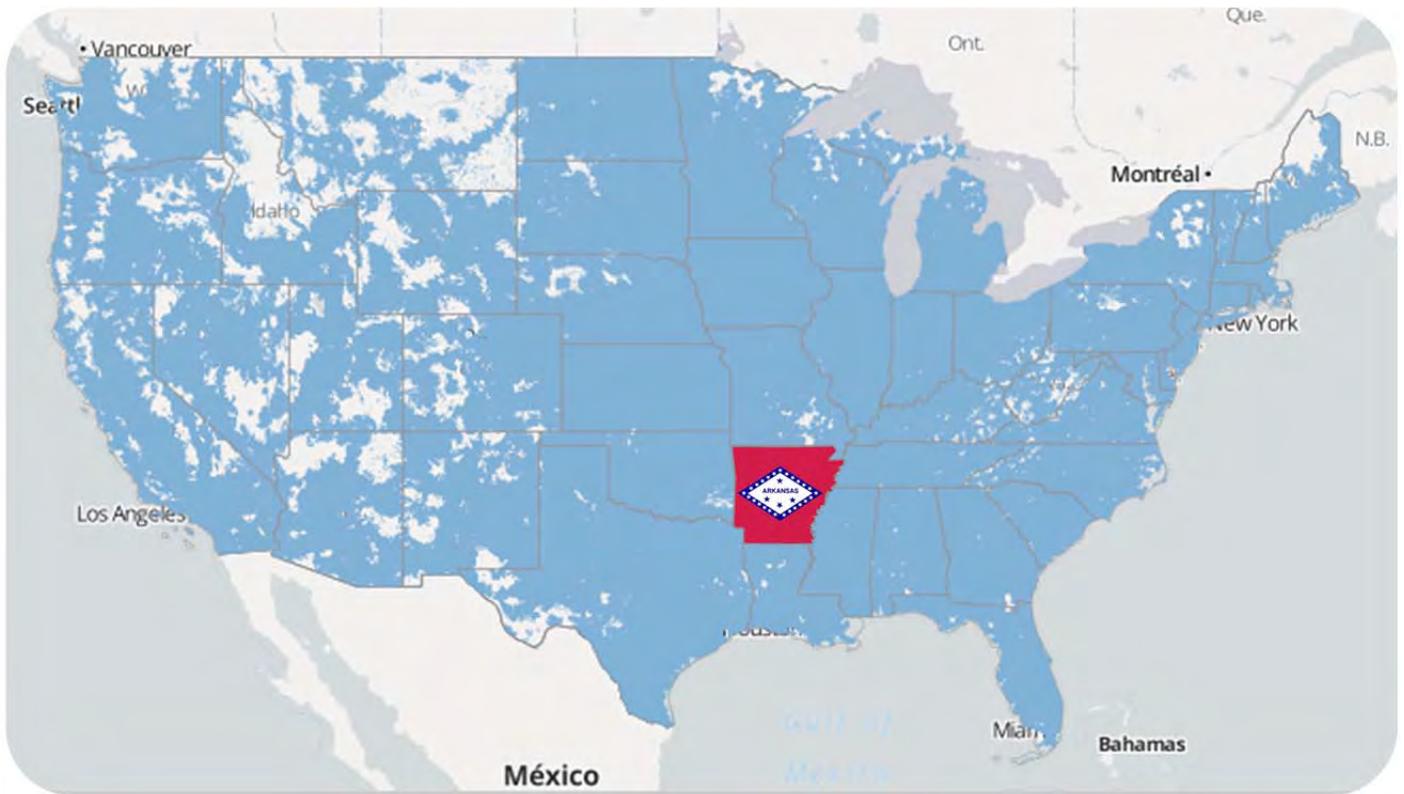


Arkansas State Broadband Manager's Report



Period Ending July 1, 2014

Cover Art: This is the National Broadband Map (May 2014) 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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Executive Summary

Background

[Act 1168 of 2013](#) designates the director of the Arkansas Department of Information Systems to serve as the state broadband manager to promote, develop, and coordinate broadband expansion and appropriate broadband infrastructure for all areas of the state. Requirements in the legislation are for the state broadband manager to submit a report on a semi-annual 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. The state broadband manager will also work with an existing strategic plan for broadband created by Connect Arkansas to formulate, update and maintain a state broadband plan.

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 kilobites 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 4 megabits/second (Mbps) for downloading and at least 1 Mbps for uploading
- [General Definition](#): High-speed Internet access that is always on (vs. dial-up)

Broadband speed requirements vary for personal use versus use by institutions

What are the Types of Broadband?

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

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. Depending on the application, the connection speed will often determine whether it is possible to run the application effectively and how quickly the information can be accessed. The table below shows how much speed is needed to run common applications. Performance issues occur when the service and speed cannot handle the application.

Applications that service different sectors	Speed requirement
Email, Web Browsing, VOIP	768K-1.5 Mbps
Telecommuting, Streaming Music and Video, Remote Surveillance	1.5-3 Mbps
File Sharing, Internet Protocol Television	3-6 Mbps
On-Demand Video, Gaming	6-10 Mbps
Telemedicine, Remote Education, IPTV High Definition	10-25 Mbps
HD Video Surveillance	25-50 Mbps
Video Conferencing, Remote Super Computing	50-100 Mbps
Real-Time Data Collection, Real-Time Medical Image Consultation	>100 Mbps

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). When broadband connectivity is available, it is irrelevant what technology is used to deliver it.
- **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.

How Does Arkansas Compare?

A 2012 TechNet State-by-State Broadband Index ranked Arkansas 50th for broadband utilization. Data to develop the state rankings was based upon three categories: Broadband adoption, network speeds, and economic structure. Also factored into the rankings is a state's approach and legislative leadership, state funding, stakeholder cooperation (public, private, and non-profit), and planning by states to explore gaps in broadband infrastructure as well as other considerations.

TechNet has not conducted a new study since the July 1-December 31, 2013, reporting period.

Top 15 States State-by-State 2012 Broadband Index	
1	Washington
2	Massachusetts
3	Delaware
4	Maryland
5	California
6	New Jersey
7	Vermont
8	Virginia
9	Utah
10	New York
11	Rhode Island
12	Pennsylvania
13	Oregon
14	New Hampshire
15	Texas
50	Arkansas

Source:

http://www.technet.org/wp-content/uploads/2012/12/TechNet_StateBroadband3a.pdf

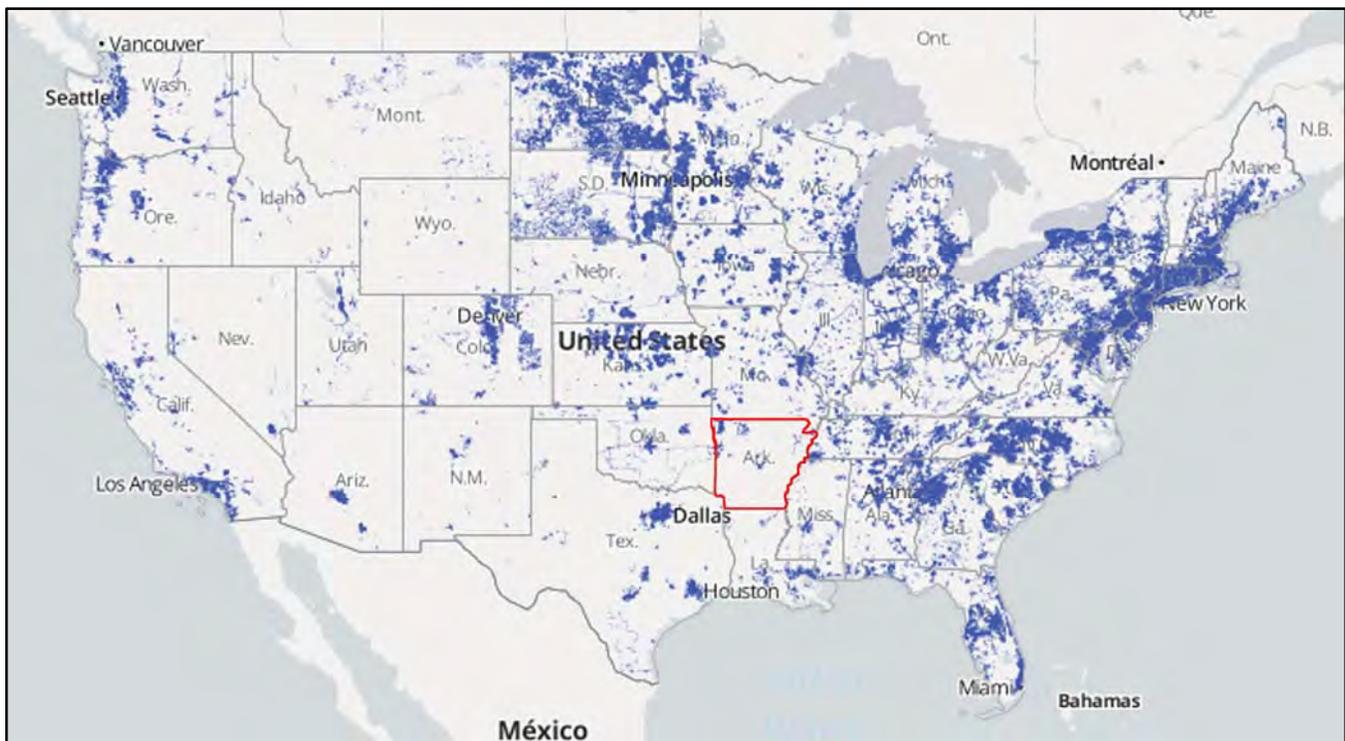
The additional rankings for Arkansas below were compiled from data on the National Broadband Map in May 2014. These maps analyze broadband availability across the United States based on speed, technology, number of providers, and age demographic. This data is created and maintained by the National Telecommunications 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.

Speed



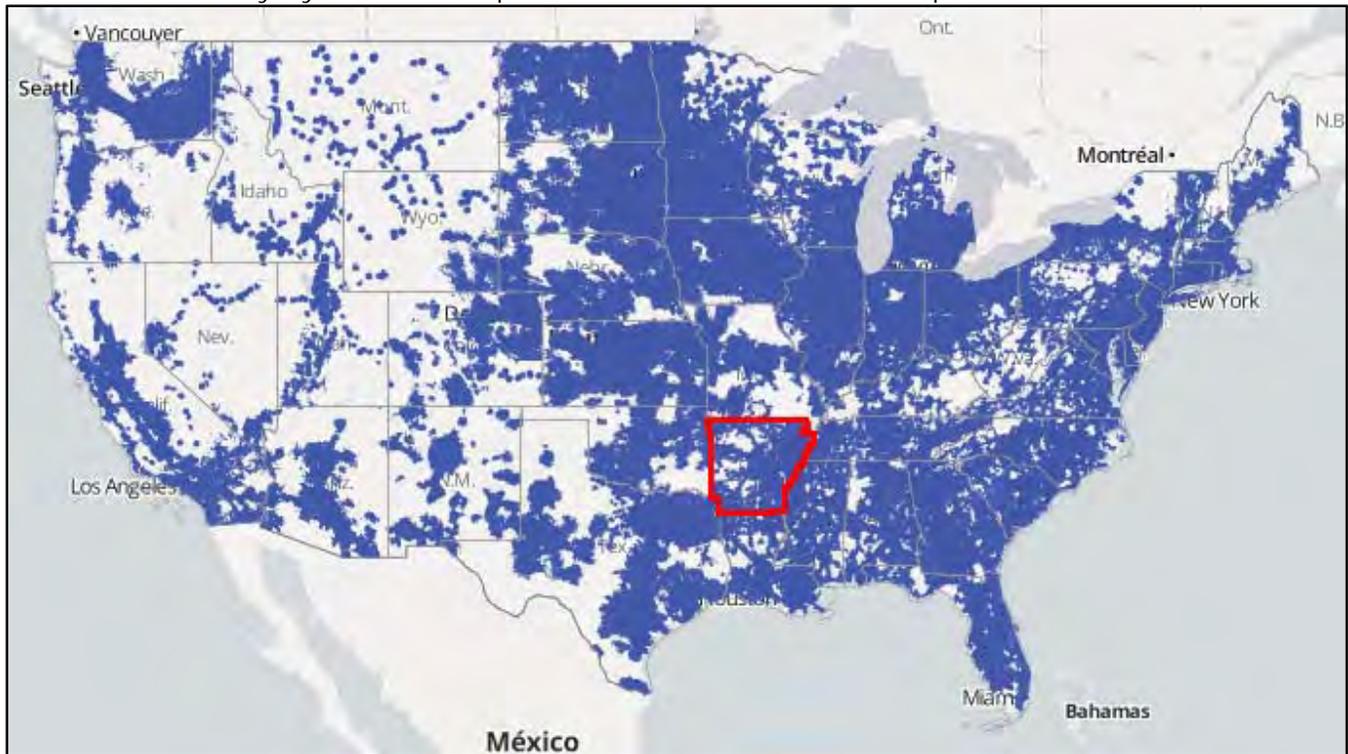
Speed: Download Greater Than 3 Mbps Upload Greater Than 0.768 Mbps			
Ranking	As of May '14	Ranking	As of December '13
#1	District of Columbia	#1	New Jersey
#41	Arkansas	#41	Arkansas
#56	U.S. Virgin Islands	#56	American Samoa

Wireline Availability by Download Speed/National Broadband Map



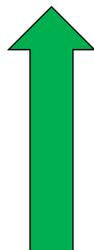
This map displays broadband wireline availability by maximum advertised download speeds of ≥ 3 Mbps.

Wireless Availability by Download Speed/National Broadband Map



This map displays broadband wireless availability by maximum advertised download speeds of ≥ 3 Mbps.

Technology

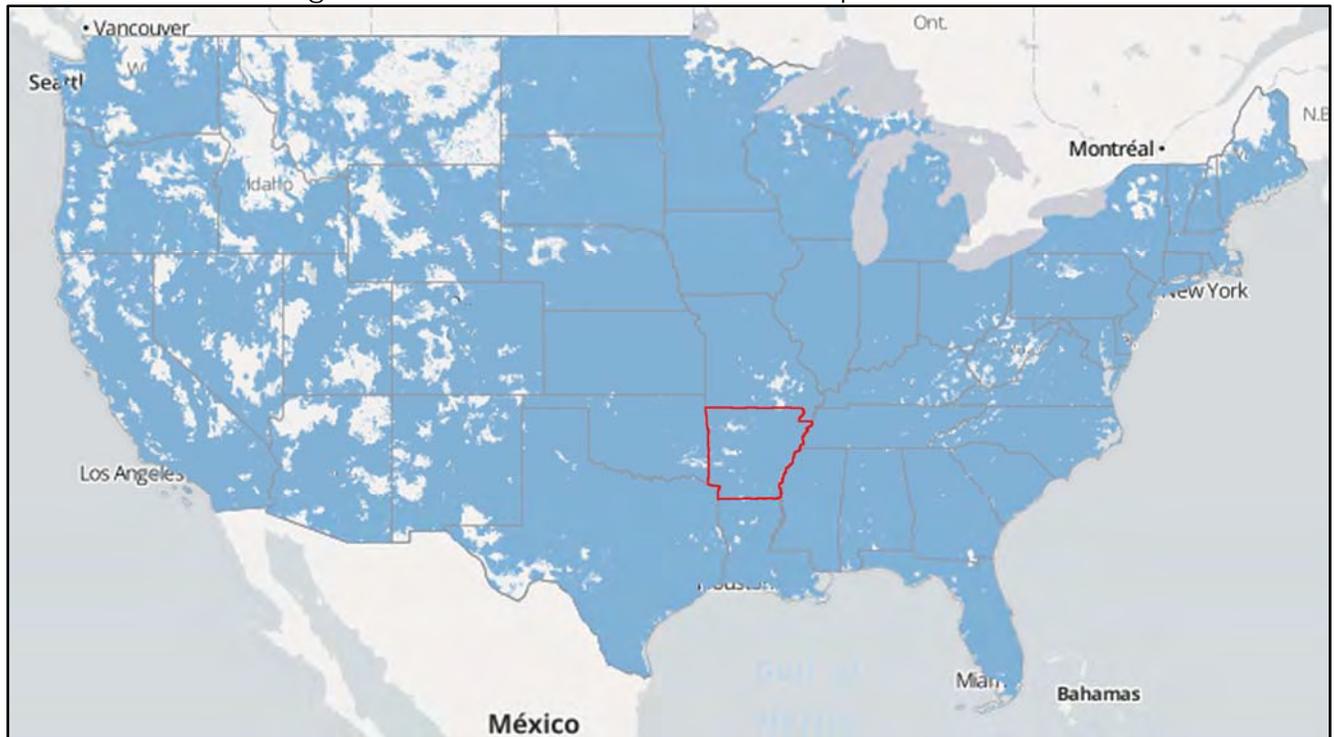


Technology: DSL, Fiber, Cable, Wireless, Other			
Ranking	As of May '14	Ranking	As of December '13
#1	District of Columbia	#1	New Jersey
#39	Arkansas	#40	Arkansas
#56	Commonwealth of the Northern Mariana Islands	#56	Commonwealth of the Northern Mariana Islands

Arkansas (% Population)				Nation (%Population)			
Technology	% as of May '14	% As of Dec. '13	+/-	Technology	% as of May '14	% as of Dec. 2013	+/-
DSL	87.2%	81.5%	+5.7	DSL	88.8%	89.7%	-.09
Fiber	5.4%	5.1%	+0.3	Fiber	25.2%	23.3%	+1.9
Cable	73.2%	71%	+2.2	Cable	88.0%	88.6%	-.06
Wireless	98.9%	99%	-.1	Wireless	99.0%	99.0%	--
Other	0.0%	0.0%	--	Other	0.0%	0.0%	--

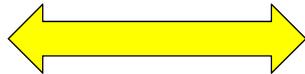
This graphic displays the general technology categories of DLS, fiber, cable, or wireless available by population percentage in Arkansas. It does not include satellite data.

Broadband Technologies Offered/National Broadband Map



This map displays broadband technologies offered to end users (DSL, cable, wireless, fiber, etc.)

Providers

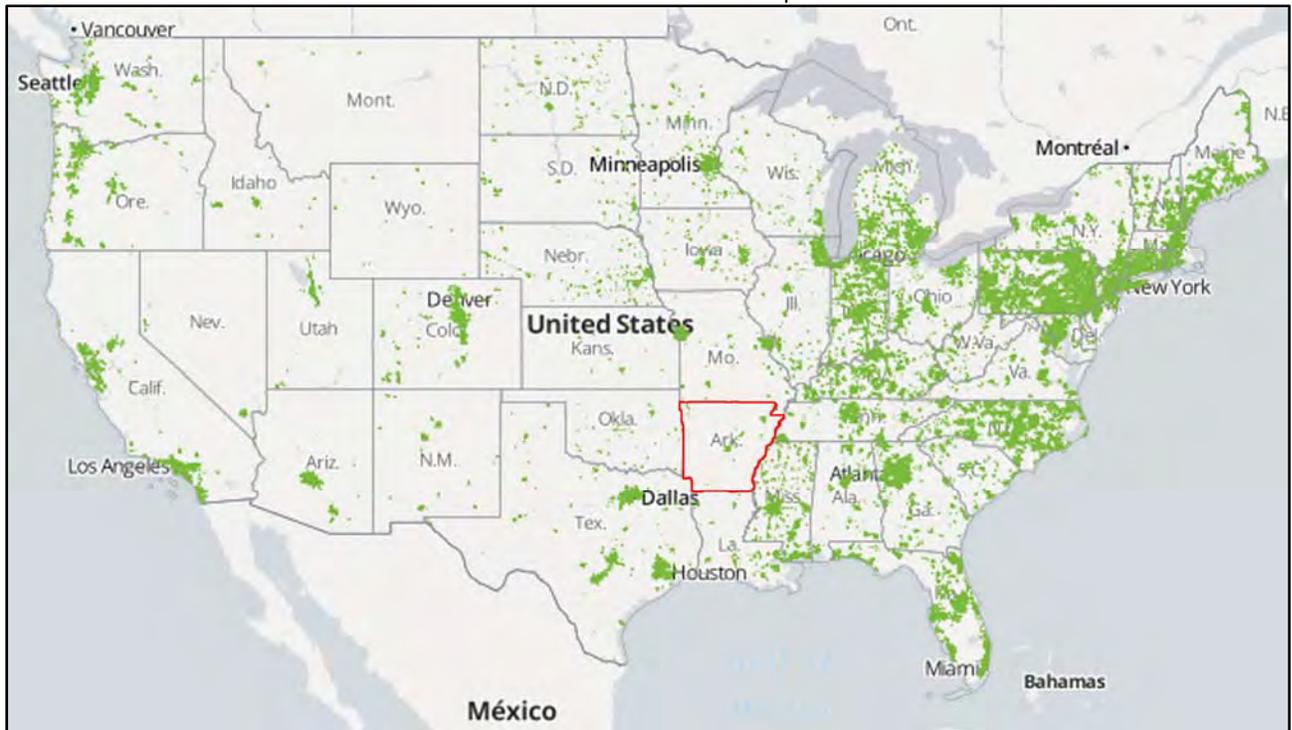


Providers: # of Wireline Providers Greater Than 3			
Ranking	As of May '14	Ranking	As of December '13
#1	Rhode Island	#1	Rhode Island
#50	Arkansas	#50	Arkansas
#56	Commonwealth of the Northern Mariana Islands	#56	Commonwealth of the Northern Mariana Islands

Arkansas (% Population)				Nation (%Population)			
# Wireline Providers	% as of May '14	% as of Dec. '13	+/-	#Wireline Providers	% as of May '14	% as of Dec. '13	+/-
0	5.1%	7.5%	-2.4	0	3.3%	3.3%	--
1	21.6%	25.8%	-4.2	1	8.9%	9.0%	-.1
2	67.8%	62.2%	+5.6	2	32.0%	30.6%	+1.4
3	5.5%	4.4%	+1.1	3	35.6%	37%	-1.4
4	0.0%	0.0%	--	4	14.3%	14.5%	-.2
5	0.0%	0.0%	--	5	4.1%	3.7%	+.4
6	0.0%	0.0%	--	6	1.3%	1.3%	--
7	0.0%	0.0%	--	7	0.4%	0.3%	+.1
8+	0.0%	0.0%	--	8+	0.2%	0.3%	-.1

This graphic displays the number of wired broadband providers that the population of a given area can access. This includes providers of DSL, cable, copper, or fiber. Over 57 percent of the nation's population has access to three or more wireline broadband providers compared to 4.4 percent of Arkansans.

Wireline Broadband Providers/National Broadband Map



This map displays the number of different wireline broadband providers offering service across the country as well as the areas unserved by any provider.

