or that already operate service missions, could also be a good place to start since many residents are already familiar with those locations. McDowell County has 91 churches throughout the county. Improving internet access and/or adding programming and digital services in existing and trusted locations is a great place to start.
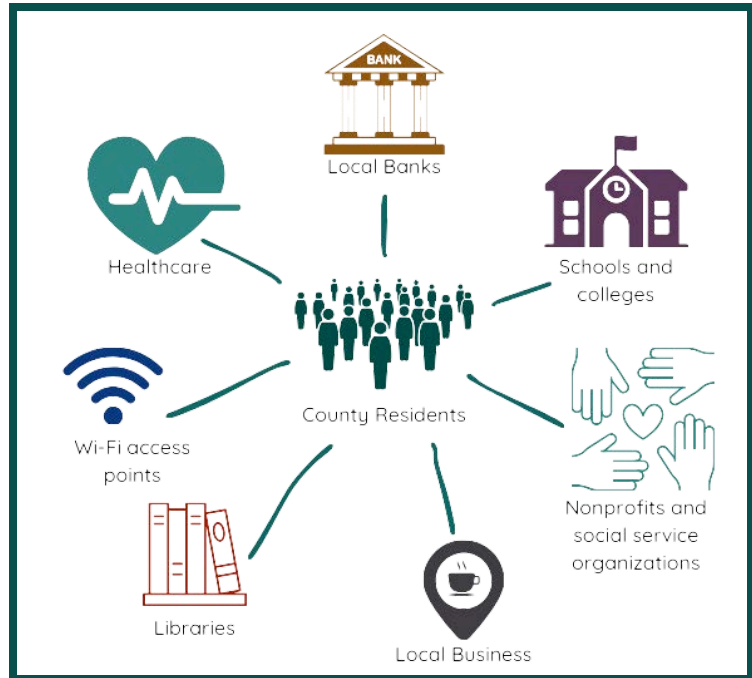
In addition, there are other organizations in McDowell County whose missions closely align with the work. Nonprofits like the local Community Action Partnerships, McDowell County FRN, Community Care of West Virginia, Inc, Community Action Agency, Family Support & Rehabilitation Services, Mountainheart Community Services, Inc and American Legion offer a variety of services to many of the covered populations and leadership understands the importance of this type of work for their clients. West Virginia Reentry Councils are also a huge asset to the community and could provide a great connection to those struggling to access online resources.

Healthcare has the potential to be a great partner whether it is a local clinic or regional healthcare system, the 20 healthcare clinics and hospitals in McDowell County could serve as access points for digital equity and inclusion resources and leveraged to provide additional services. Health providers have a vested interest in digital equity for their patients, the shift towards telehealth and integration of technology in medicine (internet-enabled heart monitors, inhalers etc.) highlights how critical it is for patients to have internet connectivity. Other community partners that also have a vested interest can include local banks, retailers, and other community businesses that can more effectively serve their customers and clients when they have the ability to take advantage of tech based support and solutions. For a further list of McDowell County Community resources please see Appendix B.2: Community Digital Asset Mapping on page 55.

Potential Solutions:

Community members in the county have a great sense of what solutions and potential solutions would have a meaningful impact. The input and lived experiences of community members is also a huge asset to the community. Potential solutions identified by McDowell County Stakeholders included:

- **Digital literacy training:** Training for the community for device and internet use;
  - Specialized training for those living with disabilities
- **Assistive technology support:** Speech compatibility on devices for disabilities
- **Affordability:** Financial assistance for low income residents

There are also regional and statewide resources that McDowell County projects can reach out to. These include programs like the Mountain State Digital Literacy Program, Catholic Charities of WV, Coalfield Development and MOVRC Senior Companion program. For a full list of community resources please see Table 12. McDowell County Resource List.

Who would benefit most from this work?

Digital equity initiatives in McDowell County would most benefit low-income families, elderly individuals, rural residents, people with disabilities, veterans, homebound individuals, those with limited digital literacy, students, formerly incarcerated individuals, non-English speakers, and racial/ethnic minorities. By providing affordable internet access, devices, and comprehensive digital literacy training, these groups can gain better educational and job opportunities, improved access to telehealth and essential services, and enhanced connectivity with their communities. Addressing these needs would significantly bridge the digital divide and improve the overall quality of life for these vulnerable populations.

Aggregate Community Engagement Findings

The following key findings and observations resulted from the community engagement process:
- Emphasis on devices for students, telehealth, medical records and patient portals.
- Barriers include affordability, device access, limited transportation, and physical barriers caused by disabilities.
- Solutions include community training for device and internet use, specialized training for disabilities, and financial assistance for low income.
- Need for involvement from teachers, school personnel, community members, and first responders.

Community feedback from McDowell County emphasizes the importance of enhancing access and opportunities through digital connectivity. Priorities include equipping students with learning devices, offering telehealth services, ensuring seamless public safety communication, and supporting businesses with online advertising and credit card processing. The county also values combating isolation through online connections and providing real-time emergency alerts.

Vision for a Connected McDowell County

In order to make change it is critical to have an understanding of where the county and stakeholders want to go, and what success looks like. With the West Virginia State Office of Broadband vision in mind – "to ensure that all West Virginians have the resources they need to participate in the digital world and achieve the numerous benefits of digital equity" – stakeholders spent time outlining their dream and vision for a connected McDowell County.

Vision:

    In a connected McDowell County, residents would experience an enhanced landscape of access and opportunity. Education would flourish with students equipped with devices for learning, enabling them to engage in online classes, access educational resources, and apply for jobs remotely. Telehealth services would offer convenient medical consultations, with patient records accessible through online portals and medications easily ordered online. Law enforcement and emergency responders would be seamlessly connected in the field, enhancing public safety and response times. Businesses would thrive with online advertising and credit card processing, while residents would enjoy remote access to classes and professional development opportunities. The community would be interconnected, combating isolation through online connections and fostering a sense of belonging. Real-time weather and emergency alerts would ensure residents are informed and prepared for any situation. Affordable and transparent government services would underscore the county's commitment to its residents' well-being and progress. In this vision, McDowell County emerges as a connected community, where every individual can thrive and contribute to its growth and resilience.

Figure 8. Word cloud from community meeting

During any planning process that hopes to move toward the vision above, it is important to consider key values that community stakeholders prioritize. In McDowell County, **cohesion** stands as a cornerstone value, fostering unity and collaboration among its residents. The pursuit of **faster speeds** in internet connectivity reflects the community's commitment to staying abreast of technological advancements, enhancing communication and access to information. **Future prosperity** is a shared aspiration, driving efforts towards economic growth and development. **Healthcare** is prioritized as a fundamental need, ensuring the well-being and vitality of individuals and families. **Reliable access to essential services** and resources is crucial, particularly for the elderly population, underscoring the community's dedication to inclusivity and support for all generations. **Knowledge** is highly valued, serving as a catalyst for personal and communal empowerment. Together, these values shape the vision for McDowell County, where cohesion fosters progress, technology fuels innovation, and collective efforts pave the way towards a prosperous and healthy future for all.

McDowell County stakeholders hope to build a future where residents are well-informed, connected, and empowered, creating a foundation for growth, security, and a high quality of life.

Mission

Based on the values and vision above, the following mission statement was developed to help lead and direct digital inclusion planning in the county:

Mission Statement:	Our mission in McDowell County is to overcome barriers to digital inclusion, focusing on affordability, access, digital literacy, and infrastructure. By enhancing broadband infrastructure and providing comprehensive digital literacy training, we empower residents to utilize online resources effectively. We prioritize cohesion, technological advancement, economic growth, inclusive healthcare, and knowledge empowerment to ensure a prosperous and healthy future for all residents.

Table 6. McDowell County Digital Equity Mission Statement

Goals

Stakeholder goals can be summarized as the following:

- Develop comprehensive digital literacy training and support services, including specialized training for individuals with disabilities, to improve residents' ability to use technology for education, healthcare, and communication.
- Ensure all residents, especially seniors and low-income families, have access to affordable digital devices and telehealth services, reducing travel costs and improving healthcare accessibility.
- Implement education and resources focused on digital safety, online privacy, and preventing scams, particularly targeting vulnerable populations such as the elderly and those with low literacy.

Alignment with Existing Goals

McDowell County's digital equity vision, mission, and values support and are aligned with the following existing regional and county goals:

- Region I Planning & Development Council's Comprehensive Economic Development Human Resources Goal to provide vocational education facilities within each county to help develop skills in and advanced technical training for children and youth.
- Region I Planning & Development Council's Comprehensive Economic Development Economic Development Goal to encourage industrial and commercial development, tourism and travel growth, which would enhance employment opportunities and diversity.

McDowell County's digital inclusion goals are also aligned with the the West Virginia Department of Economic Development Office of Broadband Digital Equity priorities and goals in the following ways:

- **Improving Digital Skills:** Aligns with WVDED Office of Broadband's objective to make digital literacy training available to all West Virginians, including covered populations. By offering comprehensive training programs and specialized support for individuals with disabilities, McDowell County will ensure residents are equipped with the necessary skills to participate fully in the digital world.
- **Improving Device Access:** Aligns with WVDED Office of Broadband's objective to create a sustainable program for device distribution, lending, and recycling. McDowell County's focus on providing affordable digital devices and telehealth services ensures that all residents have the tools they need for connectivity and healthcare.
- **Advancing affordability:** Aligns with WVDED Office of Broadband's objective to increase affordable internet options. McDowell County's efforts to secure financial assistance and subsidies for low-income residents will help bridge the affordability gap and ensure equitable access for all residents.

Figure 9. McDowell County, West Virginia

Recommendations to Further Digital Inclusion Efforts in McDowell County

Here is a list of some key activities to further digital equity and inclusion efforts in McDowell County:

1) **Bring more stakeholders to the table.** This planning process was able to reach many key partners. During the planning process, McDowell County residents identified many additional individuals, organizations and stakeholders that could help solve some of the challenges for residents in the county.
2) **Establish a formal structure around Digital Equity Planning and communications.** McDowell County steering committee members provided critical input and resources during the planning process. A potential course of action would be to formalize a committee to continue shepherding the planning process into the future. Identifying regional or neighboring county partners to include could bring in additional resources and engaged partners.
3) **Continued outreach and resource sharing.** There was a lack of knowledge identified about existing programming. There are opportunities to work with current partners to better advertise the existing resources.
4) **Identify partners in need of additional capacity:** Many local partners may already be serving the residents in most need of services and may be able to expand their existing services with some increased support. Additional staff capacity for an existing trusted program can result in significant impacts
5) **Position projects and partners to take full advantage of upcoming opportunities.** Several partners are poised to take advantage of upcoming digital equity funding to develop more comprehensive programs focused on digital literacy, skills and/or device access. Maintaining open communication with other county stakeholders will ensure efficient and effective implementation.
6) **Identifying long-term support.** This could include working with local county or town governments to identify funding sources, private business, philanthropic partners, and internet service providers in the community. County stakeholders have an opportunity to do outreach to these partners to show the impact that expanded connectivity could have on the community.

This list is not exhaustive but can serve as a starting point for the stakeholders that are committed to expanding digital equity in McDowell County.

Who to bring to the table:

McDowell County Steering Committee and community stakeholders identified a variety of stakeholders to include in further planning efforts. These stakeholders encompass a variety of local and regional organizations. Teachers, school personnel, community members, youth, first responders, store and small business owners, postal workers, coal miners, and pastors/churches were all identified as potential stakeholders to include in further planning.

Note that there may also be regional or cross-county stakeholders that can facilitate strong partnerships. Region I Planning and Development Council and local Economic Development agencies can often help facilitate regional projects that may benefit several counties.

Note on Potential Funding:

There are some near-term next steps for potential digital inclusion projects through the Digital Equity Act funding opportunities that will be available FY 2024-2026. These grant funds provide a "kickstart" to program expansion or launch by providing interested organizations with some resources to get started. The West Virginia Office of Broadband is launching three subgrant programs starting in fall 2024. These provide a great opportunity for organizations in McDowell County to start working together to address the challenges to digital inclusion in the county.

Additional Planning and Coordination

The strongest efforts and most successful models across the country are those that leverage current capacity and the partners who are already in place to do the work. Positive change requires commitment and coordination on the ground. This plan is just a starting point. It provides the baseline and a goalpost, but the McDowell County Steering Committee and stakeholders and residents of McDowell County are the individuals and organizations that will make the real impact.

Conclusion

There is a significant need for digital inclusion efforts in the county. These efforts will dramatically increase the wellbeing and quality of life in McDowell County, not only for the covered populations but for the community in general.

By beginning this process of digital equity planning and project development, McDowell County stakeholders are taking the critical first steps to ensure that McDowell County will achieve maximum benefit from the historic investment of the DEA and BEAD program over the next 5-10 years. The potential benefits are numerous and hard to quantify. From expanded healthcare access, reduced loneliness, better access to education and work opportunities, and expanded opportunities for self determination and entrepreneurship, it is clear that this work cannot wait.

The economic benefits of a connected community, where residents have the access, skill, devices, and resources needed to use the benefits of today's digital economy, would dramatically improve the social and economic outlook of McDowell County. The McDowell County Digital Equity Steering Committee hopes that this plan, and any subsequent planning efforts, will provide a roadmap and baseline measurement of the need and opportunity for digital equity work in the county.
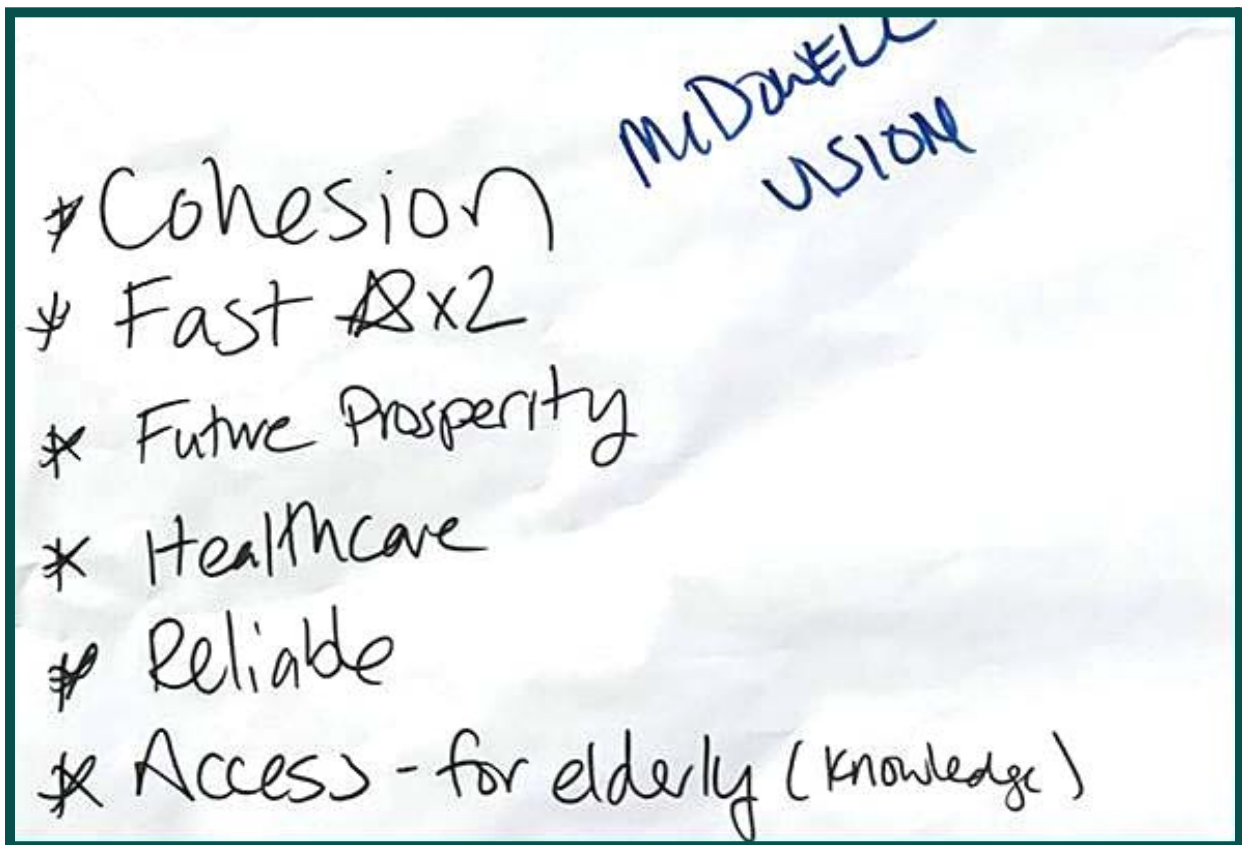
Figure 10. Vision/goal from McDowell County Community Meeting

Glossary

American Community 5-year Survey (ACS5): A comprehensive survey conducted by the U.S. Census Bureau that provides detailed demographic, social, economic, and housing data for every community in the U.S. based on five years of data collection. It offers greater geographic detail and accuracy.than the decennial and ACS 1-year survey.

