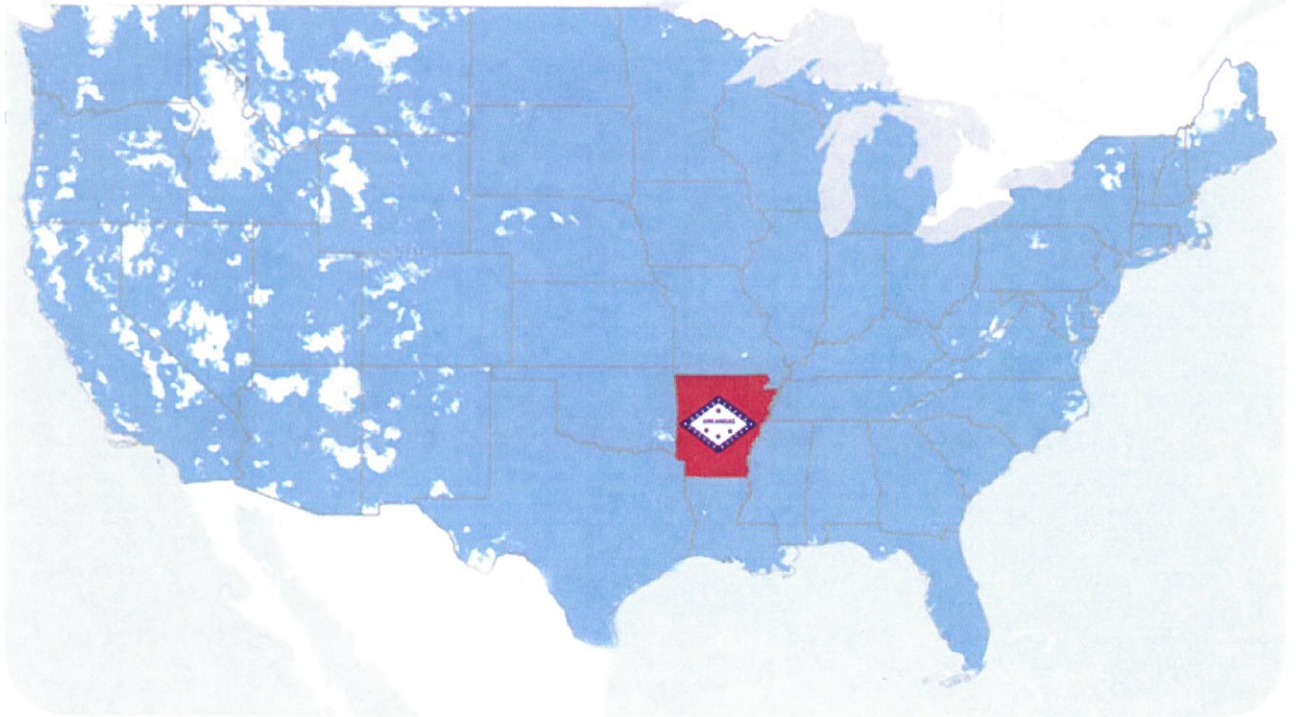


HANDOUT 1

ARKANSAS STATE BROADBAND MANAGER'S REPORT



PERIOD ENDING June 30, 2017

Cover Art: This is the National Broadband Map displaying broadband technologies offered to end users (DSL, cable, wireless, fiber, etc.). This data is created and maintained by the National Telecommunications and Information Administration (NTIA) in collaboration with the Federal Communications Commission (FCC), and in partnership with the 50 states, five territories and the District of Columbia.

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Background

Arkansas Code Annotated § 25-4-125 designates the director of the Arkansas Department of Information Systems to serve as the state broadband manager to coordinate the state's efforts to expand and improve broadband capacity and availability. The state broadband manager serves as the single point of contact for state agencies, boards, commissions, and constitutional officers, including without limitation the governor, Department of Education, Department of Higher Education, the Arkansas State Department of Transportation, private businesses, enterprises, broadband providers, nonprofits, governmental entities and other organizations. The legislation requires the state broadband manager to submit a report on a semiannual basis to the Arkansas Governor's Office, Arkansas Legislative Council, and Joint Committee on Advanced Communications and Information Technology of the activities and operations of the state broadband manager for the preceding six months. The report is to be submitted on or before January 1 and July 1 of each year.

What are the Areas of Focus for Arkansas?

- **Availability**
Broadband is available if it is accessible to accomplish all necessary goals regardless of the nature of those goals (business or educational, economic or legislatively mandated).
- **Affordability**
Broadband is affordable if it is both affordable to the consumer to purchase and for the provider to offer.
- **Adequacy**
Broadband is considered adequate if it provides enough bandwidth to meet the personal, business, educational, and economic development needs of each constituency and is capable of expansion to meet future needs.

What is Broadband?

Definitions:

- Arkansas's Definition (Act 947 of 2009)- "Broadband" means any service used to provide internet access at a minimum speed that is the greater of:
(A) Seven hundred sixty-eight kilobits per second (768 kbps) in at least one (1) direction; or
(B) The minimum speed for broadband as defined by regulations of the Federal Communications Commission as of January 1, 2009, or as of a later date if adopted by rule of the Arkansas Broadband Advisory Council

- FCC's Definition - (Federal Communications Commission) categorizes an internet service as "broadband" if it transmits at a speed of at least 25 megabits/second (Mbps) for downloading and at least 3 Mbps for uploading *Broadband speed requirements vary for personal use versus use by institutions*
- Advanced Telecommunications Capability- The FCC has sometimes used the term "broadband" to refer to "advanced telecommunications capability." The definition of advanced telecommunications capability found within this report is without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology." The term broadband is not equated to advanced telecommunications capability, but the availability of various broadband services that contribute to advanced telecommunications capability is taken into consideration.

Source: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf

What are the Types of Broadband?

- Digital Subscriber Line (DSL)
- Cable Modem
- Fiber
- Wireless (Wi-Fi, Mobile, and Fixed Wireless)
- Satellite

Fixed Broadband

Fixed (wired) broadband services generally require a physical transmission path to connect a user to the internet. Examples include coaxial cable, copper wire, or fiber-optic cable. Cable modem accounts for approximately 59 percent of all fixed broadband service subscriptions. Cable, DSL, and fiber, collectively represent approximately 97 percent of the fixed broadband market.

Source: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf

Why is Broadband Important?

Broadband is fast becoming of primary importance for







- Citizens
- Education
- Public safety
- Health care
- Economic development
- Government
- Business
- Environmental management

All of which are significant enablers to economic growth, delivery of services and quality of life.

How Important Is Broadband Speed?

The FCC definition of broadband speed changes as technologies continue to evolve. In its 2015 Broadband Progress Report, the FCC indicated that advances in technology, market offerings by broadband providers and consumer demand prompted updating broadband benchmark speeds to 25 Mbps for downloads and 3 Mbps for uploads. The commission found that speeds established in 2010 were outdated and inadequate for evaluating whether advanced broadband is being efficiently deployed to Americans.

Source: <https://www.fcc.gov/reports/2015-broadband-progress-report>

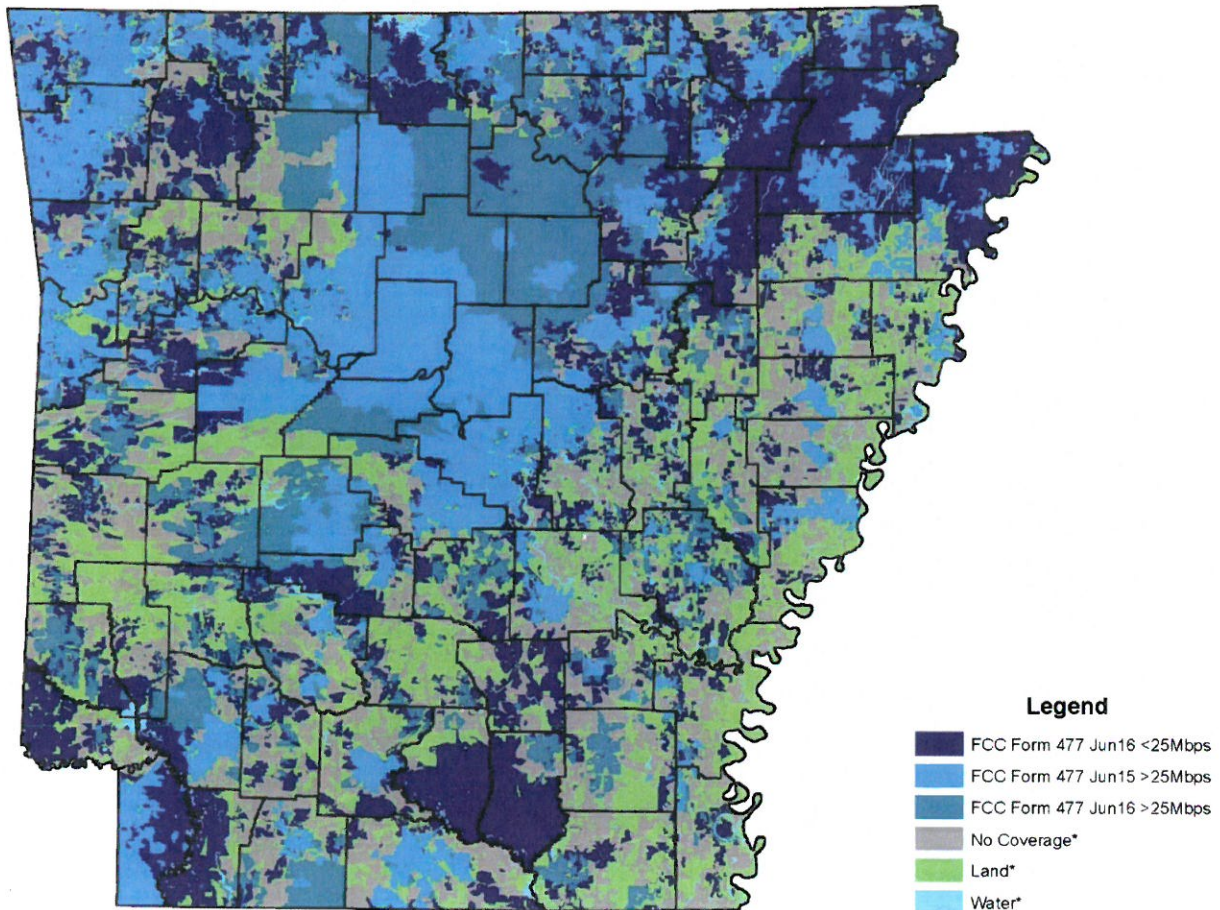
What Do You Want/Need To Do Online?	What Speed Do You Need ?					
	1.5 Mbps	3 Mbps	5 Mbps	10 Mbps	20 Mbps	20+ Mbps
Web Surfing Email Online Shopping 	✓	✓	✓	✓	✓	✓
Internet Phone Music Streaming Short Video Clips 		✓	✓	✓	✓	✓
SD Video Streaming Skype Facetime 			✓	✓	✓	✓
Online Video Gaming HD Video Streaming Online Education 				✓	✓	✓
Multiple Heavy Users Smart Home Video Surveillance 					✓	✓
Telemedicine Video Conferencing Super Computing 						✓

Source: <http://www.teammidwest.com/wp-content/uploads/2013/10/What-Speed-Do-You-Need.jpg>

What is the State of Broadband Availability and Adequacy in Arkansas?

2015 & 2016 State Coverage Map of 25Mbps of Fixed Broadband Growth

This map depicts growth of FCC-defined fixed broadband (excluding satellite) of 25Mbps between June 2015 and June 2016.



Source: Arkansas Geographic Information Systems

AGIO Sources: <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>

*No coverage areas on the map legend indicate census blocks containing 1) population 2) land 3) water.