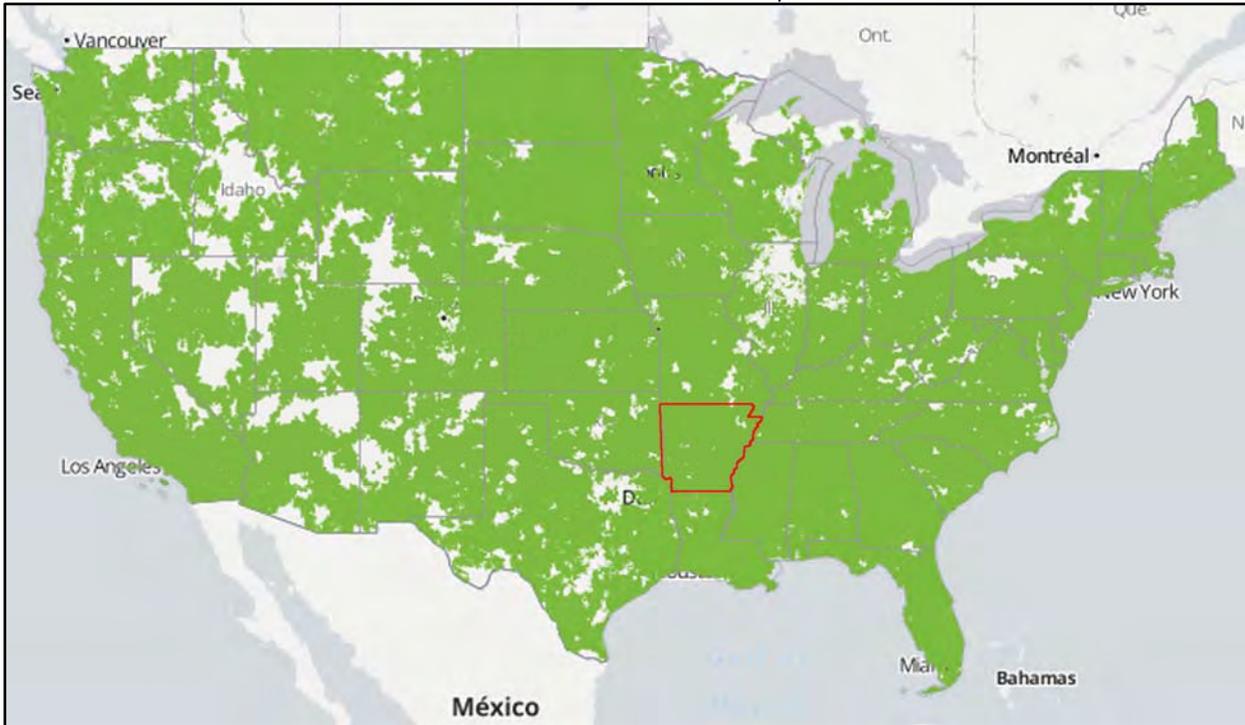


Providers: # of Wireless Providers Greater Than 3			
Ranking	As of May '14	Ranking	As of December '13
#1	District of Columbia	#1	District of Columbia
#48	Arkansas	#44	Arkansas
#56	Commonwealth of the Northern Mariana Islands	#56	Commonwealth of the Northern Mariana Islands

Arkansas (% Population)				Nation (%Population)			
# Wireless Providers	% as of May '14	% As of Dec. '13	+/-	# Wireless Providers	% as of May '14	% as of Dec. '13	+/-
0	0.1%	0.1%	--	0	0.2%	0.2%	--
1	0.4%	0.5%	-.1	1	0.7%	0.8%	-.1
2	15.3%	14.6%	+7	2	3.2%	3.5%	-.3
3	20.4%	20.4%	--	3	6.3%	6.5%	-.2
4	18.3%	18.5%	-.2	4	22.6%	15.2%	+7.4
5	15.0%	15.3%	-.3	5	32.1%	23.8%	+8.3
6	27.4%	27.0%	+4	6	16.2%	22.7%	-6.5
7	2.6%	2.8%	-.2	7	9.8%	12.8%	-3.0
8+	0.5%	0.8%	-.3	8+	9.0%	14.6%	-5.6

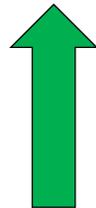
This graphic displays the number of wireless broadband providers, excluding satellite that the population of a given area can access. Over 89 percent of the nation's population has access to three or more wireless broadband providers compared to 64.4 percent of Arkansans.

Wireless Broadband Providers/National Broadband Map

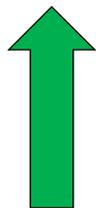


This map displays the number of different wireless broadband providers offering service across the country as well as the areas unserved by any provider.

Demographic



Age: Under 5			
<i>Ranking</i>	<i>As of May '14</i>	<i>Ranking</i>	<i>As of December '13</i>
#1	American Samoa	#1	American Samoa
#19	Arkansas	#21	Arkansas
#56	Vermont	#56	Vermont



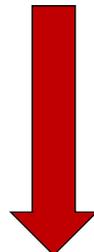
Age: 5-19			
Ranking	As of May '14	Ranking	As of December '13
#1	American Samoa	#1	American Samoa
#19	Arkansas	#21	Arkansas
#56	District of Columbia	#56	District of Columbia



Age: 20-34			
Ranking	As of May '14	Ranking	As of December '13
#1	Commonwealth of the Northern Mariana Islands	#1	Commonwealth of the Northern Mariana Islands
#24	Arkansas	#22	Arkansas
#56	Florida	#56	Florida



Age: 35-59			
Ranking	As of May '14	Ranking	As of December '13
#1	District of Columbia	#1	District of Columbia
#42	Arkansas	#42	Arkansas
#56	American Samoa	#56	American Samoa



Age: 60+			
Ranking	As of May '14	Ranking	As of December '13
#1	Florida	#1	Florida
#31	Arkansas	#28	Arkansas
#56	Commonwealth of the Northern Mariana Islands	#56	Commonwealth of the Northern Mariana Islands

Arkansas (% Population)				Nation (%Population)			
Demographics	% as of May '14	% As of Dec. '13	+/-	Demographics	% as of May '14	% as of Dec. '13	+/-
Under 5	7.5%	5.4%	+2.1	Under 5	7.0%	5.2%	+1.8
5-19	20.4%	21.2%	-.8	5-19	20.4%	20.5%	-.1
20-34	19.2%	20.0%	-.8	20-34	19.2%	19.8%	-.6
35-59	30.9%	32.1%	-1.2	35-59	32.5%	33.6%	-1.1
60+	21.0%	21.4%	-.4	60+	20.9%	21.0%	-.1

Age demographics are for a population living in a given area. The National Broadband Map uses demographic statistics from the U.S. Census Bureau, as well as GeoLytics, a private company that provides population and demographic estimates at the block level.

Source: National Broadband Map as of June 2014
<http://www.broadbandmap.gov/summarize/state/arkansas>

Demographics	
Total area (sq miles)	50,907
Population	2,992,064
Housing Units	1,366,220

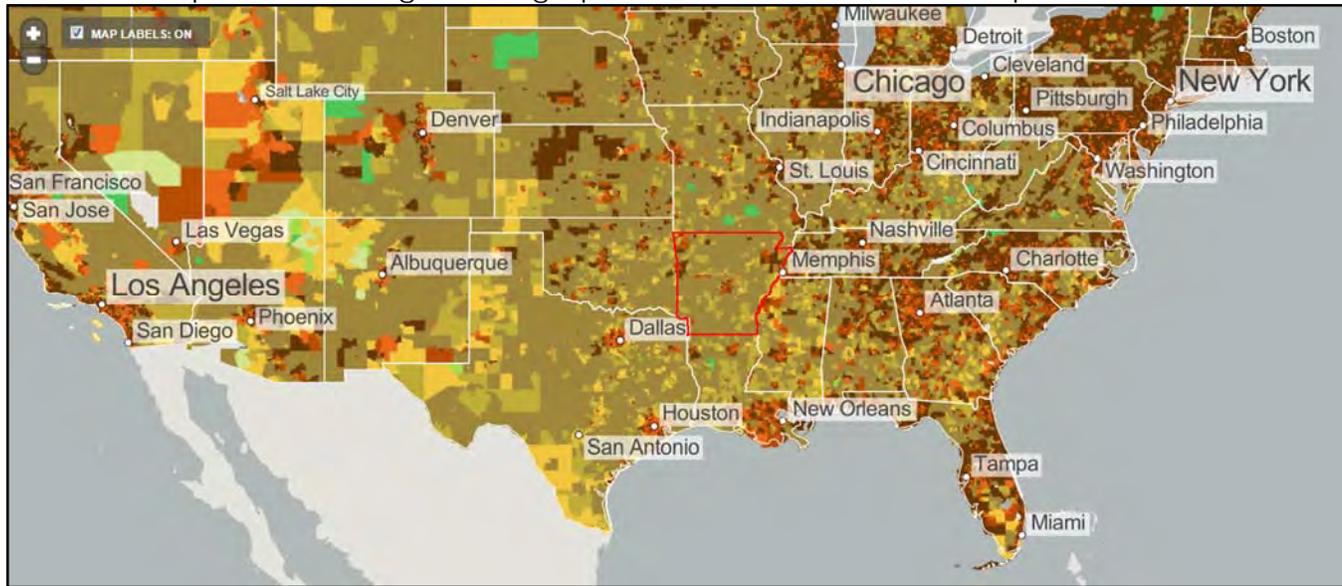
The median age for Arkansas is 37.4 years.

Under 5-years		5-19 years		20-34 years		35-59 years		65 years and over	
Number	%	Number	%	Number	%	Number	%	Number	%
160,245	5.4	629,110	21.2	593,500	20.0	952,568	32.1	635,045	21.4

Source: U.S. Census as of 2010

<http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>

Broadband Speed Across Age Demographics/National Broadband Map



This map displays availability of higher broadband speeds across age demographics

Source: National Broadband Map as of June 2014

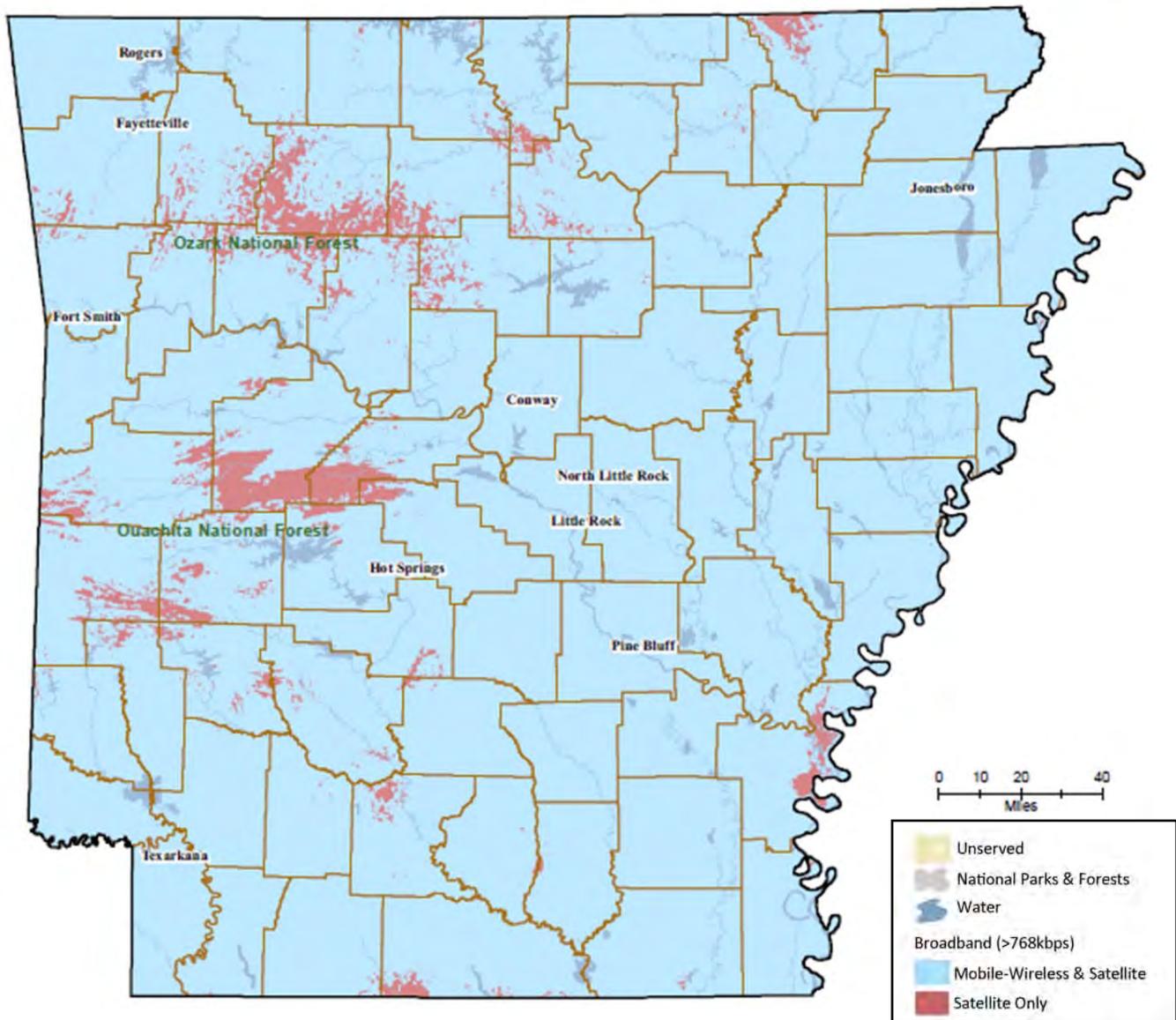
<http://www.broadbandmap.gov/demographics>



What is the State of Broadband in Arkansas?



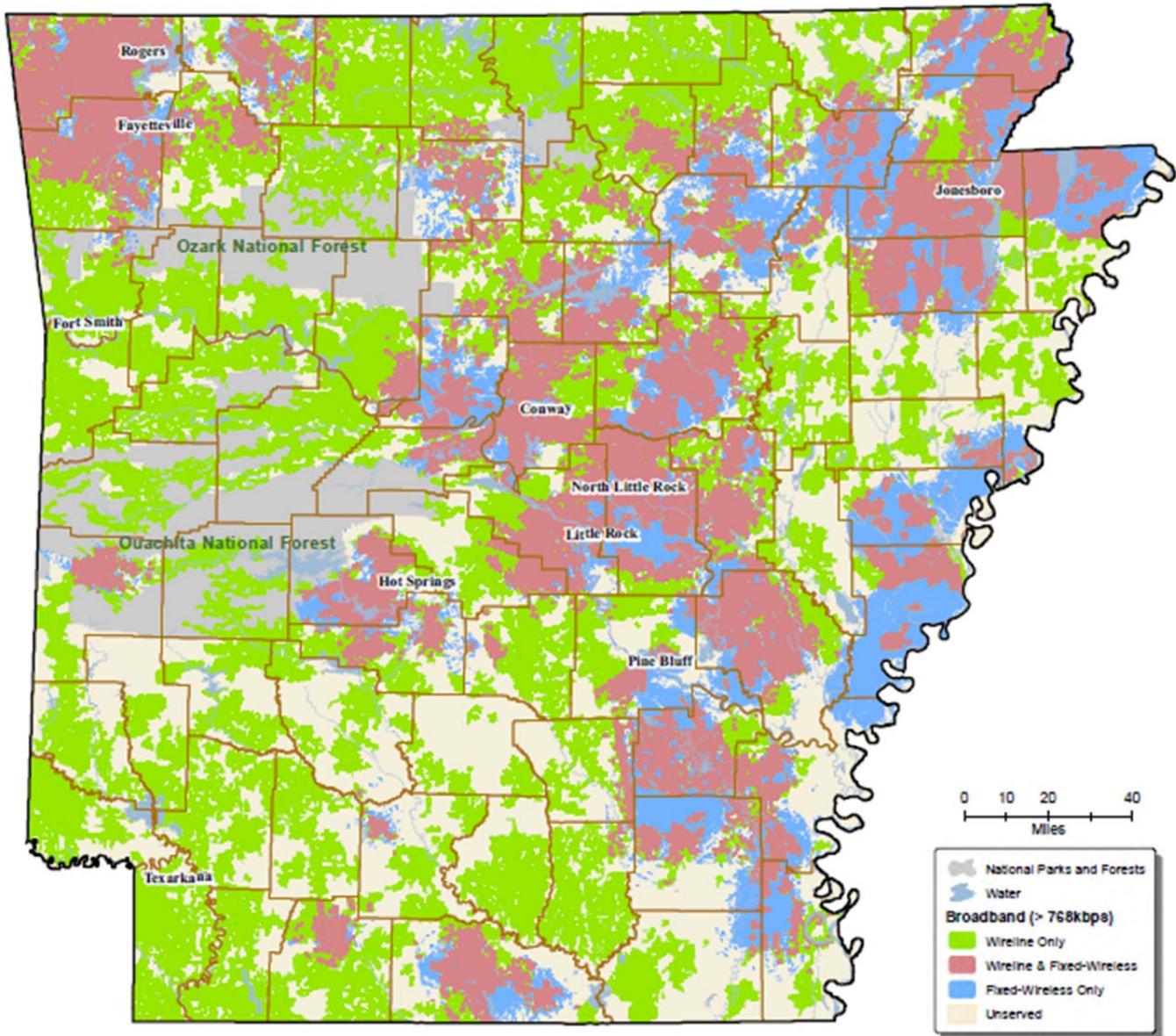
Broadband Availability Arkansas Mobile-Wireless & Satellite



Source: Connect Arkansas, Arkansas broadband providers, GeoStor, April 15, 2014. To search for coverage by address on an interactive map or to conduct a speed test to check performance, visit the Connect Arkansas website, <http://www.connect-arkansas.org/>.

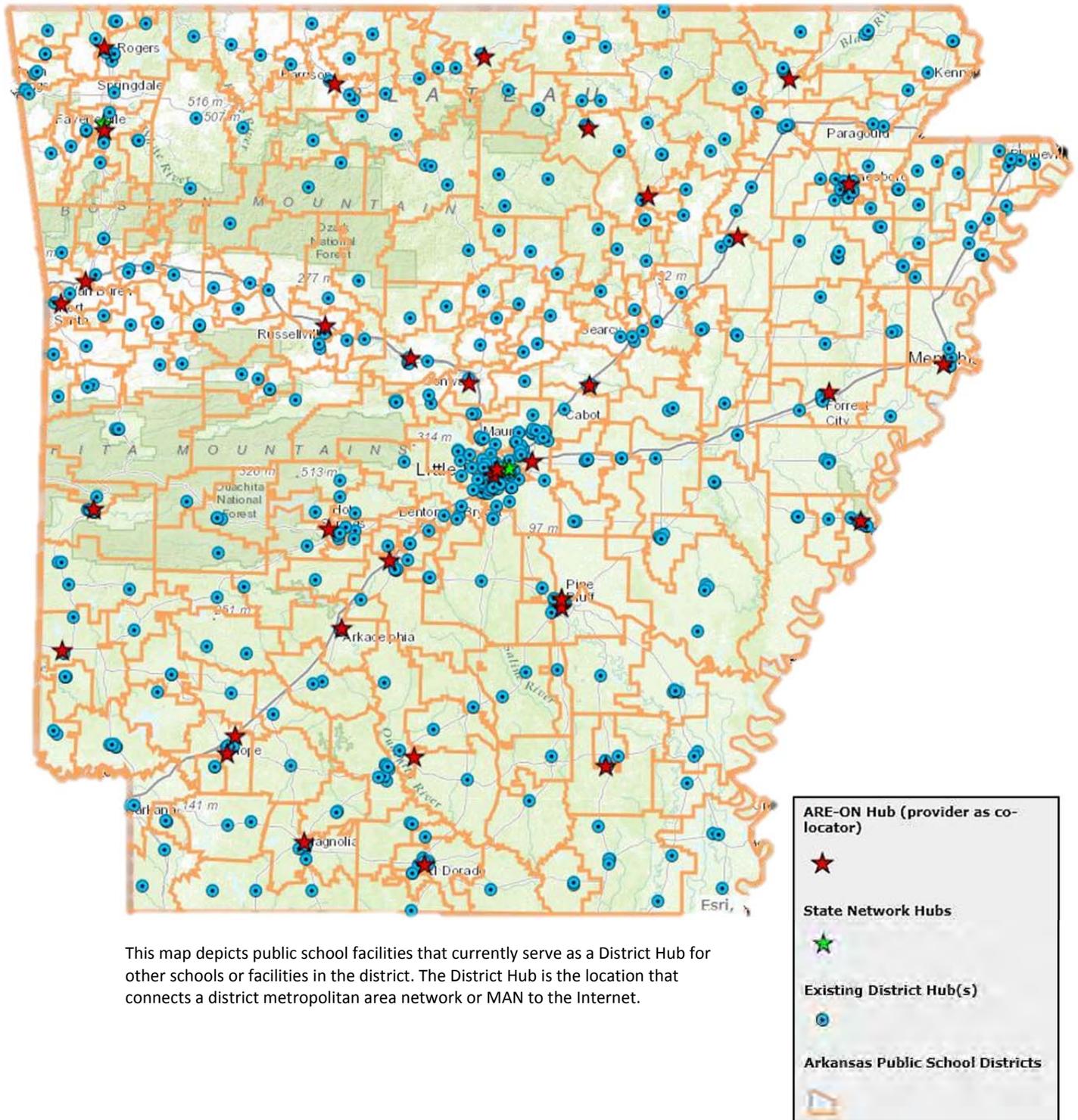


Broadband Availability Arkansas Wireline & Fixed-Wireless



Source: Connect Arkansas, Arkansas broadband providers, GeoStor, April 15, 2014. To search for coverage by address on an interactive map or to conduct a speed test to check performance, visit the Connect Arkansas website, <http://www.connect-arkansas.org/>.

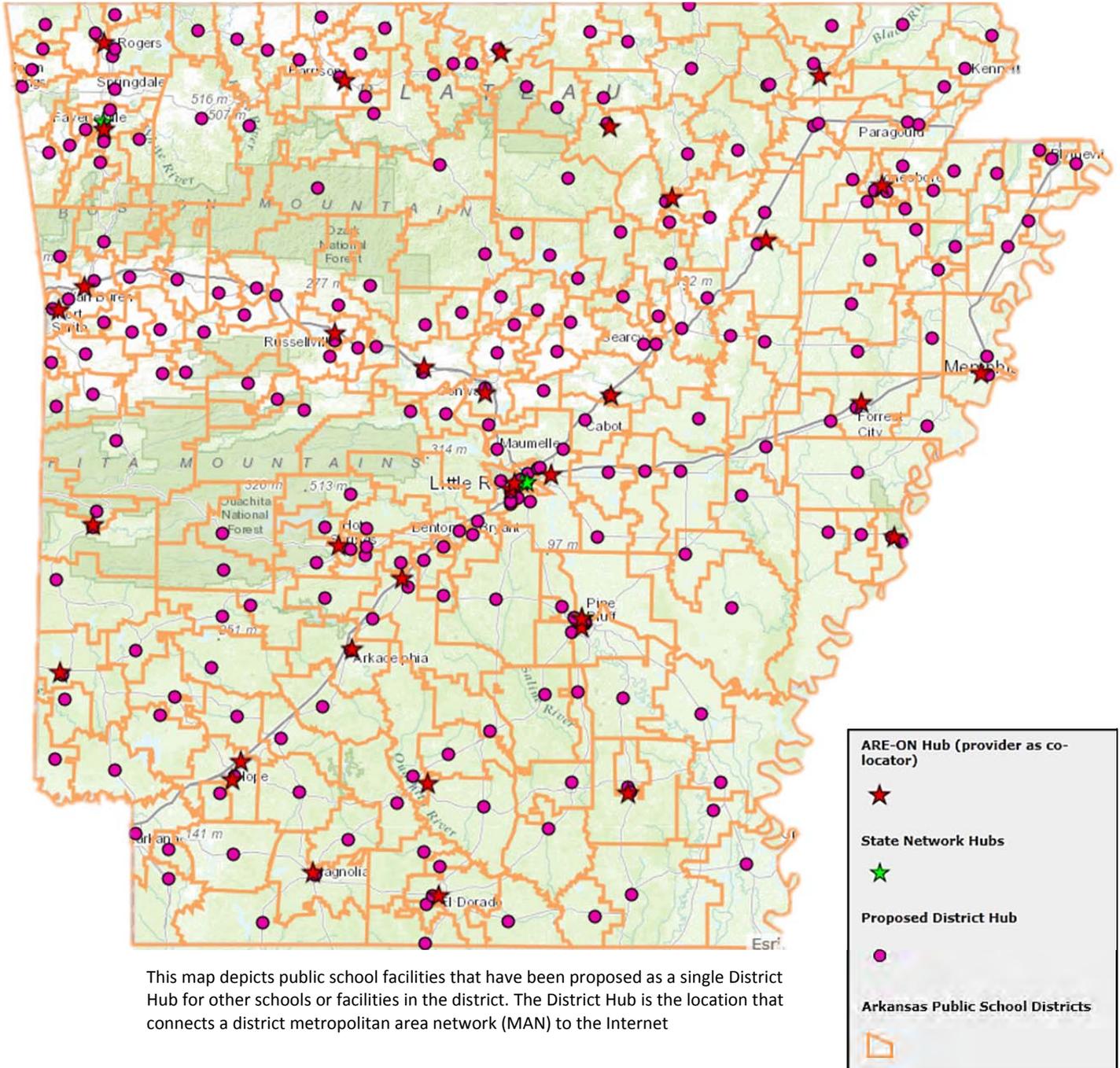
FASTER Arkansas Current Broadband Hub Analysis



This map depicts public school facilities that currently serve as a District Hub for other schools or facilities in the district. The District Hub is the location that connects a district metropolitan area network or MAN to the Internet.