American Community 1-year Survey (ACS1): A survey conducted annually by the U.S. Census Bureau that provides updated demographic, social, economic, and housing data for large geographic areas with populations of 65,000 or more. It offers more timely data but with less geographic detail than the 5-year survey.

Household: A household consists of all people who occupy a housing unit, regardless of their relationship to each other. This includes individuals living alone, roommates, or unrelated individuals living together.

Family: A **family** is a subset of a household and includes individuals related by birth, marriage, or adoption living together in one household. Families can include couples with or without children, single parents with children, and extended family members living together.

Mean Household Income: The average income of all households, calculated by dividing the total income of all households by the number of households. This is useful for understanding the overall income level of an area but can be skewed by very high or very low incomes.

Median Household Income: The middle income value where half of the households earn more and half earn less.This Provides a better representation of the typical income of an area, especially in regions with significant income disparity.

Family Income: The combined income of all members of a family living together in one household. This might be ideal for studies focusing on economic well-being and policy impacts on traditional family units, such as analyses of welfare programs, tax policies, or family support systems.

Per Capita Income: The average income earned per person in a given area, calculated by dividing the total income by the population. This is useful when assessing the average economic well-being of individuals within a specific geographic area, such as a state, county, or city.

150% of the Poverty Threshold: An income level set at 1.5 times the official poverty line, used to assess economic well-being and eligibility for certain assistance programs.

Gini Index: This is a direct measure of income inequality within a population. The Gini Index ranges from 0 (perfect equality, where everyone has the same income) to 1 (perfect inequality, where all income goes to only one household).

Demographic: Characteristics of a population used for statistical analysis, including attributes such as age, gender, race, ethnicity, education, income, and employment status. These characteristics help in understanding the composition and trends within a population.

Unemployment Rate: The percentage of the labor force that is unemployed and actively seeking employment. The unemployment rate is a critical indicator of labor market health.

Poverty Rate: The percentage of the population whose income falls below the official poverty threshold, indicating the proportion of people living in poverty.

Official Poverty Threshold: The income level set by the U.S. Census Bureau that varies by family size and composition, used to determine who is considered to be living in poverty. It is based on the minimum income needed for basic living expenses.

Digital Equity: A condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy. Digital equity is necessary for access to essential services, civic and cultural participation, employment, and lifelong learning

Digital Inclusion: Digital inclusion refers to the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs). This includes: Reliable fixed and wireless broadband internet service; Internet-enabled devices that meet the needs of the user; Applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration; Access to digital literacy training and quality technical support; Basic awareness of measures to ensure online privacy and cybersecurity.

Digital Divide: The gap between those who have affordable access, skills, and support to effectively engage online and those who do not. As technology constantly evolves, the digital divide prevents equal participation and opportunity in all parts of life, disproportionately affecting people of color, Indigenous peoples, households with low incomes, people with disabilities, people in rural areas, and older adults

Megabits Per Second (Mbps): A measure of how fast data can be transferred over the internet. It tells you how many millions of bits (tiny pieces of data) can move from one place to another in one second. Higher Mbps means faster internet, so activities like streaming videos or downloading files happen quicker. In 2015 the Mbps speed of "Broadband" was defined by the FCC as 25 Mbps Download and 3 Mbps Upload speeds (25/3). In 2024 that definition was revised to 100 Mbps Download and 20 Mbps Upload speeds (100/20).

APPENDIX A

Geographic and Demographic Profile

Appendix A. Geographic and Demographic Profile

Demographic, broadband adoption and device adoption data was identified from the U.S. Census Bureau's American Community Survey 2018-2022 5-Year Estimates, a wide-ranging survey conducted by the U.S. Census Bureau that provides detailed demographic, social, economic, and housing data for every community in the U.S. based on five years of data collection. Unemployment data was obtained for 2022 from WorkForce West Virginia and 2023 school enrollment and budget data was identified from the West Virginia Department of Education.

Demographic[17]	Demographic Data
Total Population Number	18,911
Square Miles Covered	535
Number of People per Square Mile	35
Number of Residents Who Identify as White	15,249 (80.6%)
Total Minority	3,662 (19.4%)
Number of Residents Who Identify as Black	2,685 (14.2%)
Number of Residents Who Identify as Hispanic or Latino	386 (2%)
Number of Residents Who Identify as Indigenous	*insufficient data[18]
Number of Residents Who Identify as Other	*insufficient data[18]
Total Number of Households	6,547
Number of Households That Are Owner Occupied	5,046 (77.1%)
Average Household Size	2.59 per household
Mean Household Income	$40,173
Median Household Income	$28,235
Mean Family Income	$50,001
Median Family Income	$37,380
Per Capita Income	$15,353
Number of People Living Below the Poverty Line	5,653 (33.3%)
Number of Low to Moderate Income Residents (150% of the national poverty threshold.	7,759 (45.7%)

Table 7. McDowell County General Demographic Information

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[17] U.S. Census 2022 American Community Survey 5-Year Estimates
[18] * Not sufficient data to provide an accurate estimate.

Observations

Below is a table of social determinants to consider when observing a service area, and they can vary significantly from one community to another. Addressing these determinants is crucial for promoting equity and improving the overall well-being of historically marginalized or underinvested communities.

Social Determinant	McDowell County Descriptions
Economic Factors[19]	
Income Inequality	The Gini Index of 47.68% indicates high income inequality. The significantly lower median and per capita incomes highlight severe economic disadvantages impacting digital access.
Unemployment Rate	McDowell County has an unemployment rate of 6.3%. This is significantly higher than the state's unemployment rate of 3.9% and the national unemployment rate of 3.7%.
Poverty Levels	McDowell County has a poverty rate of 29.9%. This is significantly higher than the state's poverty rate of 16.3% and the national poverty rate of 12.2%.
Lack of Economic Opportunities	McDowell County shows a significant gap in median earnings compared to state and national averages, particularly in higher-paying occupations. Digital inclusion initiatives focusing on improving internet infrastructure, providing affordable devices, and offering comprehensive digital skills training are crucial. These programs can help residents access better job opportunities, especially in remote work and digital industries, thereby enhancing overall economic prospects. McDowell County performs well in the sales and office sector, close to the state average. Digital equity initiatives can provide further training in digital business tools and online sales strategies.[20]
Education[21]	

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[19] U.S. Census 2022 American Community Survey 5-Year Data
[20] U.S. Census 2022 American Community Survey 5-Year Data
[21] U.S. Census 2022 American Community Survey 5-Year Data; West Virginia Department of Education 2023 Enrollment and Budget Data

Social Determinant	McDowell County Descriptions
Educational Attainment[22]	McDowell County faces severe educational and economic disparities. Fewer adults have high school diplomas and bachelor's degrees compared to state and national averages. The median income for residents with less than a high school diploma, high school graduates, and those with some college education is significantly lower, reflecting deep economic issues. McDowell County has five elementary, two middle, and two high schools, with a total enrollment of 2,455 students. The county has a per pupil expenditure of $17,457.62, which is significantly more than the state average. McDowell County's educational attainment is notably lower than the state and national averages. The budget per student is higher than some counties, but more focused investments and resources are needed to bridge the educational gaps.
Healthcare	
Healthcare Access	McDowell County has 20 active licensed health facilities based on data from the WVDHHR. The County has one hospital with 55 beds, one nursing home with a total capacity of 120 beds and four Rural Health Clinics. In addition to these and various other types of health facilities, there are four Federally Qualified Health Centers that provide comprehensive services. These 20 facilities serve a population of 18,911 county residents.[23]

In West Virginia, telehealth usage remains significantly above pre-pandemic levels, with about 3% of total Medicare visits conducted via telehealth in 2021, though this is a decrease from the 5% peak in 2020. Despite the overall increase, substantial disparities persist, particularly between rural and urban areas, primarily due to limited broadband access in rural regions. Rural beneficiaries are less likely to utilize telehealth services compared to their urban counterparts, highlighting a critical barrier to healthcare access. The higher statewide usage rates among beneficiaries with disabilities and those dually enrolled in Medicaid and Medicare further underscore the necessity for targeted interventions. Additionally, 22% of telehealth visits involved out-of-state providers, indicating both a reliance on external healthcare resources and potential challenges in local healthcare capacity. These statewide disparities emphasize the urgent need for enhanced broadband infrastructure and policy alignment to support equitable telehealth access and improve healthcare outcomes across the entire state. Data analysis is pending for more targeted county specific data. |
| Health Disparities * | McDowell County exhibits higher rates of cognitive and ambulatory disabilities relative to the state. The elderly population experiences more significant independent living difficulties. The median income for those with disabilities is |

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[22] U.S. Census 2022 American Community Survey 5-Year Data; West Virginia Department of Education 2023 Enrollment and Budget Data
[23] West Virginia Department of Health and Human Resources; ASPE Office of Health Policy

Social Determinant	McDowell County Descriptions
	notably lower than the state average. Improving digital equity and access to online health services would address these disparities effectively.[24]
Food Deserts and Insecurity	McDowell County has at least 6,241 residents (33%) that have low access to healthy food options being 10 miles or further from the nearest supermarket. While 33% is the minimum threshold the USDA uses to define low access, the true percentage may be higher due to the rural nature of the area. McDowell County has some food pantry options available including: No Hunger Food Pantry and Operation Charity (New Vision), Big Creek People in Action and Five Loaves & Two Fishes Food Bank [25]
Housing[26]	
Affordable Housing	In McDowell County, 3.3% of households with a mortgage pay more than 30% of their income in housing costs, indicating a housing cost burden as defined by HUD. Additionally, 3% of households without a mortgage pay more than 30% of their income in housing costs. The 22.6% of renter households in the county also face high gross rents as a percentage of household income; 7.6% of renter households pay 30% or more of their income as rent, with 3.6% severely cost-burdened, paying more than 50% of their income as rent.
Housing Segregation	In McDowell County, significant disparities exist in median home values, the age of homes, and median gross rent across Census tracts. Median home values range from $23,200 to $128,600, indicating potential housing segregation. Homes' median construction years span from 1939 to 1978, and median gross rents range from $261 to $658, highlighting different affordability levels. Additionally, a notable percentage of householders aged 65 years and over spend 30% or more of their income on rent or owner costs. These economic pressures likely hinder access to digital technologies and services, exacerbating the digital divide. Addressing these disparities through targeted housing and digital equity initiatives is crucial for fostering an inclusive community.
Homeownership	Homeownership rates are lower, with high mortgage costs as a percentage of median income. Seniors are significantly affected by these high costs, limiting their ability to invest in digital services and exacerbating the digital divide.
Criminal Justice	
Mass Incarceration	As of July 2024, McDowell County has 259 incarcerated individuals in the Southwestern Regional Jail and Correctional Facility, representing approximately 1.37% of the total population. This does not include individuals that may have posted bail or be incarcerated in local, private or federal prison systems. Statewide, West Virginia has an incarceration rate of 340 per 100,000 residents, with significant populations under probation (438 per 100,000) and parole (258

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[24] U.S. Census 2022 American Community Survey 5-Year Data
[25] US Centers for Disease Control and Prevention Environmental Justice Dashboard. Accessed June 2024. https://ephtracking.cdc.gov/Applications/ejdashboard/ ;Facing Hunger Foodbank, Inc.
[26] U.S. Census 2022 American Community Survey 5-Year Data

Social Determinant	McDowell County Descriptions
	per 100,000). The state operates 12 prison facilities and 10 jail facilities, with a prison budget of approximately $216.9 million and an average cost of $32,444 per inmate.[27] Statewide, West Virginia has high rates of incarceration, particularly among minority populations. In West Virginia, per 100,000 people, 637 are either currently or formerly incarcerated. [28] Justice-impacted individuals face significant barriers to reentry and often face glaring knowledge gaps about how to safely use online resources to navigate job seeking and educational resources and often struggle with device access.
Criminalization of Poverty	Research data pending on if there are local laws and practices that criminalize poverty-related issues.
Infrastructure and Environment	
Infrastructure Investment[29]	Much of WV's infrastructure has deteriorated, while new construction, replacement, rehabilitation and repair efforts have not kept pace with the needs. According to the ASCE-West Virginia 2020 Report Card, infrastructure across the state is generally poor with an overall grade of D (poor) across bridges, roads, wastewater, drinking water, and dams. The overall decline in population contributes to a smaller tax base available to help pay for necessary infrastructure modernization. 21% of the state's bridges are listed as structurally deficient. Many wastewater utilities across the state struggle to maintain their systems due to low rate-paying populations locally. The topography of the state results in significant challenges in maintaining and extending drinking water resources, with current funding needs upwards of $302 million. Challenges in local infrastructure dramatically impact residents and their ability to prioritize and address their digital access needs. For residents without basic utilities such as water/wastewater, digital access is often not the priority. Additionally, the lack of a local tax base prevents many systems from regular adequate repair.
Environmental Hazards	The HUD environmental health hazard exposure index average for McDowell County is 77. This index summarizes potential exposure to harmful toxins at a neighborhood level, incorporating estimates of air quality carcinogenic, respiratory, and neurological hazards. Higher index values indicate better environmental quality. McDowell County has a slightly lower risk of exposure to harmful toxins compared to the overall state average of 74. The forested areas of the county are considered at moderate risk of wildfires according to 2024 National Interagency Fire Center mapping data. Several areas along the Mud River are located within the FEMA 100-year floodplain, which is estimated to have a 1% chance of flooding in any given year. Such zones are often subject to mandatory flood insurance if property is purchased with a federally backed

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[27] WVRJA 2024/National Institute of Corrections 2021

[28] https://www.prisonpolicy.org/

[29] 2020 Report Card for West Virginia's Infrastructure, American Society of Civil Engineers(2021 WWW.INFRASTRUCTUREREPORTCARD.ORG/WEST-VIRGINIA; Federal Emergency Management Agency Flood Insurance Rate Maps for WV; National Interagency Fire Center Data 2024.

Social Determinant	McDowell County Descriptions
	mortgage.[30] Flooding remains a significant risk for broadband infrastructure and the lack of connectivity heightens the impacts of environmental conditions in rural areas.
Transportation Access[31]	In McDowell County, approximately 9.9% of households have no vehicle available. Additionally, about 13.1% of households have commute times of 60 minutes or more. There is no public bus transportation available, emphasizing the critical need for digital inclusion initiatives to provide alternative solutions for accessing services and opportunities. The lack of public transportation underscores the importance of online access for homebound and low income residents. These resources dramatically expand opportunities for those who are homebound, and reliable connectivity can also provide the opportunity for additional transportation solutions in rural areas such as ride sharing apps.
Social Support	
Social Capital	McDowell County's efforts to achieve digital inclusion are hampered by economic barriers and concerns over affordability. These social divides may weaken community bonds and present significant challenges to creating an inclusive digital environment.

Table 8. Observation of key social determinants for McDowell County.

General Community Economic and Workforce Status

Access to the digital economy has direct impacts on local workforce and their income potential.

Based on the data from the USDA and U.S. Census Bureau regarding Persistent Poverty Areas in the United States, the following observations were made:

- McDowell County as a whole has a persistent and enduring poverty rating with some areas in extreme poverty based on U.S. Census tract areas.
- McDowell County has faced significant economic challenges over the decade. Real income growth has been negligible, and per capita income increases have only been modest. The poverty rate has shown little improvement, suggesting that many residents continue to face substantial financial difficulties.

According to a 2023 analysis by the National Skills Coalition and the Federal Reserve Bank of Atlanta, *Closing the Digital Skill Divide.[32]* 92% of analyzed jobs require digital skills. Previous research found that one third of workers do not have the basic digital skills needed to succeed in today's jobs. These skills are required across industries and make it clear that low income, marginalized, and other individuals will historic challenges to accessing the digital economy are at a significant disadvantage.

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[30] US Centers for Disease Control and Prevention Environmental Justice Dashboard. Accessed June 2024. https://ephtracking.cdc.gov/Applications/ejdashboard/ | HUD Official Data as of January 2024
[31] U.S. Census 2022 American Community Survey 5-Year Data
[32]Bergson-Shilcock, Amanda, et al. "Closing the Digital Skill Divide: The Payoff for Workers, Business, and the Economy." National Skills Coalition, Federal Reserve Bank of America, 2023.

Statistics on Meaningful Uses

To obtain state and local statistics on meaningful uses of broadband in the community, the project team examined a variety of sources for the data shown on the table below:

Patient Health Portal (PHR) or Electronic Health Portal (EHR) Use/Adoption[33]	A survey of 6,910 people statewide conducted by the West Virginia Primary Care Association asking "Have you accessed your health records using the internet/patient portal?" revealed that the majority of 69.58% answered "No" indicating reasons such as "I didn't know I could" (13.98%), "I don't have internet access" (10.13%), and "I tried but it didn't work" (2.4%). This statewide survey reveals the telehealth challenges throughout the state, be it lack of internet access or potential lack of knowledge on device usage and benefits of technology.
Online Social Service Enrollment, Account Management and Use[34]	1 in 4 West Virginians are assisted by Medicaid through the Mountain Health Trust (MHT) program, with a total enrollment of 488,405 members as of the end of the State's fiscal year 2022. This significant enrollment indicates a substantial use of online systems for Medicaid services.

