

CONNECTING ARKANSAS

A Path to Economic Prosperity

August 2021



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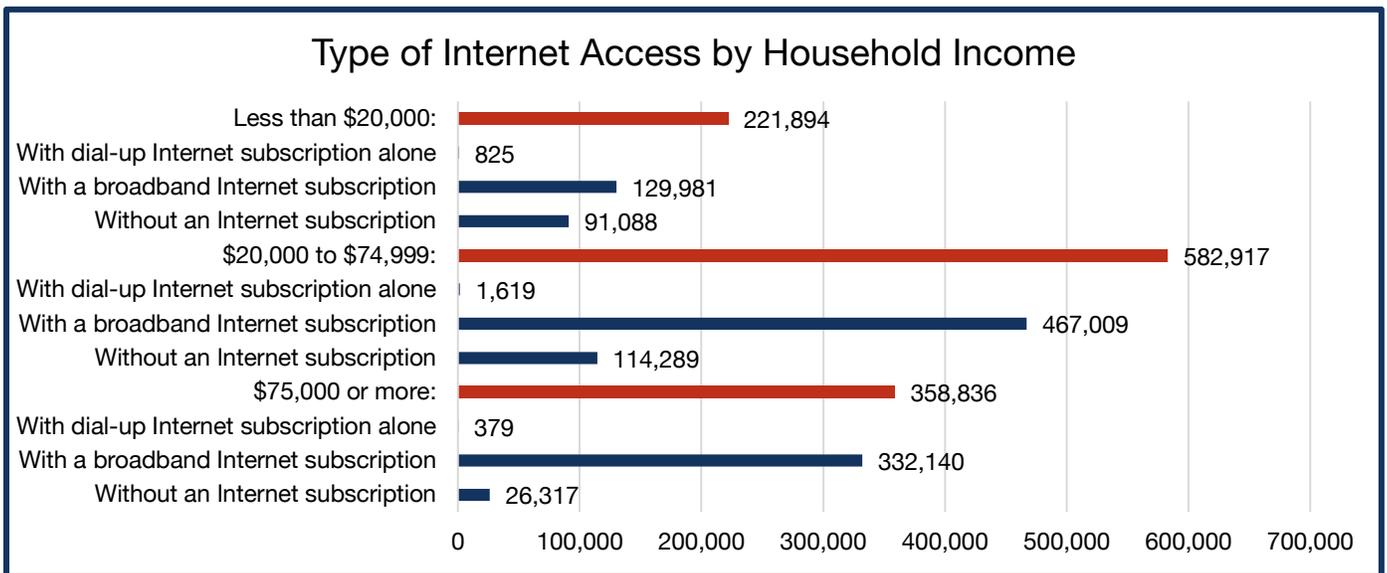
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INTRODUCTION

In our rapidly changing, technology-driven world, high-speed internet access has become a quintessential component of society. In a similar way that railroads opened commerce among rural Arkansas towns and expanded the focus of economies outside of their own immediate region, broadband enables rural citizens to seek opportunities beyond the reach of their local economic base. Today’s global economy relies on a vast network of cloud-based systems, all of which require reliable internet access to connect people to markets and information.

Despite the importance of broadband in a globalized economy, access to high-speed internet at affordable rates is not equitably available to all Arkansas citizens. Researchers refer to this unequal distribution of service as the *digital divide*, and it presents itself in several ways. Many low-income households cannot afford the costly subscription rates associated with high-speed internet, as depicted in *Figure 1*. Others can’t afford to purchase computers, or do not have the knowledge or technical skills to use the internet. And while many Arkansans live in areas with no broadband service or broadband with below-standard speeds, people living in rural counties are disproportionately impacted by inadequate services. *Figure 1* shows the type of internet access by household income, according to the 2019 American Community Survey conducted by the U.S. Census Bureau¹.

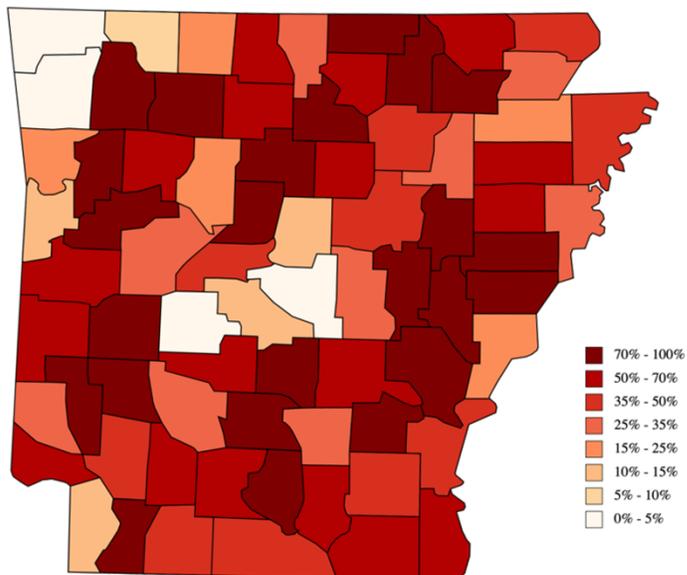
Figure 1: Internet access by household income



The definition of ‘broadband’ has been contentiously debated amongst policymakers since at least 1996, when the federal government began to set minimum speed requirements to define broadband service. The Federal Communications Commission (FCC) defines and measures the quality of broadband service by way of download/upload data transfer speed; this metric is expressed as megabytes per second (Mbps). Currently, the FCC uses 25/3 Mbps as the fixed speed minimum in defining broadband, though they are expected to increase the speed and symmetry requirements to 100/100 Mbps in the near future. It should also be noted that, to the dismay of many broadband policy researchers, the FCC’s definition of broadband includes mobile 4G LTE connection with a minimum speed of 5/1 Mbps. The inclusion of mobile 4G LTE connectedness tends to skew the data reporting, with the result being an overestimation of coverage by the FCC (22% in Arkansas).²

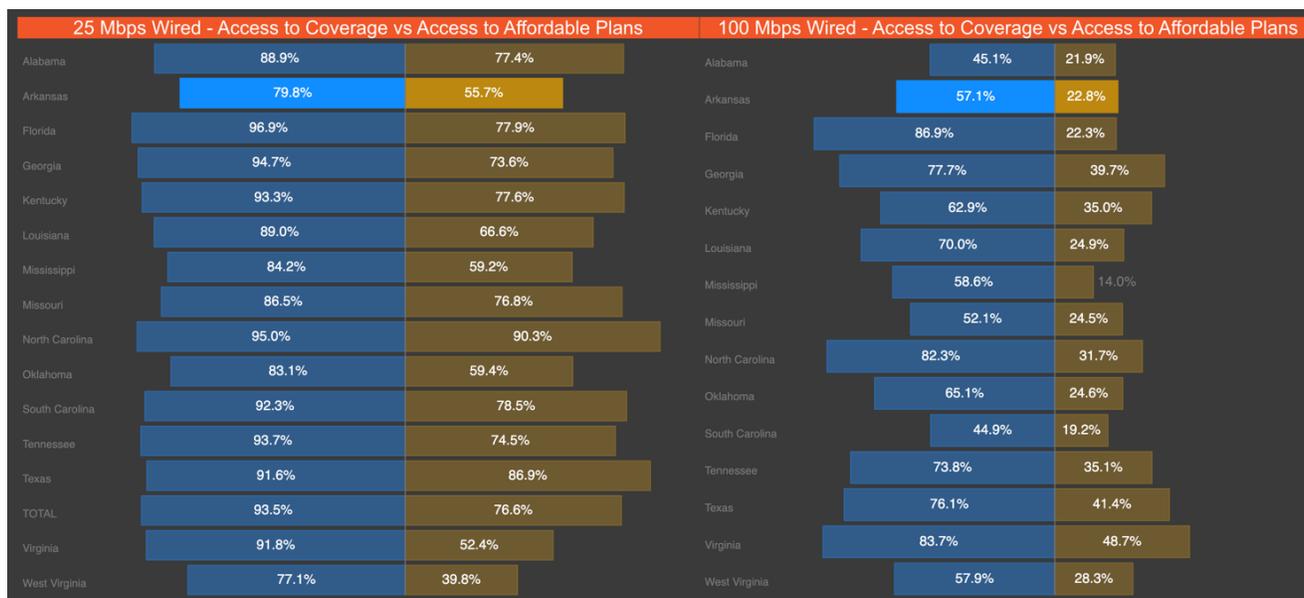
BroadbandNow, a leading independent policy research organization, ranks Arkansas 41st in the nation for broadband access.³ According to the FCC, only **63% of rural Arkansans** have access to broadband, while **95% of urban Arkansans** have access to broadband.⁴ When not considering mobile 4G LTE connections, about **46% of Arkansans** remain without access to a wired broadband connection capable of 25 Mbps or faster, leaving behind over a million Arkansas residents.⁵ *Figure 2* shows the share of the population unserved by 25/3 broadband.