Source: Arkansas Geographic Information Office (AGIO), June 2014
<http://agio.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=5743d73a30b84430a633ad3e11facb55>

FASTER Arkansas Proposed Broadband Hub Analysis

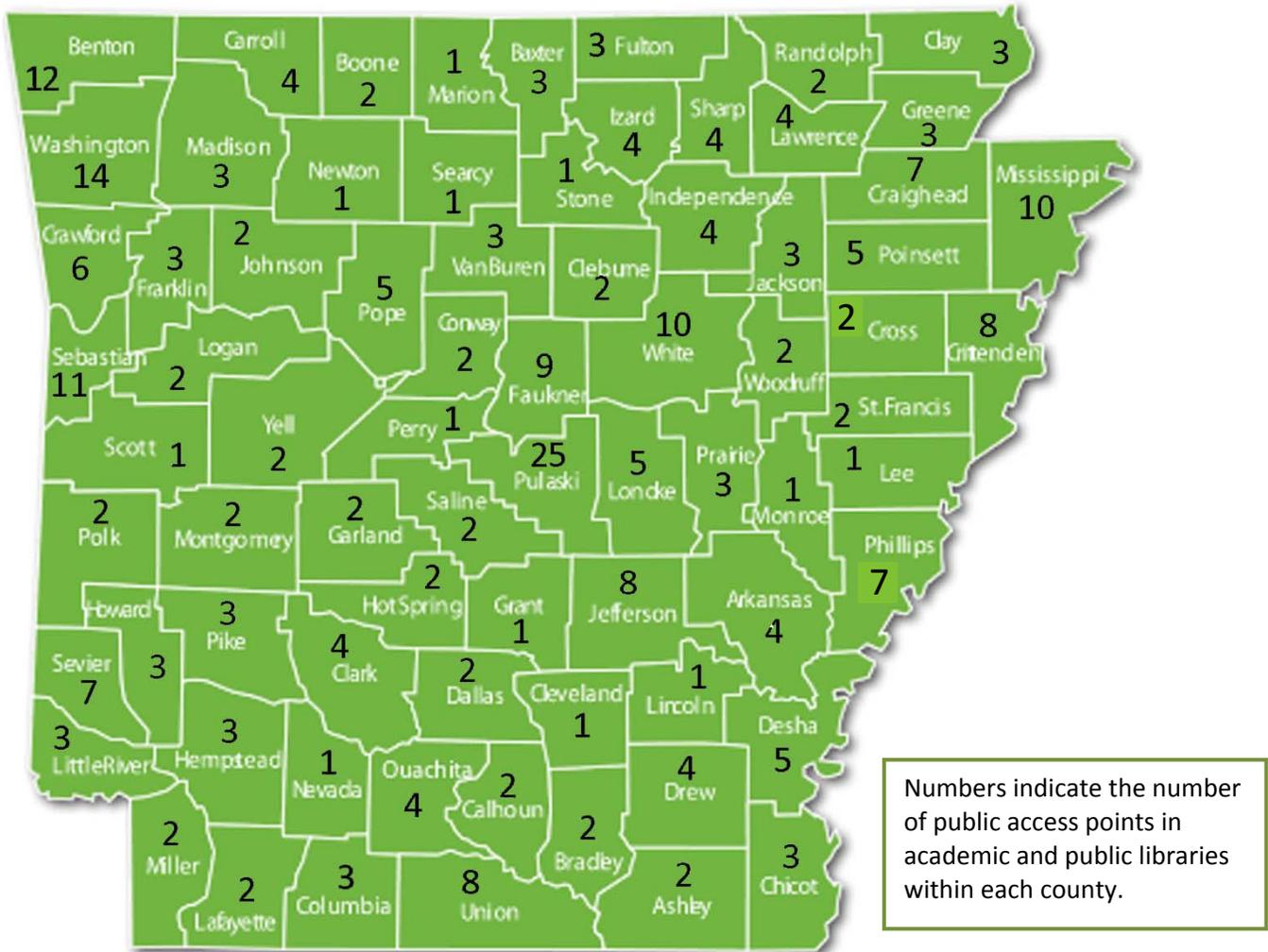


This map depicts public school facilities that have been proposed as a single District Hub for other schools or facilities in the district. The District Hub is the location that connects a district metropolitan area network (MAN) to the Internet

Source: Arkansas Geographic Information Office (AGIO), June 2014.
<http://agio.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=5743d73a30b84430a633ad3e11facb55>

Public Access Points in Academic and Public Library Locations

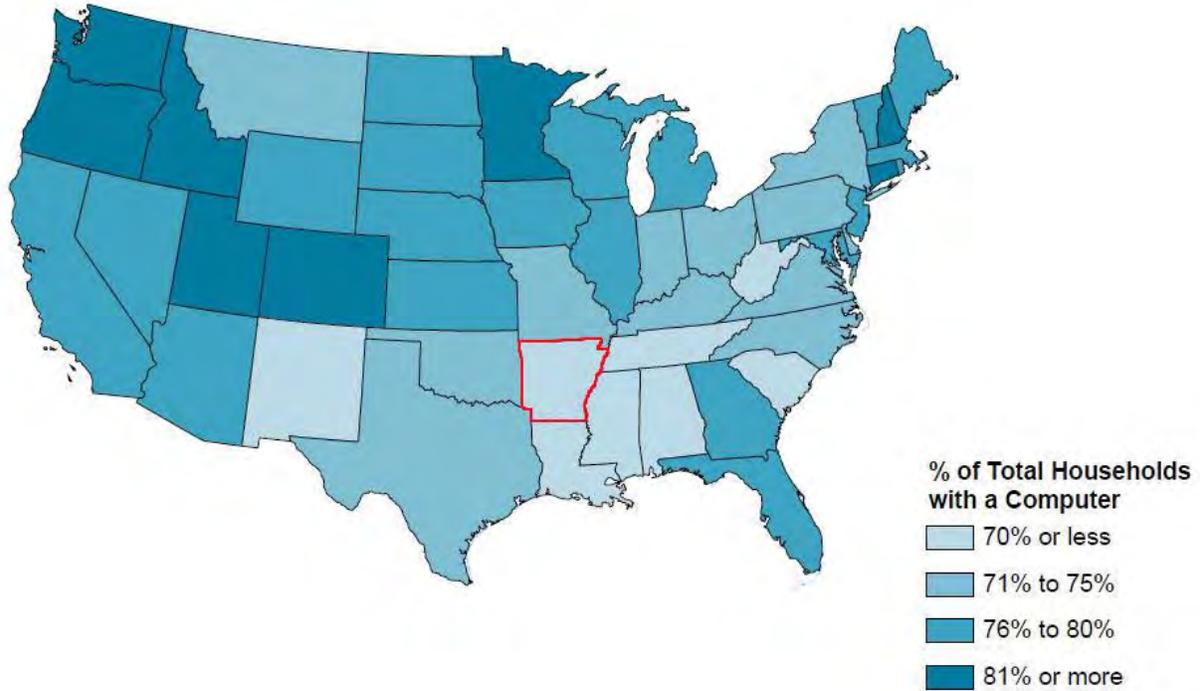
Libraries are often a valuable resource for online connectivity utilized by job seekers, retired individuals, and Internet users who lack home Internet access. Data from Connect Arkansas indicates 297 public access points at city and county libraries as well as libraries on university or college campuses.



Source: Arkansas State Library and Connect Arkansas, May 2014.
<http://www.library.arkansas.gov/Pages/stateMap.aspx>

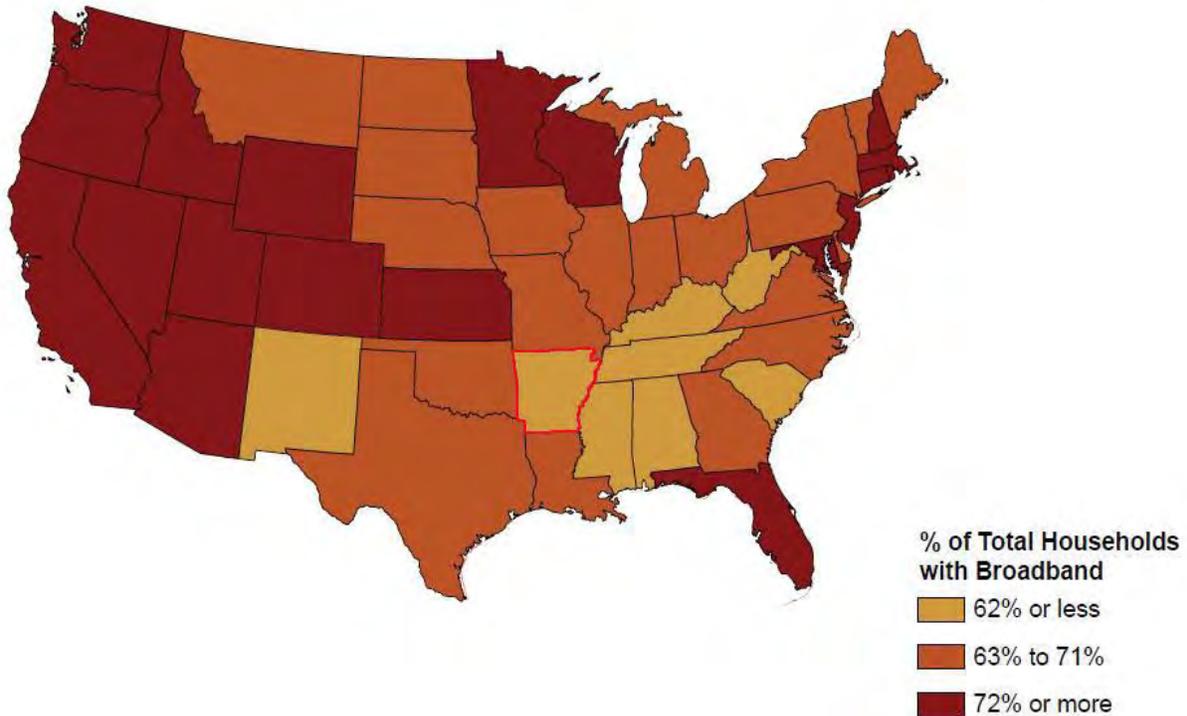
Broadband Adoption

Computer and Internet Use by State, Rounded to Nearest Percentage Point, 2011



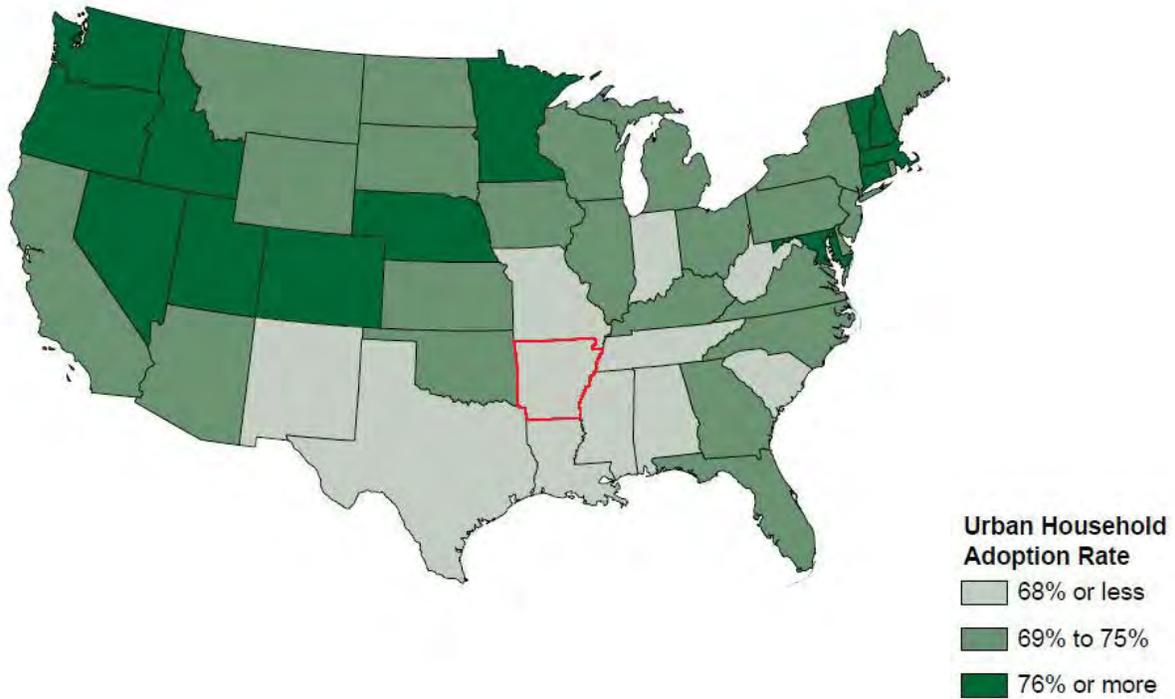
Source: [Exploring the Digital Nation](#), National Telecommunications and Information Administration, Economics and Statistics Administration in the U.S. Department of Commerce, June 2013

Household Broadband Internet Adoption by State, Rounded to Nearest Percentage Point, 2011



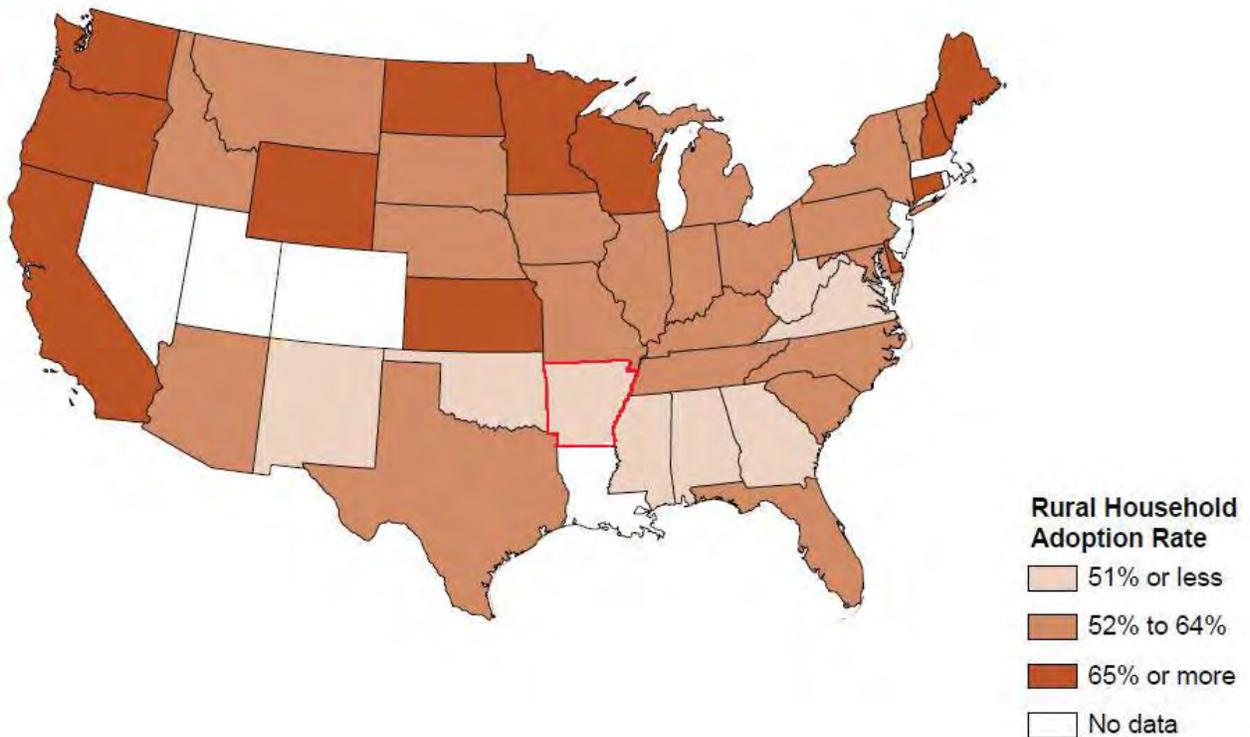
Source: [Exploring the Digital Nation](#), National Telecommunications and Information Administration, Economics and Statistics Administration in the U.S. Department of Commerce, June 2013

Broadband Internet Use in Urban Locations by State, Rounded to Nearest Percentage Point, 2011



Source: [Exploring the Digital Nation](#), National Telecommunications and Information Administration, Economics and Statistics Administration in the U.S. Department of Commerce, June 2013

Broadband Internet Use in Rural Locations by State, Rounded to Nearest Percentage Point, 2011



Source: [Exploring the Digital Nation](#), National Telecommunications and Information Administration, Economics and Statistics Administration in the U.S. Department of Commerce, June 2013

	Arkansas		Nation
Use the Internet	80% (2013)	78% (2012)	71.7%*
Have broadband in their home	69% (2013)	71% (2012)	78%**

Source:

Connect Arkansas Broadband Survey, December 2013

<http://www.connect-arkansas.org/sites/default/files/BroadbandSurveyResults2013.pdf>

*U.S. Census Bureau: Computer and Internet Use in the United States, May 2013

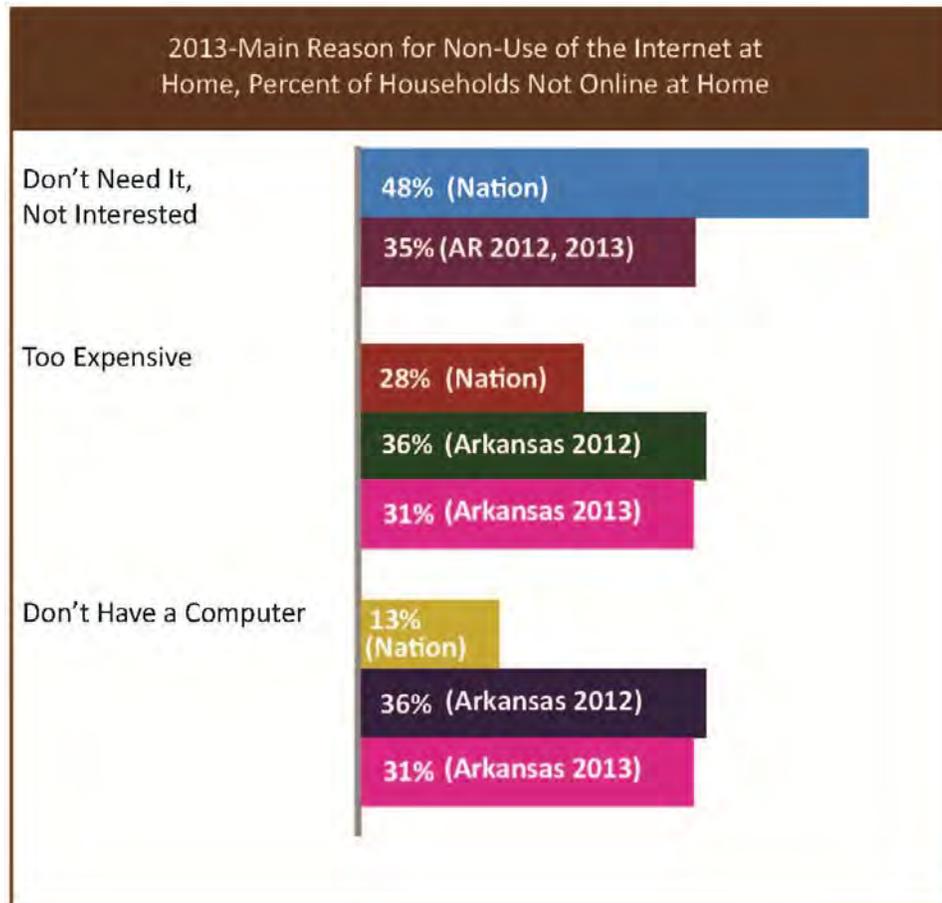
<http://www.census.gov/prod/2013pubs/p20-569.pdf>

**Leichtman Research Group, Inc., third quarter 2013

http://www.leichtmanresearch.com/research/notes09_2013.pdf

What are the Common Barriers for Broadband?

Barriers for the Consumer



Lack of Interest or Need

Households whose members have never used the Internet and households without children under 18 living at home were most likely to say they had no interest in or need for such service. Households without school-aged children at home were twice as likely as to cite this reason.

- **Too Expensive**

The percentage of households reporting that home Internet service was “too expensive” may reflect some consumers’ concern about their personal financial circumstances during a period of slow economic recovery.

- **Don't Have a Computer**

A majority of households citing this reason for not using the Internet in their homes earned less than \$25,000 annually.