The implementation of federal policies during the Covid Pandemic, such as maintaining continuous coverage for individuals enrolled in Medicaid and CHIP, significantly increased Medicaid enrollment. This policy likely led to greater use of online services for managing enrollments and renewals . |
| **Public Library Electronic Services:**[35] | McDowell County has four libraries in the County. There are 30 Patron Internet Terminals in the county with 1,843 annual users of public internet resources reported. |
| **Number or Percentage of Local Workers Requiring a Computer** | The percentage of workers requiring a computer was estimated using the number of employees and business sector from Dun & Bradstreet data based on Reid Consulting's methodology for business broadband needs, as well as data from West Virginia Workforce Onet on software use by industry sector,4572 workers in McDowell County are estimated to require use of Broadband to do their current jobs. This does not take into account businesses that are unable to expand/take advantage of online resources/computers due to lack of connectivity. |

Table 9. Additional meaningful uses of Broadband Connectivity in McDowell County

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[33] West Virginia Primary Care Association 2022 Statewide Survey of 15 Health Centers
[34] West Virginia Bureau for Medical Services 2022 Mountain Health Trust Annual Report
[35] Annual Data from West Virginia Public Library Statistical Report :
https://librarycommission.wv.gov/Who/Documents/Library%20Section%27s%20FY2023%20Statistical%20Report.pdf

Impact of the Coal Industry

Data made available from the Appalachian Regional Commission regarding Economic Distress in Appalachian counties indicates that:

- McDowell County has a very high dependance on the declining coal industry.
- McDowell County is at very high risk of negative economic impacts as the coal industry declines.
- McDowell County has a very high Composite Index indicating an overall likelihood of negative economic impacts as the coal industry declines, highlighting the need for more economic diversification.

ARC Metric	Score	Quintile	Description
Dependence	**18.498**	**Highest**	Measures how much a county's economy relies on the coal industry, based on employment and economic activity in coal-related sectors. Higher scores indicate greater reliance and vulnerability to coal market changes.
Impact	**0.318**	**Lowest**	Quantifies the economic effects of changes in coal-related employment from 2005 to 2019. Negative scores indicate job losses and downturns, while positive scores show minimal impact or growth. It assesses a county's economic resilience or vulnerability related to the coal industry.
Risk	**36.912**	**Highest**	Combines the Dependence Score and local coal mine productivity to assess future economic risk from the coal industry. Higher scores suggest greater risk if coal production declines.
Composite Index	**66.518**	**Highest**	Aggregates the Dependence, Impact, and Risk Scores to assess a county's overall economic health related to the coal industry. Higher scores indicate greater impact and dependence, highlighting the need for economic diversification.

Table 10. Coal Impacts on McDowell County

McDowell County is renowned for its extensive coal mining operations, which have been central to its economy since the late 19th century. The county's rich coal deposits made it a significant player in the coal industry. However, the decline of coal mining has had a profound impact, leading to economic hardships, high unemployment, and poverty. This historical reliance on coal underscores the importance of exploring new economic opportunities and fostering economic diversification to support the county's future development.

Coal decline is causing generational impacts across the State of West Virginia, where communities that have suffered major job losses now face disparities in wealth, income, educational attainment, and employment outcomes relative to the rest of the country. Low labor force participation across the state

is one of the most concerning impacts of coal decline, with only 55% of the state's noninstitutionalized population age 16 and older who are employed or actively looking for work. Labor force participation is even lower in the most coal-impacted communities, where high rates of disability and chronic disease point to lasting health-based repercussions of coal dependence. Coal-related job losses have also caused brain drain, as young talent leaves the state to find more opportunity. The shriveling tax base in communities with significant population loss and coal production decline has inhibited infrastructure development, including the development of broadband infrastructure, which has long lagged the rest of the country due to the state's rurality and mountainous terrain. During the pandemic, coal production declined substantially due to the drop in demand, worsening the outlook for the coal industry that was already facing the headwinds of cheaper alternatives, divestment, and the American energy transition.

While coal has bounced back some since the pandemic, the 2023-2027 WVU West Virginia Economic Outlook forecasts that coal production in the State will return to its long-run downward trend over the next five years. Coal production in West Virginia is expected to fall from about 81 million tons in 2022, to approximately 69 million tons by the end of 2027, a decline of nearly 15 percent. Demand for the State's coal faces headwinds from federal policy, as well as the ongoing switch to renewable energy in the nation's power grid.

Economic diversification and transition from coal dependence require access to high-speed Internet. Coming out of the pandemic, West Virginia has potentially more money than ever to expand access to high-speed Internet, including $136 million in ARPA-allocated funds that are supporting the state's three broadband grants, the $1.36 billon in COVID-19 funds to counties and cities that are broadband eligible, and an additional 1.2 Billion through the BEAD program. However, the communities that need these funds the most include those that industry decline and the digital divide have gutted of capacity with respect to leadership, staff, and matching capabilities.

APPENDIX B
Digital Equity and Local Assets

Appendix B. Digital Equity and Local Assets

B.1 Introduction and Vision for Digital Equity

Based on the data and community input collected as part of the planning process, the McDowell County Digital Equity Steering Committee has developed the following problem statement, vision, and mission statement for achieving digital equity through increased broadband access as shown below:

| Problem Statement | McDowell County faces numerous barriers to digital inclusion, primarily related to affordability, access, digital literacy, and infrastructure. With 45.66% of the population classified as low-income, financial constraints significantly impact residents' ability to afford internet services and necessary devices. This is further compounded by the fact that 17.5% of households report having no device at home. Despite 79.1% of residents reporting access to broadband, disparities remain, as more than 2% of households in three of the four tax districts lack broadband access.

A lack of digital literacy presents another significant challenge. Many residents, particularly the aging population (23.13%) and those with low literacy levels (8.1%), struggle to understand and use digital platforms effectively. This issue is exacerbated by limited transportation options, which make it difficult for individuals to reach internet access points or attend training locations. Moreover, infrastructure damage from weather-related events frequently disrupts internet access, adding another layer of complexity to the county's digital inclusion efforts.

Accessibility issues further hinder digital inclusion in McDowell County. With 30.0% of the population being individuals with disabilities, physical barriers and mobility issues limit access to digital resources. Additionally, the county's significant minority population, which constitutes 19.36% of the total population, may face unique challenges in accessing and utilizing digital resources. These multifaceted barriers highlight the urgent need for targeted interventions to improve affordability, enhance digital literacy, bolster infrastructure, and address specific accessibility issues. A comprehensive approach is essential to ensure all residents of McDowell County can benefit from digital inclusion and access the opportunities that come with it. |
| --- | --- |

Vision Statement	In a connected McDowell County, residents would experience an enhanced landscape of access and opportunity. Education would flourish with students equipped with devices for learning, enabling them to engage in online classes, access educational resources, and apply for jobs remotely. Telehealth services would offer convenient medical consultations, with patient records accessible through online portals and medications easily ordered online. Law enforcement and emergency responders would be seamlessly connected in the field, enhancing public safety and response times. Businesses would thrive with online advertising and credit card processing, while residents would enjoy remote access to classes and professional development opportunities. The community would be interconnected, combating isolation through online connections and fostering a sense of belonging. Real-time weather and emergency alerts would ensure residents are informed and prepared for any situation. Affordable and transparent government services would underscore the county's commitment to its residents' well-being and progress. In this vision, McDowell County emerges as a connected community, where every individual can thrive and contribute to its growth and resilience.
Mission Statement	Our mission in McDowell County is to overcome barriers to digital inclusion, focusing on affordability, access, digital literacy, and infrastructure. By enhancing broadband infrastructure and providing comprehensive digital literacy training, we empower residents to utilize online resources effectively. We prioritize cohesion, technological advancement, economic growth, inclusive healthcare, and knowledge empowerment to ensure a prosperous and healthy future for all residents.
Values	In McDowell County, cohesion stands as a cornerstone value, fostering unity and collaboration among its residents. The pursuit of faster speeds in internet connectivity reflects the community's commitment to staying abreast of technological advancements, enhancing communication and access to information. Future prosperity is a shared aspiration, driving efforts towards economic growth and development. Healthcare is prioritized as a fundamental need, ensuring the well-being and vitality of individuals and families. Reliable access to essential services and resources is crucial, particularly for the elderly population, underscoring the community's dedication to inclusivity and support for all generations. Knowledge is highly valued, serving as a catalyst for personal and communal empowerment. Together, these values shape the vision for McDowell County, where cohesion fosters progress, technology fuels innovation, and collective efforts pave the way towards a prosperous and healthy future for all.

Table 11. Vision/Problem Statement Recap

About this project: Planning Process

The core team (Generation WV, Regional Optical Communications, and the West Virginia Office of Broadband) worked together to identify key stakeholders in the county to bring to the table as the County Digital Equity Steering Committee.

Digital Equity Steering Committee: McDowell County's Digital Equity Steering Committee was first convened December 2023. The DE Steering Committee met virtually each month throughout the project. These team members built out county stakeholder and resource lists, helped organize the community workshop, invited stakeholders to the table, and provided feedback and direction to the McDowell County Digital Equity plan. The local planning team is invaluable to digital equity efforts in the county and the individuals involved understand the need and importance of digital inclusion efforts.

Research and Data Collection: The core team worked with partners across the state to gather and synthesize relevant information. These partners included state, national, and local organizations that assisted with the data collection to determine the state of digital equity and digital inclusion in McDowell County.

Community Workshop: McDowell County hosted a Community Workshop April 23, 2024 at River View High School. There were Eight in attendance at the community meeting. Stakeholders were able to join in person or virtually. The meeting emphasized the importance of addressing the digital divide and achieving digital equity in McDowell County. Participants discussed the need for reliable and affordable internet access, digital literacy, and access to devices. Key topics included the current state of digital inclusion, barriers such as affordability, lack of training, limited transportation, and physical disabilities, and potential solutions like community training programs, specialized training for disabilities, and financial assistance for low-income individuals. The vision for digital inclusion involved better access to education, healthcare, and job opportunities, particularly through telehealth, remote work, and improved connectivity for law enforcement and emergency responders. The meeting facilitated a comprehensive discussion among community members, providing valuable insights into the specific needs and challenges faced by McDowell County, guiding the development of targeted digital equity initiatives..

Phone Outreach: Due to low participation at the Community Workshop, the County Steering Committee and core team determined that it was necessary to conduct targeted phone interviews with additional stakeholders in the county to gather additional feedback on the goals and vision in the county.

Contacts for the future:
Key Stakeholders that participated in the steering committee and/or planning meetings include Aaron Rutherford, McDowell County Commission; Stephanie Lusk, McDowell County Committee on Aging; Leigh Pennington, Coalfield Development; Region 1 Planning and Development Council

These partners coordinated with the core team and the respective stakeholders throughout the process and will have copies of this document as well as supporting documentation to provide the baseline for future planning and project development.

B.2 Community Digital Equity Asset Mapping

As part of McDowell County's Digital Equity planning process, a County Resource List, or Asset Map, was developed. This resource list includes many of the following[36]:

- Digital Equity organizations
  - Nonprofit device refurbishers
  - Digital inclusion coalitions
  - Community technology centers
- Organizations serving covered populations
  - Public housing authorities
  - Returning citizen programs
  - University agricultural extension programs
  - Senior and community centers
  - Reentry councils
- Anchor institutions
  - Municipally owned buildings, i.e., City Hall
  - Libraries
  - Schools (K-12 and higher education)
  - Police/Fire Stations
  - Community Centers
- Other community assets
  - ISPs
  - Gathering spaces
  - Policymakers
  - Faith communities

Other local resources:

McDowell County FRN, Community Care of West Virginia, Inc, Community Action Agency, Family Support & Rehabilitation Services, Mountainheart Community Services, Inc and American Legion, Mountain State Digital Literacy Program, Catholic Charities of WV, Coalfield Development and MOVRC Senior Companion program, No Hunger Food Pantry and Operation Charity (New Vision), Big Creek People in Action and Five Loaves & Two Fishes Food Bank, four libraries and 91 religious organizations.

Asset Mapping Tool Development, Data Collection, and Dissemination

To develop the Digital Equity Resource List, McDowell County planning team followed the steps below:
1. The project team worked with the West Virginia Office of Broadband Digital Equity Steering Committee and staff to identify and pull state asset mapping resources developed to support the Statewide West Virginia Digital Equity Plan.

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[36] Note that some data on the number of resources are available in Dun & Bradstreet datasets and state business data but may not have been incorporated into the County Resource Lists.

2. McDowell County steering committee members worked with the project team to identify key county resources, stakeholders and add to the Resource List. The Community Resource list is a live document stored on shared Google spreadsheets allowing members to update and modify as needed.

3. Steering Committee members and the project team worked to refine the asset inventory data and identify key partners to include at the community workshops.

4. McDowell County community workshop was held on April 23, 2024 at the River View High School. Attendees at the workshop reviewed the list of Community Resources and added "missing" stakeholders to the Resource List. Project Team members incorporated these suggestions into the existing County Resource List.

5. The project team also received data from the West Virginia Tax Office, Dun and Bradstreet, and other databases to compile additional community resources.

6. The digital McDowell County Resource List is shared with the McDowell County Steering Committee members.

Throughout the Digital Equity planning process, the team and County Committee members leveraged partnerships to assist with gathering asset data. The partners contributed significantly by identifying digital equity barriers for priority populations, and being actively involved with the planning.

Final Plans and County Resources

The McDowell County Digital Equity Steering Committee used several methods for disseminating the County Resource List, data, plans, and resources tool within the community.

- County Resource Lists were distributed to attendees at the Community Workshop.
- A preliminary data report was distributed to community members June 20204
- The draft Digital Equity Plan was distributed for stakeholder comment August/September 2024
- A folder containing backing datasets, presentations, map images, GIS shapefiles and the full digital county resource list is available at this link: https://generationwv.org/DE2024/McDowell
- Copies of this report will be made available to the McDowell County Commission, Region I, Regional Optical Communications, the West Virginia State Office of Broadband, and Steering Committee members.
- Digital versions will be shared with the stakeholder email list and will be available for download on the Generation West Virginia site at www.generationwv.org/broadband

Type of stakeholder	Organization Name
	Council of Southern Mountains
Recovery programs	County Corrections
Recovery programs	Day Report Center
Town/City/County managers	McDowell County Commission
Aging community (nursing home/senior centers)	McDowell County Commission on Aging, Inc.

Type of stakeholder	Organization Name
Libraries	McDowell County Public Library
Recovery programs	Southern Highlands CMHC, Inc.
Recovery programs	Welch Parole Office
Libraries	War Library
Libraries	Bradshaw Library
Libraries	American Legion WV Post 0036
Libraries	American Legion WV Post 0175
Veterans Organization(s)	Welch American Legion
Veterans Organization(s)	Bradshaw American Legion
Libraries	Iaeger Library
Education (k-12 and higher ed)	PTO/LFIP
Economic Development	CVB
Town/City/County managers	WVU Extension

Table 12. McDowell County Resource List

B.3 Community Engagement

Stakeholder Engagement and Collaboration

As part of an inclusive Digital Equity planning process, the McDowell County Digital Equity Steering Committee understands that it must work collaboratively with additional stakeholders, including Community Anchor Institutions and other partners to ensure that identified priority populations in the community are engaged throughout the process, especially during the project planning and implementation phases, to ensure that equitable internet for all is achieved. Additionally, statewide and regional partners can play an important role by bringing in some outside capacity so it can be helpful to explore external partnerships.

Priority Population	Potential community partners/community resources:	Example Role(s)	Data that could be provided in future planning efforts
Low Income Residents	McDowell County F.A.C.E.S.	Provide assistance with applying for benefits online, provide a computer terminal for such assistance.	Number of individuals they serve, surveys to gather data on digital access and literacy.
Disabled Individuals	McDowell County Commission on Aging, Inc.	Provide device access and computer training for seniors.	Number of individuals they serve, surveys to gather data on digital

	McDowell County Department of Human Services		access and literacy and their needs.
Aging Individuals	McDowell County Commission on Aging, Inc.	Provide assistance with applying for benefits online, scheduling telehealth appointments and provide a computer terminal for such assistance.	Number of individuals they serve, surveys to gather data on digital access and literacy and their needs.
Minorities	McDowell County F.A.C.E.S.	Provide assistance with applying for benefits online, scheduling telehealth appointments and provide a computer terminal for such assistance.	Number of individuals they serve, surveys to gather data on digital access and literacy and their needs.
Individuals with Low Literacy	War Library Bradshaw Library	Could provide literacy programs to those in need. Provide access to digital devices and hotspots.	What programs they currently might offer that aligns with digital equity and inclusion. Surveys of how their patrons currently participate in the digital world.