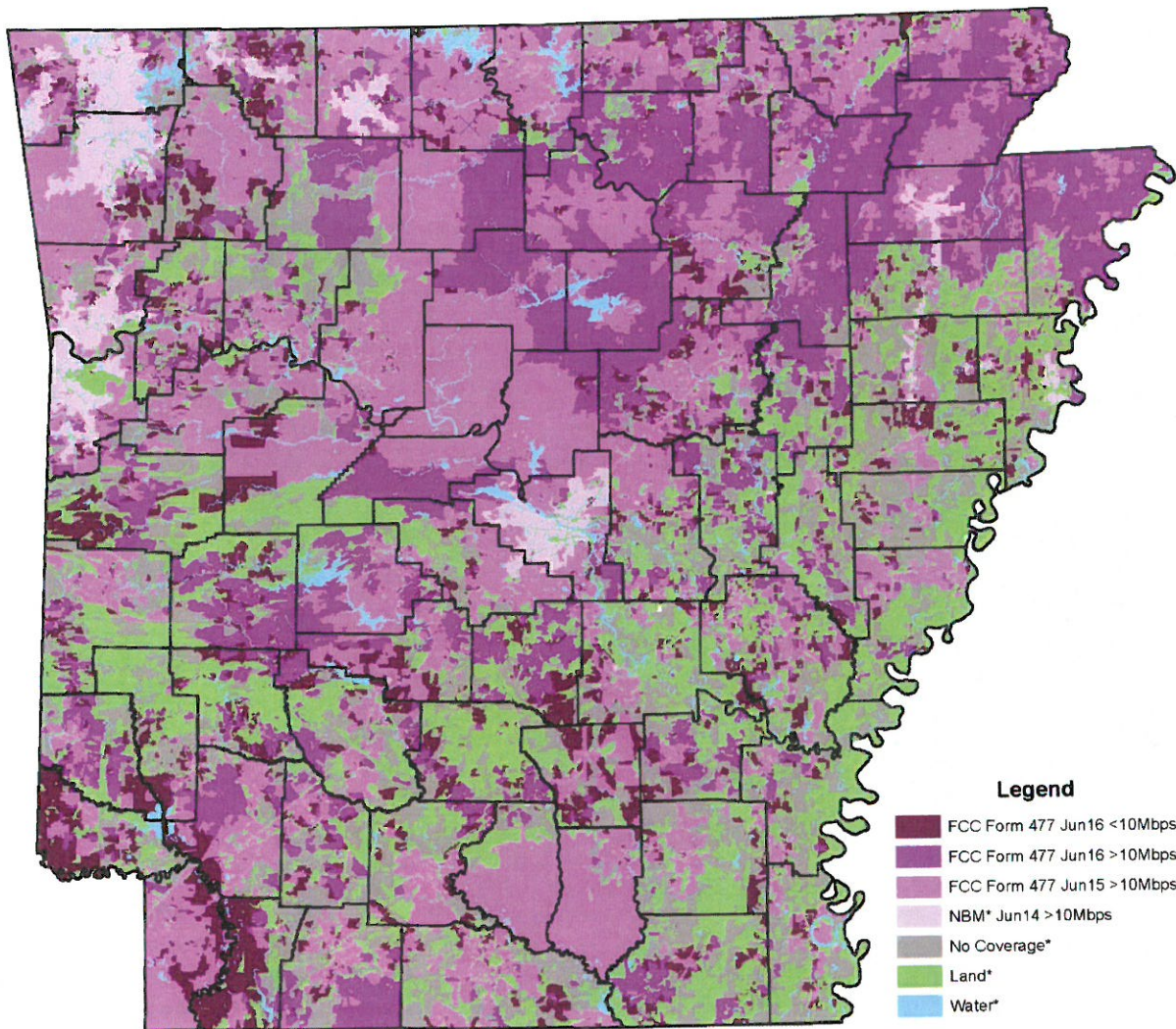
Appendix I: Americans without Access to FCC Defined Telecommunications Capability by State and U.S. Territory

Appendix II: Percentage of County Population with Access to FCC Defined Broadband



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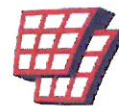
2014-2016 State Coverage Map of 10Mbps of Fixed Broadband Growth*



Source: Arkansas Geographic Information Systems

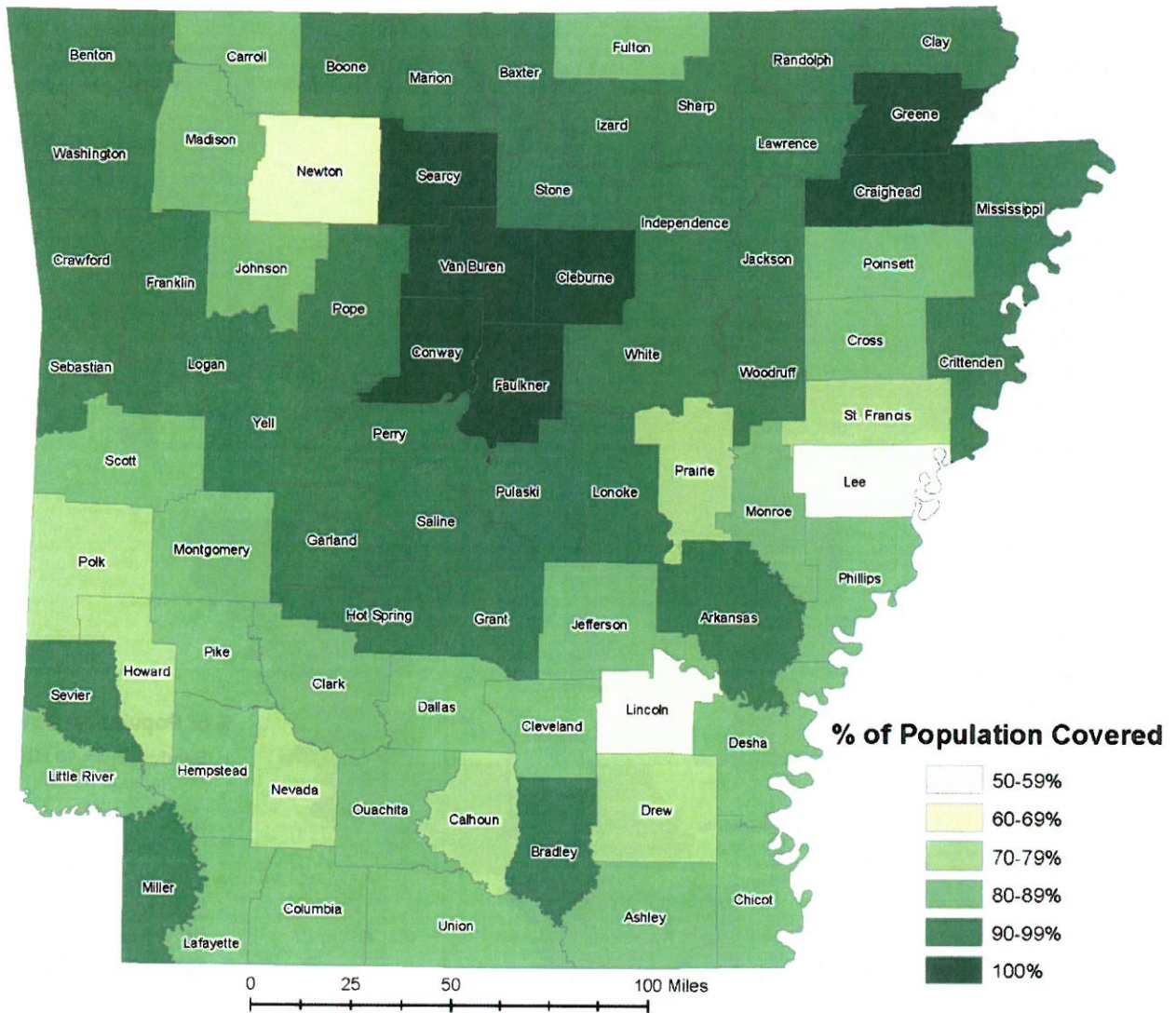
AGIO Sources: <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>

* Excludes satellite. Although the FCC redefined broadband as 25Mbps/3Mbps, minimum speed requirements for phase II Connect America Fund eligibility were 10Mbps/1Mbps. No coverage areas on the map legend indicate census blocks containing 1) population 2) land 3) water.



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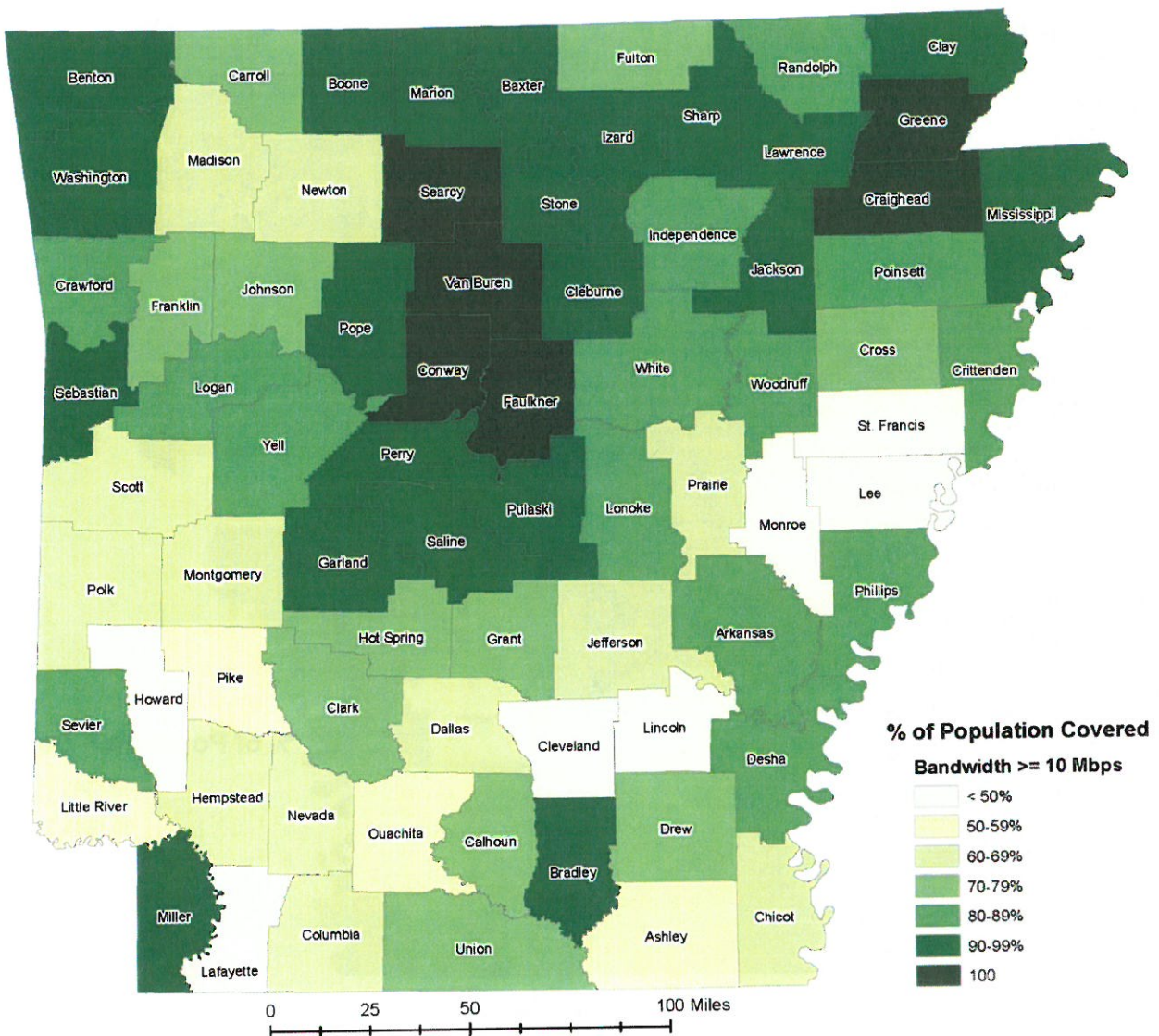
County Populations with Access to Fixed Broadband of any Speed



