

Cherokee County

Connectivity Plan



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Acknowledgements

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EXECUTIVE SUMMARY

Executive Summary

Cherokee County's Connectivity Plan addresses the critical need to bridge the digital divide by enhancing broadband infrastructure, promoting digital opportunities, and empowering its communities through accessible, affordable, and reliable internet connectivity. This plan establishes a comprehensive roadmap to align Cherokee County with state and federal funding programs, including the Broadband Equity, Access, and Deployment (BEAD) and Digital Equity Act (DEA) initiatives.

Cherokee County, a predominantly rural community in western North Carolina, faces significant challenges in broadband access and adoption. With over 30% of its population aged 65 and older, only 56% of residents subscribing to broadband services, and many underserved rural areas, the county must tackle persistent barriers to digital inclusion. By addressing affordability, digital literacy, and infrastructure development, the county aims to create an equitable digital ecosystem that fosters innovation, economic growth, and educational opportunities.

This Connectivity Plan prioritizes the deployment of a state-of-the-art fiber network to underserved and unserved areas. It envisions partnerships with local ISPs to achieve universal access while reducing costs through grant funding. Additionally, the plan emphasizes digital opportunities by proposing programs for device access, digital literacy training, and enhanced cybersecurity awareness.

Key findings from local data collection reveal significant disparities in internet availability and adoption, particularly in remote areas. By leveraging community feedback, including insights from surveys that indicated 73% of residents feel their current internet service fails to meet their needs, Cherokee County is committed to implementing targeted strategies that ensure long-term, measurable outcomes.

Cherokee County's vision is to become a digitally inclusive community where all residents have the resources and skills necessary to thrive in a connected world. This Connectivity Plan, supported by the Appalachian Regional Commission and key stakeholders, represents a bold step forward in achieving digital equity and preparing Cherokee County for a technology-driven future.



SECTION 1

Community, State Data &
Truth on the Ground

1. Community, State Data & Truth on the Ground

Cherokee County is North Carolina's westernmost county, sitting at the Tennessee border to the north and west and the Georgia border to the south. The total county population is 27,444, and it includes the two towns of Andrews and Murphy. The Town of Murphy is the county seat, and it is known for being the westernmost location in the state.

Similar to other Appalachian communities, Cherokee County is blessed with bountiful outdoor opportunities, rich cultural heritage, and mountain hospitality. The Qualla Boundary, which is the 100-square mile sovereign nation of the EBCI, includes areas that are located within Cherokee County's border.

One of the area's largest employers is the Harrah's Cherokee Valley River Casino, which is located on the Qualla Boundary, and this resort is a significant tourist attraction for the County. Other attractions include popular outdoor recreation areas, including national forest land and several lakes and rivers that bring in visitors every year. Although tourism is a main economic driver, Cherokee County does have a strong manufacturing sector, distinguishing it from several neighboring communities.

A. Geographic and Demographic Profile

General Community Demographic Information

Cherokee County utilized demographic data from the American Community Survey, Census Data, and HUD's LMISD to obtain the following information:

Demographic	Demographic Data
Total Population Number	29,512
Square Miles Covered	455.5
Number of People per Square Mile	63.2
Number of Residents Who Identify as White	93%
Total Minority	7%
Number of Residents Who Identify as Black	1.90%
Number of Residents Who Identify as Hispanic or Latino	4%
Number of Residents Who Identify as Indigenous	1.80%
Number of Residents Who Identify as Other	3.30%

Total Number of Households	12,758
Number of Households That Are Owner Occupied	81.30%
Average Household Size	2.23
Mean Household Income	\$63,371
Median Household Income	\$43,319
Mean Family Income	\$63,371
Median Family Income	\$49,254
Per Capita Income	\$28,752
Number of People Living Below the Poverty Line	15.1%
Number of Low-to-Moderate Income Residents	9,245

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	Description
Economic Factors	
Income Inequality	Disparities in income distribution within the community.
Unemployment Rate	High rates of unemployment, especially among minority groups.
Poverty Levels	A significant proportion of the population is below the poverty line.
Lack of Economic Opportunities	Limited access to quality jobs, education, and career advancement.
Education	
Educational Attainment	Low levels of educational attainment and high dropout rates.
School Funding	Insufficient funding for schools, resulting in lower quality education.
Access to Quality Education	Limited access to quality schools and educational resources.

Healthcare	
Healthcare Access	Limited access to healthcare facilities and services.
Health Disparities	Health disparities, including higher rates of chronic illnesses.
Food Deserts	Lack of access to fresh and nutritious food options.
Housing	
Affordable Housing	A shortage of affordable and safe housing options.
Housing Segregation	Historical and ongoing segregation in housing patterns.
Homeownership	Low rates of homeownership and high rates of rental housing.
Criminal Justice	
Over-Policing	Excessive police presence; targeting of marginalized communities.
Mass Incarceration	High rates of incarceration, particularly among minority populations.
Criminalization of Poverty	Laws and practices that criminalize poverty-related issues.
Infrastructure and Environment	
Infrastructure Investment	Lack of investment in infrastructure like roads, public transit, etc.
Environmental Hazards	Presence of environmental hazards and pollution in the community.
Transportation Access	Limited access to affordable and reliable transportation options.
Social Support	
Community Resources	Limited access to social services and support networks.
Social Capital	Weakened social bonds and trust within the community.
Discrimination	Experiences of discrimination and bias, limiting social mobility.

Based on social determinants, and geographic and demographic information of Cherokee County, the following observations can be made:

- While the county faces issues in almost all social determinant categories, the categories of economic factors, education, housing, and infrastructure stand out as priority areas.
- Cherokee County is a persistent poverty community with a poverty rate of 16.9%.
- Less than 30% of residents have a bachelor's degree.
- The median age is 53.

- There is a housing shortage in the county with very few affordable buying or renting options.
- The public transportation system is very limited and difficult for the most rural residents to access and utilize.

Documented Presence of Covered Populations

Specific to both the Digital Equity and Broadband Equity, Access, and Deployment (BEAD) programs, Cherokee County has identified the following impact to covered populations, as defined in the Infrastructure Investment and Jobs Act (IIJA), as a result of the proposed project(s):

Covered Population	Presence in Cherokee County (Scale 1 to 5, 1 = Low)	Potential Impact (Low, Moderate, High)
Individuals who live in covered households	5 (46%)	High 5
Aging individuals	4 (13%)	Moderate 3
Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility	1 (<1%)	Low 1
Veterans	2 (5%)	Low
Individuals with disabilities	2 (5%)	Low
Individuals with a language barrier	1 (<1%)	Low
Individuals who are English learners	1 (<1%)	Low
Those with low levels of literacy	1 (<1%)	Low
Individuals who are members of a racial or ethnic minority group	3 (7%)	Moderate
Individuals who primarily reside in a rural area	5 (100%)	High

In general, Cherokee County's proposed project(s) will create the highest impact on aging residents, residents in rural areas, and residents in poverty by providing infrastructure and digital equity support to all areas of the county. Additionally, even though other covered populations have a small presence in the county, proposed projects will still reach and cover these populations. Cherokee County will continue to engage and seek input and participation from the covered populations with the greatest impact to ensure that the proposed project creates positive, measurable outcomes.

General Community Economic and Workforce Status

Cherokee County utilized additional data resources from the U.S. Census¹ and Appalachian Regional Commission² to further identify current and past economic drivers for Cherokee County.

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

Cherokee County's most prominent industries by employment are: 1) retail trade 2) health care and social assistance, and 3) manufacturing.

This means that Cherokee County is predominantly a service-based economy.

Service-based economies often mean lower wages for employees and jobs are often seasonal, with wage insecurity. In addition, those jobs are often unreliable and are the first to be impacted when significant disruptions occur. For example, service-based jobs saw immediate impacts during COVID-19 in 2020, and we saw another example in 2024 when Hurricane Helene impacts disrupted the most busy tourism season, leading to loss of income for employees in this sector.

Cherokee County is recognized as a Tier 1 County, meaning it is one of the most economically distressed. This ranking is determined by the NC Department of Commerce.

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

- ARC recognizes Cherokee County as an at-risk community, meaning that it is high-risk for long-term economic failure or even collapse.
- Cherokee County has:
 - 5.7% unemployment rate (compared to 3.7% in NC)
 - 16.9% poverty rate (compared to 12.8% in NC)
 - \$21,898 per capita income (compared to \$37,641 in NC)

Digital technologies are used in various local government activities and economic development. Without the proper adaptation or resources, industries cannot compete globally and thus citizens continue to suffer locally.

¹ <https://www.census.gov/library/stories/2023/05/persistent-poverty-areas-with-long-term-high-poverty.html>

² <https://www.arc.gov/classifying-economic-distress-in-appalachian-counties/>

B. State Data

Previous Broadband Studies

Cherokee County's Connectivity Plan is not duplicative of any previous or existing broadband study; however, it does build upon work that has been done previously.

Broadband Plan/Study Name	Date Completed	Relation to Cherokee County's Proposed Project
<i>Southwestern Commission (Region A) Broadband Assessment</i>	February, 2018	A region-wide collection of data on resident uses, concerns, and needs related to broadband technologies and skills. This included resident surveys and speed tests as well as a next-step analysis.
<i>Region A Broadband Adoption Plan</i>	Spring 2023	A regional digital opportunities planning effort that delivered implementation strategies for each county in North Carolina's Region A.