Source:

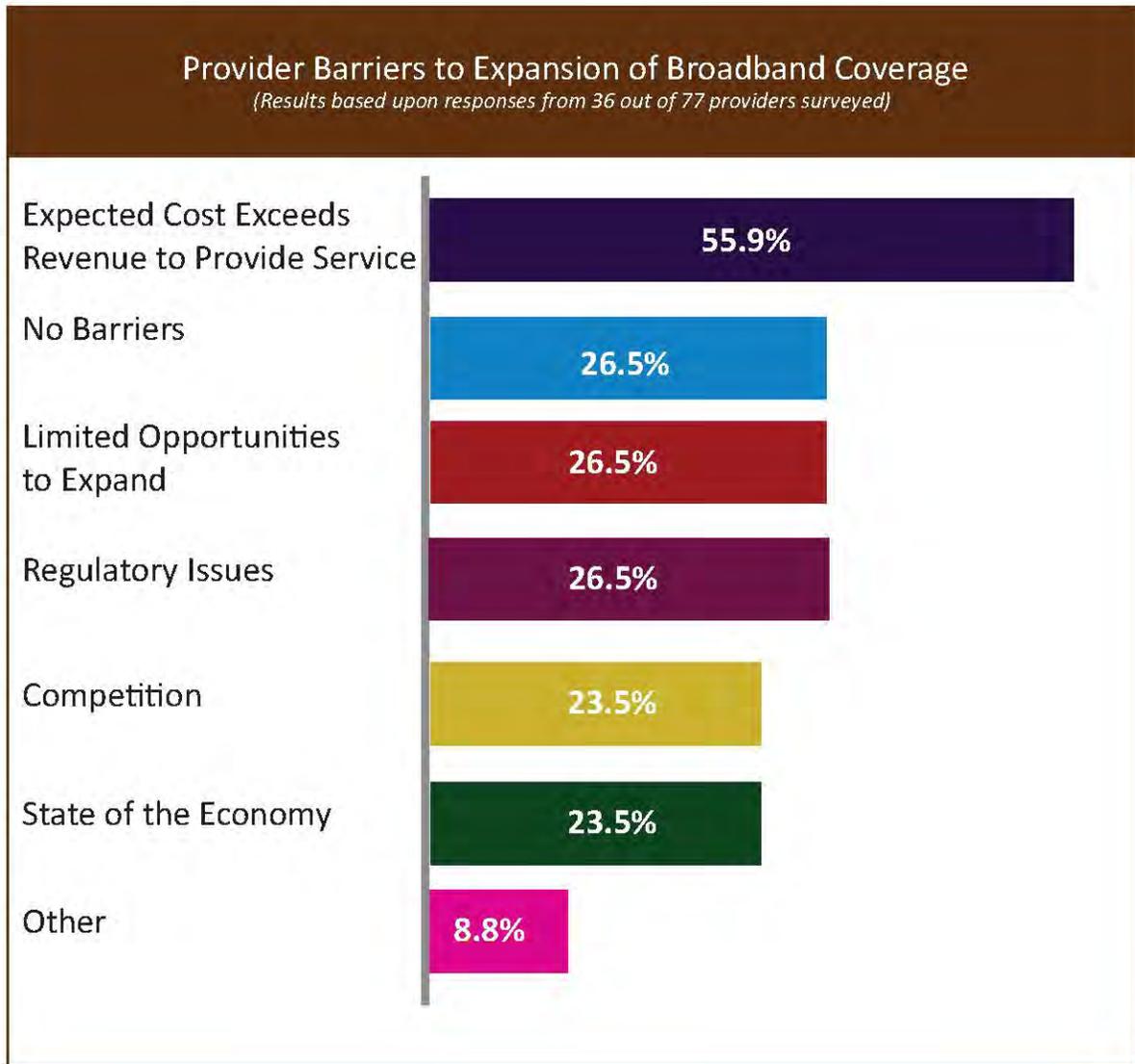
Exploring the Digital Nation: America’s Emerging Online Experience National Telecommunications and Information Administration (NTIA) and Economics and Statistics Administration U.S. Department of Commerce, June 2013

http://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_-_americas_emerging_online_experience.pdf

Connect Arkansas Broadband Survey, December 2013

<http://www.connect-arkansas.org/sites/default/files/BroadbandSurveyResults2013.pdf>

Barriers for the Provider



Other Barriers for Providers

Broadband Service Provider	If Other, Please Describe
Cox Communications	Access to poles at reasonable cost, terms and conditions
Yelcot Telephone Company	Electrical co-ops attempting to charge excessive pole-attachment fees (Up to \$29.40/pole).
The Computer Works	The only barrier is cash to buy equipment for new areas.
Centurylink	Pole Attachments

Source: Arkansas Telecommunications Provider Survey, December 2013
(See Appendix page 41 for other provider survey data)

Initiatives to Expand and Improve Broadband Capacity and Adoption (January 1, 2014-June 30, 2014 Reporting Period)

Act 298 of the 214 Fiscal Session

An act that sets up the Broadband Facilities Matching Grant Program to pay for one-time installations of fiber optic cables to connect the various buildings of school campuses, for example, to connect the district's main office to bus garages, school buildings, classrooms and administrative offices of schools throughout the district.

Source: http://www.arkansas.gov/senate/newsroom/index.php?do:newsDetail=1&news_id=457
<http://www.arkleg.state.ar.us/assembly/2013/2014F/Acts/Act298.pdf>

FCC Speed Test App

The Federal Communications Commission (FCC) Speed Test app uses smartphone-based technology to collect anonymized broadband performance data from volunteers participating in the collaborative, crowdsourcing initiative. Data collected will help inform consumers, industry and policymakers with the goal of improving mobile broadband performance nationwide. Users can also use the app to test their own mobile broadband service on demand. The application will measure mobile broadband performance in four active categories: download speed, upload speed, latency and packet loss. To better analyze wireless broadband performance, several other passive metrics are recorded, such as signal strength of the connection, and device manufacturer and model. The application tests run periodically in the background.

Source: <http://www.fcc.gov/document/fcc-unveils-mobile-broadband-speed-test-app-empower-consumers>

Suddenlink to Invest \$29 Million in Arkansas in 2014

Suddenlink announced \$29 million in capital expenditures in Arkansas this year to grow its infrastructure to provide the facilities and the equipment needed to support the growth.

Source: <http://www.arkansasbusiness.com/article/97618/suddenlink-plans-to-invest-29-million-in-arkansas-this-year>

Initiatives from 2014 Provider Survey

To gauge the progress of broadband expansion in Arkansas from January 1-June 30, 2014, a survey was distributed to approximately 70 telecommunications providers. Provider survey initiatives from 2013 can be found in Appendix IV.

Broadband Service Provider	Initiatives
South Arkansas Telephone Co.	We continue to offer 100M service throughout our service territory. We are upgrading our backbone to the world as well as internal electronics to enhance the internet experience overall.
Arkwest Communications	We are starting on our fourth exchange with our FTTH project.
NewWave Communications	In the portions of NE Arkansas that NewWave Communications serves we have the ability to provide 1 Gigabit Fiber Connectivity currently and plan to have 10 Gigabit Fiber Connectivity available by the end of 2014. We also provide cable modem services up 100 mbps down and 8 mbps up. We are a member of RazorNet and have access to other partners to reach other POPs across the state.

Prairie Grove Telephone Company; Inc.	We have completed some brownfield FTTH projects (in town and rural) and are currently working on others that will complement the greenfield FTTH we have put in place in the past. We continue to set BLC's in rural areas to shorten copper loops and increase broadband capabilities.
South Arkansas Telephone Co.	South Arkansas Telephone Company (SATCO) currently makes Broadband available to 99% of our customers, with 80% able to receive a minimum of 6 meg service. During the January 1 - June 30, 2014 reporting period, SATCO plowed 3 miles of fiber to Hermitage High School and SATCO now has the ability to provide up to 100Gbps to them. No additional new initiatives are planned during the January 1 - June 30, 2014 reporting period.
Aristotle Internet Services	Our expansion plans were delayed by various factors including the recent tornados in Mayflower and Vilonia; however, we are on track for a 3rd-quarter expansion into our identified areas followed by an additional expansion in the 4th quarter.
BCI	Vyve Broadband, since purchasing Allegiance Communications, has undertaken an expansive, \$100 mm upgrade to our network and is in the process of rolling out 105 Mbps down by 20 Mbps up availability across our AR footprint. All the company's CUID's will be upgraded by Q4 2014.
CenturyLink	CenturyLink has continued to deploy and expand our footprint since our last report in December. We have completed projects and also have a number of major projects set for completion during the current reporting period.
HillBilly Wireless	We have expanded our fixed wireless internet into Poyen, AR and are in the process of expanding into Glen Rose, AR
Ozark Telephone Company; Inc.	Ozark Telephone Company has expanded ADSL2+ offerings for higher download speeds over the traditional copper line facilities. Speeds of 10 Mb/s down and 1 Mb/s up is available to 95-100% of the Arkansas customer base. In some instances VDSL2 is available, or may be made available, upon request. Current plans are to continue with DSL technology and deploy electronic equipment cabinets within the service area to shorten physical copper loops to support higher bandwidth requests, if feasible.
Madison County Telephone	Madison County Telephone is currently deploying Fiber to the home throughout their Huntsville exchange. This will allow increased broadband to its customers. Future plans are to extend this service out to the rural areas of their service area.
AT&T	Although AT&T did not previously provide specific broadband initiatives for inclusion in the 2013 report, AT&T made 541 network upgrades during 2013 in Arkansas, including new cell sites, addition of wireless and wired network capacity, and new broadband network connections. Additionally, AT&T expanded the reach of its network, providing access to U-verse® Internet and video services to nearly 20,000 new customer locations and

	<p>delivering powerful fiber-optic connections to 1,432 business locations at 50 multi-tenant business buildings and business parks. These upgrades were made in connection with AT&T's Project Velocity IP (VIP), a multi-year plan to invest for growth. Some specific 2013 enhancements include:</p> <ul style="list-style-type: none"> • Expanding mobile internet coverage at Donald W. Reynolds Razorback Stadium with the installation of an upgraded 4G LTE Distributed Antenna System (DAS) to enhance the customer experience throughout the facility. • Improving mobile Internet coverage at the University of Arkansas for Medical Sciences (UAMS) campus by installing a new 4G LTE DAS. • Launching enhanced U-verse service in Fort Smith and Little Rock, offering home High Speed Internet at speeds of up to 45 Mbps downstream and up to 6 Mbps upstream. <p>2. AT&T has invested nearly \$800 million in its wired and wireless networks in Arkansas during 2010-2013, and AT&T continues to invest by building fiber deeper into its network and closer to businesses, schools, and homes. However, due to the highly-competitive nature of the telecommunications marketplace, AT&T can't discuss any specific initiatives that are planned. One initiative, already completed during 2014 as part of Project VIP, provides expanded mobile internet coverage at Bud Walton Arena by utilizing a Distributed Antenna System (DAS) to enhance the customer experience throughout the facility. A DAS installation consists of multiple strategically placed antennas that distribute AT&T's wireless network coverage throughout Bud Walton Arena, providing for more efficient management of wireless capacity in heavily trafficked areas. DAS has the ability to provide enhanced, consistent wireless coverage to customers in indoor or outdoor spaces where geographical limitations – terrain, building construction, etc. – or crowd density might otherwise prevent an optimal wireless experience.</p>
Windstream	<p>In the original survey, Windstream outlined three broadband initiatives underway. The company network improvement initiative that has resulted in enhanced broadband services in 26 Arkansas communities is now 89% complete. Windstream has also recently completed network upgrades partly financed by U.S. Agriculture's Rural Utility Service grants. This initiative expands broadband access in 13 rural Arkansas communities. Additionally, Windstream has started the beginning phases of the projects financed by the first round of the Federal Communication Commission's Connect America Fund (CAF-I R2). As of this report, Windstream expects the current slate of CAF-I R2 projects to impact over 39 exchanges. Construction planning on these projects began in March. Construction will continue through the 3-year timeline outlined by the CAF-I R2 requirements. Finally, as noted in our December response, Windstream continues to make advancements in providing broadband to schools, healthcare providers, and businesses throughout the state.</p> <p>2. In addition to the continuation and completion of initiatives</p>

	<p>outlined above, Windstream continues to monitor the Federal Communication Commission’s Connect America Fund grants (CAF-II). As of the writing of this survey, the FCC is still in the process of finalizing CAF-II procedures, but has indicated that they expect to have procedures in place by the end of 2014.</p>
RCC Wireless	No changes this reporting period.

Activities/Operations for Current Reporting Period

The following tables include the activities and operations toward the state's efforts to expand and improve broadband capacity and availability in Arkansas to improve education, economic development, citizen access to state services, and increase efficiency in state government through the use of broadband technology during the six months preceding July 1, 2014.

Stakeholders:

- State agencies, boards and commissions
- Governor's Office and constitutional officers
- Private business, enterprises, and broadband providers
- Nonprofit organizations
- Governmental entities and organizations organized under federal law or the law of another state
- Other individual and entities
- Citizens of Arkansas

Initiative & Date of Activity or Operation	ARE-ON January 1-June 30, 2014
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Details of Activity or Operation

Following the wrap-up of its three-year ARRA-funded Broadband Technology Opportunities Program (BTOP) project in November 2013, ARE-ON's network engineers have spent time on smaller projects to improve network resiliency and to optimize traffic for its member institutions. Some of the work performed included: completing the Netflix peering arrangement in Dallas and the Netflix caching in Tulsa to offload traffic from its Internet drains; installation of perfSONAR nodes in Tulsa and Fayetteville and working with members on doing perfSONAR performance testing; conducting a technology trial of 100Gb optical waves and 100Gb Ethernet over the ARE-ON optical network in preparation of future 100Gb projects; bringing its building management systems online to the management network; restructuring the Fayetteville backbone node to add full fiber diversity; performing a fiber relocate project in Little Rock and assisting with another similar project in Fayetteville; working cooperatively with OneNet, the regional education network in Oklahoma, to replace a 10Gb wave that was disconnected on short notice when National LambdaRail failed; transitioned all of its Internet2 and TR/CPS traffic through the Internet2 AL2S node in Tulsa; restructured member connections to the backbone to add resiliency and diversity; and provisioned bandwidth across the backbone for member disaster recovery projects. In addition, preparatory work was begun to connect to the Equinix Internet Exchange located in Dallas.

Initiative & Date of Activity or Operation Arkansas Broadband Advisory Council
January 1-June 30, 2014

Details of Activity or Operation

The council met five times during the current reporting period. Topics addressed included:

- General discussions about recent legislation
- Discussion on QDLS and FASTER recommendations
- Coordinating and planning of proposed ABC broadband summits
- Redevelopment of ABC website
- Formed committee for annual report

Initiative & Date of Activity or Operation Arkansas Public Safety Broadband Network Working Group (FirstNet)

Details of Activity or Operation

February 2014 – Hired a public safety broadband outreach coordinator to inform and educate cities and counties on public safety broadband and to gather information about their needs.

February 2014 – Established the Rural Leadership Council to address the challenges facing rural public safety organizations in regards to access to and use of broadband technologies.

March 2014 – Arkansas project team participated in the Department of Commerce/FirstNet State and Local Planning Grant Conference. The purpose of the conference was to prepare the states for consultation activities with FirstNet.

April 2014 – Current – Executed several briefings on FirstNet activities with state, city, and county public safety personnel.

May 2014 – Received Initial Consultation information request from FirstNet

May 2014 – Briefing with Arkansas Interoperable Communications Committee, Rural Leadership Council and Public Safety Broadband Working Group on Initial Consultation information request and the materials that the project team would be gathering.

June 2014 – Attended the Public Safety Research Conference to be updated on current FirstNet Activities and to begin training members of the state’s technical team on the implementation and operations of public safety broadband.

Initiative & Date of Activity or Operation	<p>Connect Arkansas Adult Digital Literacy Classes January 1-June 30, 2014</p> <p>Free adult digital literacy classes are one hour and are offered at multiple locations throughout the state, primarily in libraries. Classes are limited to three-five students for each one hour class, and each student is provided with a laptop computer to use during the class. Course offerings vary, from Computer Basics and FAQs to Setting Up and Using Email Effectively, Facebook, Pinterest, Excel and Word. The program averages 175 participants per month, with approximately 35 hours of classes each month.</p>
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Details of Activity or Operation

January 15, 2014: Star City Public Library, Email Basics
January 22, 2014: Marvell Public Library, Computer and Internet FAQs
January 23, 2014: DeWitt Public Library, Facebook and Email Basics
January 24, 2014: Faulkner County Public Library in Conway, Email Basics
January 29, 2014: Phillips County Public Library in Helena, Computer Basics
January 30, 2014: Phillips County Public Library in Helena, Email Basics
January 31, 2014: Jefferson County Public Library in Pine Bluff, Email Basics
February 4, 2014: Woodruff County Public Library in Augusta, Email Basics
February 5, 2014: Dumas Public Library, Email Basics
February 7, 2014: Faulkner County Public Library in Conway, Email Basics
February 12, 2014: Jefferson County Public Library in Pine Bluff, Email Basics
February 13, 2014: Hampton Public Library, Email Basics
February 14, 2014: Jefferson County Public Library in Pine Bluff, Email Basics
February 19, 2014: Marvell Public Library, Computer and Internet FAQs
February 20, 2014: Monticello Public Library in Drew County, Email Basics
February 21, 2014: Faulkner County Public Library in Conway, Email Basics
February 26, 2014: Jefferson County Public Library in Pine Bluff, Email Basics
February 27, 2014: Star City Public Library, Email Basics
March 5, 2014: Marvell Public Library, Computer and Internet FAQs
March 6, 2014: Jefferson County Public Library in Pine Bluff, Email Basics
March 7, 2014: Faulkner County Public Library in Conway, Email Basics
March 11, 2014: Woodruff County Public Library in Augusta, Computer Basics
March 13, 2014: Monticello Public Library in Drew County, Email Basics
March 14, 2014: Dumas Public Library, Computer and Internet FAQs
March 19, 2014: Marvell Public Library, Computer and Internet
March 20, 2014: Mayflower Public Library in Faulkner County, Email Basics
March 23, 2014: Conway Public Library, Becoming Friends with Facebook
March 26, 2014: DeWitt Public Library, Facebook and Email Basics
March 27, 2014: Hampton Public Library, Computer and Internet FAQs
April 2, 2014: Helena Public Library, Computer Basics
April 3, 2014: Helena Public Library, Computer Basics
April 4, 2014: Marvell Public Library, Computer and Internet FAQs
April 11, 2014: Star City Public Library, Computer and Internet FAQs
April 23, 2014: Marvell Public Library, Computer and Internet FAQs
April 24, 2014: Hampton Public Library, Computer and Internet FAQs
April 25, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs
April 30, 2014: Mayflower Public Library in Faulkner County, Computer & Internet FAQs
May 1, 2014: Faulkner County Public Library in Conway, Computer & Internet FAQs
May 2, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs
May 8, 2014: Faulkner County Public Library in Conway, Computer & Internet FAQs
May 9, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs

Initiative & Date of Activity or Operation	Connect Arkansas Adult Digital Literacy Classes January 1-June 30, 2014
Details of Activity or Operation	
(Continued)	
May 13, 2014: Woodruff County Public Library in Augusta, Computer Basics	
May 14, 2014: McGehee Public Library, Email Basics and Facebook	
May 15, 2014: Monticello Public Library in Drew County, Computer & Internet FAQs	
May 16, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs	
May 20, 2014: Hampton Public Library, Computer and Internet FAQs	
May 21, 2014: Marvell Public Library, Computer and Internet FAQs	
May 22, 2014: Star City Public Library, Computer and Internet FAQs	
May 23, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs	
May 28, 2014: Mayflower Public Library in Faulkner County, Computer & Internet FAQs	
May 29, 2014: Jefferson County Public Library in Pine Bluff, Computer & Internet FAQs	
June 5, 2014: Greenbrier Public Library in Faulkner County, Computer & Internet FAQs	
June 6, 2014: Marvell Public Library, Computer and Internet FAQs	
June 11, 2014: Star City Public Library, Computer and Internet	
June 12, 2014: Hampton Public Library, Computer and Internet	
June 19, 2014: Faulkner County Public Library in Conway, Computer & Internet FAQs	
June 24, 2014: Mayflower Public Library in Faulkner County, Computer & Internet	
June 26, 2014: Faulkner County Public Library in Conway, Computer & Internet FAQs	
June 27, 2014: Marvell Public Library, Computer and Internet FAQs	

Initiative & Date of Activity or Operation	Connect Arkansas Computers 4 Kids January 1-June 30, 2014 Computers for Kids is a program for families and students in kindergarten through 12 th grade which provides donations of refurbished Internet-ready computers to families completing three technology training classes. The program is open to students qualifying for free or reduced lunch, and has been expanded to cover all of Arkansas. By the end of June 2014, over 2,000 computers had been donated, with pre and post class surveys indicating high satisfaction and a willingness to subscribe to Internet access as a result of the program. Connect Arkansas is now working with an Arkansas-based computer recycler in Rogers to provide the computers utilized for this program.
Details of Activity or Operation	
February 18, 2014: 23 Internet-ready computers donated to families in Perry County	
February 19, 2014: 20 Internet-ready computers donated to families in Pulaski County	
March 12, 2014: 35 Internet-ready computers donated to families in Cross County	
March 13, 2014: 47 Internet-ready computers donated to families in Baxter County	
March 19, 2014: 18 Internet-ready computers donated to families in Grant County	
April 16, 2014: 31 Internet-ready computers donated to families in Hempstead County	
April 22, 2014: 19 Internet-ready computers donated to families in Clark County	
April 30, 2014: 37 Internet-ready computers donated to families in Pulaski County	

Initiative & Date of Activity or Operation	<p>Connect Arkansas Computers 4 Kids January 1-June 30, 2014</p> <p>Computers for Kids is a program for families and students in kindergarten through 12th grade which provides donations of refurbished Internet-ready computers to families completing three technology training classes. The program is open to students qualifying for free or reduced lunch, and has been expanded to cover all of Arkansas. By the end of June 2014, over 2,000 computers had been donated, with pre and post class surveys indicating high satisfaction and a willingness to subscribe to Internet access as a result of the program. Connect Arkansas is now working with an Arkansas-based computer recycler in Rogers to provide the computers utilized for this program.</p>
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Details of Activity or Operation

(Continued)

May 1, 2014: 19 Internet-ready computers donated to families in Cleburne County
May 12, 2014: 26 Internet-ready computers donated to families in Saline County
May 14, 2014: 53 Internet-ready computers donated to families in Lee County
May 15, 2014: 20 Internet-ready computers donated to families in Independence Co.
May 19, 2014: 31 Internet-ready computers donated to families in Garland County
May 21, 2014: 29 Internet-ready computers donated to families in Lonoke County
May 29, 2014: 24 Internet-ready computers donated to families in Craighead County
June 2, 2014: 32 Internet-ready computers donated to families in Hot Spring County

Initiative & Date of Activity or Operation	<p>Connect Arkansas Senior Digital Literacy January 1-June 30, 2014</p> <p>The statewide Senior Digital Literacy program targets seniors, those citizens identified as more in need of computer training and Internet access than any other population in the state. Courses are led by instructors from the University of Arkansas at Monticello and were initiated Summer 2013. To date, 87 classes have been held primarily at senior centers, serving 672 individuals. Each class is three hours in length and may accommodate up to twelve students, utilizing laptops provided by instructors. Each session concludes with students locating their homes on Connect Arkansas' interactive map to determine local Internet service provider options. Surveys indicate a desire on the part of participants to attend multiple classes. Two additional counties remain unserved at this time and will be addressed before the end of June, 2014.</p>
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Details of Activity or Operation

April 11, 2014: Two classes in Carroll County serving 16 seniors

Initiative & Date of Activity or Operation	<p>Connect Arkansas County Website Development January 1-June 30, 2014</p> <p>Connect Arkansas, working with the Information Network of Arkansas (INA), offers support to county governments desiring to establish an effective, attractive website. Originally targeting 17 counties, the program has been expanded to include an additional 10 counties, with INA providing not only website design and training of county administrators, but support of the websites for a two year period after launch. Counties have seen good traffic, business and tourism promotion, and through use of online payment processes, an increase in tax receipts.</p>
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Details of Activity or Operation

Two new county websites launched in the six month period ending June 30, 2014:

- Lee County: <http://leecounty.arkansas.gov/>
- Calhoun County: <http://calhouncounty.arkansas.gov/>

County websites under development include:
Clark County, Crittenden County, Dallas County, Hot Spring County, Howard County, Johnson County, and Nevada County.