Source: Arkansas Geographic Information Systems

Appendix III: Percentage of County Population with Access to Broadband at any Speed

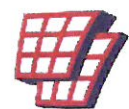
County Populations with Access to 10Mbps of Fixed Broadband*



Source: Arkansas Geographic Information Systems

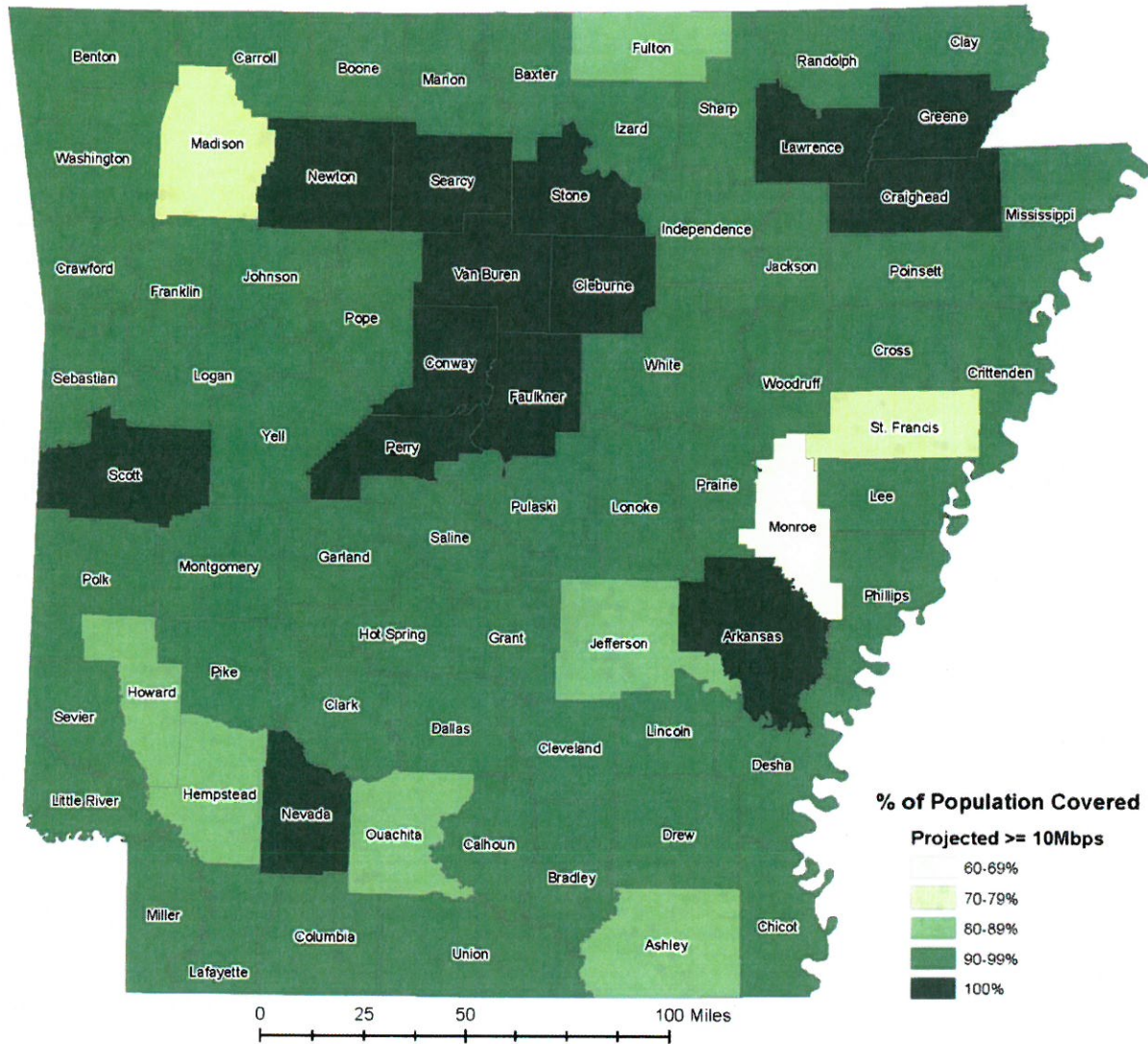
*Excludes satellite. Although the FCC redefined broadband as 25Mbps/3Mbps, minimum speed requirements for phase II Connect America Fund eligibility were 10Mbps/1Mbps. The rationale for the difference is that it allowed carriers to build networks in rural areas capable of upgrading to faster speeds found in urban areas. The FCC further determined that additional flexibility made it easier for carriers to expand service to more challenging outlying households it otherwise would have excluded from expansion.

Appendix IV: Percentage of County Population with Access to 10Mbps Broadband



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County Populations with Projected Access to 10Mbps of Fixed Broadband upon Completion of CAF II Funded Projects*



Source: Arkansas Geographic Information Systems

*In the Broadband Manager's Activities and Operations Report for period ending December 31, 2015, it was documented that AT&T and CenturyLink received a share of \$54 million from phase II CAF to deploy broadband services in rural and remote areas of the state with little or no high speed internet access. This map depicts access to 10Mbps of fixed broadband when projects by AT&T and CenturyLink are completed. The combined total of Arkansans estimated to benefit from these projects was 97,500.

Appendix V: Percentage of County Population with Access to 10Mbps Broadband Upon Completion of CAFII



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State Community Anchor Institutions

The dots on this map are state government locations including schools, libraries and other governmental entities where broadband exists.

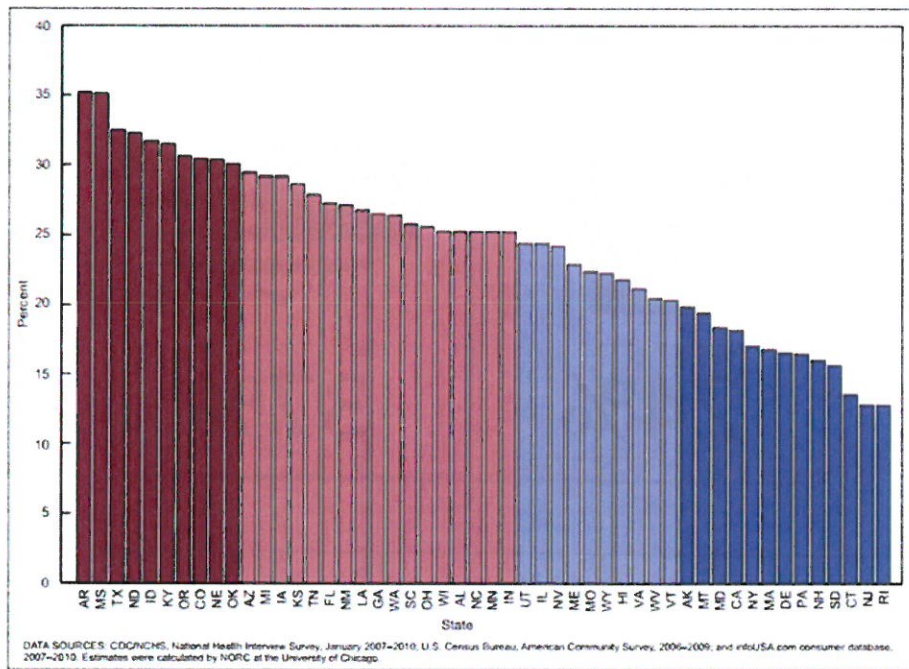


Mobile Broadband

Mobile devices have become an indispensable tool of daily life that serve in a personal as well as a business capacity. Smartphones and tablets commonly rely upon mobile broadband services for texting, email, social media, and entertainment applications. At home, work or traveling, mobile devices are also most likely to be used to call 9-1-1 in emergency situations. The smartphone share of mobile phones in the U.S. increased to 77 percent in November 2015 from 50 percent two years earlier.

In a National Health Statistics Report by the Center for Disease Control (CDC) presenting state-level estimates of the percentage of adults and children living in households that did not have a landline telephone, but did have at least one wireless telephone, Arkansas led the nation.

This report revealed 35.2 percent of Arkansans were abandoning landline telephones in favor of cellphones. CDC research found that lower-income people, younger people and renters are more likely to have only wireless phones.



Source: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf
<http://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf>

What is the State of Broadband Affordability in Arkansas?

Cost continues to be the number one obstacle for broadband adoption at home. A study of barriers to broadband adoption by Pew Research Center pointed to multiple factors for why residents do not subscribe to high-speed service at home.

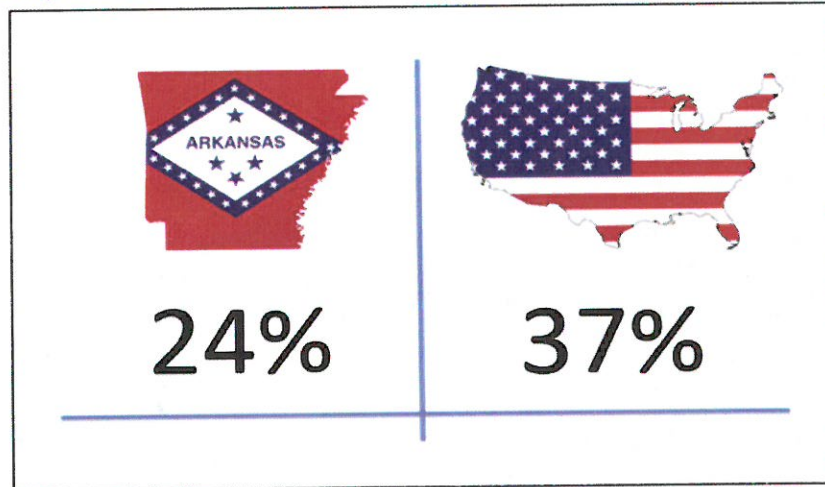
- Monthly cost of a broadband subscription is too much
- Cost of a computer
- Functionality of mobile devices rivals the monthly cost of in-home broadband makes traditional broadband a lesser priority
- Lack of access to suitable broadband service in their area

A majority (65 percent) of non-adopters said that a lack of home broadband is a major disadvantage of some sort.

As evidenced in the chart below, Arkansas continues to lag behind the nation in the overall adoption rate of at home or fixed broadband.

Source: <http://www.pewinternet.org/2015/12/21/3-barriers-to-broadband-adoption-cost-is-now-a-substantial-challenge-for-many-non-users/>

Overall Adoption Rates for Fixed Advanced Telecommunications Capability for Arkansas Compared to the U.S. Population



Source: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf

Appendix VI: Overall Adoption Rates for Fixed Advanced Telecommunications Capability by State and U.S. Territory

State and Federal Initiatives to Expand Broadband

Arkansas Public School Computer Network (APSCN)

A top priority for Governor Asa Hutchinson, the Arkansas Department of Education, and the Arkansas Department of Information Systems (DIS) is ensuring that the state's K-12 public schools have sufficient high-speed broadband services. In early 2015, 58 percent of Arkansas districts were meeting the FCC's internet access target of 100 Kbps/student. However, the governor, ADE and DIS set forth a lofty goal for **100 percent** of Arkansas schools to reach 200 Kbps/student of highly secure, E-rate eligible, state funded, high speed broadband connectivity.

An invitation for bid was opened March 9, 2015. Contracts were awarded to 22 telecommunications providers. Work began to upgrade the Arkansas Public School Computer Network (APSCN) to a statewide aggregated network delivered over fiber optic cable to serve the state's schools and education cooperatives.

Fort Smith became the first school district in the state to connect to the upgraded high speed network in July 2015. By December 31, 2015, 42 school districts and education cooperatives were functioning on the upgraded broadband Arkansas Public School Computer Network (APSCN).