Figure 2: Share of population unserved by 25/3 broadband



When considering Arkansans who have access to a fixed broadband connection capable of download speeds of 100 Mbps or more, **57.1%** of the state is covered. However, with higher performance speeds comes higher priced plans, so when factoring in the cost of coverage and the customer’s ability to pay the premium, only **22.8% of Arkansans** have equitable access to broadband capable of 100 Mbps or more.⁶ Below in *Figure 3*⁷, the affordability gap is demonstrated between access to wired coverage versus access to affordability for plans with speeds of 25 Mbps and 100 Mbps, respectively.

Figure 3: Affordability gap



While the digital divide has existed for quite some time, the onset of the COVID-19 pandemic has heightened the importance of broadband access in everyday life. High-speed internet connections are now used by students to complete their homework and attend class, patients accessing telehealth services, citizens paying their taxes and interacting with their governments, and jobseekers using online resources to secure employment. Without equitable access to quality, affordable broadband, Arkansas cannot continue to grow our post-pandemic economic recovery in ways that strengthen communities and secure opportunities, especially for our most rural populations.

ECONOMIC AND SOCIAL CHALLENGES IDENTIFIED

Since the proliferation of the internet in the 1990s, government, industry, and academia have discussed the economic and societal limitations perpetuated by the digital divide. This report has identified four significant areas of life in Arkansas that are challenged by inadequate access to broadband services. Moving forward, failure to overcome these challenges poses serious threats to social and economic development in rural Arkansas.

Agriculture

Agriculture is Arkansas’ leading economic sector with almost 50,000 farms employing some 268,000 workers contributing around \$21 billion to the state economy each year. When expressed as a percentage of total GDP, Arkansas’ agricultural production, processing, and retail sector accounts for almost 10% of the total state GDP, the highest of any neighboring state since 1969, higher than the Southeast average, and higher than the national average.⁸ Agriculture in Arkansas also depends on the global export market, shipping some \$3.2 billion in agricultural products abroad each year, including \$889 million in soybeans, \$715 million in rice, \$396 million in broiler meat, and \$283 million in cotton.⁹ While these figures bode well for the state economy, Arkansas farmers and ranchers continue to face growing challenges in accessing competitive export markets, rising operating costs, and limited infrastructure - all while needing to produce more food to feed the world’s growing population.

It is no secret that the agriculture industry is undergoing a technological revolution. For those with access to broadband, farmers and ranchers across America are now gathering data via cloud computing software systems that allows them to monitor inputs like fuel, fertilizer, pesticides, and weather patterns to achieve higher, more sustainable yields. Known as precision agriculture (PA), this combination of inputs and location intelligence results in more productive, efficient, and sustainable approaches to farming and ranching that are applied across the entire food value chain to the benefit of both producer and consumer.

Data from the Arkansas State Broadband Manager’s Report of 2019 prepared by the Arkansas Department of Commerce Broadband Office (Commerce Broadband Office) shows that large lots and farms in Arkansas are less likely to have high-speed internet access, with 24.2% of houses on ten or more acres having no access to high-speed internet. The report also shows that of farms producing more than \$10,000 in sales of agricultural goods, 14.6% have no access to the internet.

Access to High-Speed Internet by Lot Size								
Size of lot	Type of Home Internet Access							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High Speed Other	High Speed Satellite
House on less than one acre	17.7%	4.9%	15.1%	1.0%	4.1%	52.4%	0.9%	3.8%
House on one to less than ten acres	18.0%	4.1%	18.7%	2.1%	8.7%	43.3%	1.3%	3.9%
House on ten or more acres	24.2%	4.7%	19.8%	2.2%	12.0%	32.1%	1.1%	3.9%

Access to High-Speed Internet by Sale of Agricultural Goods

Sales of agricultural goods	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High Speed Other	High Speed Satellite
None	19.8%	4.2%	18.7%	2.0%	9.3%	40.9%	1.2%	3.9%
\$1 - \$9,999	16.3%	3.2%	25.3%	5.1%	13.2%	32.8%	0.8%	3.3%
\$10,000+	14.6%	6.3%	21.9%	2.1%	12.0%	35.3%	3.3%	4.6%

Connecting Arkansas farms isn't just a rural issue. The USDA's 2019 report, *A Case for Rural Broadband*¹⁰, states, "Internet expansion, economic productivity, and food security contribute to each citizen's quality of life, regardless of where they live. The benefits of broadband e-connectivity accrue not only to the producers using Next Generation Precision Agriculture technologies, but also to consumers throughout America and the world who value a safe and efficient food supply." Just as other sectors of the Arkansas economy embrace and utilize technology to access new markets and gain production efficiencies, Arkansas' agriculture producers must be equipped with the tools to capture the same opportunities in order to strengthen the state's position as a global leader in agriculture.

Small Business Growth

In much of the same way businesses depend on reliable electric, water, and gas utilities, Arkansas business owners expect affordable internet services as a basic utility. From e-commerce to telecommuting to payroll, cloud computing tools enable employers and business owners to meet the needs of their customers and employees. In 'Unlocking the Digital Potential of Rural America,' a collaborative 2019 report between the U.S. Chamber Technology Engagement Center and Amazon, it was found that "Online tools boost sales for nearly 55% of rural small businesses across America. In addition, online tools reduce purchasing costs of products and materials for nearly 29% of rural small businesses." It was also noted that almost 20% of rural small businesses in America generate at least 80% of their revenue by selling their products and services online, and 22% of small businesses in America purchased at least 80% of their goods and services online.¹¹

The unforeseen closure of many workplaces at the onset of the COVID-19 pandemic has ushered in a new era of remote work for Arkansans, many of whom are expected to continue telecommuting. Dr. Michael Wilmot, Assistant Professor of Management at the Sam M. Walton College of Business at the University of Arkansas, states, "We know that previous major world events had a profound impact on workplaces and the kind of work people do. In fact, these events led to the demise of some markets and businesses and the creation of others. This pandemic is no different. It will change work in fundamental ways, and this will challenge people to learn to work in ways dramatically different than previous generations."¹² With the telecommuting trend expected to continue playing a major role in the state's economic viability, access to reliable broadband networks is more important than ever.

Meeting the broadband needs of companies is essential given the role that businesses play in creating jobs and promoting economic opportunity that underpins the health of the Arkansas economy. If given the opportunity, increasing broadband access to unserved and underserved businesses has the potential to be a major catalyst in the future economic growth of our state.

Healthcare

Where one lives should not determine whether they live or die, yet so many Arkansans remain medically underserved. The map below (Figure 4) shows that at least 59 counties, as of 2020, remain medically underserved.¹³ Furthermore, nearly half of Arkansans do not have a primary care physician. One of the most effective ways to increase medical access for these rural and underserved counties is through the use of telehealth services, which allows patients to see a doctor, nurse practitioner, or physician assistant remotely through the use of telecommunication systems.

When properly administered, telehealth/telemedicine has been shown to drastically improve health outcomes for underserved patients through advanced monitoring services, educational sessions, cognitive affordances, clinical decision-support functions, execution of life saving, access to electronic medical records, and evidence-based critical care protocols. Additionally, the use of telehealth services benefits rural populations by allowing small rural hospitals and clinics the ability to provide quality healthcare at lower costs for both provider and patient. For rural Arkansas hospitals and clinics, adoption of telehealth services during the pandemic has allowed them to admit, retain, and treat more patients at lower operating costs, thus increasing their profits. Retaining a steady profit stream is vitally important to rural hospitals given that 181 rural hospitals in America have closed their doors since 2005, including 3 in Arkansas.¹⁴

During the COVID-19 pandemic, telehealth has become a more prominent mode of healthcare as patients and physicians seek to decrease in-person contact for routine visits. While many patients are expected to return to their local clinics when the pandemic has subsided, a recent report by the Journal of Rural Health¹⁵ states that, “It is likely that telemedicine will continue to play a prominent role, especially since: (1) telemedicine visits have frequently proven to be useful and convenient for patients and providers alike; (2) challenges related to the startup and sustainability of these services will have been overcome by many practices; and (3) we may see a resurgence of COVID-19 and need to enact distancing measures again in the future.”