State Priorities

According to the State of North Carolina's BEAD Five-Year Action Plan, the following priorities are being implemented:

Priority	Description
• Building a sustainable operation with the capacity to build digital equity in North Carolina	• Accurately identify unserved and underserved locations through data collection and mapping
• Enabling more North Carolinians to afford high-speed internet	• Recognize obstacles and barriers • Integrate and leverage existing grant programs
• Increasing digital literacy among all North Carolinians	• Recognize obstacles and barriers • Integrate and leverage existing grant programs
• Expanding broadband access across the state	• Recognize obstacles and barriers • Integrate and leverage existing grant programs
• Leveraging data to identify and understand community needs	• Develop an asset inventory and needs assessment
• Providing technical assistance to community leaders	• Form partnerships with community-based organizations and local governments and expand interagency partnerships

Cherokee County will prioritize implementing the following strategies in order to align its digital access and equity planning with the state's priorities. The strategies to meet these needs include:

- **Strategy 1:** All Cherokee County citizens have access to high-speed internet and to affordable, low-cost internet services.
- **Strategy 2:** Promote practices that support online accessibility and inclusivity of public resources and services.
- **Strategy 3:** Ensure that Cherokee County citizens can acquire the digital skills and understanding to meet their personal needs and the workforce needs of the state.
- **Strategy 4:** Promote practices and leverage tools to ensure online privacy and security.
- **Strategy 5:** Ensure that Cherokee County citizens have access to digital devices to meet their needs.

Additionally, the State's BEAD Five-Year Action Plan further describes how broadband connectivity impacts the following:

Workforce Development	Cherokee County plans to develop infrastructure that would allow for more individuals to be able to connect to an affordable internet, creating a more diverse job market and supporting remote work and online job training.
Economic Development	The county wants to use infrastructure and access to not only support individuals but to support local businesses in their day-to-day operations.
Aging in Place	Digital equity is a top priority for the county to increase the aging population's access to telehealth resources as well as safe internet usage practices.
Educational Attainment	Increased connectivity infrastructure, affordable internet, and device access will help support the students of Cherokee County in the age of digital learning.

See Appendix D for further detail on the State's method for determining BEAD eligibility.

Summary of the State Digital Equity Priorities

According to the State of North Carolina'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:

Priority	Description	Mitigation Approach
High-speed internet access and digital equity	Inclusive of all N.C. communities and populations' needs	The Digital Equity and Broadband Equity, Access, and Deployment (BEAD) planning grants to help fund local coordination efforts
Align with Governor's digital goals	North Carolina has developed a comprehensive strategy to build digital equity across the state	Ensuring that all North Carolinians have access to an affordable, high-speed internet connection and have the devices and skills necessary to participate in the modern digital economy
Achieve universal access to broadband and significantly increase adoption	Increase adoption to 80% in NC by 2025	Investing \$971M for critical infrastructure and \$50M for digital skills training

Cherokee County plans to utilize grant funding for infrastructure to increase affordability and access to all residents. Additionally, the local government and CAI's will be putting effort towards digital equity, skills training and awareness.

C. Current Internet Adoption and Use

This section aims to provide Cherokee County with a diagnosis of the current health of broadband infrastructure and services in the community. The results of this Connectivity Plan will enable Cherokee County to strategically target and prioritize areas 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 Cherokee County include, but were not limited to:

- **Availability**
 - Cherokee County is currently served by the following three ISPs:
 - Peachtree Broadband
 - BRMEMC
 - Frontier
- **Affordability**
 - A majority of residents are not served by a low-cost plan.
- **Adoption**
 - According to NCDIT's Broadband Adoption map, 56.15% of Cherokee County's residents have a broadband subscription.
 - This is compared to 71.6% of North Carolina residents

- The combination of low internet adoption and the lack of affordable options contribute to ongoing challenges to improving Cherokee's connectivity landscape.

Currently Available Internet Services

To perform the analysis of currently available internet services, Cherokee County's project team collected and evaluated data from publicly available broadband data sources and local datasets, and then compiled these sources to reflect the competitive landscape, including:

- An inventory of existing fiber networks within the county, including ownership and availability for use by other network providers;
- An overview of current broadband providers' services, pricing strategies and coverage areas;
- To the best extent possible, the investment and deployment plans of incumbent providers;
- To the best extent possible, the locations of existing fiber and broadband-related electronics; and
- The available broadband speeds by provider.

The following sections identify current ISP service offerings and pricing, existing broadband networks, and priority areas within Cherokee 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 ; Broadband search (2022). About. Available at: https://www.broadbandsearch.net/about)	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 connect middle mile
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Truth on the Ground

The FCC Broadband Deployment Data identifies the following ISPs in Cherokee County with the corresponding broadband technology and speeds they are currently providing: BRMEMC, Frontier, and Peachtree Broadband.

According to this table, there are currently 2 technologies deployed in Cherokee 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 three ISPs (data collected in July 2024):

Provider	Internet Service	Price	Customer
BRM EMC	Fiber 50/50 Mbps	\$42.95/mo	Residential
BRM EMC	Fiber 75/75 Mbps	\$49.95/mo	Residential
BRM EMC	Fiber 100/100 Mbps	\$59.95/mo	Residential
BRM EMC	Fiber 250/250 Mbps	\$75/mo	Residential
BRM EMC	Fiber 500/500 Mbps	\$99.95/mo	Residential
BRM EMC	Fiber 1G Mbps	\$124.95/mo	Residential
BRM EMC	Data 30/30 Mbps	\$42.95/mo (2 yr contract)	Commercial
BRM EMC	Data 40/40 Mbps	\$49.94/mo (2 yr contract) \$54.95 (1 yr contract)	Commercial
BRM EMC	Data 50/50 Mbps	\$59.95/mo (2 yr contract) \$64.95 (1 yr contract) \$69.95 (no contract)	Commercial
BRM EMC	Data 75/75 Mbps	\$75/mo (2 yr contract) \$80/mo (1 yr contract) \$85/mo (no contract)	Commercial
BRM EMC	Data 100/100 Mbps	\$99.95/mo (2 yr contract) \$104.95/mo (1 yr contract) \$109.95/mo (no contract)	Commercial
BRM EMC	Data Dedicated 5/5 Mbps	\$200/mo (any contract)	Commercial
BRM EMC	Data Dedicated 10/10 Mbps	\$375/mo (any contract)	Commercial

BRM EMC	Data Dedicated 20/20 Mbps	\$600/mo (any contract)	Commercial
BRM EMC	Data Dedicated 50/50 Mbps	\$1000/mo (any contract)	Commercial
Frontier	Fiber 500/500 Mbps	\$59.99/mo	Residential
Frontier	Fiber 100/100 Mbps	\$64.99/mo	Residential
Frontier	Fiber 1G/1G Mbps	\$109.99/mo	Residential
Frontier	Fiber 5G/5G Mbps	\$139.99/mo	Residential
Frontier	Business Fiber 500/500 Mbps	\$84.99/mo	Commercial
Frontier	Business Fiber 1G/1G Mbps	\$109.99/mo	Commercial
Peachtree	50/50 Mbps	\$42.95/mo	Residential
Peachtree	100/100 Mbps	\$84.95/mo	Residential
Peachtree	500/500 Mbps	\$89.95/mo	Residential
Peachtree	1G fiber	\$94.95/mo	Residential

All providers offer broadband speeds equal to or higher than 100 Mbps download and equal to or higher than 20 Mbps upload in Cherokee County.

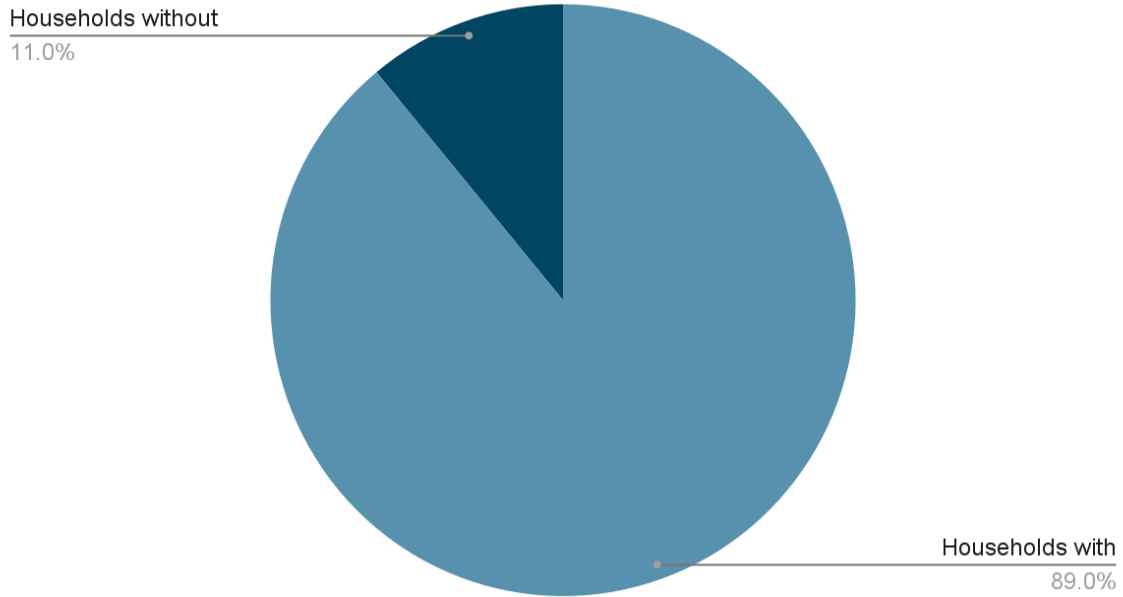
Internet Affordability

Cherokee County also collected broadband usage data from the NC DIT's Broadband Availability Index specific to the community, which illustrates the overall profile of internet affordability and adoption percentages:

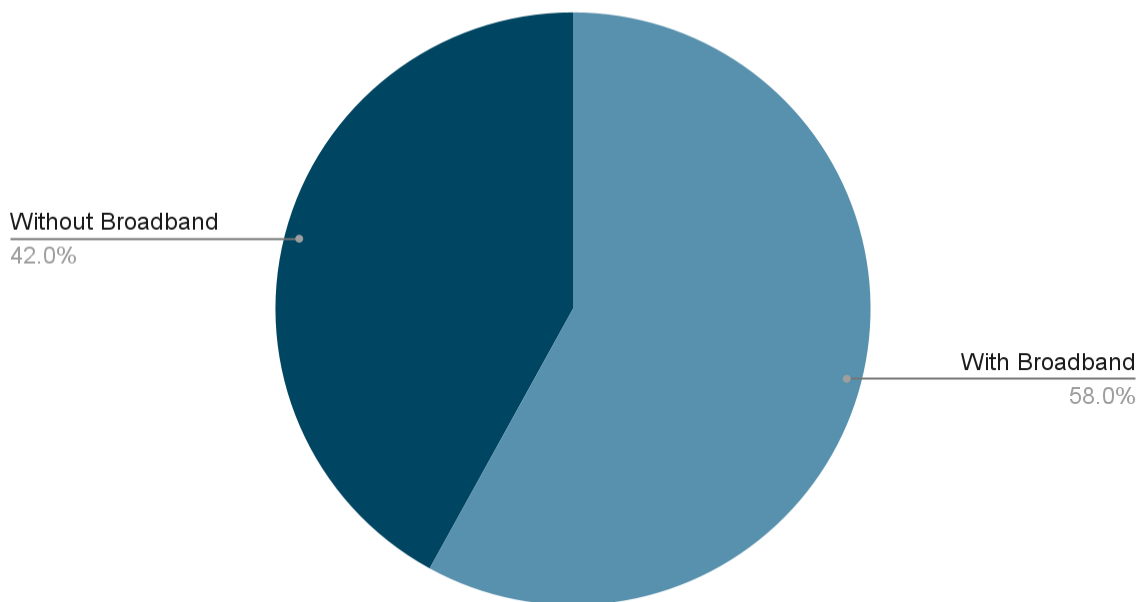
Internet/Usage Statistic	Number/Percentage per Household
Number of Total Households	12,758
Percentage of Households with Broadband of Any Kind	58%
Percentage of Households with DSL	40%
Percentage of Households with Cable	40%
Percentage of Households with Fiber	45.81%
Percentage of Households with Fixed Cellular	68.3
Percentage of Households with Satellite	15.7%
Percentage of Households with Mobile (Cellular) Internet Only	9.2%
Percentage of Households without a Device	11%
Percentage of Households with One or More Devices	89%
Percentage of Households with a Desktop or Laptop Computer	73.7%

Percentage of Households with a Smartphone	80.7%
Percentage of Households with Only a Smartphone	11.6%
Percentage of Households with a Tablet	50.6%
Percentage of Households with Only a Tablet	1.7%

Device Access



Broadband Adoption Rates



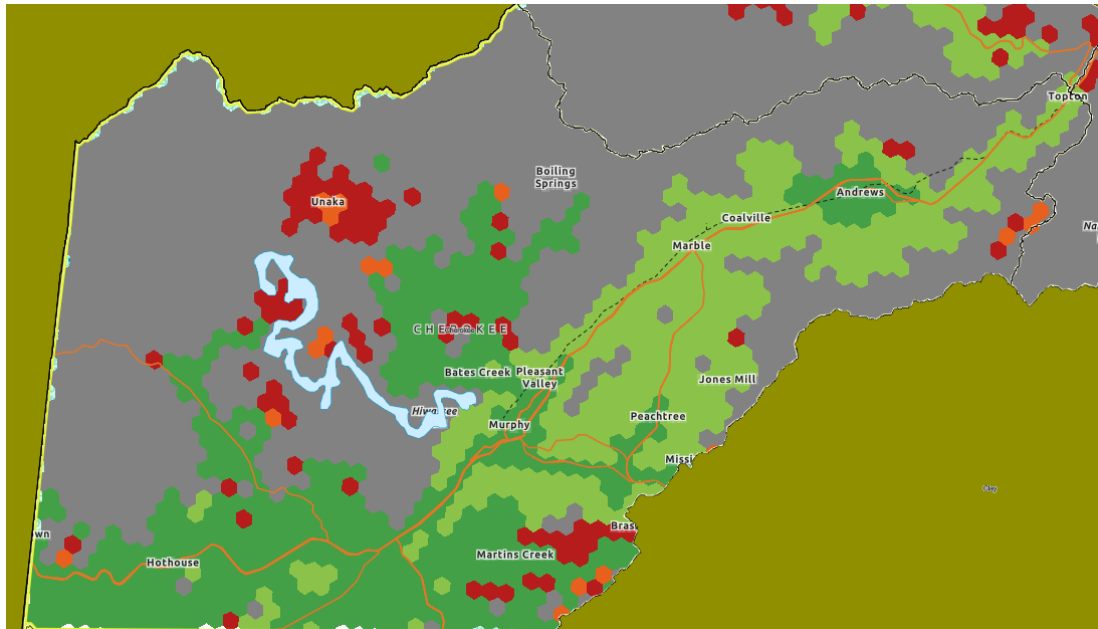
Observations

Based on the internet usage and median household income information of Cherokee County, the following observations can be made:

- Device access is surprisingly high in Cherokee County with only 11% of households lacking any type of device. The focus in Cherokee needs to be broadband adoption, as there are still 20% of households with no type of fixed internet subscription whatsoever and over 40% of households lack broadband-level access.

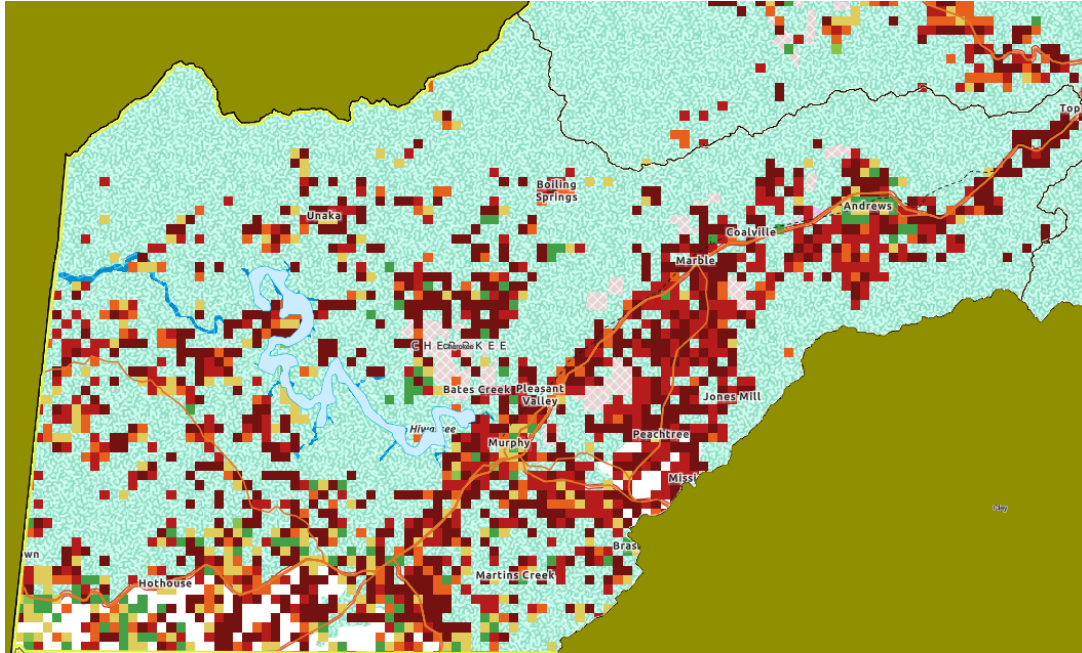
Statement of Connectivity Need

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



The map above depicts data the Internet Service Providers have reported to the FCC; the green shows what has been claimed to be served with 100/20 mpbs. In contrast, the picture on the following page shows boots-on-the-ground speed test data submitted by actual subscribers of the service. This map shows how poorly this area is covered. The breakdown of download and upload speeds in the maps below allows us to better target and prioritize the census blocks in need of enhanced broadband.

- All red, lighter red, and orange are considered unserved.
- The yellow is considered underserved.
- The green is considered served.
- For all data points, we can see that this data needs to be challenged.



Fiber is widely accepted to be the fastest, most robust, most reliable, longest-lasting, and most secure broadband technology, and it is capable of providing high symmetrical download and upload speeds. The above maps show the discrepancy between ISP data reported to the FCC and speed test data provided by actual residents. The speed tests show that many areas of Cherokee County still go unserved with proper download and upload speeds (indicated in red in the image above). We recommend that these areas in red on both maps are particularly targeted for future intervention and broadband expansion efforts in Cherokee county.



SECTION 2

Digital Equity

2. Digital Equity

A. Vision for Digital Equity

Cherokee County has developed a vision for achieving Digital Equity through increased broadband access, device access, and quality technical support as shown below:

Problem Statement	Many individuals in Cherokee County, NC are in need of better internet connectivity. These include students who need internet access for schoolwork, individuals working from home who require internet access to perform their job duties, and the aging population who can utilize online services if they are homebound. In addition, the general population requires better internet access to upskill the labor force and prepare skills for the future, remote working, telemedicine and online services, improve communication capacity, gain efficiencies and reduce telecommunication, and provide better jobs and higher standards of living With grant funding through NCDIT, we are looking to solve this gap.
Vision Statement	We envision a future where all individuals in Cherokee County have access to high-speed internet and the digital tools, resources, and skills to fully and equitably participate in our society, democracy and economy.
Mission Statement	Cherokee County will partner and collaborate with communities to strive for all residents to have access to affordable and reliable high-speed internet and online resources.
Values	The core value of Cherokee County, NC is an equitable and prosperous future for all. Cherokee County prioritizes a high quality of life and abundant opportunities for all residents who wish to live and work here.

Broadband Infrastructure Relationship

Cherokee County currently has a mix of broadband infrastructure relationship types. Some ISPs follow a cooperative model while some follow a public-private ownership model. Cherokee County does not have municipal broadband or public ownership models.