Initiative & Date of Activity or Operation	<p>Connect Arkansas Arkansas SourceLink January 1-June 30, 2014</p> <p>Arkansas SourceLink is a program that connects entrepreneurs and small business owners to the resources they need to be successful. Through the Arkansas SourceLink website, www.arksourcelink.com, entrepreneurs can find general information about all facets of business as well as a calendar of business and entrepreneurship related classes and events around the state. They can also use the Resource Navigator database to get connected to non-profit organizations around the state which can provide them with in-person assistance that is specific to their needs. The Arkansas SourceLink website content is constantly reviewed to ensure relevancy to the target audience. The Arkansas SourceLink blog remains active, pushing relevant content to site users through social media channels.</p>
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Details of Activity or Operation

Arkansas SourceLink conducted its second annual Battle of the Brands competition from February 28-March 31. The 2014 competition, used as a vehicle to promote Arkansas SourceLink and the Arkansas business community as a whole, was won by Stuttgart's RNT Duck Calls.

Initiative & Date of Activity or Operation	<p>Connect Arkansas Small Business Technology Training January 1-June 30, 2014</p> <p>Connect Arkansas partnered with the Arkansas Small Business and Technology Development Center (ASBTDC) to host a series of website development and marketing workshops statewide. These workshops teach business owners, potential business owners, local and county governments, and employees how to quickly design and set up a five page website and how to market those businesses and entities through social media.</p>
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Details of Activity or Operation

- January 14, 2014:** Website in a Day in Clark County
- January 16, 2014:** Website in a Day in Columbia County
- January 24, 2014:** Website in a Day in Benton County
- February 5, 2014:** Website in a Day in Union County
- February 5, 2014:** Website in a Day in Ashley County
- February 13, 2014:** Website in a Day in Hot Spring County
- February 21, 2014:** Website in a Day in White County
- February 26, 2014:** Website in a Day in Pulaski County
- February 26, 2014:** Facebook/Get Listed Locally in Ashley County
- February 28, 2014:** Website in a Day in Washington County
- March 4, 2014:** Website in a Day in Hempstead County
- March 11, 2014:** Website in a Day in Howard County
- March 11, 2014:** Website in a Day in Jefferson County
- March 20, 2014:** Website in a Day in Craighead County
- March 27, 2014:** Facebook/Get Listed Locally in Jefferson County
- April 3, 2014:** Website in a Day in Ouachita County
- April 9, 2014:** Search Engine Optimization in Pulaski County
- April 9, 2014:** Website in a Day in Independence County
- April 17, 2014:** Website in a Day in Izard County
- April 23, 2014:** Website in a Day in Sebastian County
- April 25, 2014:** Website in a Day in Garland County
- April 30, 2014:** Website in a Day in Johnson County
- May 6, 2014:** Search Engine Optimization in Pulaski County
- May 7, 2014:** Website in a Day in Pope County
- May 14, 2014:** Website in a Day in Franklin County
- May 16, 2014:** Website in a Day in Carroll County
- May 20, 2014:** Website in a Day in Boone County
- May 21, 2014:** Website in a Day in Pulaski County
- June 6, 2014:** Website in a Day in Pulaski County
- June 11, 2014:** Search Engine Optimization in Pulaski County

Initiative & Date of Activity or Operation Connect Arkansas
Broadband Awareness Campaign
January 1-June 30, 2014

Details of Activity or Operation

Connect Arkansas continues to promote broadband awareness through its “Connect to Life” ad campaign, which began in November of 2013 and is scheduled to run through July 2014. The campaign is designed to increase awareness of the uses for high-speed Internet service resulting in increased Internet adoption. The campaign appears in radio, television and newspapers statewide, effectively reaching the entire state. A monthly e-newsletter, along with consistent and timely news media and social media outreach also promote the various classes and services offered by Connect Arkansas. Good response and increased traffic has been experienced on the <http://connect-arkansas.org/> website, with site traffic increasing by 440% over last year. January-March web results indicate 27,797 unique users, with 475 Facebook likes and 1,873 Twitter followers.

Initiative & Date of Activity or Operation Connect Arkansas
Broadband Mapping
January 1-June 30, 2014

Details of Activity or Operation

The ninth submission of broadband data including community anchor information, library data, and public schools information was submitted April 1, 2014 to the National Telecommunications and Information Administration (NTIA). This included Broadband Coverage data from 72 of the 80 identified providers. Recent coverage information has shown that 92% of Arkansans are in areas where at least 768 Kbps download speeds are available via wireline technologies. Engineering Assessments to determine existing wireline infrastructure in Arkansas as well as the cost involved to upgrade infrastructure to capacities of 1.5 Mbps and 4.0 Mbps have been completed in 19 counties. Connect Arkansas also works with the Arkansas Geographic Information Office (AGIO) to compile Geographic Information System (GIS) data for analysis of broadband at the address level. An ongoing project, the data will be beneficial for governmental for tax purposes, bus routing for resultant fuel savings, staffing for governmental agencies, public safety purposes, and important in economic development. The collection of data for 22 counties has been completed with the results published to Geostor which is accessible to all citizens. Only 14 of 36 counties remain to be completed with most of those nearing completion.

Initiative & Date of Activity or Operation Connect Arkansas
Discount Computer Program
January 1-June 30, 2014
Connect Arkansas’ website features refurbished computers for sale directly from Microsoft approved recycling companies at a reduced rate and shipped directly to the consumer. The computers offered have been upgraded to include multiple levels of options on desktops and to include laptops, for a total of five options available to consumers at a discounted rate. Those purchasing computers use the Connect Arkansas discount code to receive the special rate.

Details of Activity or Operation

This is an ongoing initiative.

Initiative & Date of Activity or Operation	E-rate January 1-June 30, 2014
Details of Activity or Operation	
<p>March 6, 2014: The Federal Communications Commission (FCC) issued a Public Notice seeking focused comment on E-rate Modernization. The proposed three (3) goals of E-rate modernization are: (1) ensuring that schools and libraries have affordable access to 21st century broadband that supports digital learning; (2) maximizing the cost-effectiveness of E-rate funds; and (3) streamlining the administration of the program. The Public Notice addressed the phase out of legacy voice services, what equipment should E-rate fund, how to ensure all applicants have access to funding for equipment, streamlining the administration and a request for suggested demonstration projects.</p> <p>Source: http://apps.fcc.gov/ecfs/document/view?id=7521099019</p> <p>April 15, 2014: Commissioner’s Memo COM-14-066 was released requesting Arkansas E-rate applicants send the E-rate application Item 21 detail to the Arkansas Department of Education. The information gathered from the Item 21 attachments will be used to support Arkansas’s comments submitted to the FCC Public Notice on DA-14-308A1; WC Docket No. 13-184 on E-rate Modernization. Detailed information on the impact of the FCC and other stakeholders’ suggestions to the Arkansas K-12 community is not available without the Item 21 attachment. The information will be invaluable in reinforcing Arkansas’s position in any additional meetings and discussions concerning E-rate Modernization.</p> <p>April 21, 2014: Arkansas submitted comments to the FCC in the matter of modernization of the E-rate Program for schools and libraries.</p> <p>Source: http://apps.fcc.gov/ecfs/document/view?id=7521099019</p>	

Initiative & Date of Activity or Operation	Next Generation State Network (NGN) January 1-June 30, 2014
Details of Activity or Operation	
<p>January 2014: All but a handful of customer sites converted have been converted to the new state network and decommissioning the previous network backbone began (which cost more than \$160,000 per month).</p> <p>March 2014: The old state network backbone was down to 1 circuit costing \$4284 per month.</p> <p>June 2014: The entire old network backbone has been decommissioned and all customers have been converted to the Next Generation State Network. Average customer connection increased from 4Mbps to 10Mbps. Total connectivity increased from 6.5 Gigs to 17.4 Gigs.</p>	

Initiative & Date of Activity or Operation	Quality Digital Learning Study January 1-June 30, 2014
Details of Activity or Operation	
<p>The Arkansas Digital Learning Study was presented to the General Assembly Joint Education Committee on May 6, 2014. An overview of the full report and graphics from the report are attached. The link to the full report is: http://www.arkansased.org/public/userfiles/Legislative_Services/Quality%20Digital%20Learning%20Study/Facts/COMPLETE_Arkansas_Digital_Learning_Study_051914.pdf</p>	

Initiative & Date of Activity or Operation	UAMS Center for Distance Health (CDH) and Arkansas e-Link January 1-June 30, 2014
Details of Activity or Operation	
<p>Arkansas e-Link facilitated 42,263 videoconference connections from January 2 - June 1, 2014. In that same time period, e-Link transmitted an estimated 61,500+ hours of video time. These connections originate from all over Arkansas through secure, HIPAA-compliant broadband connectivity. The CDH also launched several new programs that harness the broadband connectivity of this network to increase medical services and education to rural Arkansas. One such program transmits hand trauma images from rural emergency rooms to distant specialists by using the e-Link network. In its first four months of programming, the hand trauma initiative performed 76 telemedicine consults, facilitated the transport of 37 patients, allowed 28 patients to be treated by hand specialists, and allowed 14 patients to be treated by an orthopedist. Another new CDH program in 2014, telerehabilitation, provides patients with spinal cord injuries access to specialty care for post-acute follow-up and medication management at any of the eight UAMS Regional Centers or Chicot Memorial Hospital. The program also creates best practices guidelines for issues specific to spinal cord injuries and provides a 24/7 call center for patients and doctors. Through broadband connections, the telerehabilitation program allows for telemedicine specialist consultations and follow-up appointments. In the program's first quarter, its call center accepted seven triage calls, nine informational calls, and one consult call. Additionally, two patients were able to avoid unnecessary emergency department visits. Finally, in 2014, the CDH has chosen two sites in Arkansas to receive the equipment necessary to provide screenings for eye conditions in prematurely born infants. As of May, 12 patients had been screened and at least two of those patients were less than 32 weeks gestation at birth.</p>	

Other Activities

Initiative & Date of Activity or Operation Arkansas Department of Information Systems
June 18, 2014

Details of Activity or Operation

Arkansas Department of Information Systems issued a public statement distributed to Central Arkansas media outlets regarding K-12 bandwidth.

Source: http://www.arkansas.gov/dis/newsroom/index.php?do:newsDetail=1&news_id=142

Initiative & Date of Activity or Operation Bureau of Legislative Research
June 9, 2014

Details of Activity or Operation

The Bureau of Legislative Research (BLR) was asked to provide information about the portion of foundation funding provided to public school districts to support their need for broadband services. The foundation funding formula, or matrix, funds bandwidth as part of a district's overall technology needs. The findings of BLR's Policy Analysis and Research Section were on the Jun4 9, 2014, meeting agenda to be presented to the House and Senate Committees on Education. See full report in Appendix V.

Source: [http://www.arkleg.state.ar.us/education/K12/AdequacyReports/2014/2014-06-09/03-Broadband,%20BLR%20\(38\).pdf](http://www.arkleg.state.ar.us/education/K12/AdequacyReports/2014/2014-06-09/03-Broadband,%20BLR%20(38).pdf)

Initiative & Date of Activity or Operation Report: Testimony from Various Organizations Concerning the Adequacy of the Arkansas Public Education System Including Technology (Bandwidth)
June 3, 2014

Details of Activity or Operation

A 314 page report was compiled and prepared for the House and Senate Interim Committees on Education. Data from the following organizations is included in the report:

1. Arkansas Advocates for Children and Families
2. Arkansas Association of Educational Administrators
3. Arkansas Education Association
4. Arkansas Public School Resource Center
5. Arkansas School Boards Association
6. Arkansas State Teachers Association
7. Walton Family Foundation
8. Winthrop Rockefeller Foundation

Source: <http://www.arkleg.state.ar.us/education/K12/AdequacyReports/2014/2014-05-12/AdequacyTestimony2014.pdf>

Initiative & Date of Activity or Operation House and Senate Interim Committees on Education
May 6, 2014

Details of Activity or Operation

May 6, 2014: Excerpts from the meeting minutes:

Dr. Kristin Cuilla, Director, New School Development-New Tech Network, was recognized. Dr. Cuilla discussed connectivity, pertinent to the development of fearless, connected students who have the skills needed to thrive throughout their lives.

Dr. Ed Franklin, Chair, Quality Digital Learning Study Committee, was recognized. Dr. Franklin noted this report concerning Arkansas's capacity to provide high-speed connectivity for K-12 schools is the result of a year-long study required by Act 1280 of 2013. Dr. Franklin walked the Committees through the report. He discussed the member list and others who facilitated the report, the research needed to put the study together, connections, where schools get bandwidth, and capacity needed. He said four strategies were looked at: 1) maintain status quo, 2) use public resources, 3) use private resources, and 4) use shared public/private resources and infrastructure. He reviewed the eight findings and the six recommendations. He talked about the anticipated benefits, primarily in three areas: cost, capacity, and content. In his conclusion, he commented that, while network unification using Arkansas Research Education Optical Network (ARE-ON) is not allowed, it was advised in the report that the Arkansas General Assembly removes statutory barriers to this approach.

Source:

<http://www.arkleg.state.ar.us/assembly/2013/Meeting%20Attachments/810/l12528/EX%20C4%20050614%20JointEd%20Minutes%20DRAFT%20FINAL.pdf>

June 9, 2014: Excerpts from meeting agenda:

Rural Arkansas Telephone Systems- Presentation by Mullenix & Associates

Statewide Private Provider Networks

ARE-ON Network

ADE Survey: Cost of Current Local Bandwidth

ADE: Top 20 School District with the Most Current and Planned Bandwidth

Source:

<http://www.arkleg.state.ar.us/assembly/2013/Meeting%20Attachments/410/l12528/Broadband%20Handout%20Mullenix.pdf>

Proposed FASTER Arkansas Network

Source:

<http://www.arkleg.state.ar.us/assembly/2013/Meeting%20Attachments/410/l12528/Proposed%20FASTER%20Arkansas%20Network.pdf>

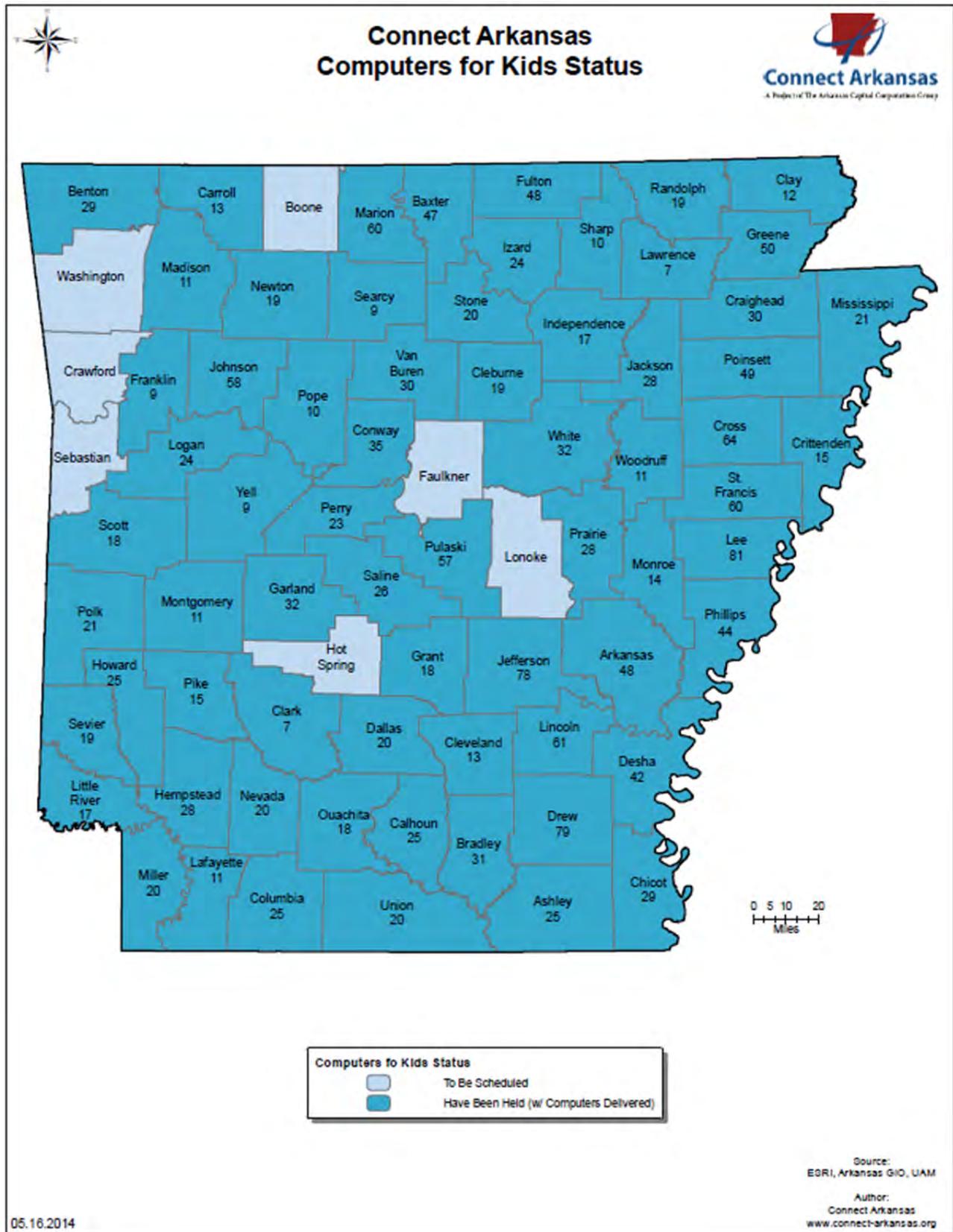
Initiative & Date of Activity or Operation Telecommunications Provider Survey
May 2014

Details of Activity or Operation

A survey, initiated by the state broadband manager, was sent to broadband providers in May giving them an opportunity to expand upon the response to an initial survey in November 2013 to showcase any progress or advances in the company's efforts in support of broadband expansion across Arkansas. The survey results are reflected in this broadband reporting period.

Appendix I

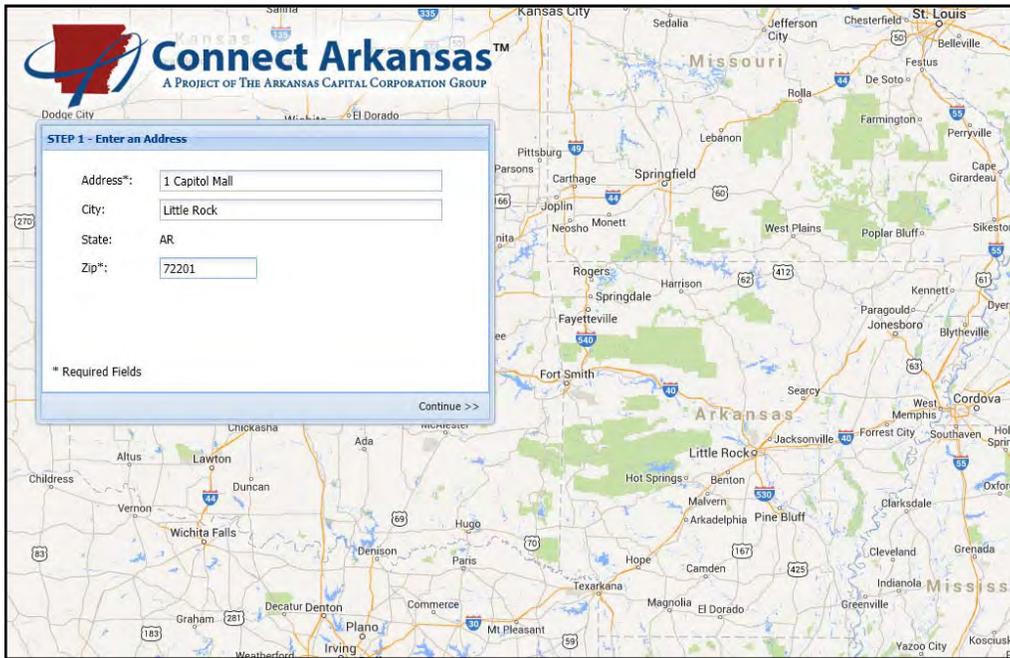
Connect Arkansas-Computers for Kids



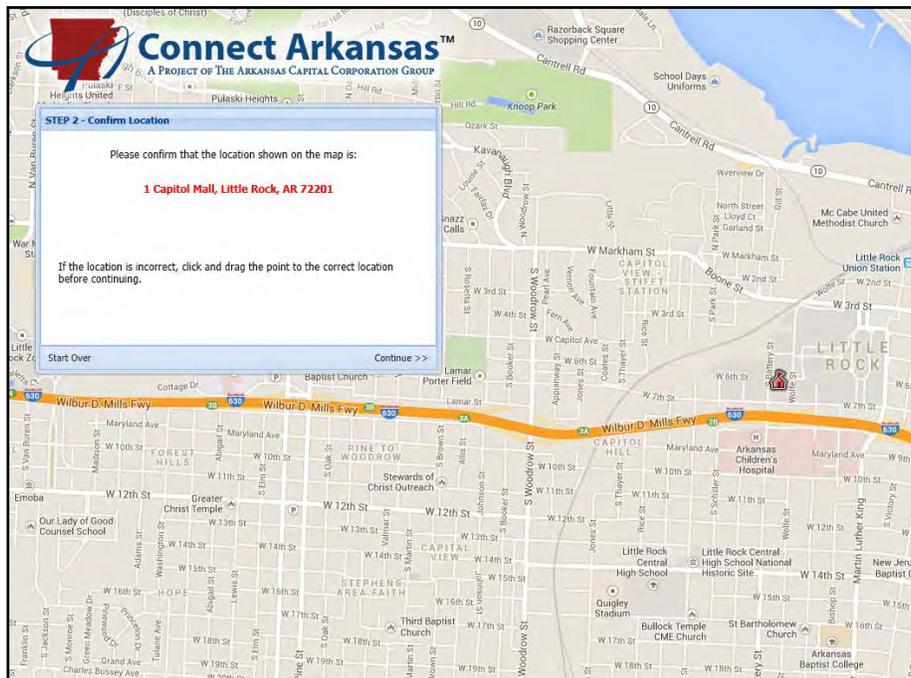
Source: Connect Arkansas as of May 2014

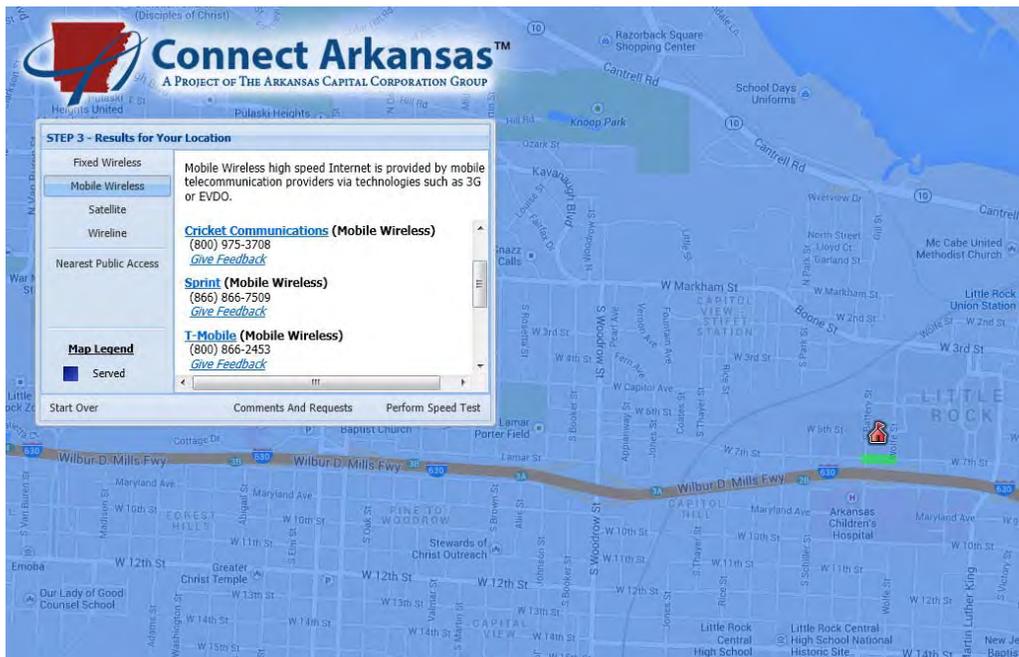
Connect Arkansas Interactive Search Map by Address

1. Enter your address and zip code in the fields provided and a map will appear with an icon of a home at the address.



2. You will be asked to confirm if the address entered is in the correct location, after which the map will allow you to select the different technologies to show whether or not high-speed Internet is available at that address.