Figure 4: Medically Underserved Areas

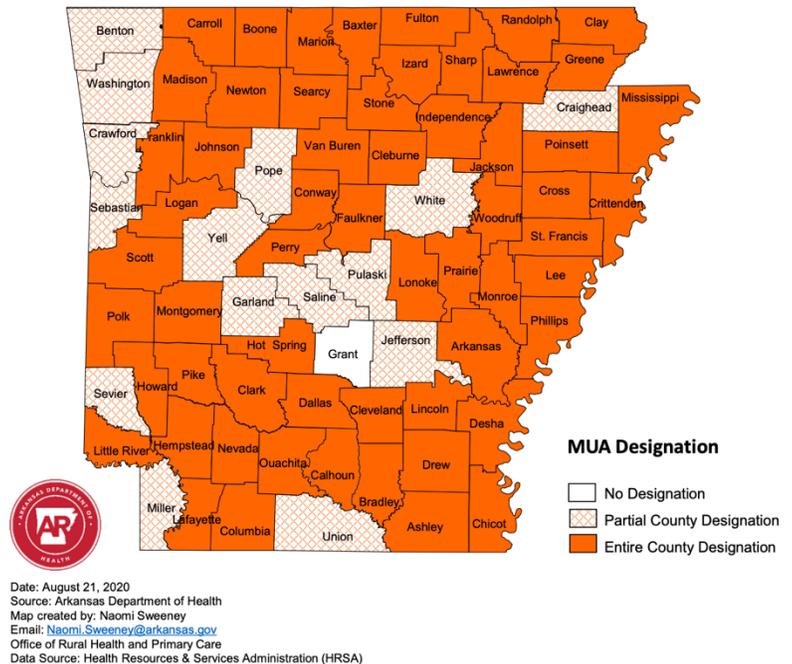
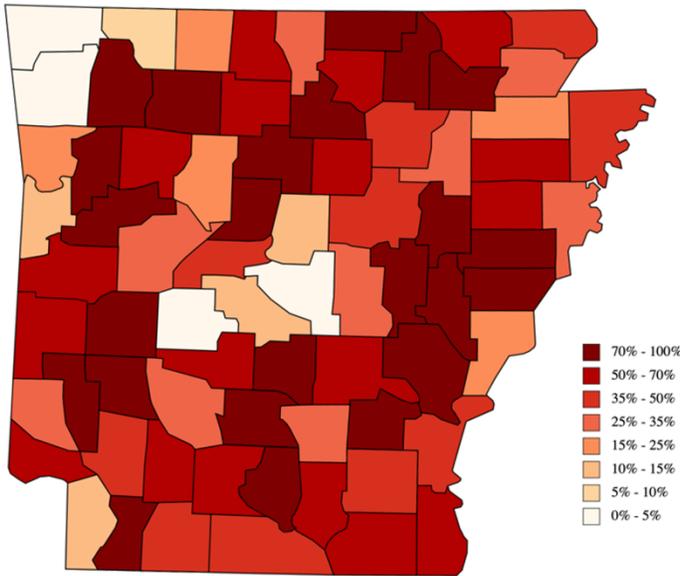


Figure 5: Underserved Broadband Counties



Increasing positive health outcomes for rural folks doesn't come without challenges. Telehealth administration constitutes a variety of telecommunications technologies, all of which require a reliable and fast broadband connection for both patient and provider. Many rural Arkansas communities lack access to internet connection speeds needed to support the effective transmission of data for telehealth services, presenting yet another layer of health inequities due to disparate access. When considering ways to close health disparity gaps, it's important to consider the correlation between medically underserved counties pictured in *Figure 4* and underserved broadband counties pictured in *Figure 5*.

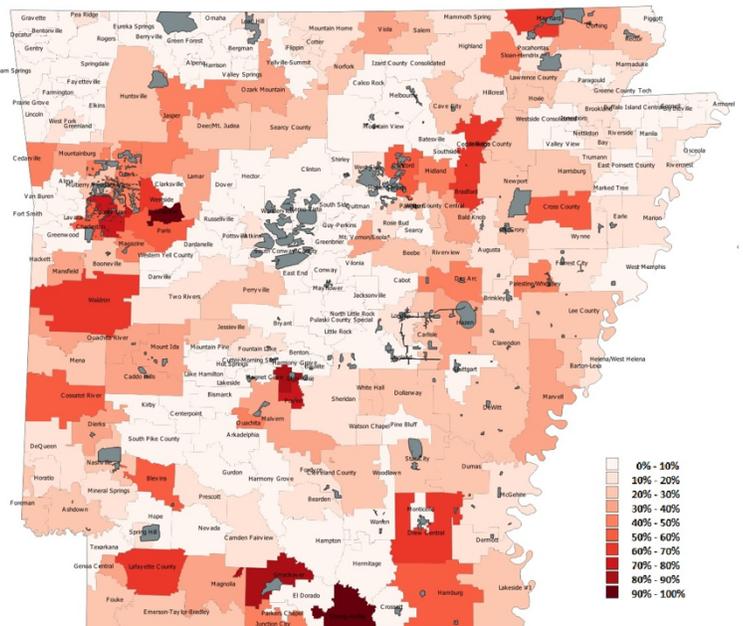
Expanding broadband to the underserved areas of the state will provide all Arkansans the ability to access the full suite of telehealth options they need to survive and prosper.

Education

In today's technology-driven world, educating the young minds of Arkansas requires robust and dynamic educational structures capable of supporting all types of learners and new types of technologies. While significant progress has been made in connecting every K-12 school in Arkansas to the internet, many students go home to households that are digitally divided and lacking broadband service. A 2020 survey of Arkansas' 262 school districts, conducted by the Arkansas Department of Education, found that 75% of school districts reported some students from their schools lacked internet connectivity at home. Thirty-nine school districts reported **more than 40% of their students lacked home internet connectivity**, while 44 school districts reported 30-40% lacked home internet connectivity. Only 48 school districts reported 10% or less of their students lacked home internet connectivity.¹⁶ *Figure 6* shows percentage of population under 18 unserved by school districts, with the gray areas being effects of Round 1 grant funding once complete (June 2020).

A lack of home internet connectivity limits or restricts students' ability to complete homework assignments involving online research, creating what is called the "homework gap." While researchers and policymakers have noted the existence of the homework gap for several years, the COVID-19 pandemic has intensified and expanded the scope of the homework gap.

Figure 6: percent <18 Unserved by School Districts



When schools were abruptly ordered to close their physical campuses for the remainder of the year, school districts quickly moved to organize distance education programs through internet-based learning systems such as Google Classroom, Canvas, Blackboard, and others. Of course, the utility of these remote learning systems is only as good as the student's access to broadband, so those students lacking internet connectivity at home suffered the most.

Educating Arkansas students is a critically important reason to close the digital divide, especially considering how vital the retention of human capital and development of a skilled workforce is to rural parts of the state. According to the 2021 Rural Profile of Arkansas, 16% of rural Arkansans lack a high-school diploma. Additionally, rural Arkansas continues to see a decline in population as more people seek economic, educational, and social opportunities in urban parts of the state. Since human capital is one of Arkansas' greatest resources, the economic value of a well-educated workforce simply cannot be overstated.

ECONOMIC IMPACT

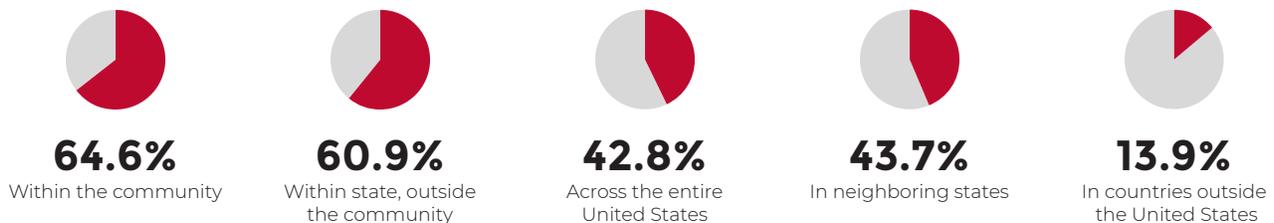
Overview

Multiple studies have explored the potential economic impact that adequate broadband infrastructure provides. Not only does it affect agriculture, healthcare, and education, but business development also has the potential to be positively impacted by enhanced broadband infrastructure.