See table below for common broadband infrastructure relationship types

Desired Relationship with Broadband Infrastructure	
Public Ownership: <i>The community relies on private ISPs to provide broadband services. This option offers convenience but may result in limited competition, varying service quality, and higher costs.</i>	Municipal Broadband: <i>The community owns and operates its broadband network through a local government entity. This option provides direct community control and can prioritize affordability and service quality. It may require public investments and partnerships.</i>
Cooperative: <i>Community members collectively own and manage the broadband infrastructure, sharing the benefits and responsibilities. This option promotes local decision-making and community engagement.</i>	Public-Private Partnership: <i>The community partners with a private company to build and manage the network while maintaining certain control and regulatory oversight. This option combines public interest and private expertise.</i>

Alignment with Existing Goals

Cherokee County's Digital Equity vision, mission, and values are aligned with the following goals:

- All Cherokee County citizens have access to high-speed internet and to affordable, low-cost internet services.
- Promote practices that support online accessibility and inclusivity of public resources and services.
- Ensure that Cherokee County citizens can acquire the digital skills and understanding to meet their personal needs and the workforce needs of the state.
- Promote practices and leverage tools to ensure online privacy and security.
- Ensure that Cherokee County citizens have access to digital devices to meet their needs.

Cherokee County's goals are also aligned with the State of North Carolina's Digital Equity priorities and goals in the following ways:

1. Focused on meeting the needs of covered populations as defined by the NTIA
2. All citizens have broadband access and digital tools to connect them to healthcare, education, workforce, and social opportunities.

Planning Process Summary

Cherokee County's development of its Digital Equity vision, mission, goals, and values involved participation from the following stakeholders:

- The Southwestern Commission
- Local ISPs
- Residents of Cherokee County

- Mountain West Partnership
- Cherokee County Public Schools
- FourSquare Community Action Team

Cherokee County coordinated with the Southwestern Commission and the respective stakeholders to identify and create the digital equity planning components and will be responsible for implementing the respective strategies to achieve its vision.

B. Community Digital Equity Asset Mapping

As part of Cherokee County's Digital Equity planning process, a Digital Equity Asset Mapping tool was developed, consisting of the following:

- Digital Equity organizations
 - Nonprofit device refurbishers
 - Digital inclusion coalitions
 - Community technology centers
- Organizations running digital inclusion programs
 - Public libraries
 - Senior and community centers
- Organizations serving covered populations
 - Public housing authorities
 - Returning citizen programs
 - University agricultural extension programs
- 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

Asset Mapping Tool Development, Data Collection, and Dissemination

To develop the Digital Equity Asset Mapping tool, Cherokee County followed the steps below:

1. Identified all current digital equity partners
2. Identified all potential digital equity partners
3. Identified community anchor institutions

Throughout the Digital Equity planning process, Cherokee County leveraged partnerships with the Southwestern Commission to assist with gathering asset data and promoting awareness of the Digital Equity Community Survey and Asset Mapping inventory to develop the tool. The

partners contributed significantly by identifying digital equity barriers for priority populations, assisting with community engagement convenings, and actively participating in the plan implementation phase.

Cherokee County developed a comprehensive strategy for disseminating the Asset Mapping tool data within the community. Methods to disseminate the tool utilized by Cherokee County, include:

- This Connectivity Plan
- Posting the asset mapping tool on the county website

A copy of Cherokee County's Digital Equity Asset Inventory is available in the Appendix of the Connectivity Plan.

C. Meaningful Community Engagement

Identify Priority Populations

Based on the demographic and internet usage of Cherokee County, the following groups have been identified as priority populations most at risk for being impacted by the digital divide:

- Aging population
- Students
- Population participating in the workforce

Thirty percent of Cherokee County's population is over the age of 65. Cherokee County has strong primary school educational attainment with 89% of residents graduating high school. Still, the county sees a steep drop in higher education with only 29.1% of the population having a bachelor's degree or higher. The economy in Cherokee County is based on health care, retail trade, and manufacturing, making it a service-based economy. Because of these statistics, the county has identified the aforementioned populations as a priority. Increasing the digital access and literacy of aging individuals, students, and those participating in the workforce would improve telehealth resources, support primary and higher education rates, and create economic opportunities. Digital skills gaps can hinder economic growth but the closing of the digital divide can lead to increased job prospects, higher earning potential, and access to new industries as well as remote work opportunities and economic mobility.

The aging population is the only of the three priority populations that is a covered population identified by NTIA for the IIJA grant programs.

Stakeholder Engagement and Collaboration

As part of an inclusive Digital Equity planning process, the Cherokee County understands that it must work collaboratively with additional stakeholders, including Community Anchor Institutions to ensure that identified priority populations in the community are engaged throughout the process, especially during the planning and implementation phases, to ensure that equitable internet for all is achieved.

Priority Population	Stakeholder Name	Role(s)	Data Collected
Residents, Businesses, Workforce	Southwestern Commission	Conducted a survey for residents using speed test data and on-the-ground truthing	Collected data on types of service, service cost, device access, and internet access dependency

Through a diverse and collaborative approach, Cherokee 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 include:

- The data gathered using the BAAT assessment shows the major discrepancies between provider reported speeds and actual speeds reported from resident speed tests. This data can be used to aid in the FCC challenge process.
- 13% of survey respondents noted that they did not have internet service at home. This data can be used to help identify unconnected households.
- 10% of respondents said they did not have service in the home because of unavailability while 6% noted that it was because it was unaffordable. This data helps us decide whether to prioritize access or affordability.
- 35% of respondents noted that they do not know what speed they are paying for. This data can be used to create meaningful digital literacy outreach.

Create an Outreach and Engagement Plan

Cherokee County understands that it must utilize a variety of outreach strategies and methods to facilitate participation and engagement from the community's Digital Equity planning and priority population stakeholders. Cherokee County 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.

As a result of the Cherokee County's Digital Equity planning process, the following Outreach and Engagement Plan was developed. Cherokee County has begun the preliminary stages of this plan and is planning for future efforts, in partnership with the Southwestern Commission. Through Digital Inclusion Program funding, the Commission has completed the initial digital inclusion planning process. As part of the creation of this Connectivity Plan, Cherokee County completed the stakeholder mapping process. These two activities included distributing community surveys, gathering meaningful digital equity data, and taking inventory of the county's assets. In the coming year, Cherokee County plans to leverage Digital Champion funding awarded to the commission to implement digital skills training and device distribution on a local and regional level. In addition, Cherokee County anticipates funding through state

programs like Connecting Access to Broadband (CAB) and BEAD in order to further develop broadband infrastructure in the county.

Component	Description	Key Activities	Timeline	Responsible Party	Status
Digital Inclusion Planning	Assess the digital equity needs of the target communities.	Conduct surveys and focus groups to gather data on digital access and literacy.	2023	Southwestern Commission	Completed
Stakeholder Mapping	Identify key stakeholders and partners for collaboration.	Identify local nonprofits, government agencies, and businesses interested in digital equity.	Q1 2024	Cherokee County	Completed
Community Engagement	Engage with underserved communities to understand their specific challenges and needs.	Host community meetings and workshops to gather input.	Q1 2024	Cherokee County	Completed
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.	Q2 2024 - Q1 2025	SWC Regional Coordinator	Ongoing
Device Distribution	Ensure access to affordable devices for underserved populations.	Establish partnerships with device manufacturers; Organize device distribution events.	Q2 2024 - Q1 2025	SWC Regional Coordinator	Ongoing
Broadband Expansion	Work on improving internet access in underserved areas.	Using grant funds, partner with ISPs to extend coverage; Set up public Wi-Fi hotspots.	2025-2027	Community and Economic Development Team	Planned

Conduct Community Survey

Cherokee County has developed two Community Surveys to seek feedback from identified stakeholders and priority populations to capture needs, unique challenges, and recommended engagement strategies to increase broadband access and adoption. One was sent to residential entities, and one to commercial.

These surveys were distributed on and offline. Please see appendix for a copy of the Commercial Survey and Residential Survey.

To conduct the Community Survey , Cherokee County utilized website, social media, paper copies and CAIs between October 2017 and January 2018. Collectively, the Survey reached 5,000 respondents/participants, which is considered high compared to other surveys conducted in the community.

In general, the Digital Equity Community Survey responses indicated the following themes and trends:

- One of the greatest concerns raised by this survey was that 73% of people said that the internet they pay for does not meet their needs. This shows a critical issue regarding reliability of services.
- There was an overwhelming number of responses that said they would access telehealth, online job resources, and online educational resources if service was available and reliable. This shows a need for connection across Cherokee County in order to create accessible opportunities.
- Over 50% of responses said that internet access was either critical or very important for their ability to earn a living. This shows that broadband connectivity and digital tools are not an option, but a necessity.

It is relevant to note that reconnecting with these participants in a post-pandemic world provide a better understanding of current issues within the communities and how they have been affected.

Carry Out Community Engagement Activities

In addition to the Digital Equity Community Survey, Cherokee County engaged the local community to obtain feedback and encourage participation in the digital equity plan development process. This included:

- Surveys
- Training Sessions

Three engagement activities were conducted in the community across several years.

Community Engagement Activities	Description	Objective/Outcome	Date/Time	Lead/ Coordinator
Regional Broadband Training	Provided uniform background on broadband and broadband activities.	Inform local govt. and partners on current broadband affairs	Nov. 28th & 29th, 2017	Southwestern Commission
WNC Broadband Leadership Summit	Convene key stakeholders	Update on NC policies, technologies, funders, and providers	2021	Southwestern Commission
WNC Broadband Summit	Convene key stakeholders	Update on grant opportunities and utilization of funds	2022	Southwestern Commission

Through the community engagement process, Cherokee County noted that there is no lack of enthusiasm from residents, governments, and private partners for broadband expansion and digital equity, and instead there is a lack of planning space and resources. This process identified funding and capacity-related barriers that stand in the way of a more equitable digital landscape.