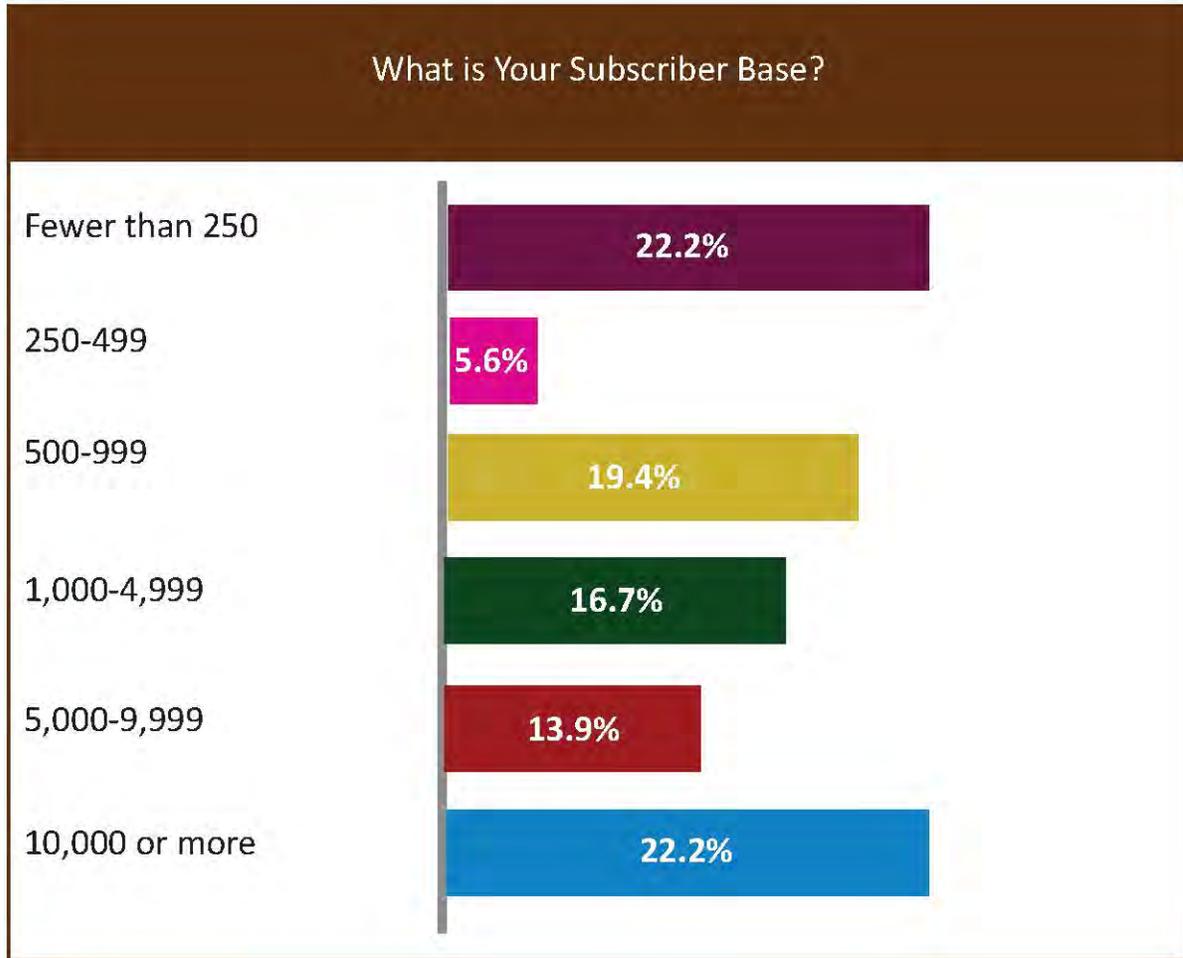


3. If high-speed Internet is available, a list will appear with the names of the providers once you have selected a technology type (fixed wireless, mobile wireless, satellite, wireline).
4. If the map says Internet is available, but you know it is not, or the type, service or provider listed is incorrect, you will be able to leave feedback for the providers listed.
5. If high-speed Internet is not available for the selected technology, the nearest location with availability of the selected technology, within five miles, will be displayed.

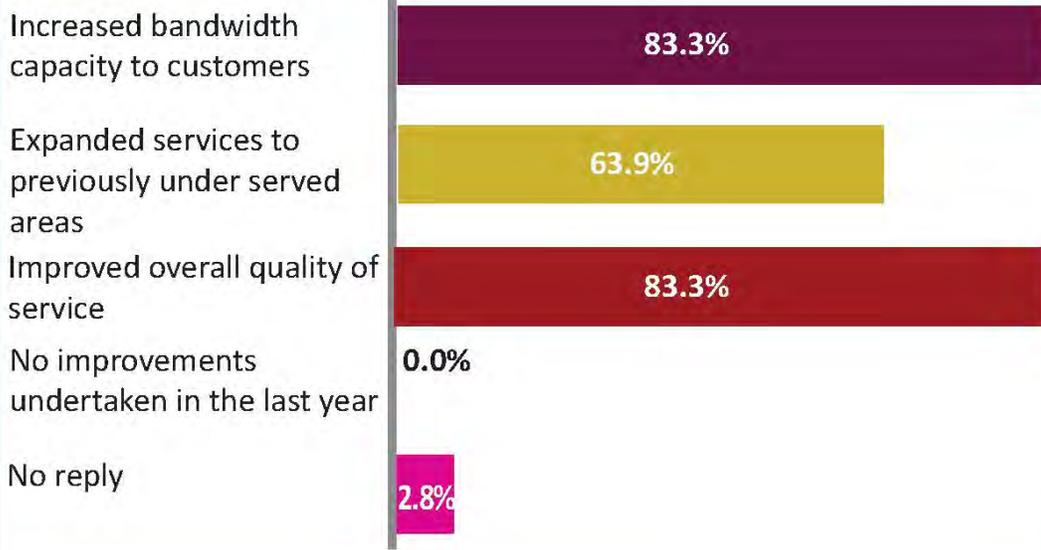
Appendix II

Arkansas Telecommunications Provider Survey Data (December 2013)

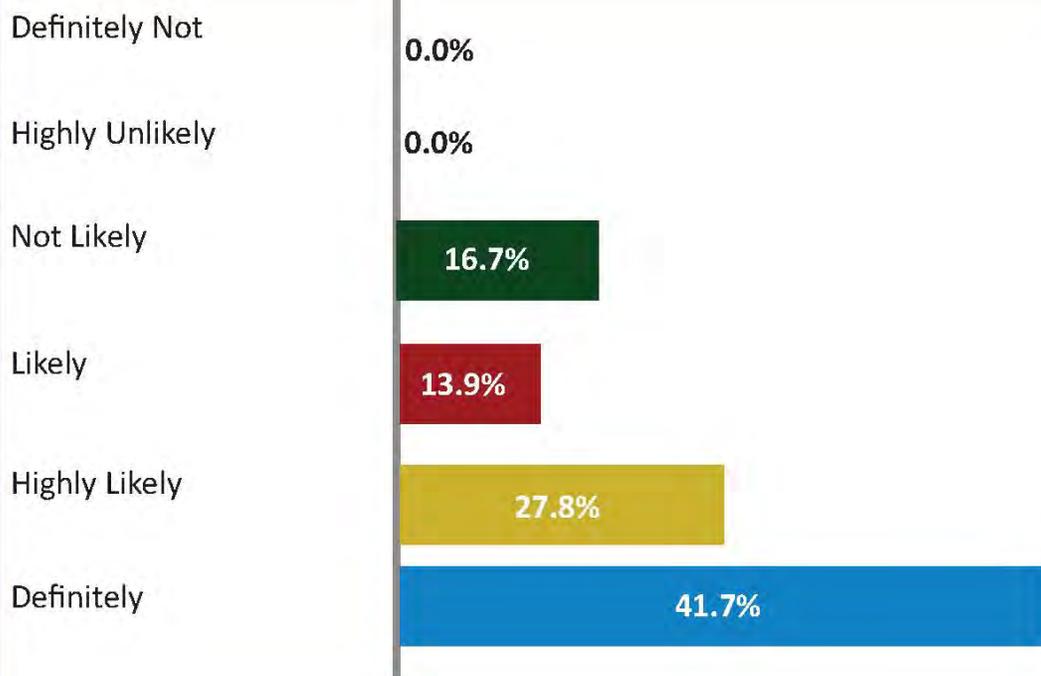
A survey was sent to 77 Arkansas telecommunications providers to help provide a representation of Arkansas's current overall broadband standing, to create a guide for ensuring that broadband becomes readily available to all Arkansans regardless of geographical location, and to establish important benchmarks that can be used to measure progress toward moving the broadband need for Arkansas. Survey responses were received from 36 providers while 41 did not issue a response.



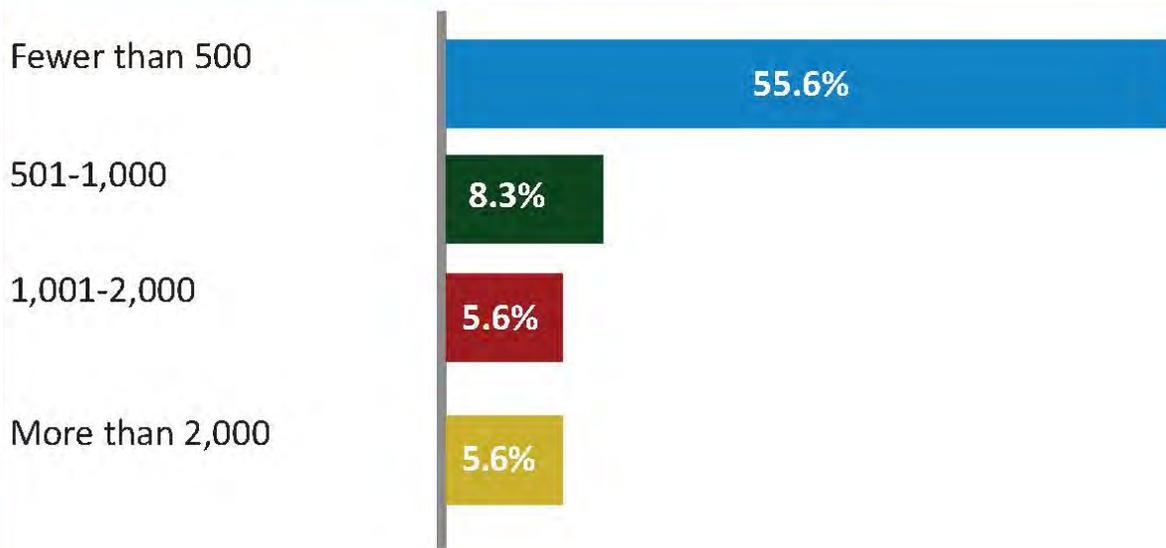
Within the past year, what broadband improvement efforts have you undertaken within your service area?



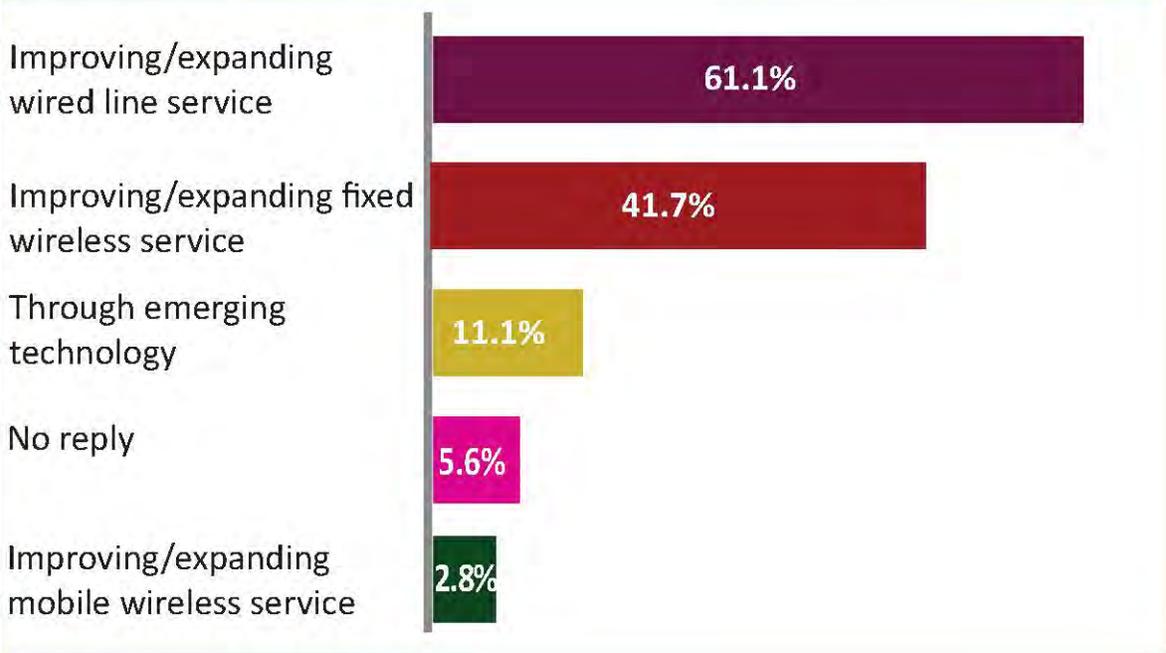
What is the Likelihood of Expanding Your Broadband Coverage?



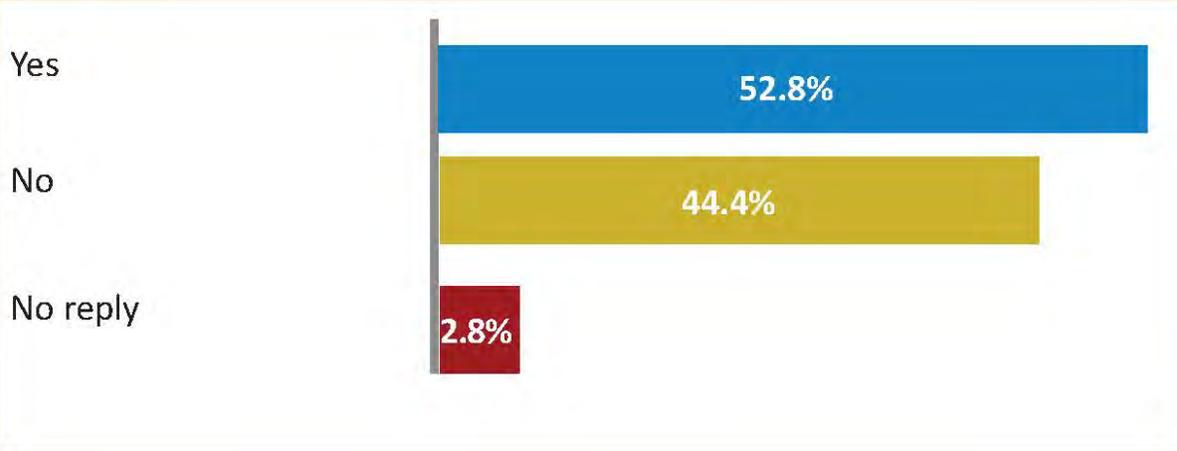
If you are planning on expanding in the next 6 months, approximately how many new customers are you hoping to serve?



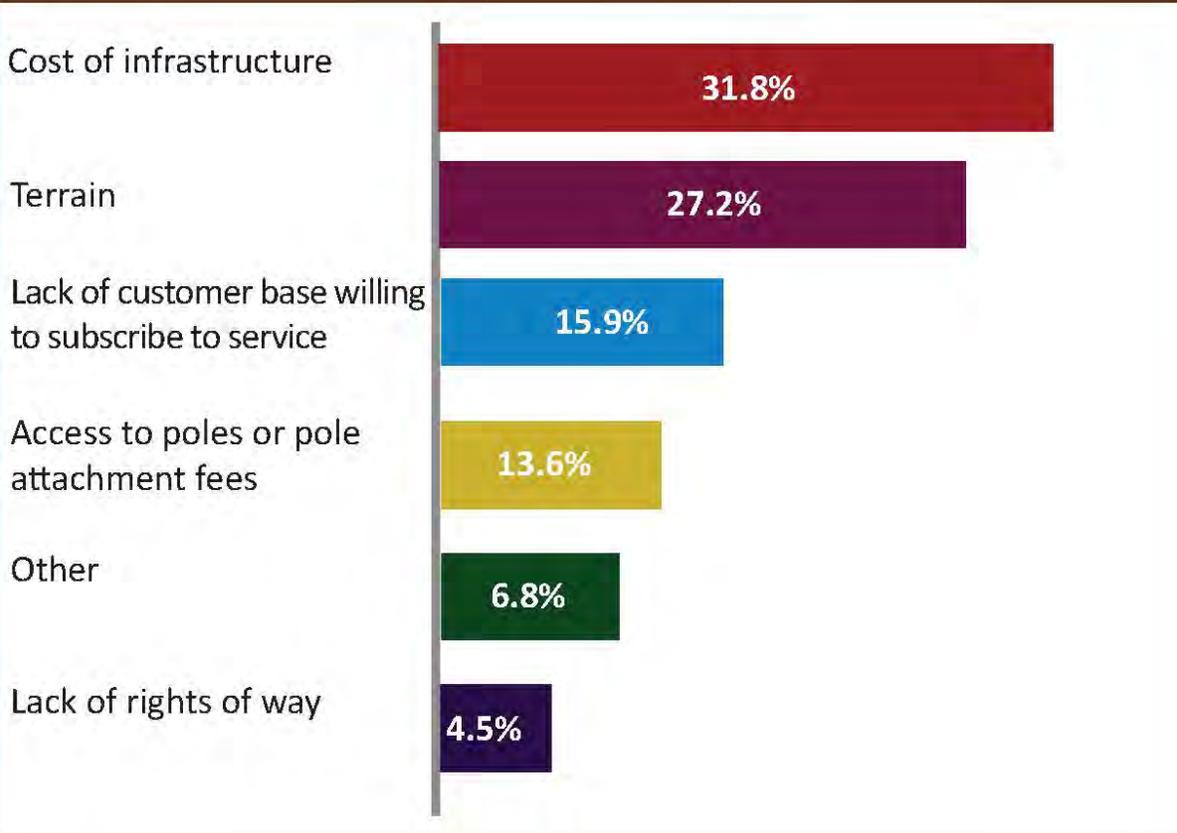
Are you focusing more on improving and expanding wired broadband or utilizing wireless?



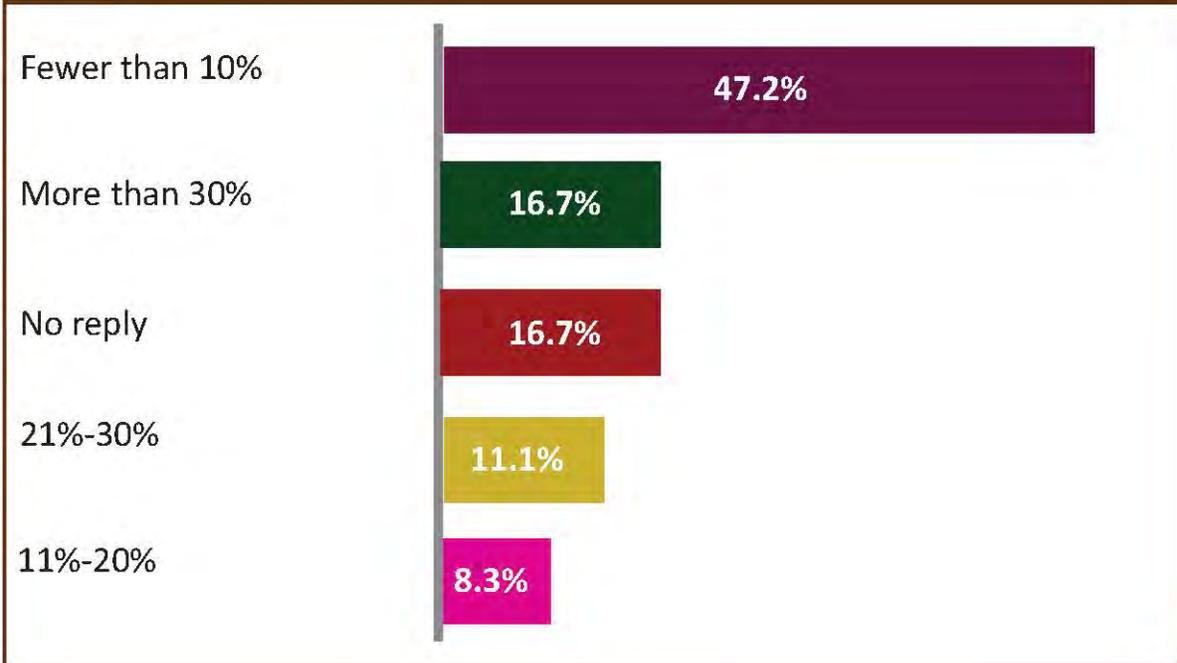
Are there locations within your service area to which you cannot provide coverage?



If yes, why?



What percentage of customers within your service area are you unable to serve?