Table 13. McDowell County Community Resources for Priority Populations

Through a diverse and collaborative approach, McDowell County will have the capacity to utilize participation, feedback, and data from each of the priority populations to measure efficacy and progress towards meeting digital equity and complement overall State Digital Equity goals. Examples of meaningful data from priority population stakeholder engagement could include:

- Percentage of households with broadband access, subscription rates to internet services, and availability of high-speed internet in underserved areas demonstrated with measurable outcomes by an increase in the number of households with broadband subscriptions.
- Number of households owning internet-capable devices demonstrated with measurable outcomes by an increase of households that own devices, particularly through device distribution programs.
- Usage rates of telehealth services, patient satisfaction surveys, and the number of healthcare providers offering telehealth options demonstrated by measurable outcomes in telehealth use and availability.
- Employment rates in tech-related fields, number of new businesses utilizing digital tools, and participation in digital economy initiatives demonstrated by measurable outcomes in employment rates in these industries.

Further Outreach

In order to build inclusive and sustainable projects, McDowell County Steering Committee understands a variety of outreach strategies and methods to facilitate participation and engagement from the community's Digital Equity planning and priority population stakeholders must be used. McDowell County Digital Equity Steering Committee values the feedback, engagement, support and buy-in from the community, especially from trusted partners who represent the covered populations that are most impacted by the digital divide.

County stakeholders identified key partners whose voices are critical to include in future planning efforts, these included: Teachers, school personnel, community members, youth, first responders, store and small business owners, postal workers, coal miners, and pastors/churches.

Figure 11. McDowell County community workshop, April 23, 2024, Bradshaw, West Virginia.

B.4 Implementation Strategies and planning

Existing Programs

Based on the unique barriers to achieving Digital Equity identified in the previous section and during the stakeholder engagement process, The McDowell County team identified the following existing programs that address the respective needs/barriers of the applicable covered populations:

Lead Entity/ Organization of Existing Program	Existing Program Name	Needs/ Barriers Addressed	Funding /Sustainability	Covered Population(s)	Potential Opportunities
McDowell Public Library	Provides 30 Internet Terminals, WiFi access and access to over 55,000 printed and digital materials.	Wifi and Computer Access	Funded by some local tax-base, Board of Education and Donations.	Low literacy and those with a language barrier, Low income individuals and rural residents.	Libraries can be a great location to start Digital Navigator and/or skills programs as residents often already use services there.
Bradshaw Public Library	Access to over 8,000 printed and digital materials.	Wifi and Computer Access	Funded by some local tax-base, Board of Education and Donations.	Low literacy and those with a language barrier, Low income individuals and rural residents.	Libraries can be a great location to start Digital Navigator and/or skills programs as residents often already use services there.
Laeger Public Library	Access to over 5,000 printed and digital materials.	Wifi and Computer Access	Funded by some local tax-base, Board of Education and Donations.	Low literacy and those with a language barrier, Low income individuals and rural residents.	Libraries can be a great location to start Digital Navigator and/or skills programs as residents often already use services there.
War Public Library	Access to over 10,000 printed and digital materials.	Wifi and Computer Access	Funded by some local tax-base, Board of Education and Donations.	Low literacy and those with a language barrier, Low income individuals and rural residents.	Libraries can be a great location to start Digital Navigator and/or skills programs as residents often already use services there.

Lead Entity/ Organization of Existing Program	Existing Program Name	Needs/ Barriers Addressed	Funding /Sustainability	Covered Population(s)	Potential Opportunities
Mountain State Digital Literacy Project	Currently has 3,140 engaged students as of most recent 2024 data	Provides extensive digital literacy content over the internet for various age or grade specific users.	Grant and agency funded.	Primarily for School Students which may include those with language barriers, low literacy, low income, with disabilities and rural residents.	This program provides a baseline of skills to students, great opportunity to expand to older grades and parents or grandparents of participating classes.

Table 14. Existing Local Digital Equity-Adjacent Programs in McDowell County, West Virginia.

*Note, This is not a complete list, many potential partners in the region may not have been engaged yet.

Many of the existing resources are still inaccessible to many of the priority populations in the county due to challenges around the rurality of the county and transportation. For aging populations, homebound residents (seniors and students alike), public access to devices or broadband does not improve their access if they are unable to travel to the locations. The planned infrastructure deployment, and subsequent affordability and skilling efforts, will be critical in meeting this need.

Additionally, there is a need for training, education, and digital navigation programs to "meet people where they are" both in terms of skill and also location.

For existing resources like libraries, maintaining up-to-date terminals and ensuring that all staff have the training necessary can be an ongoing challenge.

Potential Solutions for Covered Populations

In addition to the existing programs detailed above, the McDowell County Steering Committee identified areas where new digital inclusion resources and programs must be funded, developed, and implemented to meet the needs of the respective covered populations, reflected in the table below:

Covered Population	Program or Resource Need	Needs/Barriers Addressed
Individuals who live in covered households	Digital Skills Training, affordable device access, affordability programs, digital accessibility, and technical support.	Addressing the cost of internet services and devices for low-income households. Providing ongoing technical support and digital literacy training to ensure effective use of digital resources.

Covered Population	Program or Resource Need	Needs/Barriers Addressed
Aging individuals	Establish programs that provide digital literacy training specifically tailored for seniors, including basic computer skills, internet usage, and online safety courses. Reduce fears around AI and other new technology	Programs might include assistive technologies for seniors with visual or hearing impairments. Training on how to avoid online scams and maintain digital privacy. Programs like Older Adults Technology Services (OATS) provide curated resources and programs such as Senior Planet.
Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility	Create digital literacy and skills training programs for incarcerated individuals to facilitate their reintegration into society upon release.	Providing access to devices, digital literacy training, and ongoing support post-release. Programs like the West Virginia Schools of Diversion & Transition and Workforce West Virginia's Digital Inclusion Program offer digital skills training to help support successful reintegration and reduce recidivism rates
Veterans	Offer digital skills training programs tailored to the needs of veterans, including access to telehealth services and job training resources.	Addressing the need for assistive technologies, affordable devices, and support in transitioning to civilian life. Programs like West Virginia Veterans Upward Bound and Tech for Troops provide digital skills classes, certification programs, and equipment donations to help veterans transition into civilian roles.
Individuals with disabilities	Develop programs that provide accessible digital devices and training for individuals with disabilities as well as training or availability of telehealth resources..	Providing assistive technologies, specialized training, and affordable access to devices and internet services. They can access assistive technology, training, and device loans through programs like the West Virginia Division of Rehabilitation Services and the WVU Center for Excellence in Disabilities.
Individuals with a language barrier	Develop programs that provide digital skills training and internet access support, tailored to the cultural contexts and languages of racial and ethnic minority groups.	Providing digital resources and training in multiple languages and offering basic literacy and digital literacy training concurrently.
Individuals who are English learners	Develop programs that offer combined literacy and digital skills	Addressing the need for foundational literacy alongside digital skills,

Covered Population	Program or Resource Need	Needs/Barriers Addressed
	training, ensuring that individuals with low literacy can access and benefit from digital technologies. Digital skills to utilize text to speech readers and literacy learning apps.	providing accessible and simplified training materials, and ensuring support through community resources and personalized assistance. Programs like the West Virginia Department of Education's Adult Education and Literacy Programs offer services to help adults with low-literacy
Individuals who are members of a racial or ethnic minority group	Develop programs that provide digital literacy training, awareness campaigns, and community support specifically targeted to minority populations.	Addressing the need for digital literacy training, creating awareness about the benefits and use of digital services, and providing ongoing community support. Initiatives like the Grow with Google Program and West Virginia State University's HBCU Career Readiness Program offer free digital skills workshops, resources, and career certificates in tech-related fields.
Individuals who primarily reside in a rural area	Develop programs that provide digital literacy training, awareness campaigns, and community support specifically targeted at rural residents to help them make full use of the coming infrastructure.	Addressing the need for digital literacy education, ensuring safe internet usage, and providing access to digital resources and devices in educational settings.
Other priority populations	Implement age-appropriate digital literacy programs in schools and community centers to ensure children and youth develop essential digital skills early on.	Addressing the cost of internet services and devices for low-income households. Providing ongoing technical support and digital literacy training to ensure effective use of digital resources.

Table 15. Possible Solutions by Covered Populations.

The first step to starting or implementing a program for a covered population is to review the County resource list to determine which organizations already exist in the community. See Table 14: Existing Local Digital Equity-Adjacent Programs as a starting point. A full resource list for McDowell County is available here: https://generationwv.org/DE2024/McDowell

B.5 State Resources

Resources: Previous Broadband and Digital Equity Studies or Plans

Every county in the state is included in planning efforts on both a state, regional and local level. These studies and plans can be a good starting point and resource for McDowell County stakeholders during the planning process and provide valuable context. In addition, many agencies that may not initially seem like they oversee digital equity or connectivity work do have important goals related to connectivity and access. Several of these are listed below and referenced in the State Digital Equity Plan. These plans can be a good way to encourage partnership at governmental levels and show potential funders that project ideas are in alignment with existing planning efforts.

Broadband Plan/Study Name	Date Completed	Summary
Statewide Studies/plans		
State of West Virginia Digital Equity Plan	December 2023	The West Virginia State Digital Equity Plan is the first digital equity plan developed in the state. The State team conducted a series of listening sessions, coordinated with statewide partners, and conducted state level surveys around this planning effort. This document is a great resource and also outlines key strategies and goals for the West Virginia Broadband Office. It can serve as a guidepost for future project development. The plan can be accessed at this link: https://broadband.wv.gov/wp-content/uploads/2024/01/West-Virginia-Digital-Equity-Plan-Final-14Dec2023.pdf
Regional Optical Communications 2023 Statewide Broadband Study Report	October 2023	Regional Optical Communications took on the task of coordinating a statewide study aimed at identifying the current status of and future need for broadband service in West Virginia. The data collected in this study provides a strong baseline for RPDCs, counties, and ISPs to show funding agencies the measurable outcomes their projects will have. This can increase the likelihood of receiving the requested funding and gives a much shorter timeframe for finalizing route designs and moving projects to construction. In total, more than 14,824 miles of preliminary routing was developed through the course of this study, amounting to approximately $1,227,841,007 in future estimated construction costs. This report provides details on how these routes and estimates were developed, the results found in each county, and how communities can use this information to bring

Broadband Plan/Study Name	Date Completed	Summary
		expanded broadband service to their area. The plan can be accessed at this link: https://acrobat.adobe.com/link/track?uri=urn:aaid:scds:US:0c401a2d-8ac9-3f43-a7eb-8e22a243110c
State of West Virginia Five-Year Action Plan	August, 2023	The State Office of Broadband 5 Year Action Plan outlines state goals and strategies around broadband infrastructure, digital equity, and workforce efforts. This plan can be found at broadband.wv.gov and at this link: https://broadband.wv.gov/wp-content/uploads/2023/08/WV-5-Year-Action-Plan-2023.8.14.pdf
West Virginia FY 2022 Appalachian Regional Commission (ARC) Development Plan:	2022	The State of West Virginia submits a four-year State Development Plan to the Appalachian Regional Commission, which provides an overview of WV's economy, needs and opportunities in the state, and the governor's goals for the West Virginia ARC program. Related Goals include the following: ● Increase access and adoption of broadband; ● Increase access of broadband for individuals by creating or enhancing existing community computer and digital learning centers; ● Support e-commerce initiatives that educate businesses about the benefits of broadband; ● Deliver training to increase use of technology by businesses and residents, and support technology education to increase the adoption of broadband by businesses and residents; ● Expand and strengthen community systems (education, healthcare, housing, childcare, and others) that help Appalachians obtain a job, stay on the job, and advance along a financially sustaining career pathway. This plan can be accessed at this link: https://www.arc.gov/wp-content/uploads/2022/02/West-Virginia-ARC-4-YR-Plan-FY-2022.pdf
WV Library Commission 5 Year Strategic Plan	2023-2027	The West Virginia Library Commission Plan includes State goals around two main goals

Broadband Plan/Study Name	Date Completed	Summary
[2023-2027][37]		- Goal 1: Access to Information, including increasing services for the Blind and Print Disabled and General Literacy, - Goal 2: Facilitating Collaboration in the Library Workforce, that includes technology skills for staff, internet services, and consultation This plan can be accessed at this link: https://librarycommission.wv.gov/Who/Documents/2023-2027%20LSTA%20Plan.pdf
For a full list of Statewide Plans and Strategies please see the West Virginia Digital Equity Plan, *Section 2.2 Alignment with Existing Efforts to Improve Outcomes* (Numbered Page 5)		
Regional/County Plans/Studies		
Region 1 Planning and Development Council Comprehensive Economic Development Strategy 2022 Update	2022	The Region I Planning and Development Council is a council of local governments consisting of six counties in southern West Virginia - McDowell, Mercer, Monroe, Raleigh, Summers and Wyoming, and twenty-seven municipalities located within these counties. This Plan is a strategic perspective with planning focus on factors critical for economic advancement of the region This document describes the problems, needs and resources of this region, identifies the goals and objectives of the development program, presents the strategies and action plans devised to achieve these goals, and outlines the standards for evaluation of the program's achievements. Our efforts must be concentrated toward the continual planning and development of the Region's infrastructure with long-term results in mind. This includes improvements to the Region's existing water and sewer systems, housing stock, solid waste, broadband, transportation, industrial sites and buildings, education and work force development. Economic Development Goals outlined in this plan include Broadband Planning, Planning for the provision of ultra-high-speed broadband is also planned for the Region by coordinating with Region IV to the north. Both regions have secured grant funding to perform a comprehensive analysis outlining strategic plans and objectives to increase broadband use and implementation throughout southern West Virginia. Note* This plan is due to be updated soon. .https://www.regiononepdc.org/_files/ugd/a7c277_c8ac5dc25e1a4afabd379ca5077e80a0.pdf

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[37] https://librarycommission.wv.gov/Who/Documents/2023-2027%20LSTA%20Plan.pdf

Broadband Plan/Study Name	Date Completed	Summary
BROADBAND DEVELOPMENT AND IMPLEMENTATION STUDY For West Virginia Regional Planning & Development Councils Regions 1 & 4 and Regional Optical Communications (ROC)	February 2020	This study was prepared by Thompson & Litton for the West Virginia Regional Planning & Development Councils Region 1 & 4 and Regional Optical Communications (ROC) and was funded through a a HUD Community Development Block Grant (CDBG) and a US Economic Development Administration Grant. This plan provides the strategies for Regions 1 & 4 to implement broadband infrastructure builds in areas that are eligible for HUD CDBG funding in addition to other broadband-specific funding sources. Other important details of this plan include: A preliminary design of broadband networks outlining the types of installation and their locations including projects that could be implemented in identified CDBG-eligible areas. The preliminary cost estimates for construction of the proposed installations with guidance in applying for funding sources, including the HUD CDBG program. Estimates of the number of businesses and households that will be provided with improved and/or new broadband service, including projects that would be implemented inCDBG-eligible areas. Full plan available here: https://www.regiononepdc.org/_files/ugd/a7c277_5affa05732334217bd44183e2d877b52.pdf

Table 16. Selection of Relevant Studies/Plans for McDowell County Project Planning efforts.

BEAD and DEA State Broadband and Digital Equity Priorities and plans

To take advantage of the historic $1.2 billion allocated to the State of West Virginia, the WVDED Office of Broadband had to create extensive plans for how the money would be spent. The result includes the State of West Virginia's BEAD Five-Year Action Plan, West Virginia Initial Proposals Volume 1 & 2, and the West Virginia State Digital Equity Plan. Table 17 highlights priorities from these plans. Table 18 on page 70 specifically highlights digital equity/digital inclusion goals.

Priority	Description
5 Year Action Plan Goals: 1. Universal Broadband Access	● Goal 1.1: Ensure all Broadband Serviceable Locations have access to 100/20 Mbps speeds ● Goal 1.2: Address residential and commercial barriers to broadband projects ● Goal 1.3: Increase access to Community Anchor Institutions ● Goal 1.4: Develop a broadband talent pipeline and comprehensive workforce system

Priority	Description
5 Year Action Plan Goals: 2. Increase Digital Equity and Inclusion While broadband is a necessary condition to connect all West Virginians, WVDED recognizes that increased broadband infrastructure alone is not sufficient. Digital equity has been a key consideration throughout the broadband planning process to ensure that West Virginians who have been on the wrong side of the digital divide have the tools and support they need to use the internet in a way that allows them to reach their fullest potential.	- Goal 2.1: Ensure broadband access is available and affordable for all West Virginians - Goal 2.2: Provide quality access to digital literacy skills trainings for West Virginians - Goal 2.3: Equip West Virginians to preserve their online privacy and cybersecurity - Goal 2.4: Help West Virginians gain access to free and low-cost devices
5 Year Action Plan Goals: Leverage Improved Broadband	- Goal 3.1.1: Expand economic development coordination activities across State agencies and local governments - Goal 3.1.2: Support opportunities to increase online education and workforce development by leveraging funding sources, educators, employers, and school districts - Goal 3.1.3: Provide greater opportunities to revitalize community buildings with economic and tele-healthcare activities - Goal 3.1.4: Leverage universal broadband to attract remote workers and work opportunities
5 Year Action Plan Strategies: Unserved and Underserved Locations	WVDED will fund projects through a competitive grant process like its existing West Virginia Broadband Investment Plan programs, with modifications to meet BEAD requirements. Wherever possible, the State's strategy will favor projects offering Gigabit service delivered over fiber-optic networks. Where this is not possible due to cost or lack of fiber-based proposals, WVDED will give preference to projects with higher performance capability.