A Deloitte study released in April 2021 also explores how adequate broadband services affects economic growth. The report concludes that “economic prosperity may depend on the reliable, affordable, and fast internet connectivity for all.”¹⁷ Additionally, the report indicates that a strong correlation exists between broadband availability and jobs and GDP growth and that higher broadband speeds result in significant improvements in job growth.¹⁸

A report on the potential impact for rural small businesses was conducted by the U.S. Chamber of Commerce and Amazon in 2019. That report, which included a survey of more than 5,000 rural small businesses, found that increased access to digital tools would result in creation of 7,204 jobs in Arkansas, which includes annual wages in excess of \$260 million and \$856 million added to the state’s Gross Regional Product (GRP) per year.¹⁹ Conversely, the report also shows unrealized increase in GRP of nearly \$767 million annually over the last three years due to lack of access to digital tools.²⁰

Digital tools allow small rural businesses in Arkansas to reach new customers



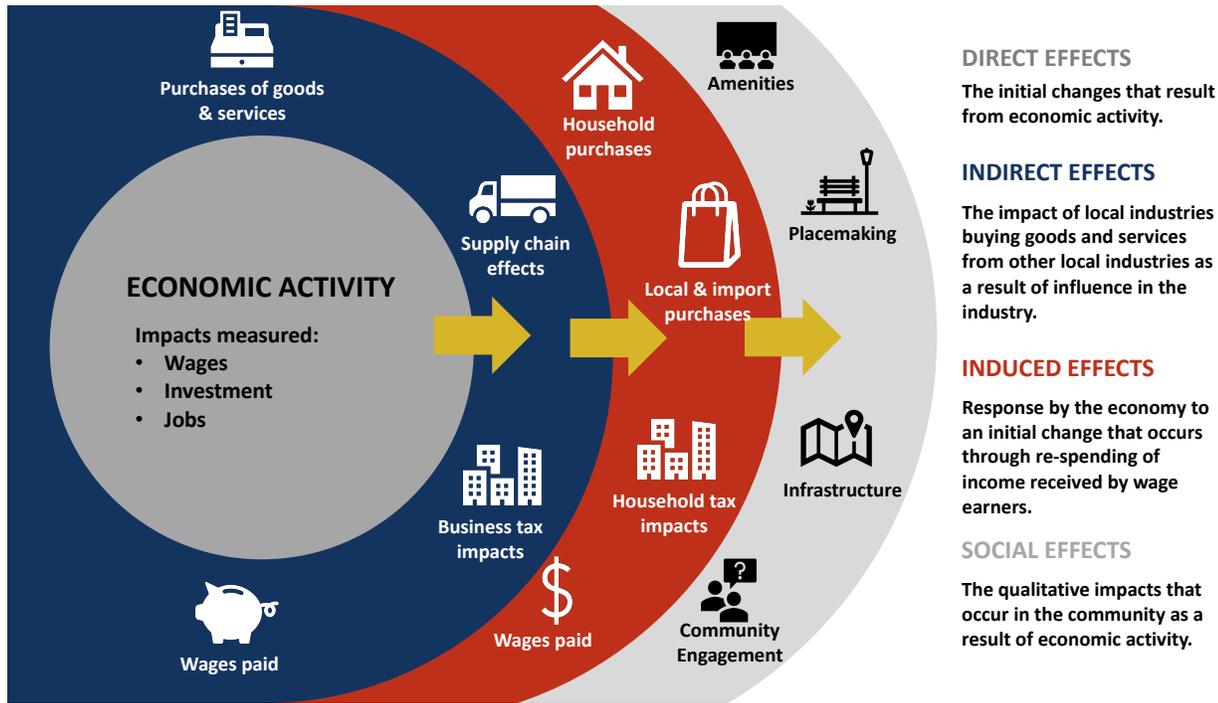
To further explore these issues, **a series of economic impact evaluations has been completed for scenario economic development projects in each of Arkansas’ four Congressional Districts.** This economic impact evaluation measures the projected effect of job creation projects that may result from enhancement of Arkansas’ broadband infrastructure. These project scenarios are based on job creation and capital investment in industry sectors that are a good match for available resources in each of the Congressional Districts. The economic impact resulting from job creation and capital investment by sector was modeled using the IMPLAN input-output model.

Methodology

The job creation and investment data utilized for this analysis was provided by the Arkansas Economic Development Commission (AEDC). The impact assessment explores the possible location of one new business in each Congressional District, using industry sectors that have specific broadband infrastructure needs that may not currently be available in many areas of Arkansas.

The economic impact of capital investment and job creation has been estimated for each project, based on the effects it might have in the state’s Congressional Districts.

The economic impact is measured in direct effects, which gauges the change in final demand of directly impacted industries; indirect effects, which captures business-to-business spending; and induced effects, which represents increased household spending.



A Social Accounting Matrix model was used to measure spending of households, governments, and inventory and export transactions. The model estimated inter-industry spending from purchaser to producer to determine the economy-wide impact. The impact values include payroll generated; contribution to the gross regional product (GRP) of the selected Congressional District; state and local tax impact; and total output, which includes the initial investment. Data used in the model is 2020, and all funds are expressed in 2021 values and adjusted for inflation/deflation.

DATA PARAMETERS

For purposes of this assessment, the following scenarios were utilized to measure the impact of capital investment and job creation. The capital investment was assumed to occur in 2022, while employment would begin in 2023.

Arkansas Broadband Expansion Economic Development					
Congressional District	Year	Sector	Capital Investment	Jobs	Average Hourly Wage
1	2025	Iron & Steel Mills & Ferroalloy Manufacturing (331110)	\$65,000,000	225	\$23.50
2	2024	Corporate, Subsidiary, & Regional Managing Offices (551114)	\$35,000,000	500	\$25.00
3	2025	Pet Food, Dog & Cat, Manufacturing (311110)	\$267,000,000	264	\$21.50
4	2027	Hardwood Veneer & Plywood Manufacturing (321211)	\$300,000,000	520	\$21.60

Impact of Job Creation & Capital Investment

While the need for enhanced broadband infrastructure is apparent in office-related sectors, it is also a critical location factor for many technology-driven manufacturing sectors, as well. If Arkansas is to compete for capital investment and job creation in some of these sectors that have historically been successful in the state, providing the required infrastructure is essential. Based on the individual scenarios used to estimate economic impact, if Arkansas could attract these types of projects, the new locations would not only result in significant one-time impact for capital investment, but also potential **job creation that will have an ongoing annual impact** for as long as the anticipated jobs remain in the region. The graphic below provides an overview of the aggregated impact that includes capital investment and a single year of employment resulting from potential job creation projects. Details of the impact by Congressional District follow below the graphic.

The enhancement of broadband infrastructure in Arkansas would result in total impact across the state of nearly \$1.5 billion. This impact is based on the impact of **one year of employment** in potential businesses along with initial capital investment to construct and equip facilities. This includes an increase in the Gross Regional Product (GRP) of more than \$556 million and total labor income of nearly \$386 million. The job creation and capital investment would result in state and local taxes of almost \$36 million. The impact of the direct effects is more than \$1 billion across the state.

JOB CREATION & CAPITAL INVESTMENT IMPACT OVERVIEW			
Four Congressional Districts			
\$1,461,709,219	\$556,218,827	\$386,358,955	\$35,885,064
Total Impact	Contribution to	Total Labor Income	Total State & Local
(Includes Employment & Payroll for Future Job Creation Projects)	Regional Economy		Taxes

JOB CREATION & CAPITAL INVESTMENT IMPACT OVERVIEW	
Four Congressional Districts	
Total Impact	\$1,461,709,219
Direct Impact	\$1,047,721,104
Indirect Impact	\$289,621,783
Induced Impact	\$124,366,333
(Includes Employment & Payroll for Future Job Creation Projects)	

FIRST CONGRESSIONAL DISTRICT

Arkansas' First Congressional District has a diverse manufacturing base. In the past 30+ years, the iron and steel manufacturing sector has created significant opportunities for Northeast Arkansas. The economic impact scenario used for the First District is based on an Iron and Steel facility that would make a \$65 million capital investment and create 225 jobs with an average hourly wage of \$23.50.

The impact of the potential capital investment and job will result in a total impact of more than \$212 million in the First Congressional District. This includes an increase in the Gross Regional Product in excess of \$56 million. That impact includes labor income of more than \$32 million and a state and local tax impact of almost \$4.3 million. Construction is a one-time event, and associated jobs are likely temporary or represent an existing employee working additional hours. For that reason, jobs are considered supported rather than created. However, indirect and induced employment resulting from the project's job creation would continue as long as the direct employment remained stable.

IRON & STEEL MANUFACTURING SCENARIO OVERVIEW First Congressional District			
\$212,295,241	\$56,361,473	\$32,087,581	\$4,289,619
Total Impact (Includes Capital Investment & One Year of Employment)	Contribution to Regional Economy	Total Labor Income	Total State & Local Taxes

IRON & STEEL MANUFACTURING SCENARIO OVERVIEW First Congressional District	
Total Impact	\$212,295,241
Direct Impact	\$161,469,587
Indirect Impact	\$38,593,285
Induced Impact (Includes Capital Investment & One Year of Employment)	\$12,232,370

Capital Investment

For purposes of this impact assessment, it is assumed that the capital investment will occur in 2023. Note that investment is measured in a single year, even if the project may stretch over two or more years. The 2022 investment will result in an impact of nearly \$86 million in the First Congressional District. The total direct impact supports 450 jobs with direct labor income of \$10.5 million. An additional 127 jobs would be supported by supply chain and consumer spending.