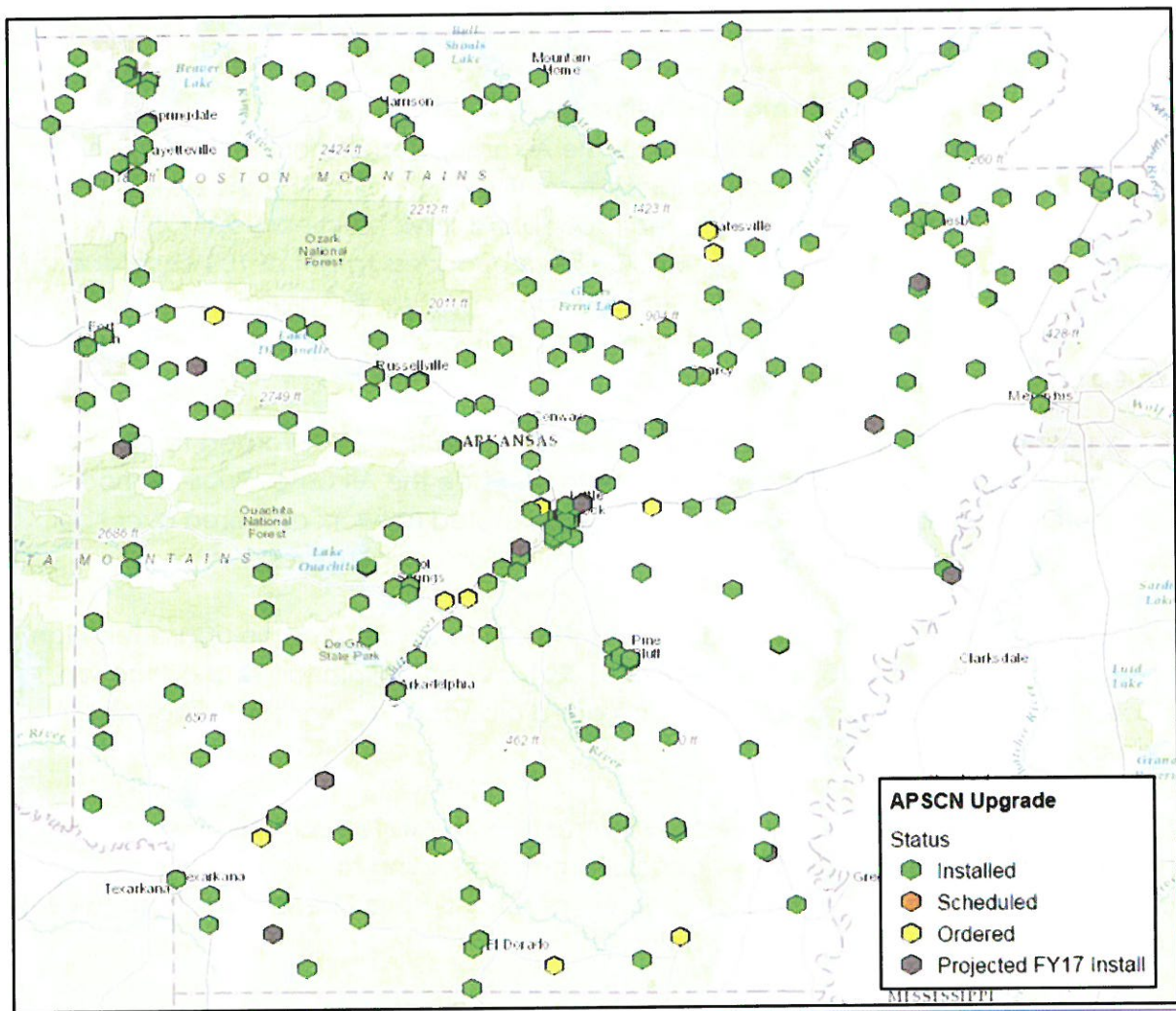
Most recent data indicates that nearly 95 percent of the state's schools now either meet or exceed the FCC's internet access target, according to EducationSuperHighway. Ninety-four percent of schools have fiber connections to keep up with growing demand for bandwidth.

As of June 30, 2017, 271 of the 276 districts included in the original bid have been upgraded to highly secure, E-rate eligible, high speed broadband delivered over fiber optic cable. At the request of ADE, an additional 14 charter school campuses and the Jacksonville-North Pulaski County School District were added to the project scope.

Appendix VII: Internet access service providers with 100 percent of the students they serve meeting the minimum 100 kbps per student needed for digital learning

Source: <http://www.compareandconnectk12.org/2016/AR>

Appendix VIII: Snapshot of K-12 Connectivity in Arkansas from EducationSuperHighway



DIS, in partnership with the Arkansas Geographic Information Systems Office, developed an interactive map to tracking the progress of the APSCN broadband upgrade. The map can be found at the following link <https://gis.arkansas.gov/dis/viewer/apscn/index.html>.

Dark Fiber Transport Services

The Department of Information Systems (DIS) issued an Invitation for Bid (IFB) through the Office of State Procurement, November 9, 2016, to obtain pricing and contract(s) for dark fiber transport services. Bids were subsequently awarded to two vendors. The deployment of the dark fiber will form two fiber rings connecting the state's two data centers and multiple point to point spurs creating a High Speed Optical Network accommodating speeds of 10, 40, and 100 Gigabit Ethernet. This will encompass two fiber rings connecting the state's two data centers and other state buildings having a need for bandwidth and equipped with emergency power.

Appendix IX: Project Concept and Buildings with State Entities Impacted

Proposed Legislation Creating an Income Tax Credit for Broadband Fails

House bill 2097, filed March 6, 2017, during the 91st General Assembly, to create an income tax credit for a portion of the cost to provide new infrastructure used to bring broadband internet access service to underserved or unserved areas of the state died in House committee at Sine Die adjournment. No other legislation pertaining to the expansion of broadband was approved during the session.

Bipartisan Coalition of U.S. Representatives Urge President to Invest in Rural Broadband

Arkansas Congressman Bruce Westerman was among a bipartisan coalition of 71 members of the U.S. House of Representatives who signed a January 30, 2017, letter to President Donald Trump urging him to invest in rural broadband as part of his infrastructure plan. The letter emphasized high-speed internet access as an essential service leveraged to attract and retain businesses and expose businesses to a global marketplace. It also highlighted sufficient broadband as an important communication tool between family and friends, timely responses to an emergency response, agricultural efficiency, and access to educational materials.

Appendix X: Letter to President Trump in its Entirety

FCC Forms Broadband Deployment Advisory Committee (BDAC)

Formed by FCC Chairman Ajit Pai, the mission of the BDAC will be to provide advice and recommendations to the FCC on how to accelerate the deployment of high-speed internet access in communities across the nation. Among the first objectives is the formation of a model code that can be used by cities as a template to make broadband deployment easier. The first meeting of the committee took place April 21, 2017.

Source: https://apps.fcc.gov/edocs_public/attachmatch/DOC-343243A1.pdf

FCC Announces Formation of Rural Broadband Auctions Task Force

The mission of the Rural Broadband Auctions Task Force will be to oversee the Connect America Fund Phase II (CAF-II) auction that will offer almost \$2 billion to connect unserved and underserved locations over the next decade. The task force will also oversee the Mobility Fund II (MF-II) auction that will offer more than \$4.5 billion in new funding for expanding 4G LTE mobile coverage across rural America.

Source: https://apps.fcc.gov/edocs_public/attachmatch/DOC-344201A1.pdf

FCC Amends Rules to Help Bring High-Speed Internet to High Cost Locations

The rule change announced by the FCC, April 20, 2017, reverses previous rules in which high-cost carriers lost universal support for capital expenses on a construction project if the average cost per location exceeded a company-specific threshold. As a result, high-cost locations might never receive broadband service.

Source: http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0420/DOC-344482A1.pdf

FCC Rule Reforms to Accommodate Skyrocketing Demand for Mobile Broadband

Rule reforms to the 800 MHz Cellular Service band will allow providers to provide mobile broadband service to the public more efficiently and increase innovation and investment to meet skyrocketing demand.

Source: https://apps.fcc.gov/edocs_public/attachmatch/DOC-344038A1.pdf

FCC Works to Remove Barriers to Wireless Broadband Deployment

A Notice of Proposed Rulemaking (NPRM) was opened to examine how state and local regulatory barriers affect and speed and cost of wireless broadband deployment. In the press release, the FCC said wireless providers depend on having a regulatory framework that promotes and facilitates network infrastructure deployment.

Source: http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0420/DOC-344486A1.pdf

Private Initiatives to Expand Broadband

Aristotle

Aristotle, uses fixed wireless solutions to provide affordable, high-speed internet for rural and suburban communities in Arkansas. Aristotle recently installed networks in England and Keo and has expansion plans that call for coverage of a six-county area of the Arkansas Delta. Residents of these counties have been searching for a broadband solution that will allow them to become competitive in markets for crops, handmade goods and other economic development initiatives.

Source: <https://www.arktimes.com/arkansas/big-ideas-for-arkansas-2017/Content?oid=4808702>

Arkwest Communications

Arkwest Communications will be fiber to the home companywide by the third quarter 2018 making gigabit service possible to its entire customer base. This is made possible through RUS and the Arkansas High Cost Fund.

Source: Broadband provider survey

CenturyLink

CenturyLink is competing in the CAFII program. Upon completion of the program, the company will upgrade or add over 44,000 living units. That number does not include the "halo" effect which includes customers benefitting from CAFII upgrades that are not located within CAFII areas.

Source: Broadband provider survey

Cox Communications

Cox is participating in the Connect to Compete program. More information is available on the company's website at <https://www.cox.com/aboutus/cox-in-the-community/connect2compete.html>

Source: Broadband provider survey

HillBilly Wireless

HillBilly Wireless currently has 115 towers in the northeast corner of Arkansas and south of I-30 around Malvern and Poyen. Twelve towers are scheduled for turn up in May/June. Land was purchased. Eight towers were built and 12 water towers were leased over the last year to provide service to rural areas. A project to replace all back-hauls to provide customers with more bandwidth is 80 percent completed.

Source: Broadband provider survey

Ouachita Electric Cooperative

Ouachita Electric began a project to bring some of the fastest Internet service in the U.S. to its co-op members. A collaborative effort with South Arkansas Telephone, which already provides Internet service to half of Ouachita Electric's service territory, and the Arkansas Rural Internet Service (ARIS), is set to bring phone, video, and gigabit Internet service — more than ten times the speeds typically offered by cable companies — to all 9,500 homes and businesses throughout Ouachita Electric's service territory.

Source: <https://ilsr.org/arkansas-utility-leads-on-energy-broadband/>

Premier Broadband

Premier Broadband was started in a Hope, Arkansas, with the aim of delivering high quality and ultra-high speed internet service only available in large cities to rural cities and towns across Arkansas. According to the company's website, Premier will bring urban internet service speeds to rural Arkansas through a wireless LTE network. The company said it would bring best-of-breed technologies major carriers deploy to rural Arkansas and provide simple installation without installation crews, roof mount antennas, and unreliable service.

Source: <https://www.premierbroadband.com/about/>

Pinnacle Communications

Our CLEC (Pinnacle Telecom) has expanded fiber into Fort Smith, Alma and Van Buren. The company is currently building Ozark to bring faster internet solutions with gigabit capabilities to areas of these communities where demand and economies are aligned.

Source: Broadband provider survey

The Computer Works

Started fiber to the home. Expanding 3.65 wireless.