Priority	Description
5 Year Action Plan Strategies: Community Anchor Institutions	WVDED will prioritize connecting Community Anchor Institutions that lack access to 1 Gbps/1 Gbps broadband service. To the extent possible, WVDED will require projects that it funds to serve unserved or underserved locations to also serve nearby Community Anchor Institutions that lack Gigabit service. For remaining, eligible Community Anchor Institution locations, WVDED will develop a Community Anchor Institution Competitive Grant process in parallel.
5 Year Action Plan Strategies: Supporting Infrastructure Investment	Creating a supportive regulatory and permitting environment for broadband infrastructure is a high priority for WVDED. WVDED will work with state, local, and private partners to streamline and expedite permitting by addressing: 1. Dig Once policy 2. Communication of clear standards 3. Pole attachment application process To do so, WVDED will consider formalizing a state agency working group on permitting that includes county governments in targeted areas, pole owners, and internet service providers. West Virginia will consider proposing that NTIA allow a small portion of BEAD funding to be used for a temporary surge in staff or contracted capacity at relevant state agencies. By investing in processes to eliminate bottlenecks for projects, West Virginia's broadband investments will be more efficiently made and transformational for the State and its residents.
5 Year Action Plan Strategies: Increasing Digital Equity	1. Realize Affordable Connectivity 2. Secure Device Access and Affordability 3. Elevate Digital Skills and Accessibility of Public Services
5 Year Action Plan Strategy: Workforce Strategy	Developed with input from West Virginia's Broadband Workforce Development Council, interviews with ISPs and other key stakeholders, and listening session input, WVDED will advance the following three workforce development goals: 1. Coordinate and convene all broadband industry partners 2. Develop industry-driven training programs with work-based learning opportunities 3. Develop a career exploration program for K12 students

Table 17. West Virginia State 5-Year Plan Strategies and Priorities

Many of the goals and project ideas identified by McDowell County stakeholders directly align with the West Virginia State Office of Broadband Objectives. During implementation planning, stakeholders are encouraged to reference the state priorities in their planning and grant writing to ensure alignment.

West Virginia Digital Equity Priorities

According to the State of WV's BEAD Five-Year Action Plan and Digital Equity Plan, the following priorities are being implemented across both the BEAD and Digital Equity Act programs. *Note that priorities from the State Digital Equity Plan are pending approved changes from NTIA* These changes were not finalized prior publication.*

Priority	Description	Mitigation Approach
1: Realize Affordable Connectivity Realize Affordable Connectivity [38]	Objective 1.1: Increase enrollment in the ACP, contingent on the continued funding for the program. Covered Populations Served: 1. Covered households 2. Veterans 3. Individuals with disabilities 4. Aging individuals over 60 years of age 5. The remaining populations when qualifying for ACP	WVDED will determine prioritized areas for ACP related outreach to each of the covered populations by leveraging existing partnerships with organizations serving covered populations, census data, and internally developed metrics (see Section 5.1.2). Approximately 368,000 West Virginian households are eligible for ACP. Baseline: 103,000 out of 368,000 households, approximately 28.0% of ACP-eligible households are served by ACP.13 Near-term target: Increase enrollment by approximately 50% to reach 150,000 households, prioritizing outreach to areas with many households of each covered population under the Digital Equity Program.
	Objective 1.2: A central goal of West Virginia's BEAD planning is to provide universal broadband to all West Virginians. As such, the goals to complete broadband deployment as a part of the BEAD Five-Year Action Plan	All 8 covered populations are served by this objective. KPI Accomplish broadband infrastructure deployment goals included in the Five-Year Action Plan.

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[38] Note that the ACP Expired in May 2024 As of time of publication the updated West Virginia Digital Equity Plan has not been released.

Priority	Description	Mitigation Approach
2: Secure Device Access and Affordability Secure Device Access and Affordability	Objective 2.1: Create a sustainable program to provide device distribution, lending, and recycling.	Census data has shown device ownership to be a significant gap in West Virginia. By implementing a program to increase the number of individuals in West Virginia who have access to a device that can connect to the internet, West Virginia can move further ahead into the digital age. To ensure covered populations are equitably represented and served, WVDED will prioritize outreach to communities with large amounts of covered populations, leverage existing partnerships with 15 organizations serving covered populations, and monitor KPIs for each of the covered populations. Currently available data sets do not delineate between covered populations at a granular enough level to establish immediate baselines for each. As with other KPIs that baseline data cannot presently be established for on a covered population level, WVDED will collect the necessary data to establish a baseline and then monitor the progress of these efforts in subsequent years. Baseline: 85.6% of the State has access to a computing device at home14. Near-term target: Increase baseline by 10%, ensure approximately proportional increases for each covered population. Long-term target: 95% of West Virginias have access to a computing device that can connect to the internet, devices are easier to procure, and device proliferation among covered populations has been significantly increased.
	Objective 2.2: Ensure citizens receive technical assistance for their newly acquired devices.	Increase the number of Community Anchor Institutions (CAI) that offer digital navigator programs, working with organizations who serve covered populations to equitably represent CAIs that serve each of the covered populations. The baseline is not yet determined, as WVDED has prioritized research into the needs of West Virginians and the benefits of providing technical assistance through these means. Concrete plans have been laid out to establish a clear baseline after NTIA approval. An assessment, largely carried out through extensive outreach to West Virginia CAIs and

Priority	Description	Mitigation Approach
		partnership input, will commence after NTIA approval, in the earliest stages of implementation planning. Baseline: Overall baseline to be determined based on an assessment of CAIs that offer digital navigator programs. Separate "population CAI" baselines are in development through existing partnerships with organizations serving each of the covered populations. Near-term target: Increase the baseline figure by 20% and ensure at least approximately proportional increases in each covered population. Long-term target: Increase the near-term target by 30% and ensure at least approximately proportional increases in each covered population.
3: Elevate Digital Skills and Accessibility of Public Services and Economic Opportunity Elevate Digital Skills and Accessibility of Public Services and Economic Opportunity	Objective 3.1: Make digital literacy training in cybersecurity, privacy, telehealth, and more, available to all West Virginians, including all covered populations.	Increase the percentage of individuals in West Virginia with beginner-level digital skills by assessing internet use activities for each demographic via a randomized survey (see Section 4.2.7) and ensure that each covered population is equitably represented. KPI Increase the percentage of individuals in West Virginia with beginner-level digital skills by assessing internet use activities for each demographic via a randomized survey (see Section 4.2.7) and ensure that each covered population is equitably represented. Baseline: Overall – 88% Covered households – 84% Racial and ethnic minority – 90% English Learners and Individuals with Low Literacy Level – 87% Individuals with Disabilities – 86% Incarcerated Individuals – 88% Individuals Over 60 Years of Age – 86% Rural Residents – 88% Veterans – 90% Near-term target: Increase the overall baseline figure by 7% and ensure approximately proportional increases in each covered population. 17 Long-term target: 95% of West Virginias have basic digital skills, can streamline their lives with online services, and can fully take advantage of new opportunities brought about by the BEAD and Digital Equity Programs.
	Objective 3.2: Ensure websites and online	Increase the number of public services in West Virginia that meet the Web Content Accessibility Guidelines

Priority	Description	Mitigation Approach
	services hosted by state agencies are accessible for all West Virginians by implementing accessibility standards.	(WCAG) and Section 508 Standards. The baseline is not yet determined, as WVDED has prioritized research into the needs of West Virginians and the benefits of web accessibility in the West Virginian context. Concrete plans have been laid out to establish a clear baseline after NTIA approval. An assessment of West Virginia government website compliance under the WCAG and Section 508 Standards will commence after NTIA approval, in the earliest stages of implementation planning. Baseline: To be determined based on an assessment of all government websites and services. Near-term target: Ensure that at least 75% of state agency-operated websites are compliant. Long-term target: Ensure that 100% of state-owned websites are compliant.

Table 18. West Virginia Digital Equity Plan Goals and Strategies

State-Aligned Digital Equity Evaluation Plan

The McDowell County Digital Equity Steering Committee understands the importance of alignment of the community's Digital Equity Plan with the State of West Virginia Digital Equity Plan to:

- Track progress towards achieving Digital Equity:
  - The McDowell County Digital Equity Steering Committee has the local capability to monitor and measure advancements in achieving digital equity and a process in place to assess and document progress towards achieving Plan goals.
- Further State priorities:
  - The McDowell County Digital Equity Plan aligns with and contributes to the broader priorities, objectives, and goals of the State to advance digital equity.

As McDowell County moves towards realizing the goals in this Digital Equity Plan, and begins implementation of digital inclusion projects, it will be a key local partner for the West Virginia State Office of Broadband and their efforts to measure impact and progress toward addressing the unique challenges and barriers to affordability, access, and adoption faced by priority populations.

APPENDIX C

Broadband Adoption and Infrastructure

Appendix C. Broadband Adoption and Infrastructure

This section aims to provide an overview of the current broadband infrastructure and services in the community. This Connectivity Plan will enable McDowell County stakeholders to strategically target and prioritize areas that may need different types of solutions in order to bridge the digital divide and offer equitable broadband opportunities to all residents and businesses, while minimizing risk and amplifying the likelihood of success.

Data analyzed by the project team include, but were not limited to:

- Availability
  - FCC Broadband Data Collection as of December 31, 2023
  - Ookla Speed Test Data January 1, 2023 to December 31, 2023
  - U.S. Census Bureau American Community Survey 2018-2022 5-Year Estimates
- Affordability
  - Universal Service Administrative Co. ACP Enrollment Data January 2022 to May 2024
  - NDIA Free & Low Cost Internet Plans
  - BROADBANDNOW Internet Service Providers in West Virginia
  - Generation West Virginia Community Meeting Feedback
- Adoption
  - Ookla Speed Test Data January 1, 2023 to December 31, 2023
  - U.S. Census Bureau American Community Survey 2018-2022 5-Year Estimates
  - Universal Service Administrative Co. ACP Enrollment Data January 2022 to May 2024

Currently Available Internet Services

To perform the review of currently available internet services, the project team collected and evaluated data from publicly available broadband data sources and local datasets, and referenced existing state resources from the WVDED Office of Broadband and Regional Optical Communications State Infrastructure Study.

In the sections that follow we identify current ISP service offerings and pricing, existing broadband networks, and priority areas within McDowell County for additional broadband infrastructure investment.

Data Sources and Purpose:				
Source Name	**Source Type**	**Source Description**	**Data Collected & Analyzed**	**Purpose**
Federal Communications Commission (FCC)	Public	Federal Agency responsible for implementing and enforcing America's communications law and regulations (Federal Communications Commission (2022). About the FCC. Available at: https://www.fcc.gov/about/overview)	FCC Form 477	Determine broadband incumbents and technology penetration
BroadbandNow & BroadbandSearch	Private	Online databases of internet service options available in a given area (BroadbandNow (2022). About BroadbandNow's Team. Available at: https://broadbandnow.com/about ; Broadbandsearch (2022).	Advertised internet service offerings including providers, speed, price and technologies	Determine broadband speed and corresponding price
FiberLocator	Private	Online telecommunications database of fiber infrastructure (FiberLocator (2022). Resources: Available at: https://www.fiberlocator.com/)	Existing fiber infrastructure in the County	Define metro fiber networks (regional level - middle mile; local level - last mile) to evaluate network redundancy. Define long haul fiber networks (national level) to be leveraged by the County to connected middle mile
Regional Optical Communications 2023 Broadband Infrastructure Study	Public	Statewide infrastructure study	Existing broadband infrastructure in the County, targeted addresses and proposed routing to reach un and underserved households.	Identify where gaps in infrastructure access are, identify areas of the county that may require different types of outreach (mobile hotspots etc.) while residents wait for BEAD and other infrastructure build out.

Table 19. Data Sources for Broadband Data

C.1 Current Service

The FCC Broadband Deployment Data identifies the following Top Tier ISPs in McDowell County with the corresponding broadband technology and speeds they are currently providing.

According to this table, there are currently 13 providers deployed in McDowell County, both for residential and business purposes, which can be categorized as follows:
1. Wired Broadband: Asymmetric DSL, Cable, and Fiber
2. Wireless Broadband: Fixed Wireless and Satellite

These broadband services and prices are offered by 13 ISPs.

Service Provider	Lowest Price Plan	Highest Price	Max Speed (Mbps)	Technology
A&A Communications	Unknown	Unknown	Unknown	Cable
Frontier	$64.99	$64.99	115 Mbps	DSL
GigaBeam Networks	$65	$105	100 Mbps	Fixed Wireless
Glo Fiber	Unknown	Unknown	Unknown	Fiber
HughesNet	$49.99	$119.99	100 Mbps	Satellite
Point Broadband	$59	$100	1 Gbps	Fiber
Shentel	$70	$115	1 Gbps	Cable, Fiber
Spectrum	$49.99	$129.97	1 Gbps	Cable
Starlink	$120	$5000	220 Mbps	Satellite
T-Mobile	Unknown	Unknown	Unknown	Fixed Wireless
Verizon	$60	$80	50 Mbps	Fixed Wireless
Viasat	$119.99	$199.99	150 Mbps	Satellite
War Telephone	Unknown	Unknown	Unknown	Copper

Table 20. Internet Service Providers Lowest Cost and Speeds

* Prices may vary depending on the plan; Not all internet speeds are available in all areas.

**Service areas are based on ZIP Code Tabulated Areas which may overlap County boundaries.

***Lowest Price Plans may not reflect the maximum available speeds.

Data obtained from BROADBANDNOW.COM

While several providers advertise speeds at or above 100Mbps, that does not indicate that speed is available everywhere in the area. Access and availability depend on location within the county. As indicated in Figure 19 there are still clusters of households along the existing fiber route that show much higher need than some of the main population centers.[39]

Cellular providers in the county[40]

Cellular Service Provider	Max Speed (Mbps)
GigaBeam Networks	100 Mbps
Mint Mobile	25 Mbps
T-Mobile	25 Mbps
Verizon	50 Mbps

Table 21. Cellular Providers in McDowell County

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[39] Note, these maps are based on data provided in 2023. They do not reflect the West Virginia WV State Office of Broadband final BEAD maps or any funds allocated in the 2024 BEAD Allocation

[40] Note that cellular coverage changes rapidly. Please see company websites to determine service levels

Opportunities for partnership

Internet Service Providers are great stakeholders to bring to the table. They typically have a strong interest in making sure their customer base has access to the resources needed to subscribe to their services. Internet Service providers can participate at varying levels in local digital equity programs. Some larger ISPs may have specific community impact departments. While many smaller local providers lack this type of structure, they still have a desire and case to work and support digital equity programming. Support can range from participating in planning meetings, to supplying donated refurbished computers, to actively participating or partnering on literacy or affordability initiatives. As outlined below, it is in the best interest of any provider to have increased digital literacy, access to devices, and demand for their services.