Provider Comments for Best Ways to Expand Service to Unserved/Underserved Areas

Broadband service provider	What are the best ways to expand service to those who are...
<p>Prairie Grove Telephone Company; Inc.</p> <p>G5 Internet</p> <p>Dlux</p> <p>HillBilly Wireless</p> <p>Conway Corporation</p> <p>RCC Wireless</p> <p>Nexus Systems; Inc.</p> <p>HighTower Communication</p> <p>Yelcot Telephone Company</p> <p>The Computer Works</p> <p>Batesville Computing</p> <p>Aristotle Internet Services</p> <p>Ozark Telephone Company; Inc.</p> <p>South Ark</p> <p>Arkwest Communications</p> <p>Clinton Cablevision Services</p> <p>NewWave Communications</p> <p>Velocity Broadband Inc.</p> <p>Arkansas Cable%</p>	<p>Plow fiber optic cable to the area and set a broadband loop carrier system then connect the existing copper loops to it. We are currently offering broadband to approximately 99.9% of our customer base. We have about 9 customers living in South Washington and Northern Crawford Counties that are unable to get wireline broadband from us. We have offered them Exede satellite broadband which we sell and maintain but they said the \$50 per month cost was too much. This area doesn't have any cell phone service either. This area is very remote and did not have land line voice service until 1988 when we agreed to expand our service area and take them in, at the request of the Arkansas Public Commission.</p> <p>Gain access to existing towers - water towers preferred. If we could have access to cities and water department's water towers to mount equipment, it would allow for much faster growth into new areas. Often we offer free access to the cities in order to mount our equipment and provide service to the communities. It's a win-win situation, but sometimes cities see dollar signs and try to charge us as if we were a big cell carrier or something, which our budget will not allow.</p> <p>Drone Antenna Systems</p> <p>Wireless</p> <p>We serve the entire city limits with broadband. Any expansion would be related to new residences/businesses</p> <p>more infrastructure (more tower sites)</p> <p>microwave links</p> <p>Wireless Acces</p> <p>Use of existing Arkansas Extension of Facilities fund for broadband.</p> <p>We have been focused on providing broadband to the rural communities through Fixed Wireless. It is less expensive than fiber and installs can be achieved in a couple of days not years.</p> <p>reduce malicious interference by other providers, obtain licensed frequencies for providing internet service</p> <p>Additional antennas.</p> <p>we can currently provide ADSL2+ broadband services to 100% of our customers, if service is requested. The only limitation may be that we have to add some equipment to our office and/or remote DLC cabinets should 100% request service.</p> <p>Extension of our infrastructure to the remote areas.</p> <p>Fiber build out</p> <p>fiber</p> <p>Government grants to expand into rural areas of service foot print.</p> <p>Less expensive bandwidth to purchase for use in distribution. Locations to setup additional backhaul towers.</p> <p>We are constantly evaluating the needs of the consumers and the opportunities available for implementation in each market.</p>
<p>Windstream</p> <p>Arkansas Telephone Company</p>	<p>Windstream recommends that the Department of Information Systems focus on addressing barriers that private sector broadband providers clearly cannot resolve on their own. Accordingly, Windstream urges the department to focus on: (1) high-cost areas where it is economically unfeasible for a broadband provider to offer robust services at reasonable rates; (2) instances when end users do not purchase available broadband service due to affordability concerns; and (3) rights-of-way fees and restrictions that unduly inhibit broadband deployment. Addressing these three issue areas would efficiently build upon private sector entities' efforts to increase broadband access, adoption and use across the state.</p> <p>Would like to consider wireless but because of the terrain in the area, it's probably not a practical solution.</p>

Arkansas Telecommunications Provider Response/Non-Response to Survey

Responded To Survey	Did Not Respond to Survey
Aristotle.Net	Allegiance Communications
Arkansas Airwaves	Bayou Cable
Arkansas Cable	Cable One
Arkansas Telephone Company	Cam Telco
ArkWest	Central Arkansas Telephone Cooperative
AT&T	City Wireless
Batesville Computing	Comcast
CableSouth Media III	Community Communications Company
CenturyLink	Cricket Communications
Clinton Cable	Data Technology ISP
Conway Corporation	Direct Connect 1
Cox Communications	East AR Video
Dlux Information Systems	Fusion Media
Fidelity Communications	HBE Internet
G5 Internet	Hope Community TV
Hightower Communications	Horton TV & Electronics
HillBilly Wireless	HughesNet
Madison County Telephone Company	Indco.net
Magazine Telephone Company	Level 3 Communications
Mo-Ark Communications	Lonoke Broadband
Newwave Communications	Mid-South Communications
Nexuss Systems	NATCO
Ozark Telephone Company	PC Solutions
Paragould Light Water & Cable	Pine Bluff Cable TV
Prairie Grove Telephone & Internet	Resort TV
Pinnacle Communications	Rice Belt Telephone Co
RCC Wireless	Ritter Communications
South Arkansas Telephone Company	Scott County Telephone Company
Southwest Arkansas Telephone Cooperative	Skycasters
TDS Telecom	SkyNet DataCom
The Computer Works	Sprint
Velocity Broadband	Starband
Vue Wireless	Suddenlink Communications
Windstream	Townes Telecommunications
Wehco Video	T-Mobile
Yelcot Telephone Company	Verizon Wireless
	ViaSat
	Vineyard Media
	Walnut Hill Telephone Company
	WestWeb
	White County Cable TV

Broadband Considerations from Other States

Minnesota

Access to broadband in rural areas of Minnesota has been a hot issue over the last several years. A bill was introduced that establishes a grant and loan program to further expansion of broadband services to underserved areas. [Senate File 2056](#) – referred to as the Border-to-Border Infrastructure Program – would take \$100 million from the state's general fund to be applied to broadband projects. A companion bill in the House, [HF 2615](#) was also introduced. The measures generated debate throughout the state, as business owners in remote areas expressed the need for higher bandwidth to support the community. Both bills have stalled in committee, however, and it doesn't look like the issue will be taken up until 2015 at the earliest.

New Hampshire

1) Legislation is making its way through the New Hampshire Legislature that would give local government expanded bonding authority for areas that have limited or no access to high-speed Internet connectivity. [HB 286](#) passed the House in early 2014 and is up being heard in the Senate Energy & Natural Resources Committee.

2) U.S. Senator Kelly Ayotte (R-NH) announced the introduction of legislation to reform a federal rural communications program that currently returns only 37 cents for every dollar that New Hampshire contributes to it. Despite being a net "donor" of nearly \$24 million to the Universal Service Fund (USF) each year, our state continues to have significant pockets that lack access to crucial communications services - including broadband technology. Ayotte's bill, the [USF Equitable Distribution Act](#) (S. 1766), would ensure that a rural state is guaranteed to receive at least 75 cents for every dollar it contributes to USF.

Tennessee

The state has a package of bills that seek to better enable local governments to pursue community broadband development. All of them, however, appear dead or stuck in committee with no hearings scheduled. [SB 2005](#) gives the city (Clarksville, TN) expanded ability to offer broadband services outside its current electric service area. [SB 2140](#) and [HB 2242](#) permit Trousdale County to contract with a rural electric cooperative in order to provide broadband services to residents. There hasn't been any movement on these proposals since early March. [SB 2428](#) and [HB 2364](#) revise the definition of "telecommunications," so electric cooperatives that own dark fiber networks can, under certain conditions, offer broadband Internet service to residents in counties with populations of less than 7,900. Finally, [SB 2562](#) and [HB 2482](#) would authorize government utilities that already provide broadband services to expand their customer base to various economic development, education and health care projects under certain conditions.

Source: <http://www.govtech.com/network/5-States-to-Watch-in-the-Community-Broadband-Fight.html>

Appendix IV

Initiatives to Expand and Improve Broadband Capacity and Adoption (July 1, 2013-December 31, 2013 Reporting Period)

Funding made available to Arkansas through the American Recovery and Reinvestment Act (ARRA) was aimed toward investment in projects and initiatives including the expansion of broadband Internet access that laid the groundwork for future economic growth in Arkansas.

Initiatives Funded by the American Recovery and Reinvestment Act (ARRA)			
Arkansas	Grantee	Total Award	Type
	Connect Arkansas	\$6,175,366	Broadband Data & Development
	Connect Arkansas Inc.	\$3,702,738	Sustainable Adoption
	University Corporation for Advanced Internet Development (UCAID)**	\$62,540,162	Infrastructure
	University of Arkansas System (e-Link)	\$102,131,393	Infrastructure

Source: Broadband USA: Connecting America's Communities, Grants Awarded Map, December 27, 2013

<http://www2.ntia.doc.gov/arkansas>

**UCAID is a multi-state award. UCAIC, also known as Internet 2, has provided advanced network services to anchor institutions across the U.S. since 1997.

Act 442 of the Regular Session of the 89th General Assembly

An act to ensure continued broadband expansion in rural areas within the state of Arkansas; to provide 911 emergency service to rural areas within the state; to enhance the 911 emergency system and assist its funding; to declare an emergency; and for other purposes.

Source: Act 442 of the 89th General Assembly

<http://www.arkleg.state.ar.us/assembly/2013/2013R/Acts/Act442.pdf>

Act 1280 of the Regular Session of the 89th General Assembly

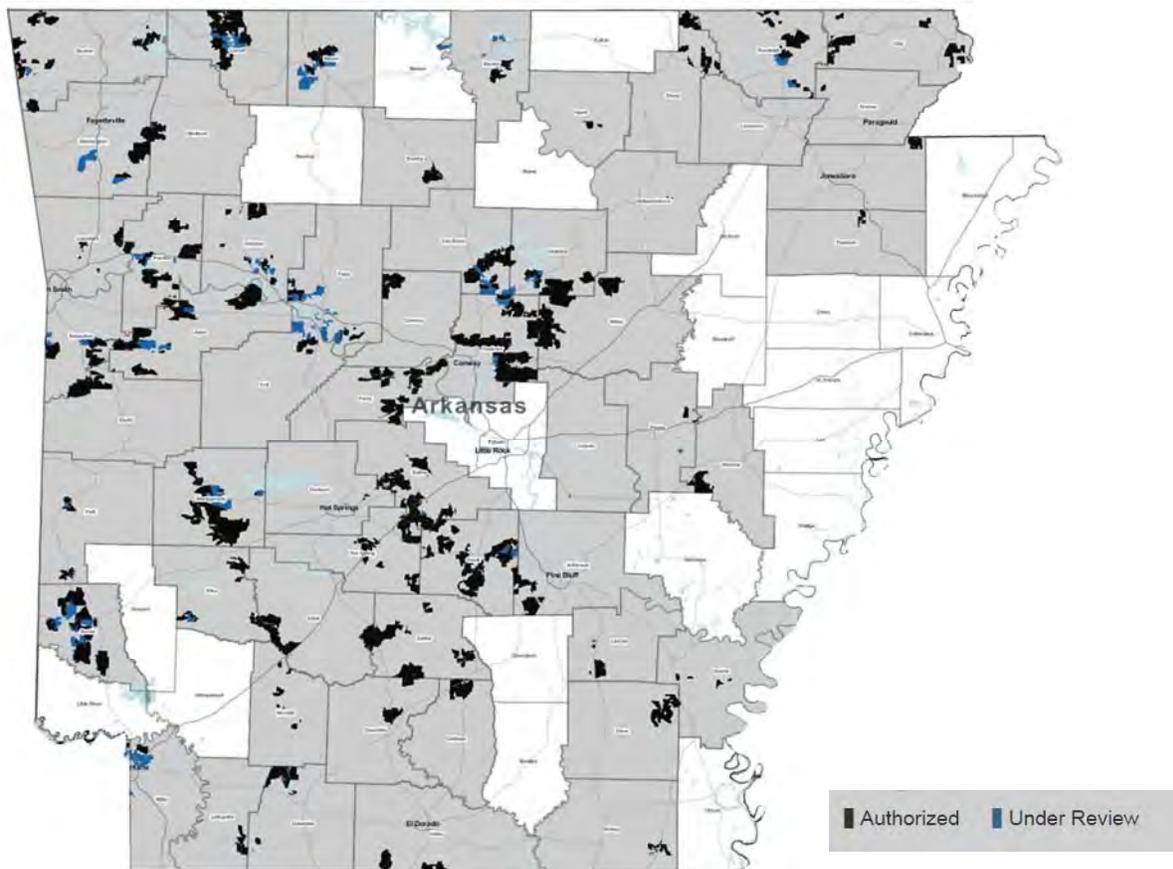
An act to provide digital learning opportunities in public schools; defining digital learning as a digital technology or Internet-based educational delivery model that does not rely exclusively on compressed interactive video. Beginning in the 2013-2014 school year, all public school districts and public charter schools participating in a pilot program shall provide at least one (1) digital learning course to their students as either a primary or supplementary method of instruction. Beginning in the 2014-2015 school year, all public school districts and public charter schools shall provide at least one (1) digital learning course to their students as either a primary or supplementary method of instruction.

Source: Act 1280 of the 89th General Assembly

<http://www.arkleg.state.ar.us/assembly/2013/2013R/Acts/Act1280.pdf>

Connect America Fund-Federal Communications Commission

The Connect America Fund aims to connect seven million unserved rural Americans to broadband in six years, and puts the nation on a path to connect all 19 million unserved rural residents by 2020. The Federal Communications Commission launched this unprecedented broadband expansion last year when it reformed and modernized the Universal Service Fund, which connected rural America to the telephone network in the 20th century. In the first phase, about \$115 million of public funding will be coupled with tens of millions more in private investment to quickly expand broadband infrastructure to rural communities in every region of the nation.



Source: Connect America Fund (CAF) Phase I Round Two, September 4, 2013

<http://www.fcc.gov/maps/connect-america-fund-phase-i-round-two>

Arkansas Broadband Advisory Council

The Arkansas Broadband Advisory Council was created to monitor the broadband-based development efforts of other states and nations in areas such as business, education and health. The council also advises the governor and the General Assembly on policies related to making affordable broadband available to every Arkansas home and business.

Source: Connect Arkansas

<http://www.connect-arkansas.org/about-us/arkansas-broadband-advisory-council>

Connect Arkansas

Connect Arkansas, a project of the Arkansas Capital Corporation Group (ACCG), is a private, nonprofit corporation dedicated to increasing high-speed Internet subscription and improving and sustaining Internet adoption throughout Arkansas. The Connect Arkansas Broadband Act was signed into law by Arkansas Governor Mike Beebe on March 28, 2007, with the goal of improving personal lives and creating economic opportunity for Arkansans. Connect Arkansas seeks to advance that goal through community-based initiatives. [Act 604](#) of 2007 states that Connect Arkansas's mission is to "prepare the people and businesses of Arkansas to secure the economic, educational, health, social, and other benefits available via broadband use."

Delta Technology Education Center

Delta Technology Education Center's main building has 24 computer stations for public access as well as total wireless usage. Full service support has been committed by the Department of Arkansas Workforce Services. Facilities are also available for entrepreneurial development and student internships in technology. The education building has two large interactive classrooms that are being used by area colleges, public school students, industry, business, agriculture, and medical fields.

Source: Delta Technology Education Center

<http://www.delta-tech.org/index.html>

E-rate

The Universal Service Schools and Libraries Program, commonly known as “E-rate,” provides discounts of up to 90 percent to help eligible schools and libraries in Arkansas and the United States obtain affordable telecommunications and Internet access. The program is intended to ensure that schools and libraries have access to affordable telecommunications and information services. Program participants may request funding in five categories of service: Telecommunications, telecommunications services, Internet access, internal connections, and basic maintenance of internal connections. Discounts for support depend on the level of poverty and the urban/rural status of the population served and range from 20 percent to 90 percent of the costs of eligible services.

FASTER

Fast Access for Students, Teachers and Economic Results (FASTER) Arkansas was tasked by Governor Beebe to explore potential solutions to accelerate broadband activation where it exists and finding alternatives in areas that lack infrastructure.

FirstNet

FirstNet will provide emergency responders with the first nationwide, high-speed network dedicated to public safety. FirstNet will be a force multiplier, increasing collaboration to help emergency responders save more lives, solve more crimes and keep our communities safer.

The broadband data network fulfills a fundamental need of the public safety community and a key recommendation of the 9/11 Commission. Creating FirstNet will require an unprecedented level of public-private partnership, collaboration and shared commitment to the well-being of all Americans.

Source: National Telecommunications and Information Administration

<http://www.ntia.doc.gov/page/about-firstnet>

Next Generation State Network

To amplify the state’s network performance, increase network capacity, and maximize efficiency, migration toward a high-speed network is in progress known as Next Generation State Network (NGN). NGN will ultimately provide a solution offering more cost effective bandwidth to the Arkansas public education system and state agencies. NGN will connect over 2,100 Arkansas public entity sites, including K-12 school districts.

Quality Digital Learning Study Committee

A 2012 state analysis by the Digital Learning Council gave Arkansas an overall grade of F for its lack of the 10 elements of high quality digital learning. The 89th Arkansas General Assembly formed the Quality Digital Learning Study Committee to “establish and maintain the necessary infrastructure and bandwidth to sufficiently facilitate and deliver a quality digital learning environment in each school district and public charter school.”

In conjunction with key stakeholders, the Quality Digital Learning Study Committee will:

1. Study the deployment of high-speed broadband to schools, classrooms, and communities sufficient to meeting the evolving needs of teaching and learning in a digital age
2. Research the technology to improve teaching and learning through professional development and provide access to affordable, effective digital learning tools, and applications in all schools
3. Identify the short and long-term infrastructure, broadband and digital learning needs of Arkansas public schools
4. Devise methods to establish and maintain sufficient broadband capacity to provide quality digital learning opportunities in Arkansas public schools

Source:

Arkansas Department of Education

<http://www.arkansased.org/divisions/policy/quality-digital-learning-study>

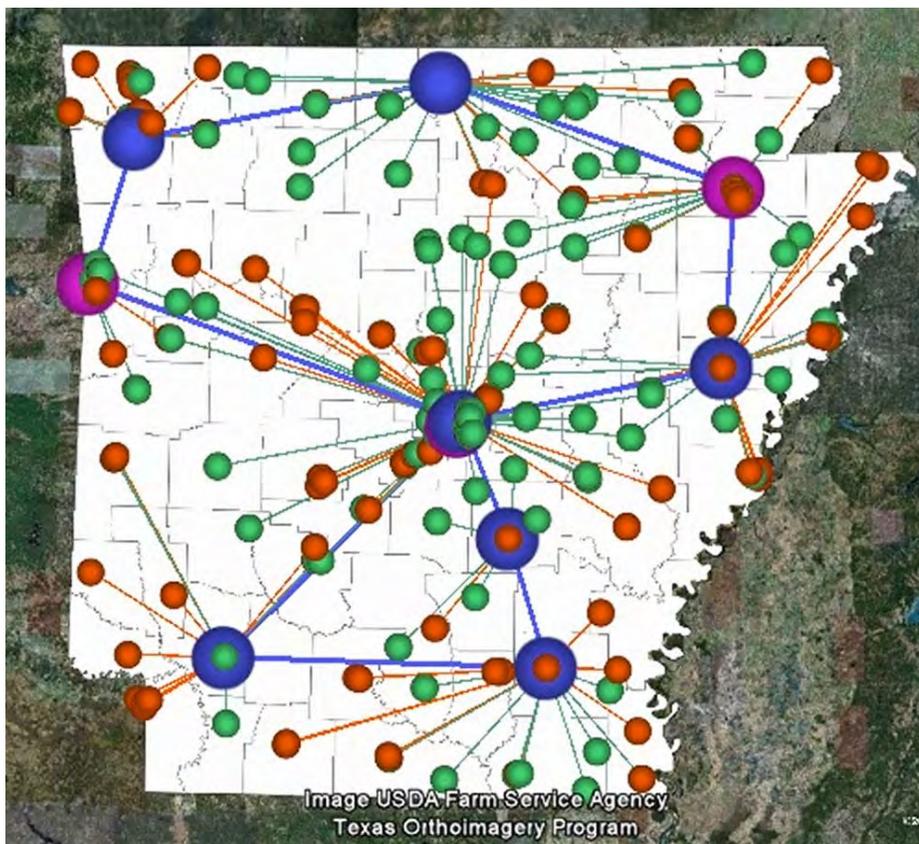
http://www.arkansased.org/public/userfiles/Legislative_Services/Quality%20Digital%20Learning%20Study/Reports/AR_Digital_Learning_Now.pdf

Act 1280 of the 89th General Assembly

<http://www.arkleg.state.ar.us/assembly/2013/2013R/Acts/Act1280.pdf>

UAMS Center for Distance Health and Arkansas e-Link

The UAMS Center for Distance Health exists to facilitate distance health implementation of educational, clinical, research, and outreach opportunities through interactive video throughout Arkansas. The Center for Distance Health works collaboratively with health leaders to identify and target health disparities impacting rural communities. Regardless of discipline or specialty area, the CDH directly offers telemedicine, continuing medical and health education, public health education, and evaluation research through interactive video in Arkansas. The CDH manages Arkansas e-Link, the statewide telemedicine network that securely connects broadband and increases bandwidth at over 450 healthcare, higher education, public safety, and research agencies across Arkansas, thus enabling each entity to transmit and receive real-time care and education. Arkansas e-Link represents the \$102 million expansion of two existing networks: Arkansas Telehealth Network (ATN) managed by the Arkansas Telehealth Oversight and Management group (ATOM) and the Arkansas Research and Education Optical Network (ARE-ON). Aligning partners from across Arkansas, this project improves broadband resources within all of Arkansas's 75 counties.



Source: Arkansas e-Link, December 27, 2013

<http://www.arkansaselink.com/>

Provider Initiatives

Arkansas State Broadband Manager 2013 Provider Survey

To gauge the state of broadband in Arkansas from the provider perspective, a survey was distributed to 70 telecommunications providers. In addition to the barriers for broadband expansion cited on page 15, some providers also included current initiatives to extend broadband coverage to Arkansans.