Source: Broadband provider survey

Windstream

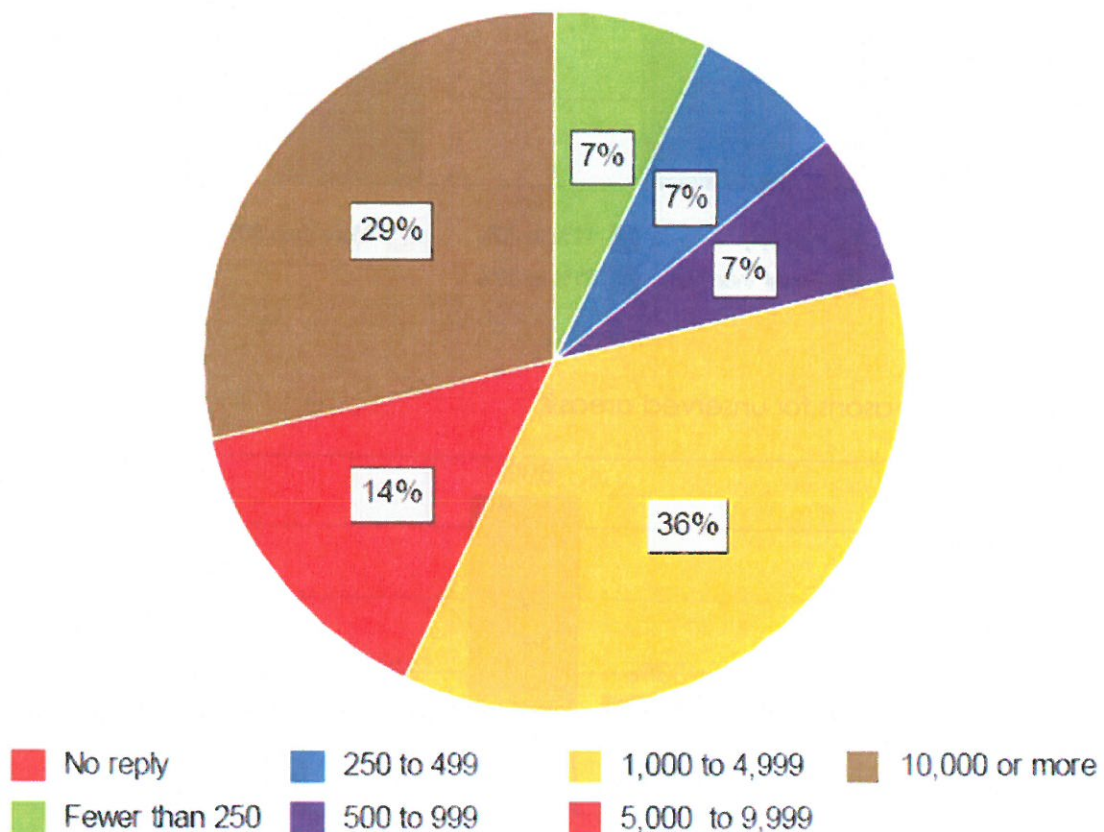
Windstream has and will continue to upgrade and expand its network as part of the CAFII program. The company will continue to improve its network in Arkansas to increase broadband coverage and capabilities to both business and consumers throughout its service territory.

Source: Broadband provider survey

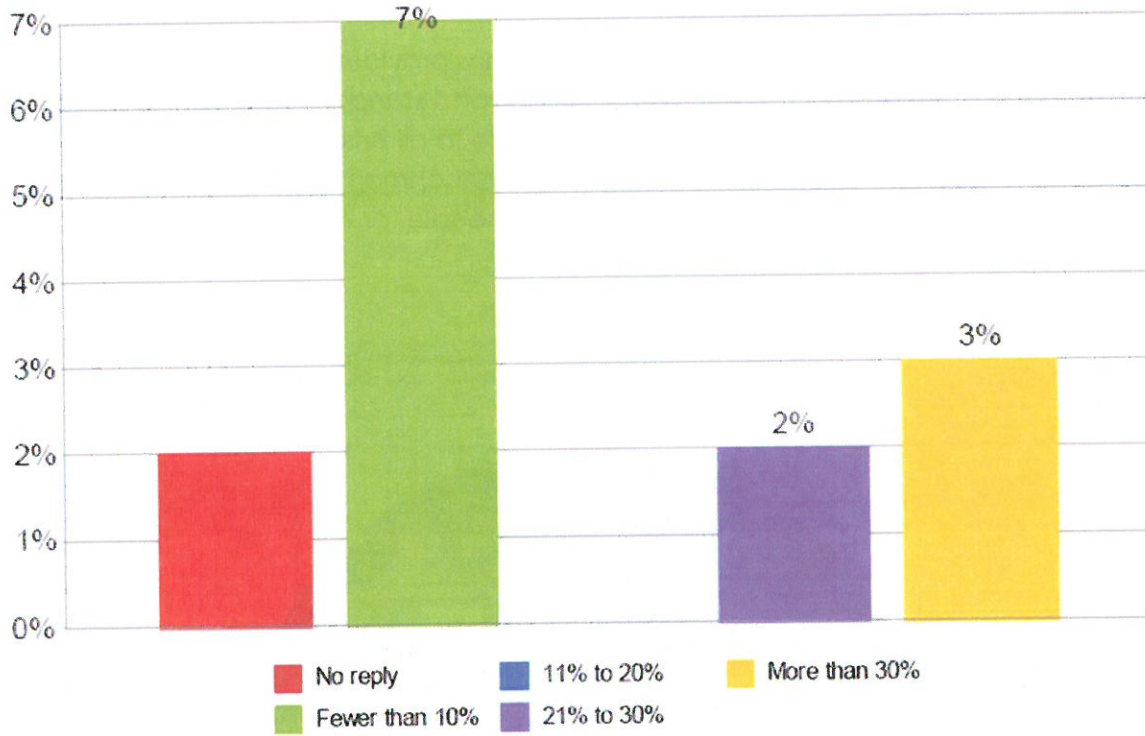
Provider Survey for Broadband Expansion

A survey was sent to 56 Arkansas telecommunications providers to help provide a representation of Arkansas's current overall broadband standing, to create a guide for ensuring that broadband becomes readily available to all Arkansans regardless of geographical location, and to establish important benchmarks that can be used to measure progress toward moving the broadband needle for Arkansas. Survey responses were received from 14 providers.

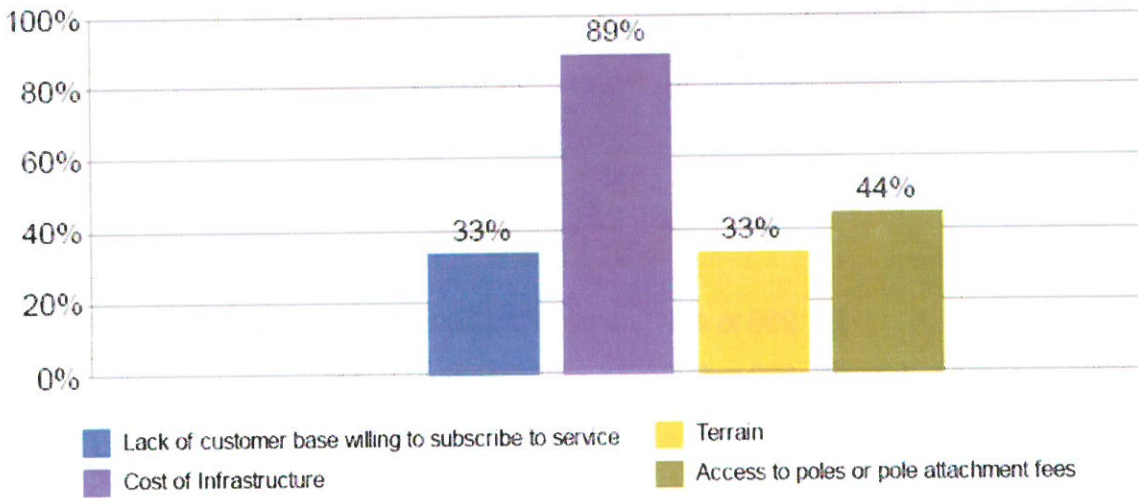
Q. What is your subscriber base?



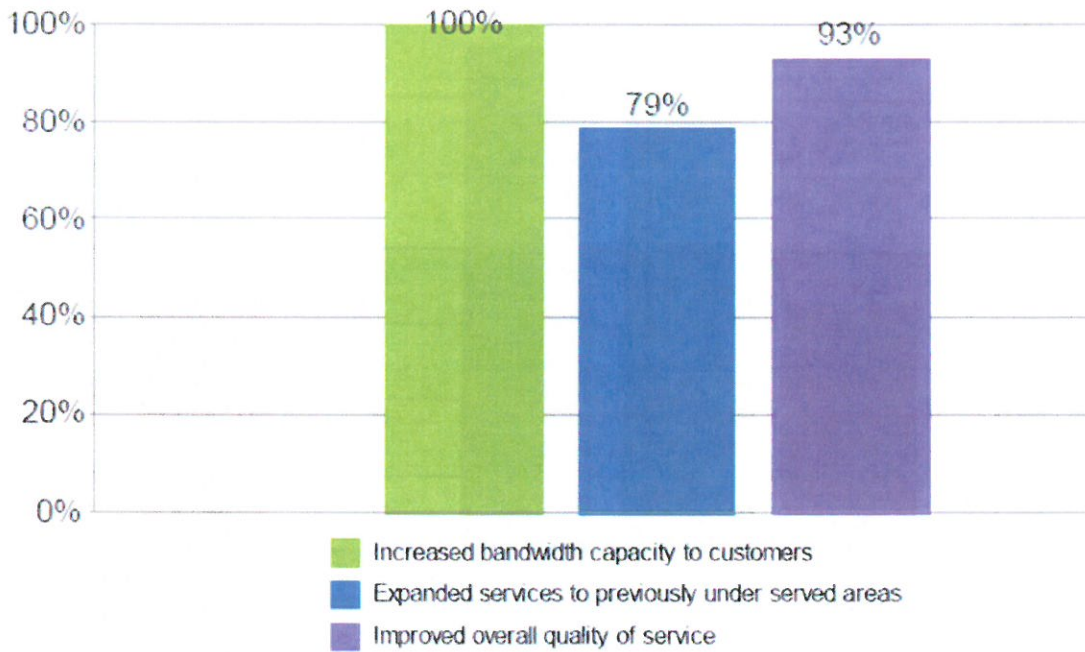
Q. What percentage of your customers are unserved?



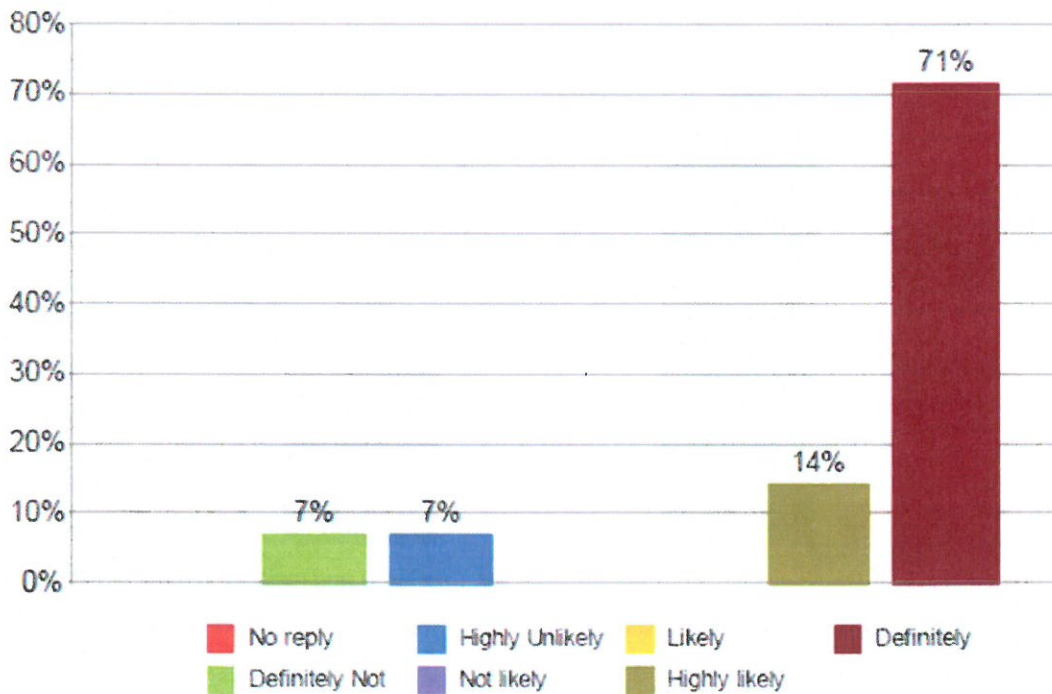
Q. What are the reasons for unserved areas?