D. Understanding Barriers to Digital Equity

Cherokee County's Digital Equity planning process has contributed to its understanding of unique barriers to achieving digital equity across a wide range of covered populations. The table below summarizes the respective unique barriers for each of the covered populations present in the community:

Covered Population	Description
Individuals who live in covered households	This covers a variety of different and unique challenges that Cherokee County must identify on an individual basis.
Aging individuals	The aging population in Cherokee County is over 30%. Aging residents face health-related issues due to a lack of health resources or transportation methods, which telehealth could help aid.
Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility	This population faces its biggest struggles with limited device access, which limits the availability of information.
Veterans	Many programs for veterans are available, but it is not easy to reach them and utilize them.
Individuals with disabilities	Cherokee County must have a user-interface that adheres to the needs of individuals with disabilities in order to make sure that this population can properly receive information and services.
Individuals with a language barrier	Cherokee County does not have many members of the local government who speak languages other than English, so this would pose an issue with translating proper digital resource materials.
Individuals who are English learners	Cherokee County does not have many members of the local government who speak languages other than

	English, so this would pose an issue with translating proper digital resource materials.
Those with low levels of literacy	Digital education must be restructured to fit the needs of citizens with low literacy levels so they can understand the materials and learn.
Individuals who are members of a racial or ethnic minority group	Cherokee County has low rates of racial or ethnic minority populations, and it can be difficult to reach these populations due to lack of previous communication and outreach.
Individuals who primarily reside in a rural area	Reaching rural residents poses a unique challenge due to the western region's rugged landscape.

Existing Programs

Based on the unique barriers to achieving Digital Equity identified in the previous section, Cherokee County identified the following existing programs that address the respective needs/barriers of the applicable covered populations:

Covered Population	Lead Organization of Existing Program	Existing Program Name	Needs/Barriers Addressed	Funding / Sustainability
Students	Cherokee County Schools	Digital Teaching and Learning for Families	This program gives students 3-12 access to take-home devices as well as access to IT support from home.	Cherokee County Schools
People who live in covered households	Library	1-1 tutoring	This program allows residents to come in and get 1-1 IT support and digital tutoring during library hours.	Library System

E. Implementation Strategies for New Programs/Resources

In addition to the existing programs detailed above, Cherokee County 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 / Resource Need	Needs/Barriers Addressed
Individuals who live in covered households	Device access program including device donation, refurbishment, and repair program. Increase public device access areas.	A program like this would allow all individuals who cannot afford to buy a device the chance to access the digital world.
Individuals who live in covered households	Device literacy program that addresses individuals needs and reaches them through CAIs and in their individual households.	A program addressing device literacy with these specific outreach tactics would allow the county to reach a wider range of individuals like those who are aging, have disabilities, or live in a rural area.
Individuals who primarily reside in a rural area		
Individuals with disabilities		
Aging Individuals		

Implementation Strategies and DEA Measurable Objectives

Cherokee County's Digital Equity Plan includes implementation strategies to address the following needs for each of the covered populations in the community:

- **Broadband Access Expansion:**
Objective - Increase the availability of affordable high-speed internet access.
 - Access to and affordability of high-speed internet. Access to high-speed internet for a home is defined as 100/20 Mbps (100 Megabits per second download/20 Mbps upload).
- **Digital Literacy Programs:**
Objective - Improve digital literacy and technology skills among underserved populations.
 - Digital literacy. Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills (American Library Association)
- **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.

- Accessibility and inclusivity of online public resources. Web accessibility and inclusivity means that websites, tools, and technologies are designed and developed so that people with disabilities and people who speak languages other than English (also called language access) can use them.
- **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.
 - Cybersecurity and privacy. Ensuring that people know how to keep their data safe and secure online is key to protecting people online and making sure individuals feel safe connecting to the internet and using a device.
- **Availability and Affordability of Consumer Devices:**
Objective - Ensure access to affordable devices and software.
 - Availability and affordability of devices and technical support. Fully participating in a digital society requires access to reliable devices that meet the needs of users as well as repair and technical assistance services to address issues with those devices.
 - Through future grant funding, Cherokee county can partner with device refurbishers to purchase devices in bulk to distribute to the previously mentioned CAI's for public use.
- **Community Technology Hubs:**
Objective - Establish community centers equipped with technology resources.
 - The best avenue for establishing community centers equipped with technology resources is by partnering with schools, libraries, and the county's aging department.
- **Public-Private Partnerships:**
Objective - Foster collaboration between government, businesses, and nonprofits.
 - This can be accomplished through networking at broadband related events hosted by the Southwestern Commission, the NC Rural Center, Dogwood, and other regional partners.
- **Digital Inclusion Policies:**
Objective - Implement policies that promote digital equity.
 - Digital inclusion policies can be implemented through the creation of plans in Cherokee County that focus on device access and skills training. The county can leverage partnerships with CAI's to help implement these programs.

F. Funding Sources for Implementation Strategies

Cherokee County has estimated the following costs and potential funding sources, based on the unique needs identified in Cherokee County's Digital Equity Plan, needed to support existing programs and the implementation of new digital inclusion strategies:

Funding Need	Funding Required	Potential Funding Source(s)
New infrastructure	\$10 Million	BEAD CAB Stop Gap Program
Replacement/update of existing infrastructure	\$4 Million	Pole Replacement Program
Digital Opportunity programs (device access and digital skills training)	\$100,000	Dogwood Digital Opportunities grant, Dogwood Health Trust Implementation grant, NCDIT Digital Champions Grant
TOTAL	\$14.1 Million	

Cherokee County intends for ISPs to utilize the potential funding sources detailed above, in addition to the Digital Equity Act grant programs, to address the digital inclusion needs of the community. Cherokee County is not interested in becoming a service provider and no match will be provided by the county at this time. Cherokee County is not interested in owning and/or leasing vertical infrastructure.

Responsible Party for Implementation Strategies

The table below reflects the owner/responsible party for each of the Cherokee County's digital inclusion strategies:

Need	Implementation Strategy	Owner/Responsible Party
Availability and Affordability	Increase broadband infrastructure across the county so every household and business has the option to connect.	Cherokee County Economic Development
	Work to use grant funds to increase infrastructure to minimize build out costs for individual customers.	Local ISPs
Accessibility and Inclusivity of Public	Increase public programs for things like device access, IT support, digital literacy	Cherokee County Economic Development

Resources and Services	skills, and other issues that arise as the digital landscape changes.	
	Partner with local CAI's to provide these services and programs at different accessible locations across the county, ensuring all residents have the option to utilize the services.	Cherokee County Economic Development, local libraries, public schools, community centers, churches, etc.
Awareness and Use of Cybersecurity and Online Privacy Tools	Create safe internet practice guidelines for all levels of digital literacy and device usage and make these guidelines available through online publication and in-person training.	Cherokee County Economic Development, CAI's
Availability and Affordability of Consumer Devices	Provide devices and hotspots for public day-use.	Cherokee County Economic Development, libraries, community centers
	Work with device refurbishers to purchase low-cost devices in bulk.	Cherokee County Economic Development, local device refurbishers
	Leverage device access through the public school system for students.	Cherokee County Economic Development, public school system
Technical Support for Devices Available to Covered Populations	Develop device training programs and one-stop IT help shops.	Cherokee County Economic Development
	Make these programs accessible at CAI's, online, and occasional in-home support.	Cherokee County Economic Development, CAI's, Regional Digital Navigator

Timeframes for Implementation Strategies

To fund, develop, and implement the respective digital inclusion strategies detailed above, Cherokee County anticipates that it can achieve the following milestones and timeframes over the next five years:

Quarter / Year	Description of Digital Equity Milestone(s) Completed	Stage
Q1 Y1	Identify funding needs and future funding sources.	Ongoing

Q2 Y1	Submit proposals for grant funding in all areas of broadband including infrastructure, device access, device training, and plan affordability.	Ongoing
Q3 Y1	Secure grant funding and begin writing grant agreements and contracting with ISPs, digital navigators, device refurbishers, and other digital partners	Ongoing
Q4 Y1	Begin to implement and advertise broadband availability and digital equity programs	Ongoing
Q1 Y2	Broadband infrastructure reaches 10% of unserved areas.	Planned
Q2 Y2	Digital equity programs reach 25% of residents without devices/literacy	Planned
Q3 Y2	Broadband infrastructure reaches 30% of unserved areas.	Planned
Q4 Y2	Digital equity programs reach 60% of residents without devices/literacy	Planned
Q1 Y3	Reassess which areas are still unserved and which population groups still need access.	Planned
Q2 Y3	Source new funding opportunities and submit applications for more grant funding	Planned
Q3 Y3	Begin new grant cycles and contracts	Planned
Q4 Y3	Broadband infrastructure reaches 60% of unserved areas.	Planned
Q1 Y4	Digital equity programs reach 90% of residents without devices/literacy	Planned
Q2 Y4	Broadband infrastructure build out will be completed in unserved areas. All residents who wish to access affordable internet and devices / digital skills can.	Planned

G. State-Aligned Digital Equity Evaluation Plan

Cherokee County understands the importance of aligning its Digital Equity Plan with the State of North Carolina Digital Equity or Opportunity Plan to:

- Track progress towards achieving Digital Equity:
 - Cherokee County has the capability to monitor and measure advancements in achieving digital equity and a process in place to assess and document progress toward achieving Plan goals.

- Demonstrate how progress furthers State priorities:
 - Cherokee County's Digital Equity Plan will align with and contribute to the broader priorities, objectives, and goals of the State to advance digital equity.

During the implementation phase of the Digital Equity Plan, Cherokee County will measure impact and progress toward addressing the unique challenges and barriers to affordability, access, and adoption faced by priority populations.