Iron & Steel Manufacturing Capital Investment First Congressional District				
Impact	Supported Jobs	Labor Income	Contribution to AR CD 1 GRP	Total Impact
Direct	450	\$10,478,540	\$11,238,301	\$62,641,641
Indirect	79	\$4,118,097	\$7,329,554	\$16,511,622
Induced	48	\$1,769,649	\$3,574,835	\$6,525,218
TOTAL	577	\$16,366,285	\$22,142,690	\$85,678,482

State and local taxes generated as a result of the project’s capital investment would total more than \$1.8 million. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total more than \$1.2 million.

State & Local Tax Impact from Capital Investment First Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$563,214	\$1,243,085	\$1,806,299

Employment

The direct employment of this project – 225 jobs – would have a total annual impact of nearly \$127 million. This would result in support of an additional 136 jobs from supply chain and consumer spending, including direct labor income of almost \$9.2 million and approximately \$34 million in increased Gross Regional Product in the First Congressional District.

Iron & Steel Manufacturing One-Year Employment Impact First Congressional District				
Impact	Annual Jobs	Labor Income	Contribution to AR CD 1 GRP	Total Impact
Direct	225	\$9,187,134	\$21,954,216	\$98,827,946
Indirect	94	\$4,987,601	\$9,137,564	\$22,081,662
Induced	42	\$1,546,561	\$3,127,004	\$5,707,151
TOTAL	361	\$15,721,296	\$34,218,783	\$126,616,759

State and local taxes generated as a result of employment in the iron and steel manufacturing facility would total nearly \$2.5 million annually. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total more than \$1.5 million.

One-Year State & Local Tax Impact from Employment First Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$952,078	\$1,531,242	\$2,483,320

SECOND CONGRESSIONAL DISTRICT

The economic impact scenario used for the Second Congressional District is based on an Office Headquarters facility that would make a \$35 million capital investment and create 500 jobs with an average hourly wage of \$25.00.

The total investment and one year of employment in this office facility would result in a total impact of nearly \$122 million in the Second Congressional District. This includes an increase in the Gross Regional Product in excess of \$64 million. That impact includes labor income of more than \$47 million and a state and local tax impact in excess of \$4.3 million. Construction is a one-time event, and associated jobs are likely temporary or represent an existing employee working additional hours. For that reason, jobs are considered supported rather than created. However, the direct job creation of 500 jobs would produce an annual impact for as long as the company's employment remained stable.

CORPORATE, SUBSIDIARY, & REGIONAL MANAGING OFFICE SCENARIO OVERVIEW Second Congressional District			
\$121,632,913 Total Impact (Includes Capital Investment & One Year of Employment)	\$64,200,520 Contribution to Regional Economy	\$47,241,171 Total Labor Income	\$4,348,154 Total State & Local Taxes

CORPORATE, SUBSIDIARY, & REGIONAL MANAGING OFFICE SCENARIO OVERVIEW Second Congressional District	
Total Impact	\$121,632,913
Direct Impact	\$68,237,275
Indirect Impact	\$29,733,738
Induced Impact (Includes Capital Investment & One Year of Employment)	\$23,661,900

Capital Investment

For purposes of this impact assessment, it is assumed that the capital investment will occur in 2022. Note that investment is measured in a single year, even if the project may stretch over two or more years. The 2022 investment will result in an impact of more than \$20 million in the district. The total direct impact supports more than 100 jobs with direct labor income of nearly \$5.7 million. Approximately 50 additional jobs would be supported by supply chain and consumer spending.

Corporate, Subsidiary, & Regional Managing Office Capital Investment Second Congressional District				
Impact	Supported Jobs	Labor Income	Contribution to AR CD 2 GRP	Total Impact
Direct	119	\$5,669,754	\$6,480,374	\$11,931,382
Indirect	22	\$1,161,458	\$2,056,803	\$4,127,582
Induced	27	\$1,238,234	\$2,318,188	\$4,115,751
TOTAL	168	\$8,069,445	\$10,855,365	\$20,174,715

State and local taxes generated as a result of the Office Headquarters investment would total nearly \$1.2 million. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total almost \$421,000.

State & Local Tax Impact from Capital Investment Second Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$735,765	\$420,590	\$1,156,355

Employment

The creation of 500 new jobs at a headquarters facility in the Second Congressional District would have a total annual impact of more than \$101 million, including annual labor income of more than \$39 million and approximately \$53 million in increased Gross Regional Product in the district.

Corporate, Subsidiary, & Regional Managing Office One-Year Employment Second Congressional District				
Impact	Annual Jobs	Labor Income	Contribution to AR CD 2 GRP	Total Impact
Direct	500	\$25,253,410	\$29,111,424	\$56,305,893
Indirect	149	\$8,046,389	\$13,224,529	\$25,606,156
Induced	129	\$5,871,928	\$11,009,203	\$19,546,149
TOTAL	778	\$39,171,726	\$53,345,155	\$101,458,198

State and local taxes generated as a result of employment in this office facility would total nearly \$3.2 million annually. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total more than \$2 million.

One-Year State & Local Tax Impact from Employment Second Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$1,123,952	\$2,067,847	\$3,191,798

THIRD CONGRESSIONAL DISTRICT

Arkansas' Third Congressional District's business base includes everything from Trucking to Food Processing to Retail. The economic impact scenario used for the First district is based on a Pet Food manufacturing facility that would make a \$267 million capital investment and create 264 jobs with an average hourly wage of \$21.50.

This Pet Food manufacturing project would result in a total impact of nearly \$583 million in Arkansas' Third Congressional District. This includes an increase in the Gross Regional Product in excess of \$225 million. That impact includes labor income in excess of \$153 million and a state and local tax impact of almost \$16 million. Construction is a one-time event, and associated jobs are likely temporary or represent an existing employee working additional hours. For that reason, construction jobs are considered supported rather than created. However, the 264 direct jobs created by the Pet Food manufacturer would have an annual impact for as long as those jobs remained in the area.

PET FOOD MANUFACTURING SCENARIO OVERVIEW Third Congressional District			
\$582,918,237	\$225,132,225	\$153,305,837	\$15,892,374
Total Impact	Contribution to Regional Economy	Total Labor Income	Total State & Local Taxes
(Includes Capital Investment & One Year of Employment)			

PET FOOD MANUFACTURING SCENARIO OVERVIEW Third Congressional District	
Total Impact	\$582,918,237
Direct Impact	\$403,311,551
Indirect Impact	\$131,047,339
Induced Impact	\$48,559,348
(Includes Capital Investment & One Year of Employment)	

Capital Investment

For purposes of this impact assessment, it is assumed that the capital investment will occur in 2022. Note that investment is measured in a single year, even if the project may stretch over two or more years. The 2025 investment will result in an impact of more than \$403 million in the Congressional District. The total direct impact supports more than 1,100 jobs with direct labor income of \$79 million. An additional 840 jobs would be supported by supply chain and consumer spending.

Pet Food Manufacturing Capital Investment Third Congressional District				
Impact	Supported Jobs	Labor Income	Contribution to AR CD 3 GRP	Total Impact
Direct	1,128	\$79,013,817	\$95,639,366	\$262,548,054
Indirect	551	\$39,713,203	\$56,440,590	\$99,165,731
Induced	288	\$12,561,740	\$23,836,708	\$41,780,239
TOTAL	1,967	\$131,288,759	\$175,916,664	\$403,494,024

State and local taxes generated as a result of this capital investment would total more than \$9 million. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total more than \$6 million.

State & Local Tax Impact from Capital Investment Third Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$2,796,082	\$6,279,482	\$9,075,563

Employment

Job creation in a Pet Food manufacturing facility in Arkansas' Third Congressional District would have a total annual impact in excess of \$179 million, with annual labor income of more than \$22 million. The Congressional District would also see an increase in Gross Regional Product of more than \$49 million each year if employment at the facility remains stable.

Pet Food Manufacturing One-Year Employment Impact Third Congressional District				
Impact	Annual Jobs	Labor Income	Contribution to AR CD 3 GRP	Total Impact
Direct	264	\$10,651,163	\$31,073,088	\$140,763,497
Indirect	132	\$9,327,698	\$14,274,688	\$31,881,608
Induced	47	\$2,038,216	\$3,867,784	\$6,779,109
TOTAL	443	\$22,017,077	\$49,215,561	\$179,424,213

State and local taxes generated as a result of employment by the Pet Food manufacturing company would total more than \$6.8 million annually. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total almost \$1.6 million.