C.2 Internet Affordability and Access

To determine broadband usage, county-level data was collected from the U.S. Census ACS 5-Year Estimate, which illustrates the overall profile of internet affordability and adoption percentages:

Internet/Usage Statistic	Number/Percentage per Household[41]
Number of Total Households Surveyed	6,547
Households with Broadband of Any Kind (Total/Percent)	5,177 (79.1%)
Households with DSL (Total/Percent)	No Data Available
Households with Cable (Total/Percent)	No Data Available
Households with Fiber (Total/Percent)	No Data Available
Households with Fixed Cellular (Total/Percent)	3,450 (52.7%)
Households with Satellite (Total/Percent)	307 (4.7%)
Households with Mobile (Cellular) Internet Only (Total/Percent)	546 (8.3%)
Households without a Device (Total/Percent)	1,145 (17.5%)
Households with One or More Devices (Total/Percent)	5,402 (82.5%)
Households with a Desktop or Laptop Computer (Total/Percent)	3,839 (58.6%)
Households with a Smartphone (Total/Percent)	3,883 (59.3%)
Households with Only a Smartphone (Total/Percent)	886 (13.5%)
Households with a Tablet (Total/Percent)	3,219 (49.2%)
Households with Only a Tablet (Total/Percent)	432 (6.6%)

Table 22. McDowell County Internet Usage Statistics

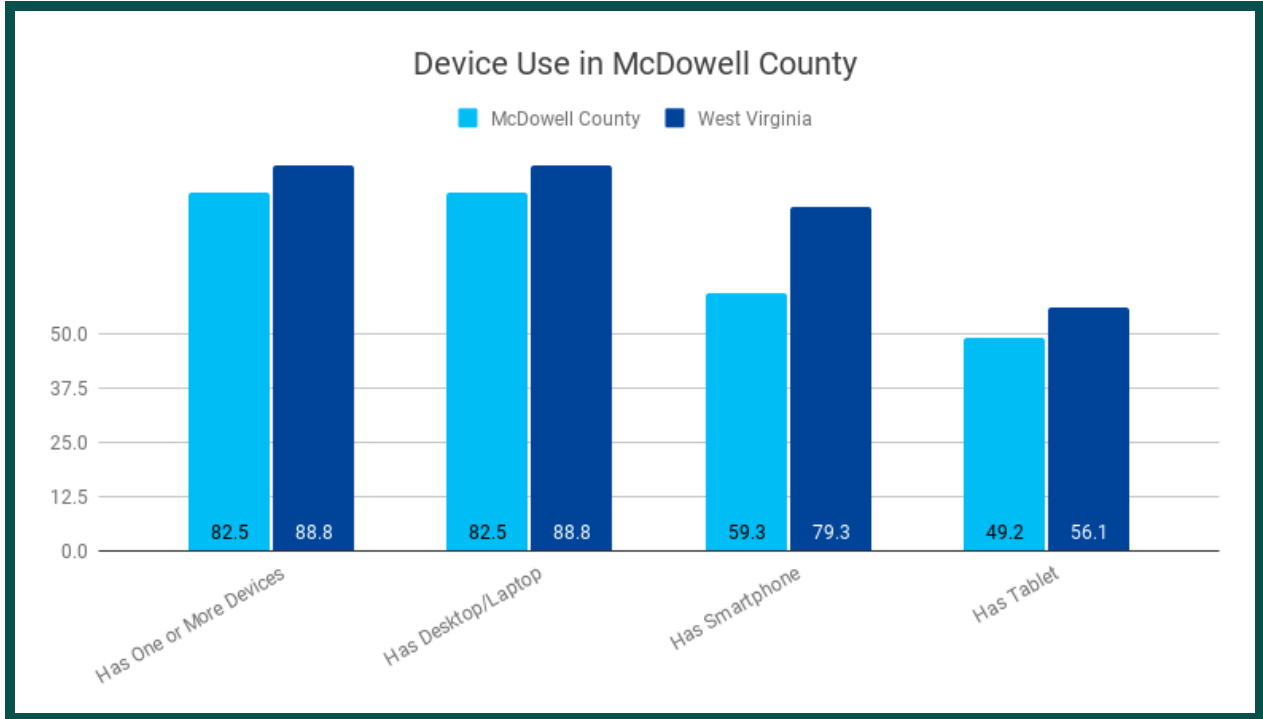[41] U.S. Census American Community Survey 5-Year Estimates

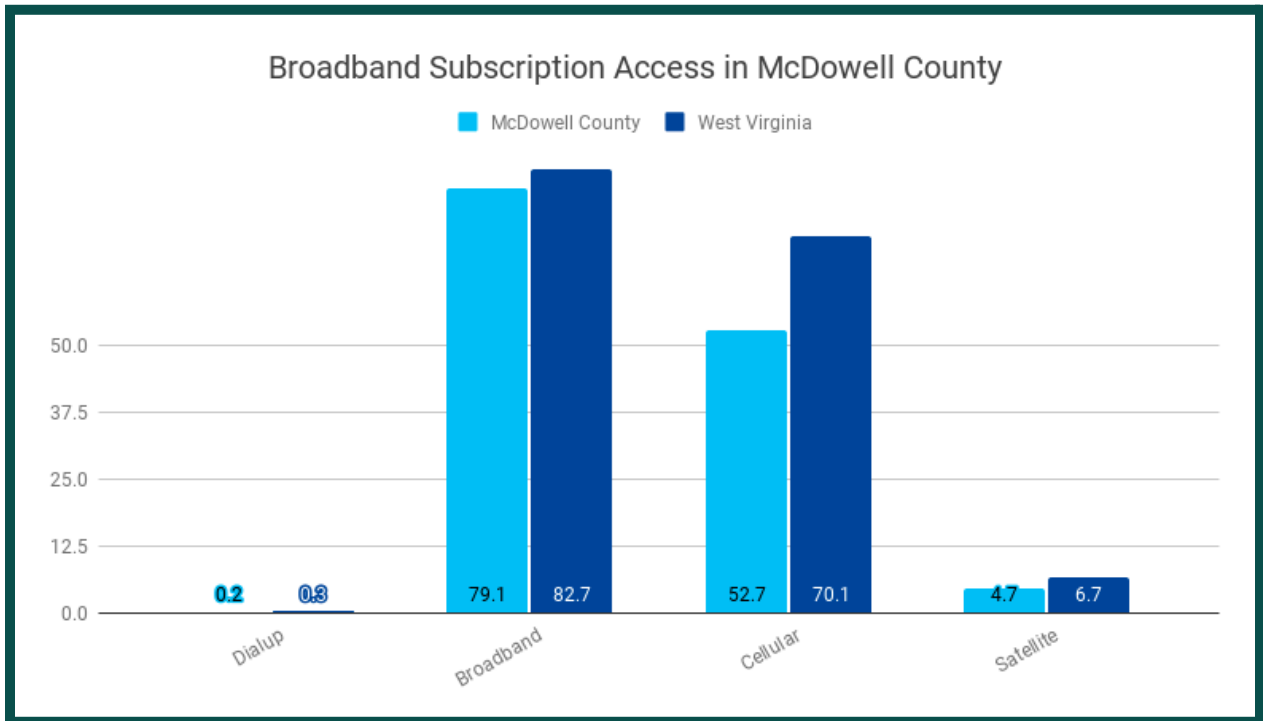*Figure 12. Device access in McDowell County*

Figure 13. Broadband Subscriptions access in McDowell County

C.3 McDowell County Broadband Maps

While infrastructure is not the focus of this plan and project, it is a critical component to achieving digital equity and digital inclusion. This section will provide a snapshot of the current state of infrastructure, as well as some of the proposed routes. These maps will likely change but do provide a picture of the state of the county infrastructure that can help inform project and program development.

A note on technology

Fiber is widely accepted to be the fastest, longest lifespan, robust, most reliable, and most secure broadband technology and it is capable of providing high symmetrical download and upload speeds. Through the BEAD funding deployment Fiber is prioritized, however, there may be locations that need to look at alternative technologies to achieve reliable connectivity. Additionally, as a stop-gap while fiber projects are in planning, permitting, and construction, many communities that need connectivity now may need to look to things like Fixed Wireless, Mobile, or Satellite solutions to fill the gap.

Claimed Speeds

The following broadband speed map is based on the FCC Broadband Deployment data representing the highest ISP-reported speed per census block.

It displays a county level map showing a map of the county with current reported speeds. This data is submitted by Internet Service Providers on a biannual basis. Note that this is the highest reported speed by the ISPs. This may not be the speed that they offer at all times, but the highest speed that they do offer. See the speed test map (page 84) below for more information.
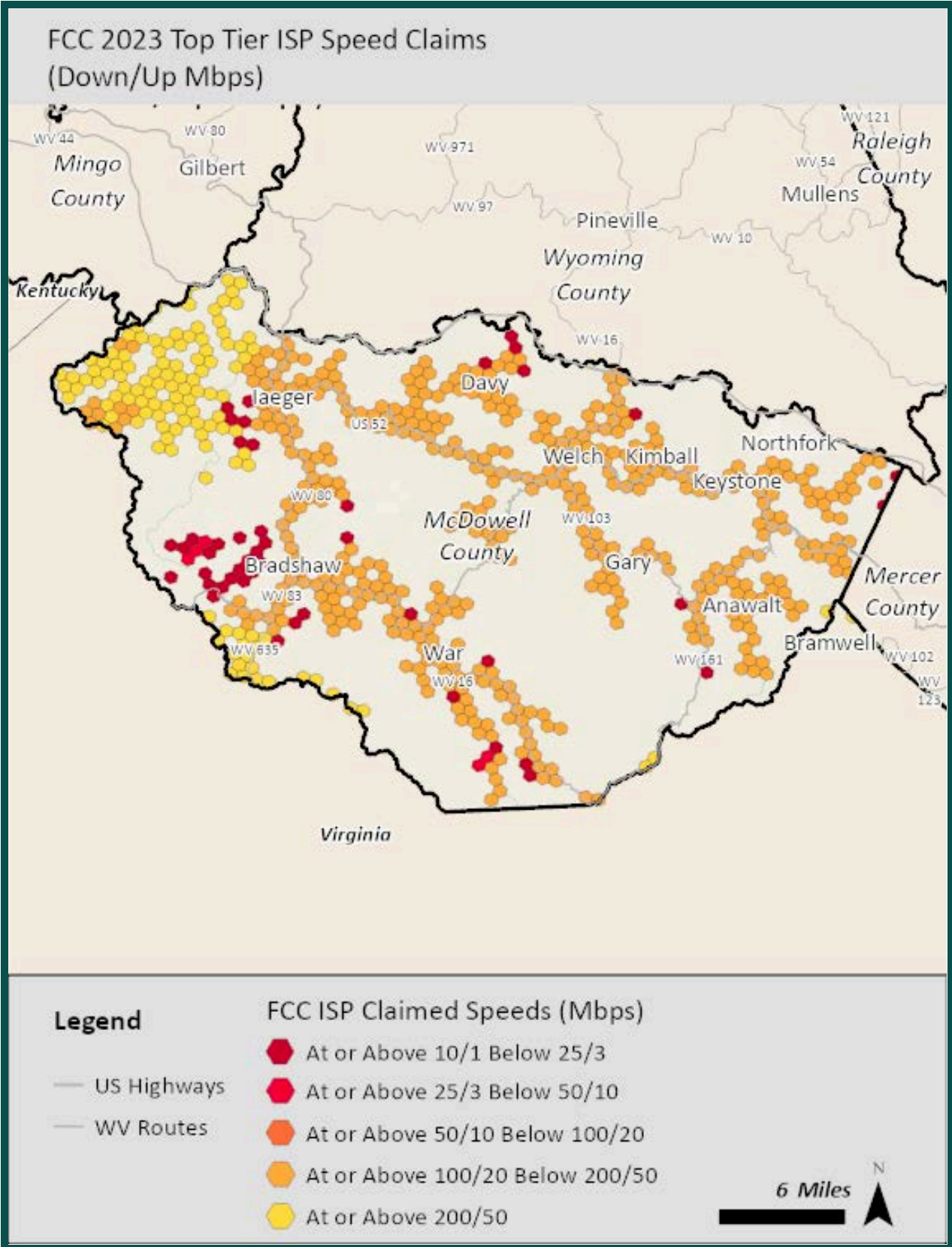
Figure 14. Current Reported Speeds based on 2023 FCC data provided by Reid Consulting Group.

Mobile / Cellular service

The map below displays existing towers in McDowell County. Due to the topography, even areas of the county with several towers may still struggle with mobile coverage. Mobile providers do update coverage maps regularly so it may be worth checking their coverage maps on the websites to see what has changed.
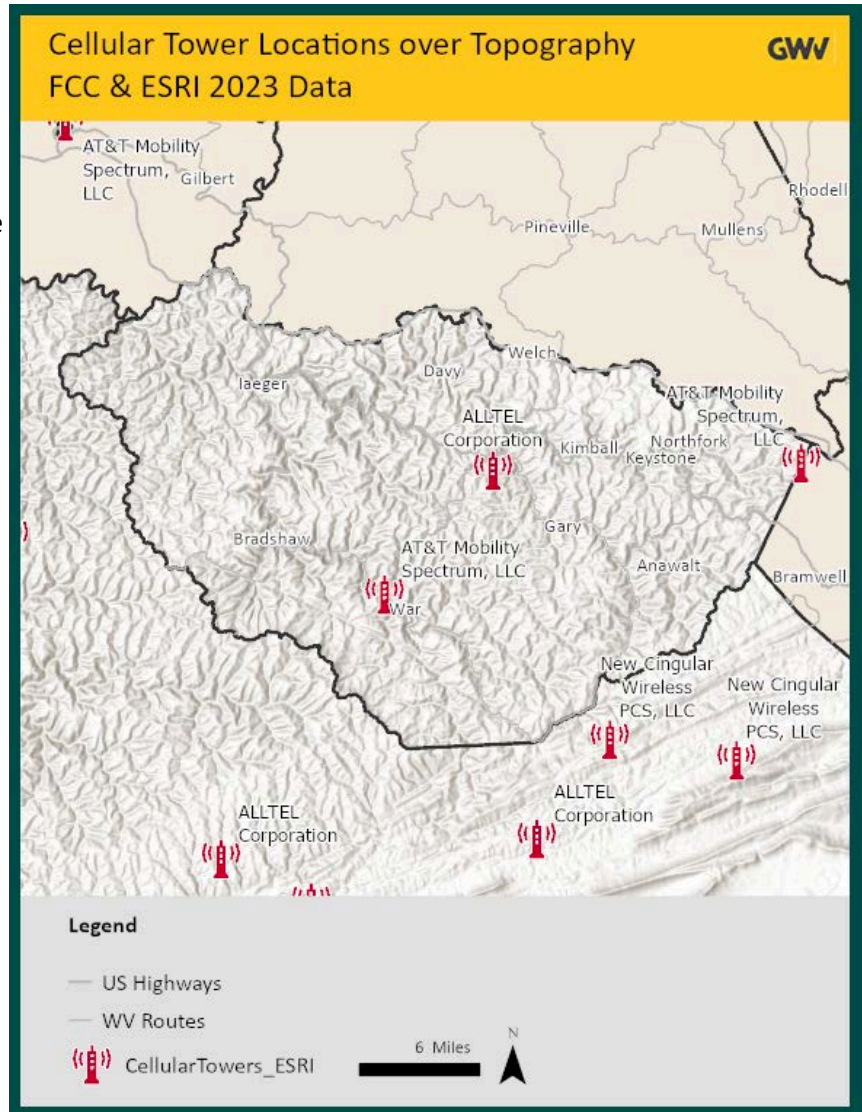
Figure 15. Mobile service towers in McDowell County

Internet Speed Test Data

An important piece of looking at broadband infrastructure is the speed test data. This map shows the reported speeds based on Ookla speed test data from 2023 that indicate the actual speeds being achieved at a given location based on customer tests, overlaid with the claimed speeds of the top tier ISPs based on Census Block Group areas. Dark red indicates the lowest speeds of 25 Mbps or less. As you can see by the square swatches, the actual speed test data is often much lower than the claimed top ISP speeds in the hexagonal areas. This may be due to differences in internet packages available or various other reasons . In the case of differences in internet packages it may indicate affordability issues of residents not being able to afford the top rated package speeds.

Ookla speed tests are a great way to test your speed and document the speeds you are actual receiving at your location. To run a test, visit

broadband.wv.gov/speedtest

to find out and help the state understand the true quality of broadband connections in your area

Figure 16. Ookla Speed Test 2023 Data Compared to 2023 FCC ISP Claimed Speeds.

