

**Broadband as a Catalyst**

**From Rural Electrification to a Cooperative-Led Development Strategy in Tennessee's  
Sequatchie Valley**

by

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A CAPSTONE PROJECT

Tennessee Certified Economic Developer Course

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## **DEDICATION**

This capstone project is dedicated to the rural communities of the Sequatchie Valley, whose resilience, leadership, and commitment to collaboration continue to shape sustainable paths toward economic opportunity and improved quality of life.

### **Project Team**

This project reflects collaboration among Bledsoe Telephone Cooperative, county governments across the Sequatchie Valley, state agencies including Tennessee Economic and Community Development, and regional partners.

## **ACKNOWLEDGEMENTS**

The authors would like to acknowledge Bledsoe Telephone Cooperative for its leadership in broadband deployment and cooperative governance, as well as the county governments, state agencies, and regional partners across the Sequatchie Valley who contributed data, insight, and collaboration throughout this project.

## ***Background***

Many areas of Tennessee, particularly rural counties, face geographic and connectivity constraints limiting economic opportunity, education, healthcare, & overall participation in the 21<sup>st</sup> century economy. The primary benefit of this project was to analyze how broadband infrastructure, when deployed through cooperative governance models, can serve as a catalyst for economic development and quality-of-life improvements in rural communities. Rural communities in the Sequatchie Valley achieve equitable access to high-speed broadband infrastructure, enabling full participation in the modern economy, improved quality of life, and long-term regional competitiveness through sustainable, locally accountable governance models. By examining the Sequatchie Valley as a case study, the project sought to demonstrate that broadband functions as foundational infrastructure in the age of connectivity that the 21<sup>st</sup> century demands.

Rural communities often experience persistent disadvantages that are structural rather than behavioral in nature. Geographic isolation, mountainous terrain, and low population density increase the cost of infrastructure deployment while reducing private-sector return on investment. In the Sequatchie Valley, narrow valleys, dispersed populations, and limited transportation corridors compound these challenges. Historically, these same conditions delayed the extension of electricity into rural Appalachia. Prior to the creation of the Tennessee Valley Authority in 1932 (TVA), Southeast Tennessee was among the most economically distressed regions in the nation, characterized by subsistence agriculture, limited industrial activity, and minimal access to modern infrastructure. The absence of electricity constrained productivity,

education, healthcare, and economic diversification. Roughly a third of the way into the 20<sup>th</sup> century, these communities were still suspended in the 19<sup>th</sup> century. Broadband connectivity today plays a role directly analogous to electricity in the early twentieth century. Just as electricity became essential for productive participation in the economy, internet connectivity is now an essential element for employment, workforce training, education, healthcare access, commerce, and civic engagement.

In the absence of reliable high-speed internet, rural communities are effectively excluded from the modern economy. Remote and hybrid work opportunities, online education, telehealth services, and digital government functions all depend on broadband access. This framing is intentional. Broadband should not be viewed as a luxury or secondary amenity, but as foundational infrastructure. Like electricity, its value lies not only in the service itself, but in the opportunities, it enables across every sector of the economy and public life.

### ***Analysis of Potential Solutions***

Purely market-based approaches have repeatedly failed in rural settings due to unfavorable cost-return dynamics. Municipal systems require administrative capacity and financial risk tolerance that many small communities lack. Public-private partnerships can be effective but may prioritize provider objectives over long-term community outcomes.

Cooperative-led broadband deployment, supported by state and federal programs, aligns most closely with rural conditions. Cooperative governance builds trust, encourages adoption, and ensures accountability to member-owners while leveraging public investment to address market failure.

### ***Selected Solution***

The selected solution is a cooperative-led, regionally coordinated broadband deployment model, exemplified by BTC Fiber's expansion across the Sequatchie Valley. This approach integrates historical lessons from rural electrification with modern broadband policy tools & funding.

### ***Implementation & Resource Allocation*** (See breakdown of investments by project & location at the bottom)

This project analyzed an already implemented broadband deployment led by Bledsoe Telephone Cooperative (BTC). Final results exceeded initial expectations, with more than 18,500 broadband serviceable locations created, subscriber growth from 6,954 in 2018 to 11,799 in 2025, and peak bandwidth increasing from 10 Gbps to 50 Gbps. Outcomes extended beyond connectivity into workforce training, education, utilities coordination, and regional planning capacity. Total broadband investment analyzed exceeded \$58 million, combining grant funds, Rural Utilities Service loans, county ARP contributions, and cooperative capital. In addition to physical infrastructure, the project generated soft benefits including institutional capacity building, workforce alignment, and sustained regional collaboration.