The table below reflects the impact and progress toward addressing the respective barriers and will continue to be expanded throughout the Plan's implementation:

Outcomes	Impact	Progress
Economic and Workforce Development	Reach residents with new work opportunities and skills training through partnerships with local industry leaders and post-secondary education institutes.	On going
Education Outcomes	Help students access devices and advance digital skills for educational opportunities at the primary and secondary school levels.	On-going
Health Outcomes	Provide device and internet access as well as more digital health opportunities for more rural/aging residents who cannot access in-person health care.	Not Started
Civic and Social Engagement	Create a landing page that showcases programs and services, making it easier for residents to stay in-the-know.	Not Started



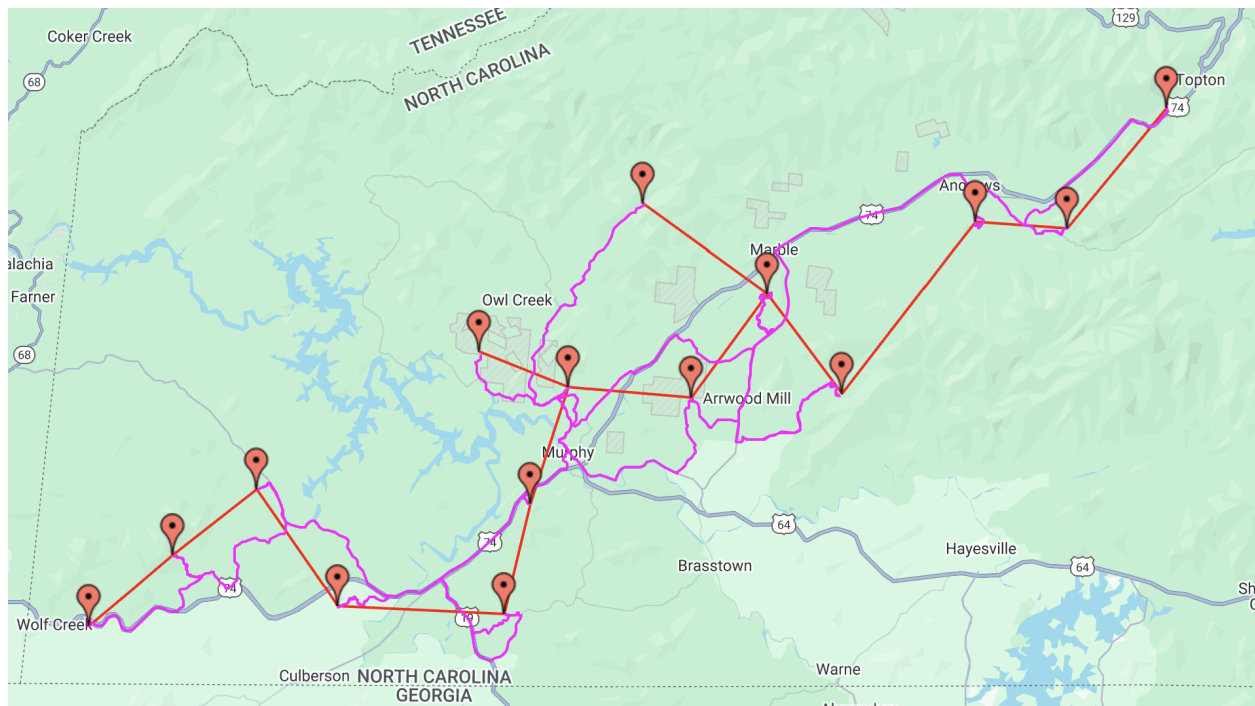
SECTION 3

Broadband Infrastructure

Section 3. Broadband Infrastructure

A. Service Area GIS

The Project Team coordinated with the Southwestern Commission and stakeholders with Cherokee County, NC to collect Geographic Information System (GIS) data to create a last-mile broadband network connecting residents and businesses. The below fiber backbone route was planned and completed by Breaking Point as an example to some of the data used to incorporate the following overview and recommendations.



B. Network Architecture and Deployment

The Appalachian Digital Accelerator provided the resources needed to conduct an in-depth analysis of the current state of broadband infrastructure throughout the County, which led to a better understanding of which areas of the community are unserved or underserved. This critical information provides the tools needed to prioritize areas that still require internet connectivity. After this analysis, the county can pursue funding through state grant programs, such as Connecting Access to Broadband (CAB) through the NC Department of Information Technology (NCDIT).

The Accelerator provided technical assistance from two firms, Breaking Point and Reid Consulting, which gave information on existing service as well as a breakdown of potential costs for building out additional infrastructure to serve unserved and underserved communities.

As a result of this technical assistance, the county is prepared to work alongside NCDIT to participate in grant programs, such as CAB. We anticipate that network deployment will be completed in phases that correspond to any budgetary restraints and considerations. This would be completed by ISPs and not by the county itself, as it is not interested in becoming a service provider. Cherokee County will work alongside NCDIT to provide adequate supporting documentation as required.

Building a Fiber to the Home ('FTTH') Network is a complicated process with many layers to complete. The life cycle of a project, at a high level, includes the following phases:

- **Feasibility Study/Community Assessment/Broadband Plan - Current Status**
- **Engineering and Fundraising**
- **Construction in Right of Way ('ROW')**
- **Marketing/Education/Sign Up Customers**
- **Drop Placement and Installation**
- **Operations and Customer Service**

The **Feasibility Study/Community Assessment/Broadband Plan** phase sets the stage for the county to tell the story of their current level of connectivity and where they would like to go in the future. This can be used by Internet Service Providers to develop proposals for funding opportunities. **Engineering and Fundraising** allows an ISP to develop a shovel-ready plan that can be used to raise funds for construction. Once the engineering is complete and funds secured, the **Construction** phase allows the county to partner with a state or federal funder and an ISP (Public Private Partnership) to build out the infrastructure that was designed in the previous phase.

Marketing/Education/Sign Up Customers is a critical phase for partnerships, as the county can be a key partner in sharing information with the public about where service is coming online during the construction phase and once it is available, assisting the ISP with their take-rate levels and return-on-investment. The take rate is estimated at this stage and ranges typically from 30% to 50% when looking at deployments. The higher the take-rate, the higher the ISP's return-on-investment will be. A key role for the county will be working with any partnering ISP to market and educate the public on availability of service and construction timelines.

As customers sign up for service, ISPs are able to conduct the **drop placement and installation** phase, providing new service to households. **Operations and Customer Service** are critical to ensuring the success and longevity of the service in the community.

Proposed Model and Next Steps:

The preferred route for internet expansion in Cherokee County is **ISP and WISP Fully Owned and Operated** by a third party. This model includes a local ISP or WISP owning all infrastructure and electronics while providing full services to the end user. The county can be a key partner in efforts to market the service within the community, which not only has the potential to increase the provider's take-rate and return-on-investment, but it also provides opportunities for residents

to access critical services through access to the internet. The county can also support local efforts to increase residents' digital opportunities through programs that offer digital skills training, access to devices, and more. By providing the community with the tools they need to access the internet, the county will increase demand for internet access to homes and businesses.

After completing the online analysis, financial projections to rollout a complete fiber network and meeting with all project stakeholders it would likely be beneficial for Cherokee County to continue to participate in grant programs or encourage local Internet Service Providers to participate in grant programs for broadband expansion. Because Cherokee County is not interested in becoming an internet service provider, the county will be pursuing opportunities to partner with NCDIT to identify grant funding that can be used to leverage opportunities for private ISPs to build out the critical infrastructure needed to connect all households, businesses, and community anchor points.



SECTION 4

Financial Plan

Section 4. Financial Plan

A. Capital Cost Estimates

Based on the completion of the Breaking Point study and feedback from Cherokee, the below financial model was created that services possible BEAD eligible areas and a model that includes building out a full network that services all residents that don't have access to fiber. These are based on early assumptions and next step recommendations would be to pursue engineering with the partner selected to improve accuracy.

BEAD Eligible Location Financial Assumptions

Opportunity	Cherokee County, NC
Abbreviation	Cherokee
Total Households	10,963
Total Businesses	50
Median Household Income	\$49,254
Estimated Mileage to Build	425
Aerial %	65%
Underground %	35%
Aerial Mileage	276.25
Underground Mileage	148.75
Engineering Per Foot	\$1.50
Underground Cost Per Mile Labor	\$115,000
Underground Cost Per Mile Materials	\$26,950
Aerial Cost Per Mile Labor	\$24,870
Aerial Cost Per Mile Materials	\$18,750
Make Ready Per Mile	\$25,450
Months to Complete ROW	36
Estimated Take Rate	50%
Months to Take Rate	48
Drop and Splicing Cost	\$800.00
Installation Cost	\$200.00
Estimated Engineering Start Date	11/1/2024
Estimated Make Ready Start Date	1/1/2025
Estimated Construction Start Date	3/1/2025
Time to First Customer	6/1/2025
Homes Per Mile	26
Home Passed Per Month	305
ARPU	\$65.00
Total Homes Receiving Service	5482
Greenfield growth post take rate	1%
Churn	1%

B. Revenue and Operations Financial Model

The financial snapshots below are from Cherokee's models which were created using the design metrics from this Connectivity Plan and Breaking Point's study, along with historical unit pricing from past experience and industry standards. The BEAD Eligible Locations financial model was created using conservative estimates in order to successfully show Cherokee what a network might cost to build and the possible revenue streams which would accompany them.

BEAD Eligible Locations Financial Model

This is the Annual Balance Sheet if the network was delivered by a single ISP to only BEAD qualifying areas over a 10 year period.