Unserved/Underserved Broadband Serviceable Locations

The next important factor is, of course, what areas of the county do not have adequate service. The map below displays the Broadband Serviceable Locations that do have access to broadband over 100/20, and those that do not. Addresses that do not have connection speeds of at least 100/20(Un and underserved) are represented as green dots.Currently there are 1,351 unserved or underserved addresses that could be served in McDowell County.
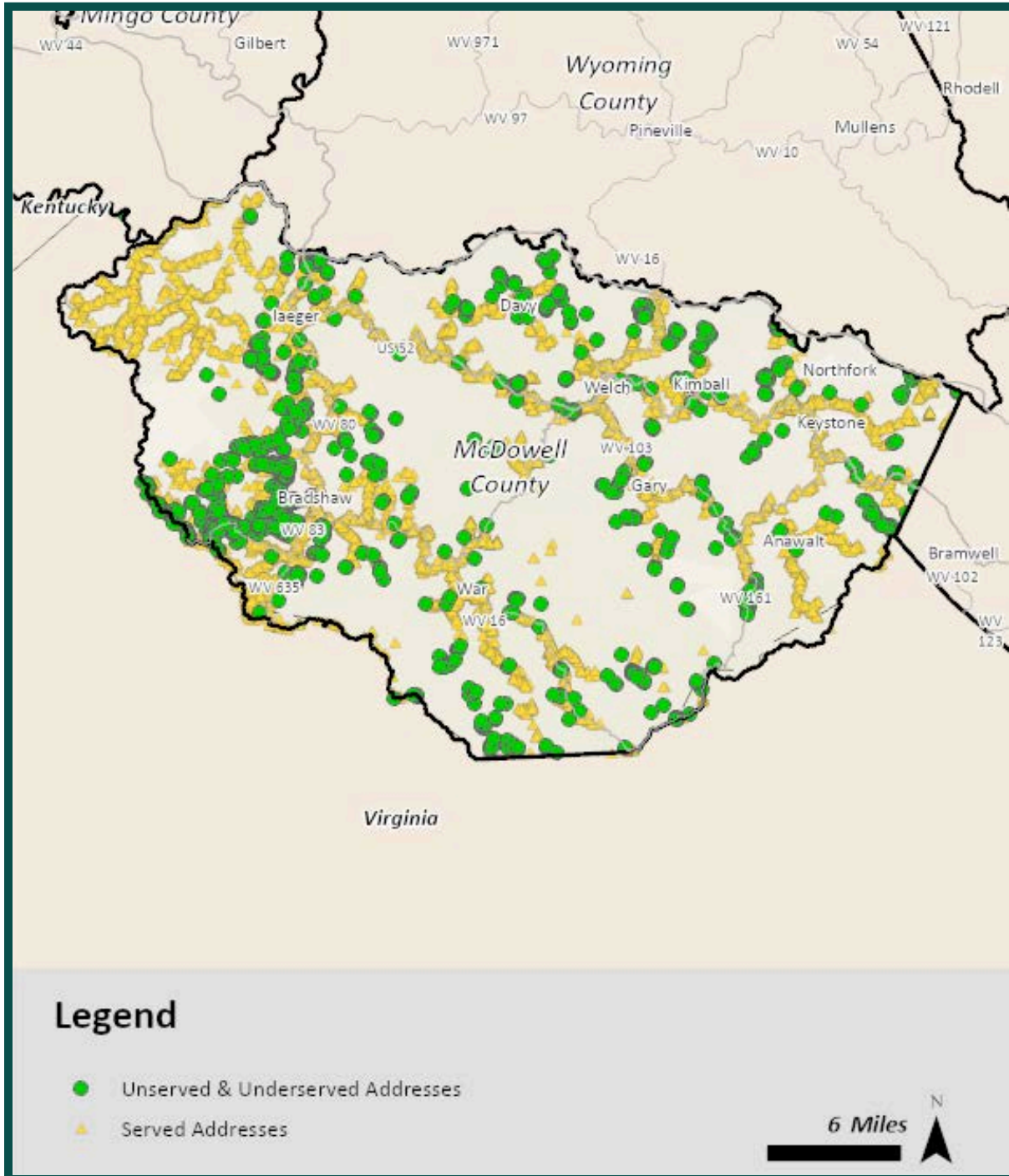

Figure 17. Un/Underserved BSLs in McDowell County

This map was created as part of the Regional Optical Communications Statewide Infrastructure study. The methodology for the broadband study data and addresses are based on the involved extensive data collection and collaboration with the West Virginia Office of Broadband (WVDED), utilizing the FCC National Broadband Map for foundational data on broadband serviceable locations (BSLs) and availability. Additional data from various federal and state programs, such as NTIA and ARC POWER Initiative, were integrated, along with local broadband studies and plans obtained through outreach to regional planning councils, county commissions, and ISPs. Using Esri GIS, interactive county maps with multiple data layers were created, categorizing addresses based on service levels, funding status, and serviceability. Note, some addresses that may not currently have access to service may fall under the category of addresses that have a "federally enforceable commitment". This means that an Internet Service Provider has already submitted a proposal and is "on-the-hook" to connect those addresses. Several of the grant programs that they may have worked with could include State GigReady, Lead Extension, USDA Community and ReConnect, ARC, RDOF, and other funds.

Proposed Routes and Address Clusters

In the 2023 ROC Study, Thrasher Engineering identified proposed routes to reach every unserved address. Note that these are NOT actually plans in progress. These are proposed routes and provide a cost estimate of $12,693,713 to install the estimated 161.19 miles of fiber that would be required to serve the currently 1,351 unserved or underserved addresses.

McDowell County, WV — 2023 ROC Study — Cost Estimate — Whole County				
Item	Unit Cost ($)	Unit Type	Unit Qty (#)	Total
Engineering	$5,500.00	Per Mile	161.19	$886,545
Permitting, Easements and Encroachment Acquisition	$1,500.00	Per Mile	161.19	$241,785
Pole Placement and Pole Make-Ready	$15,000.00	Per Mile	161.19	$2,417,850
Aerial Construction Labor	$50,000.00	Per Mile	161.19	$8,059,500
Underground Construction Labor	$150,000.00	Per Mile	0.00	$0
Project Construction Contingency 10%	$805,950.00	Lump Sum	1	$805,950
Legal 1.5%	$120,892.50	Lump Sum	1	$120,893
Administrative 2%	$161,190.00	Lump Sum	1	$161,190
				TOTAL COST = $12,693,713

Figure 18. Estimated costs for fiber buildout to McDowell County

On the map in Figure 19, unserved or underserved address clusters are represented by a heatmap with blue areas showing sparse address density and red to yellow areas showing dense clusters of unserved or underserved addresses. The existing fiber route is shown in green, and the proposed fiber routes are in blue. As indicated below, we can see how many clusters in smaller towns and rural areas are un- or underserved.
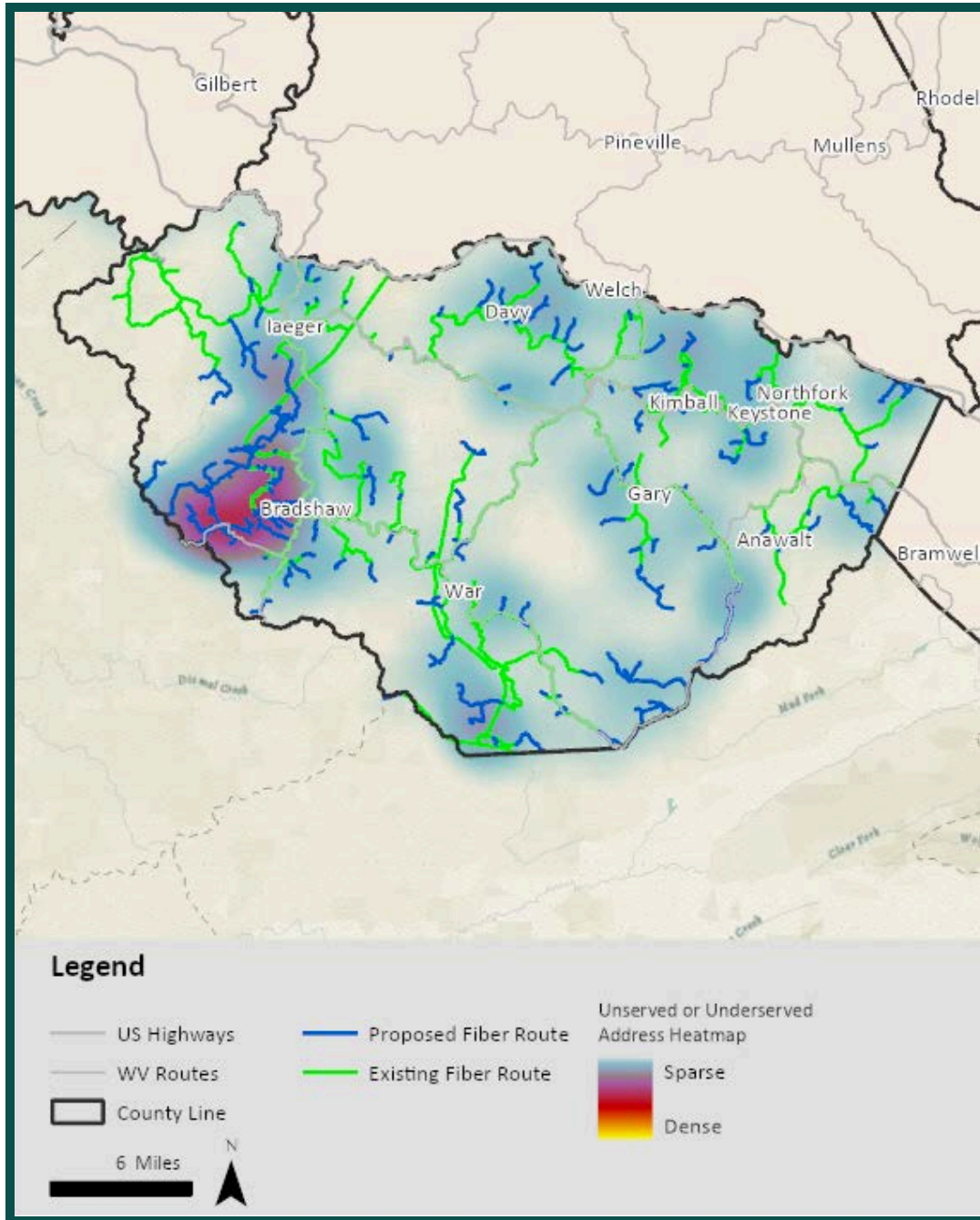
Figure 19. Current and Proposed Fiber Routes and address clusters, McDowell County

For more details on current broadband infrastructure, please visit the West Virginia Department of Economic Development Office of Broadband website at broadband.wv.gov. For more information on current funding allocations, or to see the ROC Study, visit their website here: http://www.wvroc.org/.

Unique challenges

The hill and valley topography along with spread out addresses and small communities presents significant challenges for ISPs looking to construct networks in the region. Residents at the community

meetings highlighted some challenges around the local terrain. Damage to infrastructure caused by weather, limited transportation to access spots, and affordability are significant barriers.

C.4 ISP Business 101

In order to better understand how to work with your local ISPs, it can be helpful to understand a snapshot of the costs associated with providing connectivity in rural areas

Example Fiber-to-the-Home (FTTH) Construction Financial Model

Demand Points		Explanation
Total Demand Points (Potential Folks connecting)	20	Demand points, or drops, are the number of potential customers that are along a construction route. *Note that "pockets" of customers together are easier/cheaper to connect, vs. houses spread out along a 3 mile route.*

Right of Way Preliminary Design Results		
Aerial Length Network Footage	13 miles	Length of this example project.

Additional Network Assumptions		
Estimated Pole Count	273	Number of poles that will be used to hang the fiber. ~20-22 poles per mile depending on the geography
Engineering Duration (months)	9	The amount of time to complete engineering
Make Ready Duration (months)	9	The amount of time to complete make-ready, which involves an examination of each pole to make sure there is adequate space.
Construction Duration (months)	9	Time spent actually building the new fiber line.
Take Rate Duration (months)	12	Amount of time it takes to reach the anticipated "take rate" or number of customers signing up for the network's service. For example, if there are 10 demand points, and only 2 sign up, that's a 20% take rate. If 6 sign up, it's 60%. This is a major factor in the sustainability of maintaining a network for the ISPs. ISPs often assume a take rate between 30-60% for fiber service.

Capital Expenditures	Total Estimated Cost	
Engineering *(Upfront)*	$286,000	Example Engineering cost of $22,000/mile including Engineering, Permitting and

		easements, pole placement and make-ready.
Construction *(Upfront)*	$650,000	Example Construction Cost of $50,000/mile.
Estimated Total Capital Costs	**$936,000**	**Amount of up-front costs to build and construct a fiber line.**

Estimated Cost Per Demand Point	
$46,250.00	Assuming no federal or state subsidy, this is the total Cost per POSSIBLE customer. Again, the take rate, or percent of possible customer's signing up means that the actual cost per customer could be much higher.
Estimated cost per customer with a 60% take rate.	
$78,000.00	If an ISP is assuming a 60% take rate (12 of the 20 possible customers signing up for service) this is the cost they need to recoup by the monthly service fee from these customers. At a $50/month rate with no subsidy, it would take over 100 years for customer fees alone to provide a ROI. This is why the BEAD Investment Act is so critical, and why so many of our communities are still without service since the economics do not make sense for most ISPs without the subsidy in construction.

Table 23. Example Fiber Construction Financial Model

Note that this is a simple construction example. Cost estimates are based on the 2023 ROC Statewide Infrastructure Study located at www.wvroc.org. This does not include many factors that ISPs would use to determine feasibility including general operating, maintenance, customer service, etc.

Factors ISPs need to consider include:

- How close together the targeted addresses are (again, dense clusters are cheaper/easier to serve)
- Estimated take rate (an area with existing providers typically has lower take rates, while areas with no providers or cellular coverage have higher take rates.)
- Average revenue per user: based on the take rate estimates, make an assumption based on the type and level of packages customers will be able to pay. (i.e., prices from competitors, ability to pay for the service, etc.)
- Likelihood of challenges including:
  - Cost overruns
  - Make ready delays
  - Permitting, Licensing, Authorization and Approval delays

In short, the costs of network development are extremely high. Historically, many addresses have not received service due to the lack of return on investment. This again highlights the importance and significance of the BEAD funds that are bringing $1.2 billion into the State to facilitate build out to our most rural communities.

Digital inclusion and digital equity efforts can directly impact the economics of an ISP's network in any given region. Increasing the amount of subscribers by giving them the skills, devices, affordability measures needed, or by improving local online access can make a difference. Using the same example as above, Table 24 outlines an example outlining the difference between a take rate of 30% vs 70%:

Example ISP yearly revenue projection:

Example 13 mile Fiber route.		
Total number of demand points (possible customers)	20	Using the same route from our example above
Average plan cost per month/customer	$70.00	This assumes some customers will have cheaper options, and some, including businesses, will have higher.
Number of customers at a 30 % take rate (number of customers subscribing)	6	Take rate is again, the number of possible customers that actually subscribe to a provider's service.
Total projected annual revenue for 13 mile stretch based on **30%** take rate	**$5,040.00**	
Number of customers at a 70% Take rate	14	Take rate is again, the number of possible customers that actually subscribe to a provider's service.
Total projected annual revenue for 13 mile stretch based on **70%** take rate	**$10,080.00**	

Table 24. Example ISP Yearly revenue projection

When ISPs are making decisions about which routes to maintain, grow, etc., they have to look at the annual projections. Any connected location has back-end and customer support costs. If a tree falls, there needs to be adequate staffing to make sure there is a technician with a truck who is able to respond. Digital equity and digital inclusion efforts can help increase demand for services, and ultimately their business case for continued growth in the community.

APPENDIX D

Funding

Appendix D. Funding

D.1 Current funds available for Digital Equity projects.

There are a variety of funding options available for digital equity. The ones outlined below in Table 25 are unique in that they are specifically for funding digital equity and digital inclusion projects. Many other sources of funding including grants for workforce development, training, social services, recovery, etc., have been used to help stand up programs but are usually focused around the main goals of that grant program.

Program	Description	More info:
Digital Equity Act Competitive Grant program ➔ Summer 2024	Opened Summer 2024. A second round is possible in 2025. At time of publication this has not been published. , Nationally competitive grant program for Digital Equity and Inclusion Projects. Open to a wide range of applicants. More information: https://broadbandusa.ntia.gov/funding-programs/Digital_Equity_Competitive_Grant_Program	Updates and materials: https://broadbandusa.ntia.gov/funding-programs/Digital_Equity_Competitive_Grant_Program
West Virginia Office of Broadband DEA Capacity Subgrant Program: Digital Skills ➔ Spring 2025 ➔ TBD 2026* ➔ TBD 2027*	Expected to open early 2025. State level grant for digital skills, training, navigator programs etc. 5 year period of performance, Open to a wide range of applicants.	Draft procedures on broadband.wv.gov : https://broadband.wv.gov/wp-content/uploads/2023/11/WV-BEAD-Digital-Navigator-Non-Deployment-Draft-Program-Procedures-Nov2023.pdf
West Virginia Office of Broadband DEA Capacity Subgrant Program: Device access ➔ Spring 2025* ➔ TBD 2026* ➔ TBD 2027*	Expected to open early 2025. Fund organizations looking to provide new, used, or refurbished digital/internet enabled devices. 5 year period of performance. Open to a wide range of applicants.	Draft procedures on broadband.wv.gov : https://broadband.wv.gov/wp-content/uploads/2023/11/WV-BEAD-Device-Distribution-Non-Deployment-Draft-Program-Procedures-Nov2023.pdf
West Virginia Office of Broadband DEA Capacity Subgrant Program: Local Digital Equity Planning ➔ Spring 2025*	Expected to open early 2025. Focused on county, city, or regional governments to create local digital equity plans. 1 year period of performance.	Procedures pending.

➔ TBD 2026*		
USDA Distance Learning and Telemedicine Program	Expected to open Spring 2025. Open to a wide range of applicants including state/local government, non profit, for profit, and groups. Can be used for equipment, facilities, software, instructional programming, some technical assistance if it pertains to telemedicine or distance learning	Grant landing page: https://www.rd.usda.gov/programs-services/telecommunications-programs/distance-learning-telemedicine-grants
pending final approval and subject to change		

Table 25. Digital Equity Adjacent Grant Programs

D.2 Other funding models

There are a variety of other unique funding models available for these types of programs. Because the targeted populations cover such a wide range of residents, many businesses, philanthropies, and other stakeholders have an interest in supporting them. For example, while a philanthropic organization may only support efforts assisting low-income youth, they may be willing to partner with a larger digital literacy program if that organization can show that they are targeting and supporting their target population.

Grant programs

There are a series of grants that can be used to cover certain aspects of Digital Inclusion programs. Workforce-related grants could cover skills training as it pertains to helping people join the workforce. Healthcare-related grants could support devices or training as pertains to telehealth. Even if there isn't a clear grant program for your project, building partnerships can lead to additional funding opportunities.