Broadband Service Provider	Initiatives
Cable South	Within the next year we plan on going to Docsis 3 in Crossett.
G5 Internet	In the last year, we installed a 100% off grid solar powered site, which now feeds broadband to around 40 subscribers, who have no alternative option for fixed broadband. In the coming year, we have plans to build a new tower to expand our coverage to another potential 100 or so customers who have no viable alternative for fixed broadband. This new tower will use new technology to allow us to offer faster speeds, possibly up to 25Mbps per subscriber. We have also just ordered a second fiber optic connection which doubles our capacity to feed our network, and provides us with redundancy, should one of our upstream providers experience an outage.
Pinnacle Communications	Replaced electronics at customer premise which limited broadband to 20M, can now achieve 50M+. Upgrade for 100% of customers.
The Computer Works	We have been working with Connect Arkansas since the beginning. Our primary focus is providing broadband to the rural communities. We have partnered with many local city and water districts in nine counties.
Ozark Telephone Company, Inc.	We currently offer 1, 5 and 10 Mb/s download and 1 Mb/s upload over ADSL2+. Most customers opt for the 5/1 service as most are rural, non-business service requests.
Clinton Cablevision Services	75% complete addition of new fiber nodes
Arkansas Cable	Our investments in Arkansas included creating redundancies in every market served, as well as connecting all markets together.
Windstream	Consistent with our commitment to improving broadband service availability and speeds, Windstream currently is in the midst of a company network improvement initiative that will result in enhanced broadband services in 26 Arkansas communities (60% complete). The maximum available speeds will double for many Windstream residential customers in these communities – with many more consumers able to access Windstream’s 12 Mbps and 24 Mbps service offerings. In addition, Windstream is partnering with federal government entities to make further improvements in rural areas where a feasible economic case for further deployment cannot be made absent government support. In particular, with stimulus grants that Windstream was awarded from the U.S. Agriculture’s Rural Utility Service, we have been working to

	<p>expand services in 13 Arkansas communities (91% complete). This month Windstream also was awarded funding from the Federal Communications Commission’s Connect America Fund (“CAF”) to enable new rural broadband deployments and upgrades in Arkansas. These CAF projects will begin in 2014. Complementing these residential service efforts, Windstream continues to make advancements in providing broadband to schools, healthcare providers, and businesses throughout the state. This year, for example, Windstream expanded its broadband services to the Cabot School District and the Vilonia School District. With respect to healthcare providers, Windstream, in particular, built a data network that links rural doctors’ offices and hospitals with the University of Arkansas for Medical Sciences (UAMS). This project was funded through a federal broadband stimulus grant that was awarded to UAMS and enables rural physicians and their patients to consult with specialists at UAMS through real-time video conferencing.</p>
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Source: Arkansas Telecommunications Provider Survey, December 2013

Arkansas Broadband Expenditures

Bureau of Legislative Research, Policy Analysis and Research Section



TO : House and Senate Committees on Education

FROM: Bureau of Legislative Research, Policy Analysis and Research Section

DATE : June 9, 2014

SUBJECT : Broadband Expenditures

PROJECT # 14-001-38

The Bureau of Legislative Research (BLR) was asked to provide information about the portion of foundation funding provided to public school districts to support their need for broadband services. The foundation funding formula, or matrix, funds bandwidth as part of a district's overall technology needs. In 2012-13 the matrix provided a total of \$217.60 per student for the technology component. However, until recently there has been no uniform way for districts to identify their broadband expenditures when reporting them through the Arkansas Public School Computer Network (APSCN). There were no specific expenditure codes districts could use for broadband. The Arkansas Department of Education (ADE) has created new codes for broadband expenditures that will allow for easier tracking in the future. ADE recommended districts use the codes for the 2013-14 school year and will require their use for 2014-15. Until those codes were established, districts coded broadband expenditures in a variety of ways. Some districts used technology codes, while others treated broadband more like a utility and used codes for operations and maintenance (O&M) expenditures.

This memo offers information on how districts have coded broadband expenditures in the past. It also includes an overview of the technology and O&M line items of the matrix and districts' expenditures in these areas. This information is provided to give context to the discussion on broadband, but both the technology and O&M components of the matrix cover more resources than broadband alone. A more comprehensive discussion of each of these line items will be provided during the July adequacy study meeting.

BROADBAND USE IN SCHOOLS

Broadband access and other technology are changing the way education is delivered in a multitude of ways. By helping students work more independently, technology gives teachers more time to work one-on-one or with small groups of students. Technology has allowed students and parents increased opportunities for individualizing, customizing and providing access to education through virtual or distance learning. Students who have struggled in traditional classrooms often find success in a virtual setting where the teacher and student communicate one-on-one through computer use and the student can proceed at his or her own pace. It also offers access to highly qualified teachers in hard-to-staff subjects or hard-to-staff urban and rural schools, giving all students the opportunity to take a rigorous curriculum, regardless of their school's ability to recruit and retain teachers. Technology also gives schools the ability to bring rich and diverse materials into the classroom. For example, hundreds of

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libraries and museums have recorded parts of their collections in digital form and distributed these sources through the Internet and as software.¹

Today schools use their broadband access for a wide variety of school functions, including:

- Filing APSCN cycle reports
- Offering distance learning courses
- Downloading educational videos
- Conducting student research
- Conducting professional development using the IDEAS portal maintained by AETN

Additionally in 2014-15, the Partnership for Assessment of Readiness for College and Careers (PARCC) assessment will replace the current math and literacy benchmark exams. The PARCC assessments will be administered online, requiring bandwidth that has not been needed for the former paper and pencil tests.

BROADBAND EXPENDITURES

To get a better sense of what districts are spending on broadband and how they categorize those expenditures, the BLR included several questions on the district survey used for the 2014 adequacy study. As committee members may remember, the BLR conducted surveys of all 238 school district superintendents using an online questionnaire. The survey was distributed to the districts beginning October 28, 2013, and the last district responded January 21, 2014. To elicit the most candid responses, superintendents were assured their answers would not be individually identified, therefore responses are provided only in aggregate. This memo presents the responses districts gave to questions on broadband. The first questions requested information on districts' broadband expenditures.

District Survey Question: How much did your district spend on bandwidth services (broadband) in 2012-13?

Districts reported spending a total of \$4.74 million on bandwidth in 2012-13. The total district bandwidth expenditures ranged from \$3 for one district to \$912,717 for another. These expenditures likely exclude broadband charges that were reimbursed or covered by the federal E-Rate program, although the question did not specify their exclusion. More than two-thirds of the districts reported paying less than \$10,000 for broadband. The following tables indicate that the majority of districts (68%) spent less than \$10,000 on broadband services in 2012-13.

	Districts	% of Districts
\$0 (or left answer blank)	48	20%
\$1-\$5,000	81	34%
\$5,001-\$10,000	34	14%
\$10,001-\$15,000	22	9%
\$15,001-\$25,000	15	6%
More than \$25,000	38	16%
	238	100%

The following table indicates that broadband expenditures increase with district size. Additionally, as districts increase in size, they are less likely to have zero broadband charges (i.e., 34% of the small districts reported no broadband charges, compared with 6% of the largest districts). This could mean that smaller districts are more likely to rely on the broadband access

¹ Grinager, H. (2006). *How education technology leads to improved student achievement*. Washington, DC: National Conference of State Legislatures. Retrieved September 5, 2013, from, <https://www.ncsl.org/portals/1/documents/educ/item013161.pdf>

provided through the state contract (Department of Information Systems) for all of their access, while larger districts are more likely to purchase additional bandwidth to supplement the state-provided broadband.

District Size (2012 ADM)	Avg. Broadband Expenditure	Avg. Broadband Expenditures When Districts With 0 Charges Are Excluded	# of Districts Reporting Charges	# of Districts Reporting 0 Charges
750 or less	\$5,492	\$8,285	57	29
751-5,000	\$16,737	\$19,269	119	18
5,001 or more	\$131,632	\$141,035	14	1

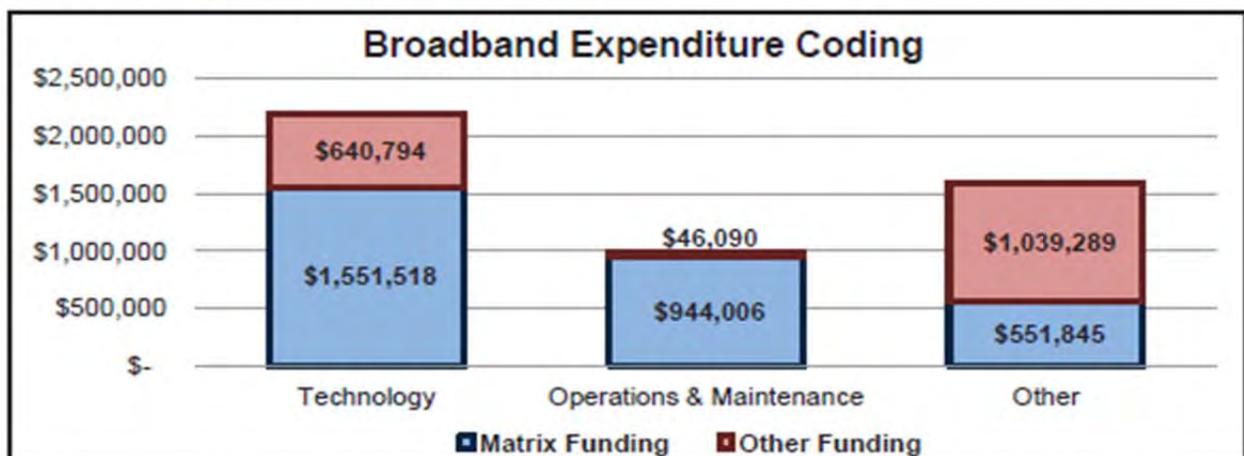
Broadband expenditures were also examined by districts' concentration of poverty as measured by the percentage of students who are eligible for free or reduced price lunch (National School Lunch, or NSL percentage). Districts with the highest concentrations of poverty had the lowest broadband expenditures on average. This finding may be related to the fact that districts with higher NSL percentages are awarded greater E-Rate discounts on telecom services.

NSL%	Avg. Broadband Expenditure	Avg. Broadband Expenditures When Districts With 0 Charges Are Excluded	# of Districts Reporting Charges	# of Districts Reporting 0 Charges
<70%	\$17,547	\$21,495	120	27
70%-< 90%	\$25,081	\$31,921	66	18
90%+	\$7,643	\$13,375	4	3

The district survey then asked for specific data on how districts were coding their broadband expenditures.

District Survey Question: Please provide the fund, function, and object codes used to record 2012-13 bandwidth expenditures in the APSCN data warehouse. Please also provide the total bandwidth expenditures for each.

Districts used foundation funds to make about \$3 million, or 64% of their broadband purchases. Of the expenditures made from foundation funds, districts coded 51% as technology expenditures and 31% as O&M expenditures. They used other expenditure codes for the remaining 18%. From all funding sources, districts used technology codes to identify 46% of their broadband expenditures, O&M codes for 21% of broadband expenditures, and other codes for the remaining 33% of broadband expenditures.



Note: Amounts in the chart total \$4.77 million. The total amount is different from the total \$4.74 million provided in the previous question due to variations in the districts' answers to the two questions.

The next sections of this memo provide information on the matrix and the two matrix components most affected by broadband expenditures: technology and O&M.

FOUNDATION FUNDING

In 2003 and 2006, the General Assembly hired education finance consultants Picus and Associates, Inc. to help determine the resources needed to provide an adequate education. The consultants helped the state develop a funding formula that identified needed resources (teachers, books, administrative staff, etc.) and the costs of those items. The formula, or matrix, was based on the resources needed for a school of 500 students and was calculated as a per-student amount. The components of the matrix are not specified in statute—only the final per-student amount appears in law. Foundation funding is considered unrestricted money, meaning districts can spend it however best fits their needs. The matrix is used to measure how closely districts’ actual spending patterns mirror the funding’s intended purpose and allows the General Assembly to determine if adjustments to the formula are necessary.

MATRIX LINE ITEM: TECHNOLOGY

To ensure districts have funding to support their need for computers and other technology, the matrix provided \$217.60 per student in 2012-13. The current rate (2013-14) is \$221.50 per student. Collectively districts received \$99.5 million in foundation funding for technology in 2013 and \$101.8 million in 2014.

DEFINITION AND BACKGROUND

The technology line item of the matrix was originally set at \$250 per student based on the 2003 recommendations of Picus and Associates. This rate was established to provide districts \$125,000 per 500 students to purchase, update, and maintain hardware and software. The funding was designed to provide one computer for every three students and the technology infrastructure needed for distance learning. On the advice of the consultants, the technology funding rate was set at \$250 per student, but over the next two years, the General Assembly decreased the amount to \$185 per student, due to evidence presented to the Education Committees that the price of technology was decreasing.

In 2006 when the consultants were rehired to adjust the matrix, they again recommended districts be provided \$250 per student to pay for technology expenditures. This time they detailed the individual costs comprising the \$250 funding amount. This funding was designed to cover four categories of technology expenditures: 1.) computers, 2.) operating system and other non instructional software, 3.) network equipment, printers and copiers and 4.) instructional software and additional hardware. Picus and Associates described the four components and recommended the following per-student cost for each.

	Individual Items	Per-Student Cost
1) Computers	• One computer for every four students, plus one computer for every teacher, principal and other key school staff, which calculates to an overall ratio of 1 computer for every three students	\$100
2) Operating system and other non-instructional software	<ul style="list-style-type: none"> • Operating system (e.g., Windows) • Productivity suite (e.g., Microsoft Office) • Server software • Database • Antivirus/anti-spyware • Other network 	\$50
3) Printers, copiers network equipment,	<ul style="list-style-type: none"> • Network equipment and internet connectivity • Copiers, 240 copies per student • Printers 	\$50
4) instructional software and additional hardware	<ul style="list-style-type: none"> • Instructional hardware: e.g., LCD projectors, smart boards (interactive whiteboard), document cameras (digital overhead), etc. • Instructional software: e.g., Accelerated Reader, multimedia resources such as Discovery.com, etc. • Software for administrators: e.g., Edusoft (helps administrators analyze test scores) 	\$50

Internet Connectivity

Funding for broadband fell into the third component of the technology line item: network equipment, printers and copiers. In their 2006 report, the consultants emphasized the importance of bandwidth as an instructional tool: "The data lines that make up [a district's] network must remain uncongested for teachers and administrators to maximize their efficiency...It is imperative that administrators, teachers, and students understand that there is a limited amount of bandwidth and that it should be used for educational purposes."²

The consultants' 2006 report noted that most elementary campuses nationally have at least one T-1 line with a capacity of 1.5 megabits each and most middle and high schools commonly have two T-1 lines to their site. The report noted that T-1 lines typically cost \$250 per month or \$3,000 annually, and districts also pay an access charge of about \$500 per school year for internet service. Based on a 400-student school, the consultants calculated a per-school cost of \$3,500, or \$9 per student. (In various places throughout the report, including this section on technology costs, the consultants provided costs based on a school size other than 500 students.)

Technology Staffing

In their 2006 report, Picus and Associates noted that the technology funding was designed to cover the costs of physical technology needs and services, not technology employees. Technology staff, they noted, are funded through other line items in the matrix. Specifically, .5 FTE technology assistant is provided through the instructional facilitator line item of the matrix, and the central office line item supports 1 FTE technology coordinator in the central office line item.

While the consultants, in 2006, reiterated their recommendation that technology should be funded at \$250 per student, the Adequacy Subcommittee determined that \$185 per student accurately reflected the cost of technology (minus technology staff) in schools. However, the committee opted to increase the technology funding in 2007-08 to \$220 and decrease it to \$201 for 2008-09 based on a declining inflationary index for computers. Since that time, the technology line item has steadily increased as a cost of living adjustment has been applied each year to the total foundation funding rate.

TECHNOLOGY EXPENDITURES

In 2013, districts collectively spent \$34.3 million in foundation funding on technology. This equates to approximately \$75.13 per student in 2012-13, compared with \$217.60 funded in the matrix. The following table shows the per-student expenditures for 2012 and 2013. (Note: In past adequacy studies, technology staff have been included in the technology expenditures reported in Resource Allocation reports. However, in an effort to more closely align with the established intent of the matrix, school-level staff expenditures have been calculated as part of the instructional facilitator line, while district-level technology staff expenditures have been calculated as part of the central office line item.)

Technology Funding and Expenditures Per Student				
	Matrix Funding Amount	Foundation Expenditures Per Student	Total Foundation Funding Received	Total Foundation Funding Spent
2011-12	\$213.30	\$65.27	\$97.5 million	\$29.8 million
2012-13	\$217.60	\$75.13	\$99.5 million	\$34.3 million

² Lawrence O. Picus and Associates, *Recalibrating the Arkansas School Funding Structure*, August 30, 2006, p. 38.

The following chart shows the per-student expenditure costs broken down by district size and percentage of students who are eligible for free or reduced price lunch (NSL %). Mid-sized districts—those with 751 to 5,000 students (average daily membership, or ADM)—spent more on technology on average than other districts. Additionally, districts with high NSL percentages spent less foundation funding per student on technology than more affluent districts. This could result from high-poverty districts having more funding beyond foundation funding to use for technology purchases.

2012-13 Technology Expenditures By District Size and NSL %			
ADM	Foundation Expenditures Per Student	NSL %	Foundation Expenditures Per Student
750 or less	\$50.40	Less than 70%	\$83.11
751-5,000	\$88.74	70%-<90%	\$57.65
5,001 or more	\$62.12	90% or more	\$35.35

Technology Staff in other Matrix Lines

Technology staff are considered part of other lines of the matrix. However, districts' expenditures for technology employees are included in this report to provide a comprehensive view of districts' spending on technology. Districts spent \$11.7 million in foundation funding on school-level technology assistants in 2012-13. This equates to approximately \$25.63 per student, far less than the \$60.56 per student provided through the matrix.

Technology Assistant in Instructional Facilitator Line				
	Matrix Funding Amount	Foundation Expenditures Per Student	Total Foundation Funding Received	Total Foundation Funding Spent
2011-12	\$59.38	\$24.32	\$27.2 million	\$11.1 million
2012-13	\$60.56	\$25.63	\$27.7 million	\$11.7 million

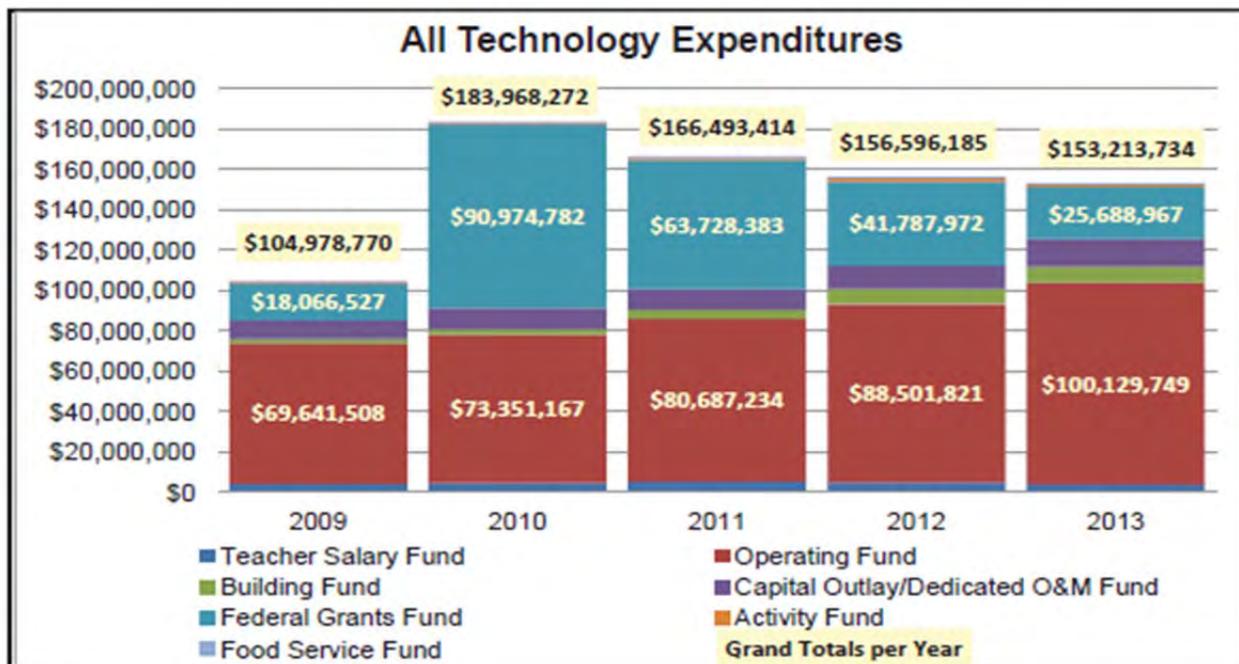
Districts spent \$20.5 million in foundation funding on technology coordinators in 2012-13. This equates to \$44.78 per student. The matrix does not provide an amount specifically for technology coordinators. Instead the matrix provides an amount of \$415.10 per student for the central office as a whole, and districts spent \$335.96.

Technology Coordinator in Central Office Line			
	Matrix Funding Amount	Foundation Expenditures Per Student	Total Foundation Funding Spent
2011-12	Not Specified	\$43.18	\$19.7 million
2012-13	Not Specified	\$44.78	\$20.5 million

Although the matrix formula funds broadband costs as part of the technology component, some districts record their broadband expenditures as operations and maintenance expenditures.

TECHNOLOGY EXPENDITURES FROM ALL FUNDING SOURCES

The following chart shows all expenditures districts made for technology-related expenses (physical items and staffing) from all funding sources. Expenditures of foundation funds are included in two of the categories described below: the Teacher Salary Fund and the Operating Fund. The chart shows that districts greatly increased their use of federal funding to purchase technology in 2010. This likely resulted from the surge of federal funding made available to districts by the American Recovery and Reinvestment Act of 2009. Because districts made large investments in technology in 2010, they may have had fewer technology needs in the following years.



MATRIX LINE ITEM: OPERATIONS AND MAINTENANCE

In 2012-13, the matrix provided \$629 per student for operations and maintenance (O&M), and collectively districts received \$287.6 million for O&M in 2013.

DEFINITION AND BACKGROUND

In 2006, Picus and Associates recommended providing \$594 per student for O&M. This amount was intended to cover custodians, maintenance workers, groundskeepers, maintenance supplies, utilities, and property insurance. The Adequacy Subcommittee, however, determined that the consultants' recommendations were based on costs in higher priced geographical areas of the country and on more duties than are required in Arkansas. The Subcommittee asked the Academic Facilities Oversight Committee to study the issue further.

The Facilities Oversight Committee recommended that O&M be funded at 9% of the foundation funding rate, based on a requirement set out by Act 1426 of 2005. That act requires districts to spend at least 9% of their foundation funding to pay for utilities; custodial services, maintenance, repair, and renovation activities. If districts do not spend the required 9%, they must transfer unspent funds into an escrow account to be used for future O&M expenses. The Adequacy Subcommittee adopted the Facilities Oversight Committee's recommendation and set part of the O&M component at 9% of a district's foundation funding. Additionally, the Subcommittee recommended providing \$27 per student for property insurance. The total O&M

amount in 2007-08 and 2008-09 was set at \$581 per student, which included \$554 for the 9% of foundation funding and \$27 for property insurance. Since that time, the O&M line item has steadily increased as a cost of living adjustment has been applied each year to the total foundation funding rate.

OPERATIONS AND MAINTENANCE EXPENDITURES

In FY2012-13, districts collectively spent \$361.8 million in foundation funding on operations and maintenance. This equates to approximately \$791.32 per student, compared with \$629 funded in the matrix. The following table shows the per-student expenditures for 2011-12 and 2012-13.

Operations and Maintenance Funding and Expenditures Per Student				
	Matrix Funding Amount	Foundation Expenditures Per Student	Total Funding Received	Total Foundation Funding Spent
2011-12	\$616.60	\$775.14	\$282 million	\$354.5 million
2012-13	\$629.00	\$791.32	\$287.6 million	\$361.8 million

Because districts said they recorded less than \$1 million of their broadband expenditures as O&M expenditures, broadband likely is not a significant factor in districts' pattern of spending more on O&M than what is provided in the matrix.

CONCLUSION

Districts reported spending about \$4.7 million on broadband expenditures in 2012-13. Districts used about \$3 million of their foundation funds to pay for those expenses. Districts reported recording about 51% of their broadband expenditures as technology expenses, 31% as O&M expenditures and the remaining 18% as other types of expenditures.

The foundation funding matrix provided districts with money for broadband expenses through the formula's technology line item. In 2012-13, districts received \$217.60 per student for all technology needs (not including technology staff), and districts spent about 35% of that amount on technology needs.

Because some districts code their broadband expenditures as O&M expenses, this memo also examined districts' O&M spending patterns. Districts received \$629 per student in foundation funding for O&M needs in 2012-13 and spent 1.25 times as much. However, because so little of the O&M expenditures are tied to bandwidth, the cost of broadband likely had little to do with districts' high spending in this area. A more comprehensive review of this expenditure category will be presented in July.

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