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Capital Expense FTE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Capital Expense Office and Development	\$ 3,000	\$ 158,263	\$ 179,165	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 1,690,141
Capital Expense Construction in ROW	\$ -	\$ 9,276,031	\$ 11,131,237	\$ 2,709,906	\$ 1,025,640	\$ 1,025,640	\$ 1,025,640	\$ 1,025,640	\$ 1,025,640	\$ 1,025,640	\$ 29,271,015
Success Based Capex(1)	\$ -	\$ 466,288	\$ 1,243,433	\$ 1,243,433	\$ 785,546	\$ 22,494	\$ 22,629	\$ 22,765	\$ 22,902	\$ 23,040	\$ 3,852,532
CapEx	\$ 3,000	\$ 9,900,582	\$ 12,553,836	\$ 4,146,156	\$ 2,004,003	\$ 1,240,950	\$ 1,241,086	\$ 1,241,222	\$ 1,241,359	\$ 1,241,496	\$ 34,813,688
Cumulative Total CapEx	\$ 3,000	\$ 9,903,582	\$ 22,457,417	\$ 26,603,573	\$ 28,607,576	\$ 29,848,526	\$ 31,089,611	\$ 32,330,833	\$ 33,572,192	\$ 34,813,688	\$ 34,813,688
Annual Income Statement	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Subscription Revenue	\$ -	\$ 72,164	\$ 663,905	\$ 1,356,675	\$ 1,978,581	\$ 2,090,295	\$ 2,102,871	\$ 2,115,523	\$ 2,128,251	\$ 2,141,056	\$ 14,649,320
Cost of Goods	\$ 4,835	\$ 45,602	\$ 58,395	\$ 59,284	\$ 93,094	\$ 90,609	\$ 132,822	\$ 140,993	\$ 186,721	\$ 232,033	\$ 1,044,389
Gross Margin	\$ (4,835)	\$ 26,562	\$ 605,510	\$ 1,297,390	\$ 1,885,486	\$ 1,999,686	\$ 1,970,049	\$ 1,974,530	\$ 1,941,530	\$ 1,909,023	\$ 13,604,931
GM%	n/a	37%	91%	96%	95%	96%	94%	93%	91%	89%	93%
Selling	\$ -	\$ 195,017	\$ 362,042	\$ 372,042	\$ 259,524	\$ 150,000	\$ 130,000	\$ 150,000	\$ 140,000	\$ 140,000	\$ 1,898,625
General	\$ -	\$ 2,500	\$ 2,500	\$ -	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ 2,500	\$ 2,500	\$ 20,000
EBITDA	\$ (4,835)	\$ (170,956)	\$ 240,968	\$ 925,349	\$ 1,620,962	\$ 1,849,686	\$ 1,835,049	\$ 1,824,530	\$ 1,799,030	\$ 1,766,523	\$ 11,686,306
EBITDA %	n/a	-237%	36%	68%	82%	88%	87%	86%	85%	83%	80%
Depreciation	\$ 6	\$ 181,093	\$ 782,758	\$ 1,252,976	\$ 1,383,205	\$ 1,458,817	\$ 1,520,867	\$ 1,582,925	\$ 1,644,989	\$ 1,707,060	\$ 11,514,695
Profit / (Loss)	\$ (4,841)	\$ (352,049)	\$ (541,790)	\$ (327,627)	\$ 237,757	\$ 390,869	\$ 314,182	\$ 241,605	\$ 154,041	\$ 59,463	\$ 171,611
Profit / (Loss) %	n/a	-488%	-82%	-24%	12%	19%	15%	11%	7%	3%	1%

ISP Investment and Return

Based on the assumptions shown above, an overall investment of ~\$26 million is needed and to achieve positive EBITDA (Earnings before interest, taxes and depreciation) beginning in Year 3, cashflow positive in Year 6, and fully returning principal investment needed and being cumulative cash flow positive in ~54 years based on limited growth and conservative expenses.

Full Network Build Out Financial Model

This is the Annual Balance Sheet if the network was operated by a single entity or ISP but multiple ISPs use the network to provide service to the end user. In this modeling, no businesses are shown receiving service as those are more difficult to predict based on this phase of the project.

The county or other digital advocates could participate at certain levels based on the P3 structure that was covered in Chapter 3 for the Business Plan. This participation would adjust some of the assumptions which would change the overall balance sheet.

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Capital Expense FTE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Capital Expense Office and Development	\$ 3,000	\$ 158,263	\$ 179,165	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 192,816	\$ 1,690,141
Capital Expense Construction in ROW	\$ -	\$ 9,212,539	\$ 11,055,047	\$ 11,055,047	\$ 1,842,523	\$ 18	\$ 18	\$ 18	\$ 18	\$ 18	\$ 33,165,247
Success Based Capex(1)	\$ -	\$ 822,258	\$ 2,192,688	\$ 2,192,688	\$ 1,385,244	\$ 39,666	\$ 39,905	\$ 40,145	\$ 40,387	\$ 40,629	\$ 6,793,610
CapEx	\$ 3,000	\$ 10,193,061	\$ 13,426,900	\$ 13,440,551	\$ 3,420,583	\$ 232,500	\$ 232,739	\$ 232,979	\$ 233,221	\$ 233,464	\$ 41,648,998
Cumulative Total CapEx	\$ 3,000	\$ 10,196,061	\$ 23,622,961	\$ 37,063,512	\$ 40,484,095	\$ 40,716,595	\$ 40,949,334	\$ 41,182,314	\$ 41,415,534	\$ 41,648,998	\$ 41,648,998
Annual Income Statement	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Total
Subscription Revenue	\$ -	\$ 111,347	\$ 1,024,396	\$ 2,093,332	\$ 3,052,925	\$ 3,225,299	\$ 3,244,704	\$ 3,264,226	\$ 3,283,865	\$ 3,303,622	\$ 22,603,716
Cost of Goods	\$ 10,480	\$ 104,063	\$ 135,362	\$ 136,102	\$ 218,748	\$ 210,151	\$ 312,659	\$ 329,253	\$ 438,709	\$ 545,821	\$ 2,441,347
Gross Margin	\$ (10,480)	\$ 7,285	\$ 889,035	\$ 1,957,229	\$ 2,834,177	\$ 3,015,148	\$ 2,932,045	\$ 2,934,973	\$ 2,845,156	\$ 2,757,802	\$ 20,162,369
GM%	n/a	7%	87%	93%	93%	93%	90%	90%	87%	83%	89%
Selling	\$ -	\$ 296,503	\$ 552,608	\$ 567,608	\$ 537,608	\$ 424,854	\$ 195,000	\$ 225,000	\$ 210,000	\$ 210,000	\$ 3,219,180
General	\$ -	\$ 108,750	\$ 146,250	\$ 150,000	\$ 142,500	\$ 150,000	\$ 142,500	\$ 150,000	\$ 146,250	\$ 146,250	\$ 1,282,500
EBITDA	\$ (10,480)	\$ (397,968)	\$ 190,177	\$ 1,239,622	\$ 2,154,070	\$ 2,440,294	\$ 2,594,545	\$ 2,559,973	\$ 2,488,906	\$ 2,401,552	\$ 15,660,689
EBITDA %	n/a	-357%	19%	59%	71%	76%	80%	78%	76%	73%	69%
Depreciation	\$ 6	\$ 182,540	\$ 817,389	\$ 1,489,161	\$ 1,982,472	\$ 2,029,532	\$ 2,041,162	\$ 2,052,805	\$ 2,064,459	\$ 2,076,126	\$ 14,735,652
Profit / (Loss)	\$ (10,486)	\$ (580,508)	\$ (627,212)	\$ (249,539)	\$ 171,597	\$ 410,762	\$ 553,382	\$ 507,168	\$ 424,446	\$ 325,426	\$ 925,036
Profit / (Loss) %	n/a	-521%	-61%	-12%	6%	13%	17%	16%	13%	10%	4%

Full Network Investment and Return

Based on the Assumptions shown above, an overall investment needed of ~\$37 million is projected and achieving positive EBITDA (Earnings before interest, taxes and depreciation) beginning in Year 3, cash flow positive in Year 6, and fully returning principal investment needed and being cumulative cash flow positive in ~22 years based on limited growth and conservative expenses. The county or stakeholders that chose to participate in the partnership with an ISP could receive revenue sharing, discounted services for anchor institutions or digital equity training and workforce development.

Conclusion

The Cherokee County Broadband Connectivity Plan represents a significant step toward bridging the digital divide and ensuring internet access for all residents. This plan aims to enhance infrastructure, digital literacy, and digital opportunities for broadband adoption to meet the diverse needs of all residents of Cherokee County, including students, remote workers, small businesses, and the aging population. With a commitment to fostering public-private partnerships and leveraging federal and state grants, Cherokee County is poised to build a robust broadband network that aligns with state and national digital equity goals. The outlined strategies not only aim to provide high-speed internet access to underserved and unserved areas but also address key barriers such as device affordability, cybersecurity, and digital literacy. By implementing this comprehensive approach, Cherokee County can create opportunities for economic growth, educational advancement, and improved quality of life for its residents.

To achieve these goals, the following key activities and funding priorities have been identified:

- **Infrastructure Development:** Deploying a fiber-to-the-home (FTTH) network to reach 100% of unserved areas, estimated at \$10 million through BEAD and state grant funding.
- **Digital Literacy Programs:** Establishing workshops and training programs to support underserved populations, requiring approximately \$100,000 in grants.
- **Device Distribution:** Partnering with refurbishers and manufacturers to provide low-cost devices for residents, with funding needs of \$100,000.
- **Public-Private Partnerships:** Collaborating with local ISPs and leveraging federal programs beyond BEAD (reconnect, CAB, etc.) to sustain long-term operations and ensure affordability.
- **Community Engagement:** Hosting outreach and digital inclusion events to promote awareness and participation.

Through these efforts, Cherokee County will build a digitally accessible community that supports lifelong learning, innovative economic opportunities, and a thriving digital ecosystem.