One-Year State & Local Tax Impact from Employment Third Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$5,205,506	\$1,611,305	\$6,816,810

FOURTH CONGRESSIONAL DISTRICT

The economic impact scenario used for the Fourth district is based on a Hardwood Veneer and Plywood manufacturing facility that would make a \$300 million capital investment and create 520 jobs with an average hourly wage of \$21.60.

The combined impact of capital investment and one year of employment will result in a total impact of nearly \$545 million in the Fourth Congressional District. This includes an increase in the Gross Regional Product in excess of \$210 million. That impact includes labor income of nearly \$154 million and a state and local tax impact in excess of \$11 million. Construction is a one-time event, and associated jobs are likely temporary or represent an existing employee working additional hours. For that reason, jobs are considered supported rather than created. However, the impacts from job creation at the wood manufacturing facility would have annual effects for as long as employment remained stable at the facility.

HARDWOOD VENEER & PLYWOOD MANUFACTURING SCENARIO OVERVIEW			
Fourth Congressional District			
\$544,862,828	\$210,524,609	\$153,624,366	\$11,354,917
Total Impact	Contribution to	Total Labor Income	Total State & Local
(Includes Capital Investment & One Year of Employment)	Regional Economy		Taxes

HARDWOOD VENEER & PLYWOOD MANUFACTURING SCENARIO OVERVIEW	
Fourth Congressional District	
Total Impact	\$544,862,828
Direct Impact	\$414,702,691
Indirect Impact	\$90,247,421
Induced Impact	\$39,912,715
(Includes Capital Investment & One Year of Employment)	

Capital Investment

For purposes of this impact assessment, it is assumed that the capital investment will occur in 2025. Note that investment is measured in a single year, even if the project may stretch over two or more years. The investment will result in an impact of more than \$374 million in the state's Fourth Congressional District. The total direct impact supports more than 1,200 jobs with direct labor income of nearly \$91 million. An additional 430 jobs would be supported by supply chain and consumer spending, and the total increase in Gross Regional Product would exceed \$145 million.

Hardwood Veneer & Plywood Manufacturing Capital Investment				
Fourth Congressional District				
Impact	Supported Jobs	Labor Income	Contribution to AR CD 4 GRP	Total Impact
Direct	1,207	\$90,983,735	\$104,656,566	\$294,961,140
Indirect	295	\$15,550,918	\$24,263,388	\$49,468,484
Induced	215	\$7,811,045	\$16,162,174	\$29,661,436
TOTAL	1,717	\$114,345,699	\$145,082,128	\$374,091,060

State and local taxes generated as a result of the manufacturing facility capital investment would total more than \$7.6 million. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total almost \$4.4 million.

State & Local Tax Impact from Capital Investment Fourth Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$3,222,620	\$4,397,205	\$7,619,825

Employment

The creation of 520 jobs at the wood product facility would result in a total annual impact of nearly \$171 million, including annual labor income of more than \$39 million and approximately \$65 million in increased Gross Regional Product in the Congressional District.

Hardwood Veneer & Plywood Manufacturing One-Year Employment Impact Fourth Congressional District				
Impact	Annual Jobs	Labor Income	Contribution to AR CD 4 GRP	Total Impact
Direct	520	\$23,234,868	\$40,954,984	\$119,741,552
Indirect	230	\$13,344,253	\$18,901,633	\$40,778,937
Induced	74	\$2,699,547	\$5,585,864	\$10,251,279
TOTAL	824	\$39,278,667	\$65,442,481	\$170,771,768

State and local taxes generated as a result of employment in the Wood Products sector would total more than \$3.7 million annually. It should be noted that incentives are not accounted for in this data. Incentives would only have an impact on the direct taxes paid by the benefitting company. Indirect and induced tax impacts, which are not affected by incentives, total more than \$2.6 million.

One-Year State & Local Tax Impact from Employment Fourth Congressional District		
Direct Tax Impact	Indirect & Induced Tax Impact	Total Tax Impact
\$1,122,255	\$2,612,837	\$3,735,092

RECOMMENDATIONS

While expansion of broadband infrastructure has been a goal not just in Arkansas, but across the country, for more than a decade, the COVID pandemic has created a new sense of urgency as more and more people realize the how inadequate service can impact everything from education to groceries. Broadband use no longer has peak periods during the day as broadband is required for school and work, streaming entertainment, shopping, and healthcare.

Arkansas' overarching goal in expanding broadband access is to develop infrastructure to provide 100 x 100 service to every community in Arkansas. With that as the base standard, the state would then have a scalable network that could be enhanced over years to come by utilizing the available footprint and coinciding adjacencies. This would allow for improvements in broadband speed, in addition to using industry best practices to build out any underserved communities, including those with high unemployment, generational poverty, and declining populations. In fact, digital equity may be Arkansas' greatest challenge in developing a network that provides connectivity to every Arkansas community.

The recommendations in this plan are designed to achieve the overarching goal using strategies that CREATE, CONNECT, COLLABORATE, CHAMPION and COMMUNICATE. With a focus on the strategies and action steps outlined in this document, the DOC Arkansas Broadband Office should also establish metrics tied to use of public funds to ensure that networks are built to competitive specifications and that reach all Arkansans at an affordable cost.

CREATE	CONNECT	COLLABORATE	CHAMPION	COMMUNICATE
<ul style="list-style-type: none">Expand DOC Arkansas Broadband OfficeEmpower Arkansas Mayors and County Judges	<ul style="list-style-type: none">Encourage Innovative AccessibilityEnsure Digital EquityProvide Funding Options	<ul style="list-style-type: none">Establish Key PartnershipsDevelop Synergies with Service Providers	<ul style="list-style-type: none">Provide Technical Support to StakeholdersCreate Additional Funding OptionsPropose Policy Changes	<ul style="list-style-type: none">Develop Consumer Education ToolsField Stakeholder Surveys

Strategies

CREATE

- **Expand the Arkansas Department of Commerce Broadband Office**

The current staffing level in the DOC Arkansas Broadband Office is limiting the staff's opportunities to explore new ideas and funding opportunities, as well as hindering their ability to develop critical relationships necessary to aggressively pursue broadband expansion in Arkansas. This plan recommends a number of additional strategies and tasks that will clearly enhance Arkansas' broadband development, but a lack of available human resources could limit the opportunity to pursue these initiatives.

- *Increase Staffing*

The DOC Arkansas Broadband Office currently has three employees. Those employees currently focus only on applications for funding and moving forward with those approved projects. Additional staff with necessary technical knowledge would have the opportunity to conduct additional research, maintain accountability for active projects, and pursue innovative solutions to enhance Arkansas' broadband infrastructure.

- *Enhance Services*

This Broadband Plan includes recommendations for several new programs and services to make Arkansas more competitive in efforts to build a fast, reliable and affordable broadband network. These programs will identify service gaps; support local officials; develop enhanced partnerships; and provide consumer education.

- **Empower Arkansas' County Judges and Mayors**

Arkansas' county judges and mayors serve on the front lines in the broadband expansion effort, often in the position of seeking funding and negotiating a contract with the Internet Service Provider offering service in the area. This process might go more smoothly and result in better outcomes for consumers if local officials are provided some training and tools to negotiate a strong partnership for their communities.

- *Promote Funding Options*

The first step in this process is to educate local officials about the various funding options that may be available, along with requirements to receive funds. Because funding opportunities are regularly evolving, it is important to offer an updated list that includes information about the application cycle, local match requirements, technical specifications to qualify for funding.

- *Deploy Community Tool Kit*

To further support local communities in their quest for increased broadband infrastructure, a community tool kit should be developed. It would be a compilation of background information, along with tools to identify the community's specific needs and unique broadband opportunities. Next Century Cities has an online toolkit that is available. This

should be reviewed to determine if it aligns with Arkansas' current situation and expansion goals. If it does not, the Next Century Cities toolkit might be a starting point for development of an Arkansas-specific tool for local officials.

- *Offer Training Webinars*

In addition to the toolkit, training webinars might also be offered to communities as they prepare for the expansion of broadband access. These sessions might provide information about strong community – ISP partnerships; negotiating contracts with ISPs; understanding access vs. affordability considerations; and completing funding applications.

- *Establish Broadband Action Teams*

To further assist local officials with enhancing broadband access in their communities, they might consider forming Broadband Action Teams. These groups, which might include elected officials, educators, healthcare providers, and major employers, would work at the community level to set priorities and offer additional resources to those responsible for securing funding and connecting with ISPs.