Total Investment Results:

- Bledsoe Telephone Cooperative
  - Total Investment-\$48,121,591.56
  - Grant Funds-\$18,544,275.71
  - RUS Loan Funds-\$4,596,803.00
  - BTC Funds- \$29,117,635.85
  - Broadband Serviceable Locations-14,503
  - Broadband Subscribers-10,665
- BTC COMMUNICATIONS
  - Total Investment-\$10,197,515.35
  - Grant Funds-\$3,884,438.01
  - BTC Funds- \$6,313,007.34
  - Broadband Serviceable Locations-4,009
  - Broadband Subscribers-1,037

<p>The Build RUS Loan Project</p> <ul style="list-style-type: none"> <li>Rural Utilities Service Infrastructure Loan</li> <li>County-Sequatchie</li> <li>Project Award Year-2016</li> <li>Project Area-27 Square Miles</li> <li>Access Lines-1,924</li> <li>Added Redundant Core Routers</li> </ul> <p>Total Loan: \$7,855,120</p>	<p>The Build- Walden's Ridge</p> <ul style="list-style-type: none"> <li>Tennessee Broadband Grant Program</li> <li>Project Award Year-2019</li> <li>Project Route Miles-39.20</li> <li>Project Locations Passed-767</li> <li>Total Project Cost: \$1,402,240.32</li> </ul> <p>Grant Portion: \$701,120.16</p>	<p>The Build- Bledsoe 447</p> <ul style="list-style-type: none"> <li>Tennessee Broadband Grant Program</li> <li>County-Bledsoe</li> <li>Project Award Year-2019</li> <li>Project Route Miles-116.80</li> <li>Project Locations Passed-1,738</li> <li>Total Project Cost: \$4,600,767.88</li> </ul> <p>Grant Portion: \$1,500,000</p>	<p>The Build- Bledsoe 881 &amp; College Station</p> <ul style="list-style-type: none"> <li>Tennessee Broadband Grant Program</li> <li>County-Bledsoe</li> <li>Project Award Year-2019</li> <li>Project Route Miles-36.26</li> <li>Project Locations Passed-406</li> <li>Total Project Cost: \$1,160,320</li> </ul> <p>Grant Portion: \$590,320</p>
<p>The Build- South Cumberland</p> <ul style="list-style-type: none"> <li>Tennessee Emergency Broadband Grant Fund</li> <li>County-Cumberland</li> <li>Project Award Year-2022</li> <li>Project Route Miles-94</li> <li>Project Locations Passed-1,577</li> <li>Total Project Cost: \$7,355,708.13</li> </ul> <p>Grant Portion: \$4,089,103.92</p> <p>Cumberland County ARP Funds- \$408,910.40</p>	<p>The Build- Rhea County Rhea County ARP Funds County-Rhea</p> <p>Project Award Year-2022</p> <p>Project Route Miles-50</p> <p>Project Locations Passed-1,031</p> <p>Total Rhea ARP Funds: \$2,050,000</p>	<p>The Build- Old Washington Fiber Expansion</p> <p>Rhea County ARP Funds County-Rhea</p> <p>Project Award Year-2022</p> <p>Project Route Miles-50</p> <p>Project Locations Passed-1,031</p> <p>Total Rhea ARP Funds: \$2,050,000</p>	<p>County Completions:</p> <ul style="list-style-type: none"> <li>Tennessee Emergency Broadband Grant Fund</li> <li>County-Bledsoe</li> <li>Project Award Year-2022</li> <li>Project Route Miles-222</li> <li>Project Locations Passed-1,738</li> <li>Total Project Cost: \$14,270,616.46</li> </ul> <p>Grant Portion: \$9,224,471.52</p>
<ul style="list-style-type: none"> <li>County Completions: Tennessee Emergency Broadband Grant Fund</li> <li>County-Van Buren</li> <li>Project Award Year-2022</li> <li>Project Route Miles-40</li> <li>Project Locations Passed-470</li> <li>Total Project Cost: \$2,542,319.09</li> </ul> <p>Grant Portion: \$1,568,223.26</p> <p>Van Buren County ARP Funds- \$20,000</p>	<ul style="list-style-type: none"> <li>County Completions: Tennessee Emergency Broadband Grant Fund</li> <li>County-Sequatchie</li> <li>Project Award Year-2022</li> <li>Project Route Miles-150</li> <li>Project Locations Passed-1,529</li> <li>Total Project Cost: \$11,327,571.54</li> </ul> <p>Grant Portion: \$6,937,120.08</p> <p>Sequatchie County ARP Funds- \$550,000</p>	<p>The Build- Fall Creek Falls ARC 1</p> <ul style="list-style-type: none"> <li>Appalachian Regional Commission(ARC)</li> <li>County-Bledsoe</li> <li>Project Award Year-2019</li> <li>Project Route Miles-20.7</li> <li>Project Locations Passed-413</li> <li>Total Project Cost: \$662,400</li> </ul> <p>Total ARC Funds: \$500,000</p>	<p>The Build- Fall Creek Falls ARC 2</p> <ul style="list-style-type: none"> <li>Appalachian Regional Commission(ARC)</li> <li>County-Bledsoe</li> <li>Project Award Year-2019</li> <li>Project Route Miles-15.96</li> <li>Project Locations Passed-618</li> <li>Total Project Cost: \$647,760</li> </ul> <p>Total ARC Funds: \$500,000</p>

BTC implemented broadband deployment through phased builds aligned with grant awards and community priorities. Projects were funded through Tennessee Broadband Grant Programs, Appalachian Regional Commission grants, Emergency Broadband funding, ARP allocations, and local investment. Implementation emphasized redundancy, scalability, and universal fiber-to-the-home coverage. The cooperative structure allowed BTC to extend service into areas historically avoided by private providers while maintaining long-term financial sustainability!