APPENDIX

Appendices

Appendix A: Digital Equity Asset Inventory

Asset Category	Description	Key Contacts / Responsible Parties
1. Infrastructure	Physical resources supporting digital access.	
Public Wi-Fi	Locations with public Wi-Fi access.	-Murphy Public Library -Andrews Public Library -Public School System -Cherokee County Rec Center -Ranger Community Center -Mcdonalds/other restaurant locations
Computer Labs	Community or organization-owned computer labs.	-Murphy Public Library -Andrews Public Library -Public School System
Device Loan Programs	Programs offering device loans to underserved individuals.	-Murphy Public Library -Andrews Public Library -Cherokee County Rec Center -Ranger Community Center
Digital Inclusion Centers	Centers providing digital literacy training and resources.	-Murphy Public Library -Andrews Public Library -Cherokee County Rec Center -Ranger Community Center -Public School System
2. Devices	Availability of computing devices.	
Desktop Computers	Number and availability of desktop computers.	-Murphy Public Library -Andrews Public Library -Public School System
Laptops	Number and availability of laptops.	-Murphy Public Library -Andrews Public Library -Public School System
Tablets	Number and availability of tablets.	-Murphy Public Library

		-Andrews Public Library -Public School System
3. Training & Support	Programs and resources for digital literacy training.	
Digital Literacy Workshops	Availability of workshops and training programs.	-Murphy Public Library -Andrews Public Library -Cherokee County Rec Center -Ranger Community Center -Public School System
Online Learning Platforms	Platforms for online courses and resources.	-Murphy Public Library -Andrews Public Library -Public School System
Technical Support	Availability of technical support for digital issues.	-Murphy Public Library -Andrews Public Library -Cherokee County Rec Center -Ranger Community Center -Public School System
Digital Instructors	Trained individuals or volunteers providing instruction.	-Murphy Public Library -Andrews Public Library -Cherokee County Rec Center -Ranger Community Center -Public School System
4. Community Partnerships	Collaborations with other organizations and entities.	
Educational Institutions	Partnerships with local schools, colleges, or universities.	-Public School System -Western Carolina University -Tri-County Community College -Haywood County Community College -Southwestern Community College
Public Libraries	Partnerships with local libraries for digital resources.	-Murphy Public Library -Andrews Public Library
Local Businesses	Partnerships with businesses providing digital access.	-Mcdonald's and other local restaurants

5. Funding & Grants	Financial resources and grant opportunities.	
Grants & Donations	Grants and donations supporting digital equity efforts.	-Dogwood -IEI -State and Federal Funding
6. Outreach & Awareness	Efforts to raise awareness about digital equity.	
Outreach Campaigns	Campaigns to inform the community about available resources.	-Cherokee County local government -Murphy Public Library -Andrews Public Library -Public School System
Marketing Materials	Brochures, flyers, or websites promoting digital equity.	-Cherokee County local government -Murphy Public Library -Andrews Public Library -Public School System
Community Events	Events to engage the community and raise awareness.	-Cherokee County local government -Murphy Public Library -Andrews Public Library -Public School System
7. Data & Assessment	Data collection and assessment mechanisms.	
Data Collection Tools	Tools for collecting data on digital equity efforts.	-Cherokee County local government -ARC -NC Rural Center
Impact Assessment	Evaluation methods for assessing the impact of initiatives.	-Cherokee County local government -ARC -NC Rural Center

Appendix B: Summary of Community Survey Responses Template

Digital Equity and Inclusion Community Survey Summary

Survey Period: October 2017 - January 2018

Total Responses: 1,235

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 91% of respondents reported having access to personal computing devices (laptops, desktops, tablets, or smartphones).

Internet Connectivity:

- *Broadband Access:* 87% of respondents indicated that they have access to reliable broadband internet connections.
- *Internet Reliability:* 68% of respondents reported experiencing frequent internet connectivity issues, affecting their online activities and work.

Digital Literacy and Training:

- *Digital Literacy:* 76% of respondents expressed a need for digital literacy training

Appendix C: Surveys distributed (Residential & Commercial)

Residential Survey:

1. Do you currently have Internet service at your home?
 - Yes
 - No
- 1a. If you don't currently subscribe to Internet service, please tell us why.
 - Not available
 - Too expensive
 - Not relevant or needed
 - Lack of skills/knowledge to use it
 - No computer or device
 - Not applicable (I currently have service)
2. Please select the type of service to which you currently subscribe:
 - Wired (cable, DSL)
 - Cellular data (mobile phone)
 - Fixed wireless (from a local Wireless Internet Service Provider)
 - Satellite
 - A combination (wired and wireless, wireless and cellular, satellite and cellular, etc.)
 - I don't have service
3. What is the download speed you currently pay for?
 - 1.5Mbps to 3Mbps
 - 3Mbps to 6Mbps
 - 6Mbps to 10Mbps
 - 10Mbps to 25Mbps
 - 25Mbps to 5 Mbps
 - 50Mbps to 100Mbps
 - 100Mbps to a Gigabit or more
 - I don't know
 - I don't have service
4. Does the speed you currently subscribe to meet your needs?
 - Yes
 - No
 - I don't have service
5. On average, how many devices do you have that connect to your Internet service (including laptops, tablets, smart phones, televisions, etc.)?
 - 1-2
 - 3-4
 - 5 or more
 - I don't have service
6. If additional competitive services were available to you, to which package would you subscribe?
 - Internet only
 - Internet and TV
 - Internet and home phone

- Internet, TV and home phone
- TV only
- None of the above

7. Who are, or would be, the primary users of the Internet at your address? (Please check the primary user group.)

- School age child(ren) - K-12
- Adult(s) - Ages 19-35
- Adult(s) - Ages 36-50
- Adult(s) - Ages 50-65
- Adult(s) - Ages 66 and older
- No one would use this service

8. Would anyone in your household take online classes if sufficient Internet service were available?

- Yes
- No

8a. Would anyone in your household telecommute or start a home-based business if sufficient Internet service were available?

- Yes
- No

8b. Would anyone in your home use telemedicine or social support applications (e.g. "virtual doctor visits") if sufficient Internet service were available?

- Yes
- No

9. How important is Internet access to your ability to earn a living?

- Very important
- Somewhat important
- Neutral
- Not important

9a. How important is Internet access to your quality of life?

- Very important
- Somewhat important
- Neutral
- Not important

Are there any other comments you wish to share regarding broadband service or Internet access in your Region?

Commercial Survey:

1. Do you currently have Internet service at your business?

- Yes
- No

1a. If not, what is the primary reason?

- Not available
- Too expensive

- Not relevant or needed
 - Lack of skills/knowledge to use it
 - No computer or device
 - Not applicable (I currently have service)
2. What Internet connection speed are you paying for (download speed)?
- Level 1 (768Kbps-1.5Mbps)
 - Level 2 (1.5Mbps-4Mbps)
 - Level 3 (4Mbps-10Mbps)
 - Level 4 (10Mbps-100Mbps)
 - Level 5 (more than 100Mbps)
 - I don't know
 - We do not have Internet service
3. How important is an Internet connection to your business/ability to earn a living?
- Critical
- Very Important
- Somewhat Important
- Neutral
- Not Important
4. Would anyone in your company telecommute if sufficient Internet service were available?
- Yes
 - No
5. Which of the following categories best describes your type of business?
- Agriculture
- Retail
- Construction
- Service Industry/Hospitality
- Manufacturing
- Professional Services
- Government/Institutions
- Healthcare
- Real Estate
- Other
6. How many employees (full and part-time) do you currently have at this location?
- 1-5
- 6-25
- 26-50
- Over 50
- Are there any other comments regarding broadband in your region that you wish to express?

Appendix D: North Carolina BEAD Method of Determining Eligibility

The State of North Carolina's BEAD Initial Proposal Volume 1 describes the process being undertaken to identify eligible locations for funding, as shown below:

1. The State identified the existing broadband funding allocated within the state (Requirement 3), including funding sources, description of the funded activities, total funding, amount expended and remaining funding available. This step was necessary to prevent any locations with existing broadband funding from being eligible to receive BEAD funding.
2. The State identified unserved locations as those with service below 25 Megabits per second (Mbps) download and 3 Mbps upload speeds, and underserved locations as those with service below 100 Mbps download and 20 Mbps upload speeds (Requirement 5), utilizing FCC National Broadband Map data collected through the Broadband Data Collection process (data as of December 31, 2022).
3. The State identified the types of Community Anchor Institutions (Requirement 6) eligible to receive BEAD funding within the state, including [insert CAI types from the State's Vol. 1 Initial Proposal, i.e., Schools, Libraries, Public safety entities, Public housing, etc.].
4. The State confirmed that it will adopt the NTIA's BEAD Model Challenge process (Requirement 7), which will allow for all identified eligible locations to be reviewed and challenged ahead of the BEAD Subgrantee selection process.
5. Following the completion of the State's BEAD Challenge process, the State may modify the eligibility of certain locations with enforceable commitments, planned service deployment, etc., and allow for a rebuttal phase prior to making its final determination.

Further details regarding the State's Deployment Subgrantee Selection process (Requirement 8), can be found in Volume 2 of the BEAD Initial Proposal. According to the State's plans, potential subgrantees will submit documentation demonstrating their financial, technical, and operational capabilities. In phase two, the pre-approved subgrantees will submit specific proposals for local projects. Lastly, the State will accept BEAD proposals geographically based on the locations identified in the three existing last-mile broadband infrastructure grants: GREAT, CAB, and Stop-Gap.

Appendix E: Various Business Models

Once a Business Plan is completed in collaboration with the community then a path can be created to bring better connectivity. Some examples of typical architectures and ownership models are listed below:

- **ISP and WISP Fully Owned and Operated** - This model includes a local ISP or WISP owning all infrastructure and electronics while providing full services to the end user.
- **Open Access Network** - This model can have sub levels of modeling but overall is similar to an airport where the Operator owns the physical infrastructure (like the terminals and runways) and then multiple ISPs or WISPs use it to provide services (like the different airlines taking off and landing each day) which gives the end users multiple choices for providers.
- **Municipally Owned Network and Service Provider** - If you are in a State where municipalities don't have any broadband restrictions, the local municipality could create an entity either for profit or non-profit to build a new network and deploy services as a utility based model. This could then be funded through municipal bonds or other means outside philanthropic, debt or equity.
- **Public, Private, Partnership ('P3')** - In this model there is a partnership between the local municipality and an ISP or WISP. For example, the municipality might own a dark fiber middle mile network (connects all your anchor institutions and provides diversity and redundancy into the network) and leases them to a private provider that owns and builds the last mile or part of the network into the neighborhoods. The provider also owns the electronics to light the dark fiber and eventually provide service to the end user. There are many ways to build a P3 that might be as simple as providing expedited permitting for a small revenue share so in this model it is recommended to think outside the box similarly to the Open Access Model.