- *Develop Broadband Ready Community Designation*

As communities begin working toward expansion of broadband infrastructure, a program that designates them as ready actively pursue funding and partnerships to move forward with investment in broadband infrastructure. Specific details for the program would be developed but might address revisions to an existing local Comprehensive Plan and approval of a model ordinance that demonstrates that local government is prepared to address any challenges to establishing and expanding broadband.

- *Create County Broadband Dashboard*

Work with local communities to collect data to populate a county Broadband Dashboard that provides additional information about existing infrastructure and current service providers. These tools should include number of households, current download and upload service speeds, and any funding that has already been received. Additionally, a map illustrating existing infrastructure should also be included.

CONNECT

- **Encourage Innovative Accessibility**

As Arkansas works to build out a more robust broadband infrastructure, opportunities exist to develop innovative accessibility solutions. Taking an innovative approach may not provide the maximum desired speeds, but they will potentially provide much-needed access in rural areas, while also offering more affordable solutions. A recent report from Deloitte concerning economic effects of broadband infrastructure found that a high-speed threshold may result in discouraging any type of investment, even though they may provide both cost and timing advantages compared to more comprehensive solutions. “Innovative solutions can help spawn a competitive broadband environment that improves broadband affordability for all households,” according to

the report.²¹ Currently, Arkansas available funding for broadband expansion does not provide for development of these innovative approaches based on existing funding guidelines.

- *Address Underserved Areas*

Rural Arkansas has many unserved or underserved areas. However, there are innovative solutions to providing access without building out the full broadband network. Community and Drive-in hotspots offer residents free, temporary access to internet service if they do not have broadband service in their homes.

These hot spots, which can be available at libraries, community centers, government buildings, parks, and other public areas, allow people to connect for schoolwork, telework, telehealth, job searches, and unemployment filings, for example. Additionally, in many cases, these hot spots can be accessed from a vehicle in a parking lot, allowing residents to utilize the service without even going into a building.

It should be noted that not all underserved areas are in rural communities. Economically disadvantaged communities in urban and suburban environments also are generally underserved, not for lack of infrastructure, but because the available services are cost prohibitive. The state of Washington has been aggressive in development of these readily accessible networks and now has more than 300 hot spots offering free broadband access to all residents.²²

- *Consider Educational Needs*

When the COVID pandemic caused K – 12 and post-secondary education to be delivered virtually, many students did not have broadband access at home. Many communities were forced to come up with “band-aid” approaches to allow students to continue learning while schools were closed. This also served to illustrate the challenges many families face on a daily basis as students attempt to do homework without broadband access.

Some states have had success with equipping school buses with WiFi access on routes that require students to travel more than 30 minutes to and from school. The bus WiFi allows students to work on any assignments requiring internet access before they arrive at home or at school.

- *Provide for Healthcare Uses*

While telemedicine has been a tool to deliver quality healthcare in rural areas for some time, the COVID pandemic brought the virtual physician visits to the mainstream. However, historically, those telemedicine visits were available in a local medical clinic with adequate infrastructure to connect the patient and the consulting specialist, not from home. Until enhanced broadband services are available to all Arkansans, these innovative solutions would provide opportunities to allow residents to continue using telemedicine to address their healthcare needs.

- *Future Scalability*

Interestingly, keeping up with the past decade’s 20 percent annual growth scaling in the fiber optic industry could not have happened by just increasing the size and speeds of network infrastructure alone. Provider based systems had to rely on advancing the ability to provide multiple data paths over a single pair of fiber optic cable. This can be visualized by a single interstate expanding from 4 to 12 lanes of traffic to allow greater throughput and reduce bottlenecks in traffic flow.

The COVID-19 pandemic has exposed how important scalability and flexibility in network infrastructure has become as we have become more reliant upon our connectivity to continue to operate and educate as a society.

No matter the technology being utilized , ensuring a smooth upgrade path from existing fiber optic networks will prove essential. Consequently, new and scalable systems must reuse the existing fiber infrastructure and available optical systems as much as possible. Networks will have to operate over a number of infrastructure vendors and styles of deployment. Ensuring that there is scalable interoperability while remaining flexible to technology demands is key. This is precisely why we should consider the engineering logic and scalability of contingent fiber systems today.

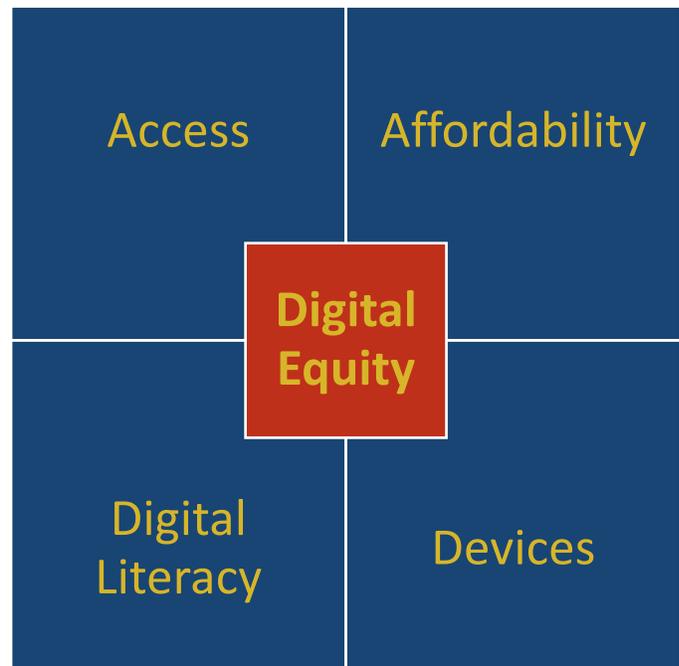
We must strive to design open ended architectural solutions that will continue to support future technological advancements by keeping adjacencies available in interconnecting network infrastructure.

- **Ensure Digital Equity**

In a state like Arkansas with significant rural population and below average household income, digital equity must always be a consideration in development of the state’s broadband capacity. Digital Equity and Inclusion initiatives will provide access to resources that Arkansans experiencing poverty and other challenges will have access to critical resources only available through internet access.

- *Conduct Gap Analysis*

To fully understand the digital divide at play in Arkansas, a gap analysis should be conducted with data specific to Arkansas. Federal data is often misleading, because it only measures broadband availability, without considering the cost or the understanding of key demographic groups. An effort to identify the gaps between availability and affordability will help communities and ISPs



understand the need to provide strong reliable internet service at a price that the majority of residents can afford.

- *Develop Metrics*

Accountability measures should be identified to confirm that funded broadband projects are built according to specifications and that all targeted populations have affordable access to service. The speed and capacity for these networks must be at a level to support uses for healthcare, education, and employment.

- **Provide Funding Options**

The gap analysis should also identify potential solutions to closing the digital divide, including consideration for a funding mechanism to incentivize development of affordable programs, as well as subsidizing needed devices and digital literacy skills training. Having available funding to work with ISPs who will commit to build the capacity of community-based organizations may also be a valuable approach that should be explored.

The DOC Arkansas Broadband Office should work with local communities to ensure that their plans and agreements provide equal access to the technology and training needed. Additionally, the office should provide information to potential customers about sources for potential financial assistance and special programs offered by ISPs, as well as how to access training to allow them to maximize their internet access.

COLLABORATE

- **Establish Key Partnerships**

To efficiently and effectively enhance Arkansas' broadband network, it will be critical to establish effective partnerships involving local, state, and federal government agencies; ISPs; other utilities; healthcare providers; educational institutions; community-based organizations; and the business community. Local planning teams should also establish these partnerships at the community level to more accurately understand the local and regional dynamics that may differ from the overall statewide perspective.

- *Create an Arkansas Broadband Advisory Council*

A Broadband Advisory Council would allow the DOC Arkansas Broadband Office to bring together legislators, government agencies, Internet Service Providers (ISPs), other potential partner utilities, and technology sector representatives to establish policy and funding that would expedite the development of the state's broadband infrastructure. Additionally, this group would serve as a collaborative partnership needed to build out a broadband program that extends the existing footprint, while also ensuring affordability.

- *Convene a Broadband Summit*

The DOC Arkansas Broadband Office should annually host a statewide conference to engage all partners. This would provide an opportunity to communicate the current status of

broadband expansion in the state, in addition to seeking stakeholder feedback and discussing potential future policy issues that may impact effective implementation of the broadband strategy.

- *Collaborate with Economic Development and Workforce Organizations*

The opportunity for residents to participate in education and training programs, as well as to seek employment is often dependent on access to adequate broadband service. Economic Development and Workforce organizations at the local, regional, and state levels play a vital role in the implementation of improved broadband access. Local and regional broadband needs should be addressed in economic and community development plans, and workforce organizations should consider broadband infrastructure needs in considering curriculum, delivery methods, and digital literacy needs of the regional population.

