

ARIZONA STATEWIDE BROADBAND STRATEGIC PLAN



ARIZONA DEPARTMENT OF ADMINISTRATION

FEBRUARY 2018

ARIZONA
DEPARTMENT OF ADMINISTRATION

Prepared by Mission Critical Partners, LLC, for the Arizona Department of Administration



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BROADBAND STRATEGIC PLAN
FEBRUARY 2018**

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We want to extend a special thank you to all of the state leadership, local subject matter experts and community partners that participated in the focus group sessions, personal interviews and planning process. Each person's contributions were vital to the development of this Plan.



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2 EXECUTIVE SUMMARY

Over the last 20 years, Arizona state government and several entities in Arizona have worked hard on expanding affordable high-speed broadband access for its citizens. Together their actions and broadband-focused programs yielded tangible, positive results but never a complete solution. While broadband was a necessity then, it has now become a critical part of the state's infrastructure. The time has come for a new plan and a renewed commitment to expanding broadband service statewide. To that end, the Arizona Department of Administration (ADOA), in partnership with Mission Critical Partners, LLC (MCP), developed this Arizona Statewide Broadband Strategic Plan (Plan)¹ to effectively coordinate, manage and collaborate on the resources required to deliver accessible, affordable, and reliable access to broadband services. This Plan is designed to serve as a roadmap for ensuring that Arizonans are afforded equal access to digital opportunities regardless of geographic location.

In 2018, access to the information provided by broadband services is integral to education and job readiness, commerce, public safety, health care, infrastructure, research, government and just about every other facet of today's life. Yet, despite their urgent need for broadband, only 78 percent of Arizonan's have access to the internet in their home.² Approximately 898,724 Arizona citizens—mostly in rural and tribal communities—have limited or no access to high-speed internet, creating a digital divide between communities that can or cannot participate in global opportunities for education and economy.

According to the Federal Communications Commission (FCC) 2016 Broadband Progress Report,³ 13 percent of Arizona's total population still does not have broadband access; of the population lacking such access, 410,794, or 63 percent, reside in rural areas. Meanwhile, 95 percent of the tribal population has no broadband access. The National Broadband Plan, released by the FCC on March 17, 2010, identifies initiatives to stimulate economic growth, create jobs and boost America's capabilities in education, health care, homeland security and more. The Plan includes sections focusing on economic growth, education, health care, energy and the environment, government performance, civic engagement and public safety.

Without equal, affordable and reliable broadband access with robust, resilient infrastructure for all citizens, Arizona Governor Doug Ducey's top five priorities will go unrealized: educational excellence; a 21st century economy; protecting our communities; fiscal responsibility; and happy and healthy citizens. The impact of broadband access on each of these priorities is described in Table 1 below.

¹ This effort also engaged the Arizona Corporation Commission, the Arizona Commerce Authority, the Arizona Department of Education, the Arizona Telecommunications Council and the four regional Councils of Government

² <https://www.census.gov/content/dam/Census/library/publications/2017/acs/acs-37.pdf>

³ https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf



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Table 1: Broadband Impact

Governor's Priorities	Broadband Necessity
Educational Excellence	<p>Broadband in every community helps ensure that children and teachers get the resources they need to succeed and helps level the playing field. Arizona's educational communities with little or no access to the Internet will be left behind as educational communities in other states excel.</p> <p>Access to broadband ensures that students and citizens have the greatest opportunity to improve their educational results, career transitions and professional development, leading them to reach their fullest potential.</p>
21 st Century Economy	<p>One cannot advance and support the way Arizona must do business today without access to reliable broadband. The speed of business today requires access to broadband services, which are the foundation of a 21st century economy and E-government.</p> <p>Businesses thrive using online points of sale, electronic marketing, and social media. Small companies and startups that employ Arizonans without reliable access to the broadband internet are hamstrung and will lose out to competitors.</p> <p>One cannot grow or strengthen the state's economy—or recruit out-of-state companies to expand their operations throughout Arizona—if businesses lack reliable access to the broadband internet.</p>
Protecting Our Communities	<p>If a government's number-one responsibility is keeping its citizens and homeland safe, broadband access is the foundation.</p> <p>Without access to reliable broadband services, law enforcement will lose out on life-saving and transformative technology like body-worn cameras, gunshot monitoring, and license plate-reading technology. As technologies that protect the public evolve, so must the networks that support them. Broadband is critical as law enforcement agencies increasingly incorporate equipment and tools that are connected to the internet. The State must continue to move forward with the implementation of the nationwide public safety broadband network (NPSBN), which is being built by the First Responder Network</p>