### ***Evaluation of The Solution***

The infrastructure-first philosophy that guided broadband deployment has extended into other areas of community and economic development in the Sequatchie Valley. One example is Pikeville's water capacity expansion, which addressed utility constraints that previously limited growth and site readiness. Additionally, Sequatchie County's participation in Tennessee ECD's Property Evaluation Program reflects a proactive approach to site development, ensuring that potential industrial and commercial sites are evaluated and prepared in advance of demand. Engagement in the Retail Strategies program and the use of data-driven tourism marketing further demonstrate how improved infrastructure enables more sophisticated planning and investment.

Together, these initiatives illustrate institutional learning. Communities are applying the same access-first mindset used in broadband to utilities, site readiness, and market development, reinforcing long-term regional competitiveness. Beyond its direct impacts, broadband has functioned as a multiplier by enabling additional development initiatives throughout the Sequatchie Valley. One key example is the establishment of a Tennessee College of Applied Technology campus in Pikeville, which expanded access to workforce credentials aligned with regional industry needs. Broadband connectivity has also supported investments in STEM education, including certified STEM school designations and the introduction of drone and cooperative sciences curricula. These programs align closely with existing agribusiness and agriscience clusters in the region, such as Aviagen and Hubbard. This multiplier effect reinforces the idea that broadband is not an isolated investment. Instead, it serves as a platform that enables workforce development, education, and industry alignment strategies that would not be feasible without reliable connectivity. Beyond connectivity, broadband deployment enabled multiplier effects including workforce credential expansion, STEM education initiatives, site readiness improvements, water infrastructure expansion, and data-driven tourism strategies. These outcomes reinforce the conclusion that broadband functions as a foundational platform for long-term rural economic resilience.

Direct quantitative project success can be measured through the conversion of grant money & investment from the community into broadband serviceable locations, subscriber adoption rates, peak network capacity, and cost-efficiency metrics. Cost efficiency was demonstrated through an average cost per location of approximately \$3,150 and an average cost per subscriber of approximately \$4,950, reflecting effective use of grant funding, federal loans, and cooperative capital. Increased broadband adoption also supported indirect revenue generation through business attraction, workforce participation, and institutional expansion. For instance, an individual who wishes to live in the Sequatchie Valley may now be able to do so with emerging hybrid and remote workforce trends. In rural communities a high earning remote worker adds an outsized impact to small population county tax bases, allowing the local government to perform more services. Additional qualitative indicators can be measured through the progress broadband infrastructure implementation that helped jumpstart, including: workforce development expansion, site readiness improvements, and evidence of institutional learning and collaboration across counties within the region.

Both the Bledsoe Telephone Cooperative and The Tennessee Rural Fellowship program believe in empowering rural communities to thrive emphasizing infrastructure-first development which creates a catalyst for other opportunities like site readiness, workforce alignment, and regional collaboration. Importantly, the success of broadband deployment has reinforced a broader infrastructure-first philosophy among local and regional leaders. Communities across the Sequatchie Valley have begun applying similar strategies to other forms of development, including water and utility expansion, site readiness initiatives, workforce credential programs,

and tourism development. These efforts demonstrate how foundational infrastructure investments can serve as catalysts for additional economic development activity and institutional collaboration.

The cooperative model examined in this project provides several lessons for rural communities seeking to address similar connectivity challenges. First, locally governed infrastructure providers can align investment decisions with long-term community outcomes rather than short-term market returns. Second, coordinated use of federal, state, and local funding programs can enable rural regions to overcome the capital barriers associated with broadband deployment in low-density areas. Third, infrastructure investments are most effective when paired with complementary strategies in workforce development, education, and site readiness.

Looking forward, the Sequatchie Valley's broadband expansion provides a foundation for continued economic growth and regional resilience. As digital connectivity increasingly shapes workforce participation, education, healthcare access, and business development, rural communities with reliable broadband infrastructure will be better positioned to compete for investment and talent. Continued collaboration among local governments, cooperative utilities, educational institutions, and state agencies will be essential to fully leverage the economic development potential created by broadband deployment.

Ultimately, the experience of the Sequatchie Valley reinforces a broader principle that has shaped rural development throughout American history. Just as electrification transformed rural economies in the twentieth century, broadband connectivity represents a defining infrastructure investment for the twenty-first century. When deployed through locally accountable governance models and paired with strategic economic development planning, broadband can serve as a powerful catalyst for sustainable rural prosperity.

## Resource Page

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