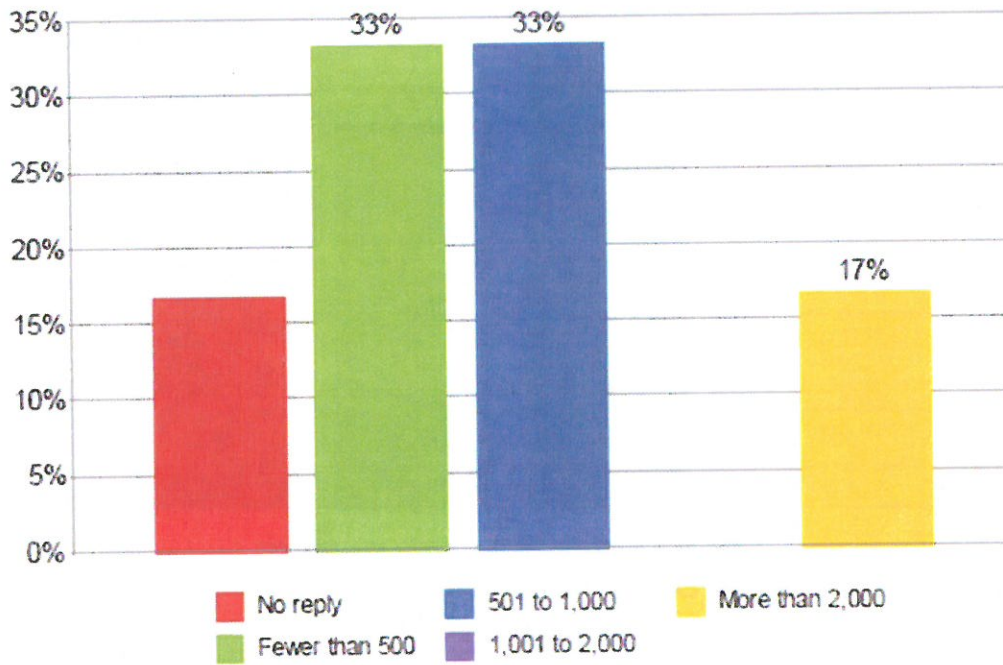
Q. Within the past year, what broadband improvement efforts have you undertaken within your service area?



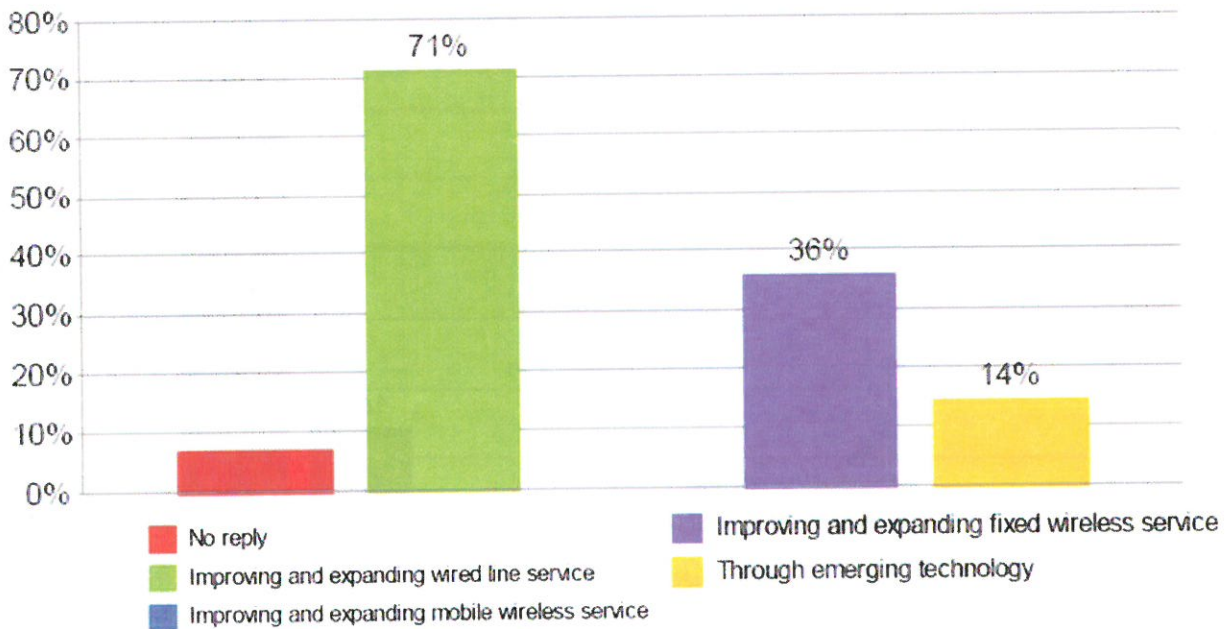
Q. How likely are you to expand broadband coverage in your service area in the next six months?



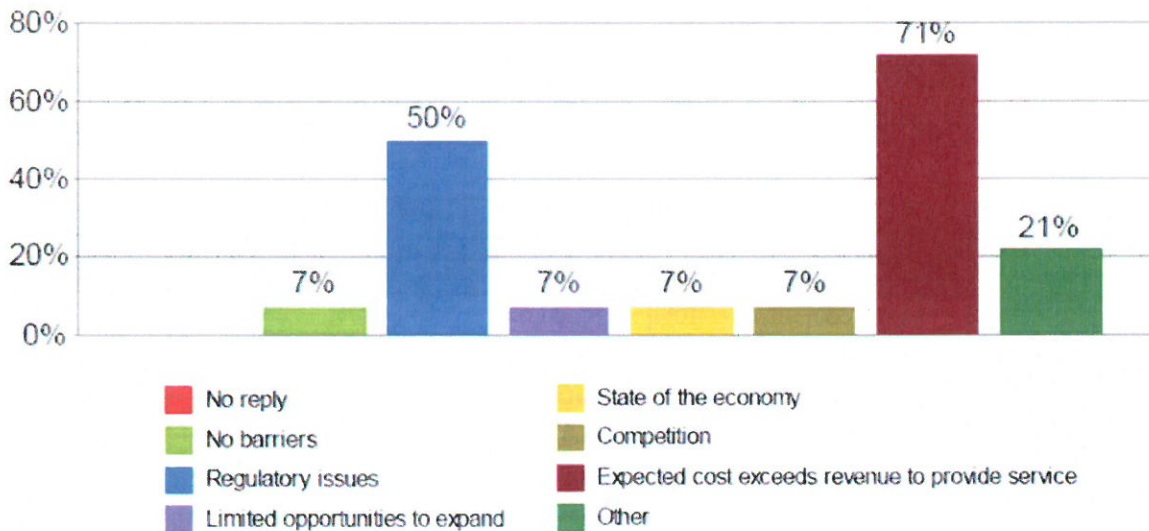
Q. If you are planning on expanding in the next six months, approximately how many new customers are you hoping to serve?



Q. Are you focusing more on improving and expanding wired broadband or utilizing wireless?



Q. Do you have barriers to expansion?



If other, please describe.

- Affordable access to attach utility poles
- Funds and wireless spectrum
- The state competing for our customers

Q. What can the state do from a policy or regulatory perspective to incentivize broadband expansion in rural areas?

Regulate attachment rates on Electric Co-Op poles similar to the federal regulation on public utility companies.

Listen and respond to our concerns

Allow WISP's to apply for grants or funding for expansion. Mandate cities and rural water departments to allow WISPs to lease (at a reasonable rate) the use of Water Towers to provide service to the area.

I have applied for FCC grant opportunities, but they go to big businesses like at&t. Also the high cost of leasing 2.5 ghz frequency from educational band.

We are a municipal utility.

Enhance support mechanisms such as state USF for fiber deployments already made and for future deployments and enhancements.

We rely heavily on the Arkansas High Cost Fund to help support the roll out of broadband service in our area as well as maintain the service after construction of facilities is complete. A more stable fund with cost of living increases to the cap would help our confidence that the fund will be there to help pay back debt incurred and maintenance cost in the future. As you can see from my answers to the above questions, we are constructing fiber to the home as fast as current support will allow. You have to remember we are serving areas where there is not a business case that will support the cost of building a fiber network.

Economic incentives limited to areas not currently served by an unsubsidized provider.

whatever incentives should compliment existing efforts at the federal level and not work counter to federal funding or plans.

Tax incentives through property tax relief and sales tax exemptions would help to free up capital and to reduce overall project costs. State grant funds for broadband would be welcome, as long as they are separate and apart from any support available for voice service in rural areas. Additionally, a reduced emphasis on the narrow definition of broadband as 25/3 and recognition that 10/1, as required by the FCC for CAF2 purposes, qualifies as broadband.

Appendix I

Americans without Access to FCC Defined Telecommunications Capability by State and U.S. Territory

	All Areas		Urban Areas		Rural Areas	
	Pop. Without Access	% of Pop.	Pop. Without Access	% of Pop.	Pop. Without Access	% of Pop.
United States	33,981,660	10%	10,551,623	4%	23,430,037	39%
States and District of Columbia	31,353,263	10%	9,001,161	3%	22,352,102	38%
Alabama	985,263	20%	169,154	6%	816,109	41%
Alaska	194,375	26%	26,389	5%	167,986	67%
Arizona	898,724	13%	487,930	8%	410,794	63%
Arkansas	744,572	25%	128,125	7%	616,447	48%
California	2,017,166	5%	920,182	2%	1,096,984	61%
Colorado	539,327	10%	180,754	4%	358,573	53%
Connecticut	47,464	1%	42,220	1%	5,244	1%
Delaware	29,789	3%	13,355	2%	16,434	10%
District of Columbia	10,539	2%	10,539	2%		
Florida	1,297,648	7%	795,839	4%	501,809	29%
Georgia	932,484	9%	306,414	4%	626,070	25%
Hawaii	26,201	2%	2,001	0%	24,200	22%
Idaho	301,118	18%	47,922	4%	253,196	55%
Illinois	1,188,012	9%	419,780	4%	768,232	56%
Indiana	1,131,373	17%	220,696	5%	910,677	52%
Iowa	451,148	15%	76,830	4%	374,318	37%
Kansas	436,249	15%	123,315	5%	312,934	49%
Kentucky	699,360	16%	73,542	3%	625,818	34%
Louisiana	881,763	19%	282,361	8%	599,402	50%
Maine	162,563	12%	20,362	4%	142,201	17%
Maryland	262,002	4%	166,879	3%	95,123	13%
Massachusetts	183,103	3%	129,783	2%	53,320	10%
Michigan	1,153,387	12%	245,299	3%	908,088	37%
Minnesota	641,787	12%	59,140	1%	582,647	43%
Mississippi	1,034,047	34%	129,674	9%	904,373	60%
Missouri	1,257,622	20%	204,409	5%	1,053,213	61%
Montana	317,581	31%	54,888	9%	262,693	61%
Nebraska	304,018	16%	94,847	6%	209,171	51%
Nevada	249,722	8%	151,168	5%	98,554	65%
New Hampshire	99,129	7%	22,094	3%	77,035	15%