CHAMPION

- **Provide Technical Support to Stakeholders**

Stakeholders at all levels may need technical support to utilize existing broadband service and to maximize opportunities for new infrastructure. Some needs may be addressed by programs described earlier that are targeted to further educating local officials involved in partnering with ISPs to enhance or develop internet service. However, additional as-needed support should also be available.

- *Offer Training*

The DOC Arkansas Broadband Office might work with other state agencies, as well as educational institutions to develop digital literacy training programs for Arkansans who may not have the skills needed to fully benefit from better internet access. The training might be available through local public libraries and other community-based organizations with clients that may need additional training.

Additional training programs might also be developed for businesses related to business technologies, software, and business digital and e-commerce strategies.

- *Create Online Tools*

Online tools would not be effective with stakeholders who do not currently have access to broadband or do not possess basic technology skills. However, online tools might be developed to support local Broadband Action Teams, as well as providing access to more advanced skills as follow-up to basic digital literacy training.

Additionally, opportunities for financial assistance available to low-income and underserved residents, as well as online security and safety programs should also be available online.

- **Propose Policy Changes**

Because available technologies and use cases are rapidly evolving, the DOC Arkansas Broadband Office should continually monitor changes and consider whether national and global trends require an adjustment to any Arkansas policies impacting broadband development.

- *Monitor Industry Trends and Standards*

While some industry trends may not require policy changes, they are likely to be important to future planning and how local communities engage with ISPs. In these cases, new information should be effectively shared with communities that are currently developing new infrastructure or are researching and/or negotiating enhancement opportunities.

More importantly, the Federal Communications Commission (FCC) serves as the federal oversight agency for the nation's broadband infrastructure. The agency frequently issues new programs and policies that will impact state and local broadband development. Specifically, the FCC sets a minimum standard definition of download and upload speeds to be considered broadband. Any adjustment to this standard would potentially require action at the state level to ensure that future funding addresses the most current requirements.

- *Explore Additional Funding Options*

Just as the technology evolves, so too does availability of funding and specific requirements associated with potential funding sources. The DOC Arkansas Broadband Office should continually identify available funding opportunities and support local communities in securing funding and meeting all stipulated requirements, particularly focused on those funding sources that target unserved and underserved areas. In addition, the Office should identify any funding gaps that might need to be addressed at the state level. It is also important to collect and maintain any data that may be important in developing successful applications for funding.

COMMUNICATE

- **Develop Consumer Education Tools**

To fully achieve the potential of broadband availability across Arkansas, efforts must be made to increase awareness of available local services, as well as the importance and value of having broadband access in homes. A series of targeted communications strategies will be key to further educating the public.

- *Enhance Awareness of Importance of Broadband Access*

Several reports have shown that many people, particularly those in more rural areas or in low-income populations, may not pursue getting broadband service. They simply don't understand the importance of having service to improve education, healthcare, and employment opportunities. Communication efforts targeted to these key groups of stakeholders should speak to opportunities to obtain service at an affordable price, as well as illustrating the uses and benefits to having adequate internet service.

- *Launch Social Media Presence*
An aggressive social media strategy should be developed to inform stakeholders about the successes achieved as new broadband services come online. Additionally, social media will reach a broad portion of the Arkansas population, as data shows that while lower-income residents may not have internet service, they are likely to have a smart phone that provides access to social media platforms.
- *Produce Instructional Videos*
To enhance the social media effort, brief videos providing tips for use of broadband could be produced and made available on the DOC Arkansas Broadband Office website. Embedding video content in social media posts typically results in a higher “click” rate, which increases exposure to the messages.
- *Post Provider Information and Cost*
Information about ISPs and the various service options available should be available online, along with any cost assistance that might be available. For example, the federal Emergency Broadband Benefit Program that was developed during the COVID pandemic should be promoted as long as it is available. Any similar programs that are offered, including those offered by ISPs, should also be featured online and included in social media messaging.

■ **Field Stakeholder Surveys**

Many state broadband agencies regularly survey various stakeholder groups, including residents, ISPs, businesses, education and healthcare providers, and other partners. The DOC Arkansas Broadband Office website currently provides access to a survey of residents who have broadband service. This survey captures data about providers, cost, and usage, in addition to a speed test showing both download and upload speeds.

- *Enhance Available Data*
In addition to the current speed test and use survey, the DOC Arkansas Broadband Office can collect additional data by surveying other audiences. One reason this is so important is to obtain higher quality data about on-the-ground broadband access across the state. Many existing sources fail to explore the digital divide caused by lack of affordable service options.

Additional surveys targeted at local officials, rural businesses, work from home residents, healthcare providers, and educational institutions would be beneficial in working with local planning committees and ISPs in determining the best plan for expanded service in local communities. Surveying broadband providers would provide additional understanding of the challenges and opportunities they consider in their broadband development plans.

- *Collect Data from Non-Users*
One key group to target with a survey would be those Arkansans who do not currently have internet access in their homes. A survey of these residents would explore whether or not service is available, in addition to exploring the reasons they have chosen to not purchase

internet service if it is available. This data would be very useful in developing marketing messages to dispel any myths and further enhance understanding of the need for broadband service.

GLOSSARY OF TERMS

4G – The fourth generation of broadband cellular network technology, succeeding 3G and preceding 5G, that provides users the ability to access the mobile web, high-definition mobile TV, video conferencing, and general browsing.

Bandwidth – The maximum rate of data transfer.

Bit – The bit is a basic unit of information in computing and digital communications.

Broadband – Technologies that provide high-speed internet access and other advanced services to end users. Broadband is currently defined by the Federal Communications Commission as 25/3 Mbps, though the minimum speed requirement is expected to increase to 100/100 Mbps in the coming months.

Byte – Unit of digital information that most commonly consists of eight bits.

Cable internet – A form of broadband internet access that uses the same infrastructure as cable television.

Cloud – Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data center available to many users over the internet.

Downstream – Internet connections have two components – a downstream and upstream. Downstream refers to the rate at which the user’s computer can receive data from the internet. Otherwise known as ‘download.’

DSL – Digital subscriber line is a family of technologies used to transmit digital data over telephone lines.

Fiber-Optic – A system that uses glass (and sometimes plastic) to carry light to transmit information. Typically, each side of the fiber is attached to a laser that sends the light signals. When connection reaches capacity, the lasers may be upgraded to send more information along the same strand of fiber.

Fixed Wireless – A connectivity model that uses stationary wireless technology to bridge the “last mile” between the internet backbone and the subscriber.

Gbps – Gigabits per second is a data transfer speed equal to 1,000 megabits per second (Mbps).

Internet Backbone – principal data routes between large, strategically interconnected computer networks and core routers of the internet.

Kbps – Kilobits per second is a data transfer speed equal to 1,000 bits per second.

Mbps – Megabits per second is a data transfer speed equal to 1,000,000 bits per second and also equal to 1,000 kilobits per second.

Satellite Internet Access – Internet access provided through communication satellites.

Symmetrical – Internet connections have two components - a download and upload speed. When the two speeds are the same, the connection is termed symmetric.

Take Rate –The number of subscribers to a service – typically expressed in a percentage of those taking the service divided by the total number of people who could take the service. If a community fiber network passes 10,000 people and 6,000 people subscribe, it has a take rate of 60%. When planning the network, it will be built to be profitable at or above a certain take rate as defined in the business plan. Generally, networks require a few years to achieve take rates due to the long time it takes to connect each customer.

Telecommunications – The exchange of information by various types of technologies over wire, radio, optical or other electromagnetic systems.

Telehealth/Telemedicine – Health care initiatives supported by a broadband connection. Telehealth applications are especially reliant on high-capacity, low-latency service. Goals include the ability to bring quality health care to those living far from hospitals or to elderly patients wishing to age in place.

Underserved – those living in areas lacking access to broadband at or below a speed of 25/3 Mbps.

Unservd – those living in areas in which broadband service is not readily available.

Upstream – Internet connections have two components – a downstream and upstream. Upstream refers to the rate at which the user’s computer can send data to the Internet. Synonyms: upload.

Wi-Fi – A suite of protocols that allow wireless devices to exchange information using unlicensed frequencies. Equipment carrying the Wi-Fi brand is interoperable.

Wireless Broadband – Telecommunications technology that provides high-speed wireless internet access or computer networking access over a wide area. The term comprises both fixed and mobile broadband.

ENDNOTES

- ¹ <https://data.census.gov/cedsci/table?q=types%20of%20computers%20and%20internet%20access&g=0400000US05&tid=ACST1Y2019.S2801&hidePreview=true>
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- ⁴ <https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf>
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- ²² <https://www.commerce.wa.gov/building-infrastructure/washington-state-drive-in-wifi-hotspots-location-finder/>