Public-private partnerships

Public-private partnerships are a familiar concept within traditional economic development work.. Many industries benefit from their customers or clients having access to and being able to use online services. These could be local banks, healthcare, industry, or other local businesses. In addition, business and industry often spend significant amounts of time and money on training new employees and building up pipelines. Digital skilling and access programs also have the potential to decrease costs for them in the long run. While developing public-private partnerships can take time and effort, the benefits could be long-term sustained funding for digital inclusion initiatives.

ISP support

Internet Service Providers, as mentioned above, have a very clear interest in making sure that their networks are being utilized. They can participate in a variety of ways, from providing direct (grant) support to programs, to donating equipment/devices, to being willing partners in educational activities.

For any digital inclusion project, it may be a great step to reach out to your local ISPs to see if/what they're already doing and how they may be willing to come to the table.

CRA funding

There have been some instances where a financial institution's Community Reinvestment Act funding could be used for these efforts. There are significant changes coming to the CRA process over the next few years so it may be best to work directly with your local banking representative to determine what they can/cannot do.

D.3 Project planning 101

For any project that is seeking funding, there are several key items to consider.

Match:

When working with a funder, whether government or private philanthropic organizations, It is very common for there to be a required match. Match is the dollar amount and/or in-kind time that an organization is able to pitch into their project. Some funders calculate match differently but the most common method is a % of the total request. For example, say an organization is Requesting $40,000 from a funder. If that funder requires a 25% match, the organization would be required to come up with and supply $10,000 in matching funds along with the request. This would bring the total project cost up to $50,000 total investment leveraged. For more information please visit:
https://www.learngrantwriting.org/blog/match-funding-grants/

Partners

Identifying and securing partnerships can be a very important step in developing your project. When selecting partners, look for organizations that you have worked with in the past, and/or organizations that have similar goals.

When selecting partners it is important to make sure that they understand and fully have capacity to work on the project in the ways they are proposing. There is always inherent risk in partnership, but the more time you can spend with them during the planning process, like any relationship, the less likely there will be misunderstandings or communication breakdowns later on.
Once you have determined the outline of the partnership, it is recommended that you write down your shared work plan and/or MOU. This provides important context in case staff changes occur or something happens down the line. Some good tips here:
https://grantwriters.net/blog/tips-for-finding-the-best-partners-for-your-grants/

Project plan

The project plan or work plan is an important component of your project. It includes specific timelines, activities, and responsibilities assigned to your staff and partner organizations. For more information please visit: https://writing.wisc.edu/handbook/grants/ and
https://www.ncoa.org/article/succeed-at-grant-proposals-have-a-plan-and-a-process

Funding Strategy and Remaining Gaps

Activity	Description	Example Key Stakeholders	Possible Funding Sources
1. Project Objectives	Define the goals and objectives of the project.	Government Agencies, Private Partners, Community	Grants, Public Funds, Private Investments
2. Partnership Formation	Identify key partners and their roles in the project.	Government Agencies, ISPs, Infrastructure Providers	Public-Private Partnerships, Joint Ventures
Public Sector	Government agencies responsible for regulation, funding, and oversight.	Local, State, and Federal Government	Grants, Bonds, Public Funds
Private Sector	Internet Service Providers (ISPs), infrastructure providers, and technology companies.	ISPs, Infrastructure Providers, Technology Companies	Private Investments, Loans, Equity
Community Engagement	Involvement of the local community and organizations.	Community Groups, Nonprofits, Local Businesses	Community Contributions, Grants
3. Financial Planning	Develop a financial plan for the project.	Financial Analysts, Project Managers	Grants, partnerships
Budget Allocation	Allocate funds for staffing, supplies, travel, curriculum, devices etc.	Project Managers, Financial help.	Public Funds, Grants, Loans
4. Funding Sources	Identify sources of funding for the project.	Funding Agencies, Private Investors	Grants, Loans, Equity
Government Grants	Federal, state, or local grants	Government Agencies, State Agencies	Government Grants
Philanthropy	Grants, pilot funds	Local, Regional, National Philanthropy	Philanthropy
Private Partnerships	Attract private investors for equity or debt financing.	Private Partners, Investors, ISPs	Private Investments,

Activity	Description	Example Key Stakeholders	Possible Funding Sources
5. Project Management	<u>Define the structure for decision-making and oversight.</u>	<u>Project Manager, Project Partners</u>	
Steering Committee	A committee overseeing the project's progress and compliance.	Steering Committee Members	Decision-Making Protocols
Project Manager	Appoint a project manager responsible for day-to-day operations.	Project Manager	Reporting, Execution
Reporting and Monitoring	Implement mechanisms for progress reporting and performance monitoring.	Project Manager, Oversight Team	Reporting Framework
8. Performance Metrics	<u>Define key performance indicators (KPIs) for the project.</u>	<u>Project Manager, Oversight Team *note some national orgs. Can offer support for tracking.</u>	<u>KPIs and Measurement Metrics</u>
Broadband Accessibility	Measure the percentage of the population with access to broadband.	Oversight Team/ PM	
Covered population metrics	Measure items relating to covered populations and their success in your program	Oversight team/PM	
Service Quality	Monitor the quality of broadband services provided.	Oversight Team	Service Level Agreements (SLAs)
9. Review and Adaptation	Establish a process for project review and adaptation.	Steering Committee, Project Manager	Review Schedule, Adaptation Strategies

Table 26. Project Planning Table

D.4 Measurement and Tracking strategies

Implementation Strategies and DEA Measurable Objectives

Measuring the impact of any new or existing digital inclusion project will be critical to show the success, areas of improvement, and secure longer term funding for projects moving forward. As community members and organizations develop project ideas to address the barriers identified above, it will be important to plan for measurement on the front end.

Some example measurement objectives are listed below:

- **Digital Literacy Programs:**
  Objective - Improve digital literacy and technology skills among underserved populations.
  - Example strategy: collaborate with libraries, schools, and community centers to offer digital literacy workshops.
  - Potential measurement: Pre/post testing for literacy courses, number of attendees completing programs, attendance at workshops, devices"earned" through learn and earn programming.

- **Online Accessibility and Inclusivity of Public Resources and Services:**
  Objective - Ensure everyone has the same opportunity to engage with public resources and services online to increase civic participation.
  - Example strategy: Addressing online accessibility and inclusivity of public resources and services across the applicable covered populations within the community by partnering with local government to update websites and improve accessibility of their online resources.
  - Potential measurement: Community surveys, number of websites that are accessible,

- **Awareness and Use of Cybersecurity and Online Privacy Tools:**
  Objective - Empower individuals, organizations, and communities to protect their digital assets, personal information, and online activities from cyber threats and privacy breaches.
  - Example strategy: Increase digital security awareness, use of cybersecurity, and online privacy measures/tools across the applicable covered populations within the community by partnering with local tax prep support services to do outreach and provide training to the community.
  - Possible measurement: Increase in residents using online banking, privacy tools, accessing healthcare records. etc.

- **Availability and Affordability of Consumer Devices:**
  Objective - Ensure access to affordable devices and software.
  - Example strategy: Increase availability and affordability of consumer devices across the applicable covered populations in the community by working with the local high school tech center to begin a device refurbishment program.
  - Potential measurement: Increase of residents using appropriate devices, number of devices distributed, number of devices refurbished.

- **Community Technology Hubs:**
  Objective - Establish community centers equipped with technology resources.

- Example strategy: Fund and support the creation of technology hubs in underserved communities by offering technical assistance for grant writing, partnership development to help connect businesses with a stake in it to the community center etc.
    - Potential measurement: Number of residents using resources, number of workshops held at these hubs, funding to increase the number of the hubs.

- **Public-Private Partnerships:**
  Objective - Foster collaboration between government, businesses, and nonprofits.
    - Example strategy: Create pathways for the establishment of public-private partnerships for the benefit of covered populations within the community by creating incentives for businesses to invest in digital equity initiatives.
    - Potential measurement: Percentage of funding coming from private investment and businesses.

APPENDIX E
Example Resources

Appendix E. Example Resources

DEI Inventory Example:

Asset Category	Description	Key Contacts / Responsible Parties
1. Infrastructure	Physical resources supporting digital access.	
Public Wi-Fi	Locations with public Wi-Fi access.	
Computer Labs	Community or organization-owned computer labs.	
Broadband Availability	Availability and quality of broadband connections.	
Device Loan Programs	Programs offering device loans to underserved individuals.	
Digital Inclusion Centers	Centers providing digital literacy training and resources.	
2. Devices	Availability of computing devices.	
Desktop Computers	Number and availability of desktop computers.	
Laptops	Number and availability of laptops.	
Tablets	Number and availability of tablets.	
Smartphones	Number and availability of smartphones.	
3. Training & Support	Programs and resources for digital literacy training.	
Digital Literacy Workshops	Availability of workshops and training programs.	
Online Learning Platforms	Platforms for online courses and resources.	
Technical Support	Availability of technical support for digital issues.	
Digital Instructors	Trained individuals or volunteers providing instruction.	

Asset Category	Description	Key Contacts / Responsible Parties
4. Community Partnerships	Collaborations with other organizations and entities.	
Educational Institutions	Partnerships with local schools, colleges, or universities.	
Nonprofit Organizations	Collaborations with nonprofits focused on digital equity.	
Public Libraries	Partnerships with local libraries for digital resources.	
Local Businesses	Partnerships with businesses providing digital access.	
5. Funding & Grants	Financial resources and grant opportunities.	
Grants & Donations	Grants and donations supporting digital equity efforts.	
Funding Sources	Identified sources of funding for ongoing initiatives.	
6. Outreach & Awareness	Efforts to raise awareness about digital equity.	
Outreach Campaigns	Campaigns to inform the community about available resources.	
Marketing Materials	Brochures, flyers, or websites promoting digital equity.	
Community Events	Events to engage the community and raise awareness.	
7. Data & Assessment	Data collection and assessment mechanisms.	
Data Collection Tools	Tools for collecting data on digital equity efforts.	
Impact Assessment	Evaluation methods for assessing the impact of initiatives.	

Table 27. DEI Inventory Example

Example Community Survey Questions

Continued stakeholder outreach and engagement can be a good way to not only ensure that planned programs are working as anticipated, but also to better understand existing challenges and tailor services as needed.

Example: Digital Equity Community Survey

Section 1: Demographics

1.1. Name:

1.2. Email:

1.3. Phone Number:

1.4. Are you representing a specific organization or community group?
     If so, please specify:
     [ ] Yes (Please specify) _____ [ ] No

Section 2: Current Broadband Access

2.1. Do you currently have access to a reliable high-speed broadband internet connection at your place of residence?
[ ] Yes [ ] No [ ] I don't know

2.2. If you answered "No" or "I don't know" to the previous question, please briefly explain the challenges or barriers you face in accessing broadband internet:

(Open-ended response)

Section 3: Internet Use and Adoption

3.1. How frequently do you use the internet for personal, educational, or professional purposes?
[ ] Daily [ ] Weekly [ ] Monthly [ ] Rarely [ ] Never

3.2. What are the primary reasons for using the internet? (Check all that apply)
[ ] Education [ ] Work or employment [ ] Healthcare and telemedicine [ ] Communication (email, social media, etc.) [ ] Entertainment [ ] Accessing government services [ ] Other (please specify)

3.3. Have you encountered any specific challenges or limitations in using the internet for your needs? If so, please describe:

(Open-ended response)

Section 4: Strategies and Recommendations

4.1. What strategies or initiatives do you believe would be most effective in increasing broadband access and adoption in our community?
(Open-ended response)

4.2. Are there any specific programs, resources, or partnerships that you would recommend to address digital inequities and promote broadband access?

(Open-ended response)

4.3. Do you have any other suggestions, comments, or insights regarding digital equity and broadband access that you would like to share?

(Open-ended response)

Example Summary of Community Survey Responses Template:

Digital Equity and Inclusion Community Survey Summary

Survey Period: [Date Range]

Total Responses: [Total Number of Respondents]

Survey Purpose: To assess the digital inclusion needs and challenges within our community and gather input on potential solutions.

Key Findings:

Digital Access and Devices:

- *Access to Devices*: Approximately [Percentage]% of respondents reported having access to personal computing devices (laptops, desktops, tablets, or smartphones).
- *Digital Divide*: [Percentage]% of respondents mentioned experiencing challenges due to a lack of personal devices, highlighting the existence of a digital divide.

Internet Connectivity:

- *Broadband Access*: [Percentage]% of respondents indicated that they have access to reliable broadband internet connections.
- *Internet Reliability*: [Percentage]% of respondents reported experiencing frequent internet connectivity issues, affecting their online activities and work.

Digital Literacy and Training:

- *Digital Literacy*: [Percentage]% of respondents expressed a need for digital literacy training and resources to improve their digital skills.
- *Training Availability*: [Percentage]% of respondents were unaware of available digital literacy programs in the community.

Community Resources:

- *Awareness of Resources*: [Percentage]% of respondents were unaware of existing community resources, such as public Wi-Fi hotspots or computer labs, for accessing digital services.
- *Access to Support*: [Percentage]% of respondents mentioned that they lacked access to technical support for digital issues.

Partnerships and Collaboration:

- *Existing Collaborations*: [Percentage]% of respondents were unaware of any ongoing partnerships between local organizations and the community to address digital inclusion.
- *Interest in Collaboration*: [Percentage]% of respondents expressed interest in community partnerships to enhance digital equity initiatives.

Awareness and Outreach:

- *Awareness Campaigns*: [Percentage]% of respondents indicated that they had not come across any awareness campaigns promoting digital equity and inclusion.
- *Interest in Awareness*: [Percentage]% of respondents expressed a desire for increased outreach efforts to raise awareness about available resources.

Example: Engagement Activity Matrix

Community Engagement Activities for Digital Equity	Description	Objective/ Outcome	Date/ Time	Location/ Venue	Lead/ Coordinator	Resources Needed	Notes
1. Community Meeting	Hold a town hall-style meeting	Share information on internet access options	[Date]	[Location]	[Lead Name]	Presentation materials, AV equipment	Agenda and speakers confirmed
2. Stakeholder Roundtable	Convene key stakeholders	Discuss strategies and partnerships	[Date]	[Meeting Venue]	[Lead Name]	Meeting agenda, invitees	Stakeholders confirmed to attend
3. Community Webinar	Host an online information session	Raise awareness and educate community members	[Date]	[Online Platform]	[Lead Name]	Webinar platform, speakers	Webinar registration open
4. Public Awareness Campaign	Launch a digital equity	Raise awareness and promote	[Date Range]	[Online and Local]	[Lead Name]	Marketing materials, media outreach	Social media content planned
5. Focus Group Discussions	Organize small group discussions	Gather in-depth insights and suggestions	[Date Range]	[Community Locations]	[Lead Name]	Facilitators, discussion guides	Focus group topics identified

Table 28. Example Engagement Activity Matrix

Example Outreach and Engagement Planning Table

Component	Description	Key Activities	Timeline	Responsible Party
Needs Assessment	Assess the digital equity needs of the target communities.	E.g., Conduct surveys and focus groups to gather data on digital access and literacy.	i.e., Q1-Q2	i.e., Digital Equity Team
Stakeholder Mapping	Identify key stakeholders and partners for collaboration.	Identify local nonprofits, government agencies, and businesses interested in digital equity.	i.e., Q1-Q2	Digital Equity Team
Community Engagement	Engage with underserved communities to understand their specific challenges and needs.	Host community meetings and workshops to gather input.	i.e., Q1-Q2	Outreach Coordinator
Digital Literacy Programs	Develop and implement digital literacy programs.	Create a curriculum for digital skills training; Partner with libraries and community centers to offer workshops.	i.e., Q1-Q2	Education Coordinator
Device Distribution	Ensure access to affordable devices for underserved populations.	Establish partnerships with device manufacturers; Organize device distribution events.	i.e., Q1-Q2	Technology Coordinator
Broadband Expansion	Work on improving internet access in underserved areas.	Partner with ISPs to extend coverage; Set up public Wi-Fi hotspots.	i.e., Q1-Q2	Infrastructure Team
Technology Hubs	Establish community technology hubs.	Identify suitable locations and secure funding; Equip hubs with computers and internet access.	i.e., Q1-Q2	Facilities Coordinator

Component	Description	Key Activities	Timeline	Responsible Party
Policy Advocacy	Advocate for policies supporting digital equity.	Engage with policymakers and advocate for digital inclusion legislation.	i.e., Q1-Q2	Advocacy Team
Private Sector Engagement	Collaborate with businesses for support.	Reach out to local companies for sponsorship and support; Organize corporate volunteer programs.	i.e., Q1-Q2	Partnerships Coordinator
Progress Monitoring	Continuously track and evaluate progress.	Collect data on key performance indicators; Adjust strategies based on results.	Ongoing	Data Analyst
Community Outreach Events	Host community events to promote digital equity.	Organize digital fairs, workshops, and awareness campaigns.	Ongoing	Outreach Coordinator

Table 29. Example Outreach and Planning Table