	All Areas		Urban Areas		Rural Areas	
	Pop. Without Access	% of Pop.	Pop. Without Access	% of Pop.	Pop. Without Access	% of Pop.
New Jersey	285,478	3%	188,462	2%	97,016	21%
New Mexico	431,125	20%	156,432	9%	274,693	61%
New York	430,202	2%	40,455	0%	389,747	17%
North Carolina	738,306	7%	77,082	1%	661,224	20%
North Dakota	97,315	14%	11,294	2%	86,021	37%
Ohio	983,927	8%	202,958	2%	780,969	31%
Oklahoma	1,066,854	27%	247,333	9%	819,521	66%
Oregon	416,102	10%	150,759	5%	265,343	37%
Pennsylvania	803,645	6%	270,708	3%	532,937	20%
Rhode Island	17,996	2%	15,757	2%	2,239	2%
South Carolina	852,483	18%	247,842	8%	604,641	38%
South Dakota	92,406	11%	9,962	2%	82,444	26%
Tennessee	834,545	13%	106,128	2%	728,417	34%
Texas	2,976,879	11%	1,216,234	5%	1,760,645	46%
Utah	180,004	6%	77,530	3%	102,474	39%
Vermont	106,615	17%	5,223	2%	101,392	27%
Virginia	925,477	11%	186,349	3%	739,128	38%
Washington	200,320	3%	48,339	1%	151,981	14%
West Virginia	554,124	30%	92,104	10%	462,020	48%
Wisconsin	744,002	13%	33,517	1%	710,485	43%
Wyoming	137,922	23%	10,802	3%	127,120	63%
U.S. Territories	2,628,397	66%	1,550,462	54%	1,077,935	98%
American Samoa	54,504	100%	41,307	100%	13,197	100%
Guam	159,377	99%	107,044	99%	52,333	100%
Northern Mariana Islands	51,455	100%	33,906	100%	17,549	100%
Puerto Rico	2,259,097	62%	1,325,683	50%	933,414	98%
U.S. Virgin Islands	103,964	100%	42,522	100%	61,442	100%

Appendix II

Percentage of County Population with Access to FCC Defined Broadband

County Name	Total Population	25Mbps	25Mbps %
Arkansas	19019	14431	76
Ashley	21853	8122	37
Baxter	41513	35282	85
Benton	221339	199822	90
Boone	36903	31212	85
Bradley	11508	7095	62
Calhoun	5368	267	5
Carroll	27446	16511	60
Chicot	11800	3014	26
Clark	22995	16627	72
Clay	16083	11361	71
Cleburne	25970	25758	99
Cleveland	8689	100	1
Columbia	24552	15986	65
Conway	21273	21273	100
Craighead	96443	82966	86
Crawford	61948	52958	85
Crittenden	50902	40308	79
Cross	17870	11378	64
Dallas	8116	3959	49
Desha	13008	9012	69
Drew	18509	13086	71
Faulkner	113237	112704	100
Franklin	18125	8648	48
Fulton	12245	7180	59
Garland	96024	92894	97
Grant	17853	9588	54
Greene	42090	30696	73
Hempstead	22609	14100	62
Hot Spring	32923	16688	51
Howard	13789	969	7
Independence	36647	25667	70
Izard	13696	8980	66
Jackson	17997	13777	77
Jefferson	77435	46019	59
Johnson	25540	17272	68

County Name	Total Population	25Mbps	25Mbps %
Lafayette	7645	967	13
Lawrence	17415	9833	56
Lee	10424	3399	33
Lincoln	14134	3891	28
Little River	13171	3693	28
Logan	22353	13331	60
Lonoke	68356	50784	74
Madison	15717	2835	18
Marion	16653	6990	42
Miller	43462	38007	87
Mississippi	46480	36194	78
Monroe	8149	3204	39
Montgomery	9487	4428	47
Nevada	8997	4125	46
Newton	8330	5111	61
Quachita	26120	13069	50
Perry	10445	10074	96
Phillips	21757	17112	79
Pike	11291	5557	49
Poinsett	24583	18225	74
Polk	20662	1969	10
Pope	61754	57853	94
Prairie	8715	620	7
Pulaski	382748	369212	96
Randolph	17969	12272	68
St. Francis	28258	10245	36
Saline	107118	98010	91
Scott	11233	6522	58
Searcy	8195	8070	98
Sebastian	125744	119178	95
Sevier	17058	12851	75
Sharp	17264	13098	76
Stone	12394	10964	88
Union	41639	30020	72
Van Buren	17295	17235	100
Washington	203065	186885	92
White	77076	53657	70
Woodruff	7260	4610	63
Yell	22185	17830	80

Appendix III

Percentage of County Population with Access to Broadband at any Speed

County Name	Total Population	Any bandwidth	Any %
Arkansas	19019	17548	92
Ashley	21853	17962	82
Baxter	41513	39628	95
Benton	221339	214582	97
Boone	36903	36543	99
Bradley	11508	10689	93
Calhoun	5368	4083	76
Carroll	27446	23694	86
Chicot	11800	10131	86
Clark	22995	19818	86
Clay	16083	15678	97
Cleburne	25970	25870	100
Cleveland	8689	6951	80
Columbia	24552	19595	80
Conway	21273	21273	100
Craighead	96443	96386	100
Crawford	61948	57330	93
Crittenden	50902	46530	91
Cross	17870	14849	83
Dallas	8116	6849	84
Desha	13008	11278	87
Drew	18509	14170	77
Faulkner	113237	113141	100
Franklin	18125	16288	90
Fulton	12245	10874	89
Gariand	96024	93862	98
Grant	17853	16435	92
Greene	42090	42090	100
Hempstead	22609	19175	85
Hot Spring	32923	29471	90
Howard	13789	10188	74
Independence	36647	35593	97
Izard	13696	12768	93
Jackson	17997	16966	94
Jefferson	77435	67482	87
Johnson	25540	22495	88

County Name	Total Population	Any bandwidth	Any %
Lafayette	7645	6282	82
Lawrence	17415	16755	96
Lee	10424	5621	54
Lincoln	14134	8003	57
Little River	13171	10923	83
Logan	22353	20111	90
Lonoke	68356	65758	96
Madison	15717	12954	82
Marion	16653	16331	98
Miller	43462	43180	99
Mississippi	46480	45366	98
Monroe	8149	6604	81
Montgomery	9487	8098	85
Nevada	8997	6902	77
Newton	8330	5405	65
Ouachita	26120	21426	82
Perry	10445	10271	98
Phillips	21757	18904	87
Pike	11291	9345	83
Poinsett	24583	21127	86
Polk	20662	15639	76
Pope	61754	60653	98
Prairie	8715	6620	76
Pulaski	382748	378373	99
Randolph	17969	16665	93
St. Francis	28258	20062	71
Saline	107118	101928	95
Scott	11233	9009	80
Searcy	8195	8182	100
Sebastian	125744	124292	99
Sevier	17058	16054	94
Sharp	17264	16662	97
Stone	12394	12317	99
Union	41639	36785	88
Van Buren	17295	17295	100
Washington	203065	197863	97
White	77076	72050	93
Woodruff	7260	6507	90
Yell	22185	20692	93

Appendix IV

Percentage of County Population with Access to 10Mbps Broadband

County Name	Total Population	10Mbps	10Mbps %
Arkansas	19019	16815	88
Ashley	21853	12656	58
Baxter	41513	38730	93
Benton	221339	206270	93
Boone	36903	35591	96
Bradley	11508	10339	90
Calhoun	5368	3954	74
Carroll	27446	19394	71
Chicot	11800	7266	62
Clark	22995	17797	77
Clay	16083	14812	92
Cleburne	25970	25773	99
Cleveland	8689	4093	47
Columbia	24552	16469	67
Conway	21273	21273	100
Craighead	96443	96314	100
Crawford	61948	54614	88
Crittenden	50902	42671	84
Cross	17870	12443	70
Dallas	8116	5581	69
Desha	13008	10544	81
Drew	18509	13446	73
Faulkner	113237	112757	100
Franklin	18125	13355	74
Fulton	12245	9414	77
Garland	96024	93046	97
Grant	17853	14042	79
Greene	42090	42085	100
Hempstead	22609	15571	69
Hot Spring	32923	25915	79
Howard	13789	4401	32
Independence	36647	31556	86
Izard	13696	12577	92
Jackson	17997	16624	92
Jefferson	77435	48478	63
Johnson	25540	20114	79

County Name	Total Population	10Mbps	10Mbps %
Lafayette	7645	3398	44
Lawrence	17415	16349	94
Lee	10424	3954	38
Lincoln	14134	6254	44
Little River	13171	6872	52
Logan	22353	18174	81
Lonoke	68356	60649	89
Madison	15717	9697	62
Marion	16653	14906	90
Miller	43462	41159	95
Mississippi	46480	44523	96
Monroe	8149	3983	49
Montgomery	9487	5906	62
Nevada	8997	5657	63
Newton	8330	5355	64
Ouachita	26120	15479	59
Perry	10445	10074	96
Phillips	21757	18191	84
Pike	11291	6717	59
Poinsett	24583	20357	83
Polk	20662	13482	65
Pope	61754	58924	95
Prairie	8715	5862	67
Pulaski	382748	372779	97
Randolph	17969	15426	86
St. Francis	28258	11144	39
Saline	107118	98780	92
Scott	11233	7501	67
Searcy	8195	8179	100
Sebastian	125744	121572	97
Sevier	17058	14919	87
Sharp	17264	15888	92
Stone	12394	11998	97
Union	41639	32234	77
Van Buren	17295	17235	100
Washington	203065	191734	94
White	77076	63882	83
Woodruff	7260	5889	81
Yell	22185	18672	84

Appendix V

County Populations with Projected Access to 10Mbps of Fixed Broadband upon Completion of CAF II Funded Projects

County Name	Total Population	Projected 10Mbps	Projected %
Arkansas	19019	18956	100
Ashley	21853	19287	88
Baxter	41513	39367	95
Benton	221339	217615	98
Boone	36903	36675	99
Bradley	11508	11414	99
Calhoun	5368	4960	92
Carroll	27446	26817	98
Chicot	11800	10953	93
Clark	22995	22491	98
Clay	16083	15928	99
Cleburne	25970	25970	100
Cleveland	8689	8506	98
Columbia	24552	23385	95
Conway	21273	21273	100
Craighead	96443	96316	100
Crawford	61948	60846	98
Crittenden	50902	47883	94
Cross	17870	16467	92
Dallas	8116	7858	97
Desha	13008	12508	96
Drew	18509	18202	98
Faulkner	113237	113237	100
Franklin	18125	17826	98
Fulton	12245	9971	81
Garland	96024	95098	99
Grant	17853	17629	99
Greene	42090	42090	100
Hempstead	22609	20109	89
Hot Spring	32923	32714	99
Howard	13789	11531	84
Independence	36647	35978	98
Izard	13696	13011	95
Jackson	17997	17699	98
Jefferson	77435	62005	80
Johnson	25540	25248	99

County Name	Total Population	Projected 10Mbps	Projected %
Lafayette	7645	7034	92
Lawrence	17415	17407	100
Lee	10424	9399	90
Lincoln	14134	13786	98
Little River	13171	11996	91
Logan	22353	22241	99
Lonoke	68356	65423	96
Madison	15717	11326	72
Marion	16653	16413	99
Miller	43462	42671	98
Mississippi	46480	45596	98
Monroe	8149	5652	69
Montgomery	9487	9401	99
Nevada	8997	8982	100
Newton	8330	8330	100
Ouachita	26120	22732	87
Perry	10445	10432	100
Phillips	21757	20742	95
Pike	11291	11145	99
Poinsett	24583	23312	95
Polk	20662	20226	98
Pope	61754	61270	99
Prairie	8715	8546	98
Pulaski	382748	375776	98
Randolph	17969	17811	99
St. Francis	28258	20364	72
Saline	107118	105981	99
Scott	11233	11193	100
Searcy	8195	8195	100
Sebastian	125744	124587	99
Sevier	17058	16953	99
Sharp	17264	16560	96
Stone	12394	12375	100
Union	41639	39938	96
Van Buren	17295	17295	100
Washington	203065	192120	95
White	77076	74456	97
Woodruff	7260	7068	97
Yell	22185	21807	98

Appendix VI

Overall Adoption Rates for Fixed Advanced Telecommunications Capability by State and U.S. Territory

	25 Mbps/3 Mbps
United States	37%
Alabama	25%
Alaska	3%
Arizona	45%
Arkansas	24%
California	43%
Colorado	52%
Connecticut	43%
Delaware	*
District of Columbia	*
Florida	37%
Georgia	35%
Hawaii	*
Idaho	25%
Illinois	40%
Indiana	30%
Iowa	6%
Kansas	26%
Kentucky	8%
Louisiana	36%
Maine	13%
Maryland	59%
Massachusetts	68%
Michigan	40%
Minnesota	42%
Mississippi	26%
Missouri	27%
Montana	*
Nebraska	34%
Nevada	*
New Hampshire	56%
New Jersey	58%
New Mexico	30%
New York	39%
North Carolina	16%

	25 Mbps/3 Mbps
North Dakota	45%
Ohio	11%
Oklahoma	34%
Oregon	49%
Pennsylvania	46%
Rhode Island	*
South Carolina	23%
South Dakota	40%
Tennessee	40%
Texas	26%
Utah	41%
Vermont	51%
Virginia	53%
Washington	52%
West Virginia	46%
Wisconsin	24%
Wyoming	46%
U.S. Territories	4%
American Samoa	NA
Guam	*
Northern Mariana Islands	NA
Puerto Rico	0%
U.S. Virgin Islands	*
* Data Withheld to maintain confidentiality. NA - Not Available.	

Appendix VII


Internet access service providers with 100 percent of the students they serve meeting the minimum 100 kbps per student needed for digital learning (2016)

Service provider	# of students served	% Total students served meeting goals
Conway Corporation	9,733	100% ★ Connectivity leader
Nexus Systems, Inc.	7,461	100% ★ Connectivity leader
SkyRider Comm	5,424	100% ★ Connectivity leader
Conterra, LLC	4,516	100% ★ Connectivity leader
Vantage Telecom, LLC	3,278	100% ★ Connectivity leader
Madison County	3,154	100% ★ Connectivity leader
Yelcot Tele Co	2,685	100% ★ Connectivity leader
Walnut Hill	2,441	100% ★ Connectivity leader
Telecomp Comp Serv	2,297	100% ★ Connectivity leader
Pine Bluff	2,296	100% ★ Connectivity leader
ENA Services, LLC	1,038	100% ★ Connectivity leader
Telecomm Mgmt	897	100% ★ Connectivity leader
Lavaca Telephone	849	100% ★ Connectivity leader
Verizon	589	100% ★ Connectivity leader
Resort TV	589	100% ★ Connectivity leader
Hope Community	511	100% ★ Connectivity leader

Snapshot of K-12 Connectivity in Arkansas (2016)

page 1 of 2

Progress on K-12 connectivity

Arkansas | **LEADER** 

83,709

MORE STUDENTS CONNECTED IN 2016

now have the minimum connectivity they need

45,116

STUDENTS NEED MORE BANDWIDTH

to meet the minimum connectivity goal

CONNECTIVITY
95% of school districts representing **419,163 students** meet the minimum connectivity goal of 100 kbps per student. This is **up from 79%** in 2015.


UPGRADES
106 school districts upgraded their Internet access in 2016 leading to **242,378 students** getting more bandwidth.

FIBER
94% of schools in Arkansas have the fiber connections needed to keep up with growing bandwidth demand from students and teachers.

WI-FI
91% of school districts report sufficient Wi-Fi in all their classrooms. **\$30M of E-rate funding remains** to support Wi-Fi network upgrades in Arkansas.

AFFORDABILITY
49% of school districts are maximizing the bandwidth they are getting for their budgets. This is **up from 24%** in 2015.

Gov. Hutchinson is taking action to upgrade schools in Arkansas



“ Our children are our future, and if they don't have the connectivity they need to use digital learning tools, we all lose out. That is why I am taking action to get high-speed Internet in every classroom and unleash our students' potential to compete in tomorrow's workforce. ”

Actions to upgrade schools in 2016


- Overhauled the Arkansas Public School Computer Network contract, upgrading school bandwidth from 5 kbps/student to 200 kbps/student by 2017

Opportunities for further action

- Upgrade school district networks
45,116 students do not have the minimum connectivity to use technology in the classroom.
- Make broadband more affordable
51% of school districts could get more bandwidth for their budgets.*
- Establish a state matching fund
48 of your 1,043 schools do not have fiber connections.

Source: USAC Form 471 10/16/2017 E-rate applications, n=201 of 237 school districts, n=910 of 1,043 schools, n=404,506 of 464,279 students

*The budget refers to the total cost of all Internet access services and does not always represent what the school district actually pays. E-rate typically provides a 20-100% reimbursement and some states also subsidize the cost of broadband for school districts.



About the Metrics

K-12 Broadband State of the States Report

The State of the States report is based on data from the publicly-available K-12 school district E-rate filings collected by the Federal Communications Commission and administered by the Universal Service Administrative Company. EducationSuperHighway verified and analyzed completed 2016 E-rate applications and conducted extensive nationwide outreach to verify school districts' network infrastructure. The data represents K-12 public schools only and does not include private schools, independent charter schools, or libraries.



CONNECTIVITY

This metric shows the percent of school districts meeting the FCC minimum connectivity goal of 100 kbps per student. The number of students with the minimum connectivity is an extrapolation of the percent of students in the sample that are meeting goals to the entire population of students in the state. Student populations are based on 2013-14 NCES data.



UPGRADES

This metric shows the number of students in school districts that upgraded their Internet access bandwidth from 2015 to 2016. Only districts with verified data in both 2015 and 2016 are included in the upgrade metric. As a result, this metric may slightly underestimate the total number of school districts and students that upgraded. We define "upgrades" as an increase in bandwidth from 2015 to 2016 of at least 11% or at least 50 Mbps.



FIBER

This metric reports on the availability of scalable infrastructure. The FCC goal is for every school to have a broadband connection capable of scaling to 10 Gbps, and today only fiber optic connections are capable of meeting that goal. For schools where the connection type was unknown, we applied assumptions based on extensive research. Some states may see decreases in their fiber metric from 2015 due to a reclassification of cable and fixed wireless connections from scalable to unscalable.



WI-FI

The FCC provided every school district with a \$150 per student total "Category 2" budget from 2015-2019 to upgrade Wi-Fi and other internal connections in classrooms. Our metrics profile the state of Wi-Fi connectivity in schools as reported by E-rate applicants and the extent to which districts have taken advantage of their Category 2 budgets.

- **Wi-Fi sufficiency:** The percentage of sufficient school districts is determined by dividing the total number of school districts that reported "Completely" or "Mostly" sufficient (as opposed to "Sometimes" or "Never") by the total number of districts that reported on the sufficiency of their Wi-Fi.
- **E-rate funds available:** We calculated the total Category 2 budget remaining for 2017-19 after subtracting funds requested in 2015 and 2016. We applied school district discount rates when available, otherwise we applied the aggregate state discount rate of school districts requesting Category 2 services.



AFFORDABILITY

Affordability of broadband is a roadblock that prevents school districts from meeting the FCC minimum connectivity goal, therefore we calculated the percent of school districts that could be getting more Internet access bandwidth for the amount they are currently spending.

- **Maximizing the bandwidth:** We compared the amount of bandwidth districts currently receive to the amount they could purchase if they used their current Internet access budget to buy circuits at 2015 benchmark prices (benchmarks were selected because at least 30% of school districts nationally are currently purchasing circuits at those prices). A school district's Internet access budget is the total cost of all Internet access services, including ISP costs and the cost of transport between the school district and the ISP. Shared costs for backbone circuits and ISP-only services were distributed based on the number of students enrolled in the school district. Note: This metric was re-calculated for 2015 using this methodology, and therefore is different from what was reported in the 2015 State of the States.

Internet Access Circuit Size	Price Benchmark (\$/Mbps)
10 Gbps	\$0.75
1 Gbps	\$3.00
500 Mbps	\$5.50
200 Mbps	\$9.00
100 Mbps	\$12.00
50 Mbps	\$14.00

Appendix IX

Project Concept and Buildings with State Entities Impacted

The Department of Information Systems (DIS) seeks to obtain dark fiber transport that will be configured in a ring and star topologies consisting of two (2) dark fiber network rings and fourteen (14) point to point dark fiber connections back to the state's primary data center (SDC-MAC) or the state's backup data center (SDC-West). Each connection will require one *pair* of fiber (two fiber strands) with the option for additional *pairs* as needed by the state. For rings 1 and 2 the vendor is asked to provide the cost for optional diverse routing of the fiber *pairs* between the two point sections of each ring.

Ring 1 (Table 1) is planned to connect all of the state agencies listed below:

- The State Primary Data Center – MAC (SDC-M)
- The State Backup Data Center - West (SDC-W)
- The State Ledbetter Building (LED) Data Center

Ring 2 (Table 2) is planned to connect all of the State agencies listed below:

- The State Primary Data Center (SDC-M)
- The State Backup Data Center - West (SDC-W)
- Donaghey Plaza North (Waldon Building) is located at: 108 East 7th St., Little Rock, AR 72201
- Mann on Main is located at: 324 South Main St., Little Rock, AR 72201
- Arkansas Department of Health (ADH) is located at: 4815 West Markham St., Little Rock, AR 72205
- Arkansas State Police (ASP) is located at: 1 State Police Plaza Dr., Little Rock, AR 72209

The following locations will connect to either the state's primary data center (SDC-M) or to the state's backup data center - west (SDC-W) via point to point connections in the most effective topology.

- Union Plaza 1 Building is located at: 124 West Capitol Av., Little Rock, AR 72201
- Department of Arkansas Heritage (DAH) is located at: 1100 North St., Little Rock, AR 72201
- City of Little Rock is located at: 718 West Markham St., Little Rock, AR 72201
- 5 Main Place is located at: 413 South Main St., Little Rock, AR 72201
- 1515 Building is located at: 1515 West 7th St Little Rock, AR 72201
- Arkansas Teacher Retirement is located at: 1400 W 3rd St. #200, Little Rock, AR 72201
- Arkansas Public Service Commission (PSC) is located at: 1000 Center St., Little Rock, AR 72201
- Arkansas Workers Compensation Commission (AWCC) is located at: 324 South Spring St., Little Rock, AR 72201

- Arkansas State Hospital (ASH) is located at: 305 South Palm St., Little Rock, AR 72205
- Little Rock School District (LRSD) Technical Center is located at: 7701 Scott Hamilton, Little Rock, AR 72209
- Arkansas State Highway and Transportation Department (AHTD) is located at: 10324 Interstate 30, Little Rock, AR 72209
- Arkansas Game and Fish Commission (AGFC) is located at: 2 National Resources Dr., Little Rock, AR 72205
- Arkansas State Crime Lab is located at: 3 Natural Resources Dr., Little Rock, AR 72205
- Arkansas Department of Environmental Quality (ADEQ) is located at: 5301 Northshore Dr. North Little Rock, AR 72118
- Arkansas National Guard (ANG) is located at: @Building 6200 Camp Robinson, North Little Rock, AR 72118
- AREON North Little Rock Hut is located at 2809 Eanes Road, North Little Rock, AR 72117

Bipartisan Coalition Letter to President Trump

Congress of the United States
Washington, DC 20515

January 30, 2017

President Donald J. Trump
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Mr. President:

We share your commitment to making investments in our nation's infrastructure that create good jobs and boost economic productivity.

As you consider the parameters of your infrastructure proposal to Congress, we write to urge you to include investments that will bring the benefits of broadband connectivity to rural America. In the 21st Century, high-speed internet access is no longer a luxury amenity, but rather an essential service for homes and businesses in this interconnected world. No other technology has produced as much innovation, competition, and economic growth.

Unfortunately, rural Americans in our districts lack sufficient broadband infrastructure to take advantage of this explosion of technology and economic possibility. The digital divide between rural and urban America is significant.

Simply put, rural communities cannot attract and retain businesses and human resources if they are insufficiently connected. Broadband allows rural Americans to communicate with friends and families and access entertainment. It provides businesses access to global customers to reach and drive economic development. It facilitates agricultural efficiency for farmers, supplies students and teachers with unlimited access to educational materials, and ensures a timely response to health and safety emergencies by first responders.

We look forward to working with you and your administration to advance an infrastructure package that bridges America's digital divide by ensuring essential broadband infrastructure in rural areas of our country.