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Governor’s Priorities	Broadband Necessity
	Authority (FirstNet) and its commercial partner, AT&T, as well as deployment of Next Generation 911 (NG911) services.
Happy and Healthy Citizens	<p>The Governor’s vision for Arizona depends on a strong, innovative economy supported by healthy citizens living in clean, safe communities. Broadband is the backbone that connects communities—whether it is to organize a neighborhood clean-up or to provide tele-health services to communities that are geographically separated from healthcare providers.</p> <p>Citizens need broadband and mobile services everywhere they live and travel to keep them connected to nearly all facets of their life. In a time when vehicles, appliances, phones, medical instruments and satellites are linking up on digital networks that did not exist five years ago, the average American relies on broadband connectivity to feel happy and healthy.</p>
Fiscal Responsibility	<p>For government to reduce the cost of doing business, automate and offer services on-line, and be more efficient in the delivery of services to its citizens, access to reliable and affordable broadband will be required to facilitate these initiatives.</p> <p>Rural and underserved communities will substantially benefit from these on-line services. The challenges of distance and limited access to brick and mortar government facilities is a road block for citizens to access government services.</p>

To create the Plan, ADOA conducted six information-gathering community focus group meetings in October 2017 with relevant stakeholders across Arizona. At these focus group meetings, ADOA collected valuable input about broadband service in rural communities, and stakeholders shared the challenges and limitations their communities face due to non-existent, limited or inconsistent access to broadband capabilities.

When asked to grade the current state of broadband statewide, the focus groups grades ranged from “C” to “D-” with an average grade of “D.” Stakeholders qualified these grades based on a variety of factors.



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The focus group data was reviewed for common patterns and themes. The themes were validated by an additional group of state-level stakeholders who participated in a structured strategic planning workshop in January 2018. At the planning workshop, participants helped craft the Plan's goals and initiatives.

The Plan sets the vision and priorities for Arizona's approach to expanding broadband services statewide and maps out a course of action agreed upon and committed to by a diverse set of stakeholders. The vision is:

ONE STATE ENTITY TO COORDINATE DIVERSE STAKEHOLDERS, FUNDING SOURCES AND SERVICE PROVIDERS TO DELIVER TECHNOLOGY-NEUTRAL, AFFORDABLE, RELIABLE BROADBAND SERVICE AT A COMPETITIVE PRICE STATEWIDE.

There are six primary goals and 23 initiatives identified in this Plan that drive Arizona toward its vision, as indicated to the right.

Successful implementation of the strategic objectives and metrics in the Plan will result in the ability of Arizona citizens to:

- More easily access broadband services at speeds and prices equal to national averages in rural areas
- More consistently access resilient and reliable broadband services
- Choose broadband services from a variety of providers, ensuring that no individual vendor monopolizes the market and pricing

Stakeholders will need to coordinate and collaborate across disciplines and levels of government to ensure that the State's digital priorities are aligned. Even though the levels of authority to execute initiatives within the Plan will differ, all contributions will be needed for the Plan to be successful. It is expected that organizations and other entities such as the [Arizona](#)

STATE OF ARIZONA STRATEGIC BROADBAND GOALS

Goal 1: Broadband is accessible and affordable.

Goal 2: Broadband expansion is strategically governed and implemented.

Goal 3: Existing broadband infrastructure is identified, leveraged and expanded.

Goal 4: Funding opportunities are identified, leveraged and expanded.

Goal 5: Citizens understand the impact of broadband and promote adoption.

Goal 6: Policies are implemented to incentivize provisioning of and/or reducing barriers to broadband.



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[Telecommunications & Information Council \(ATIC\)](#), [Arizona Telemedicine Program \(ATP\)](#), Arizona Technology Council (AZTC), Arizona State Land Department (ASLD), and the Arizona Geographic Information Council (AZGEO) will assist in achieving the goals outlined in the Plan by providing telecommunications and network expertise.

Stakeholders must collaborate and use this plan to help guide their operational, technical, resource, funding, and legislative decisions for broadband provisioning in Arizona. They must work together to:

- Coordinate and integrate existing public networks (AZNet, Sun Corridor Network, Arizona Telemedicine, etc.) to seek efficiencies
- Leverage buying power
- Identify infrastructure expansion investment vehicles
- Investigate potential public-private partnerships
- Identify ways to solve problems where the market has failed

Stakeholders and citizens are ready for action, and the time to act is now—the Plan provides the roadmap for taking such action to extend access to broadband services to the greatest extent possible.

**STAKEHOLDERS WITH ROLES
AND RESPONSIBILITIES**

State Broadband Office (Proposed)
Broadband Advisory Board (Proposed)
Arizona Department of Administration
(ADOA)
State Chief Information Officer
Arizona Department of Transportation
(ADOT)
Arizona Commerce Authority (ACA)
Governor’s Office of Public Private
Partnership (3P)
Arizona Corporation Commission
(ACC)
Arizona Department of Education
(ADE)
Arizona Department of Health
Services (ADHS)
Arizona State Library and Public
Libraries
Arizona Board of Regents (ABOR)
State of Arizona Procurement Office



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3 BACKGROUND

In 2012, the Digital Arizona Council (DAC) completed an enormous undertaking in drafting the Statewide Strategic Plan for Digital Arizona, which included strategic goals and recommendations that would leverage broadband connectivity to transform education, healthcare and research, improve public safety and government operations, and create new opportunities for business and enable long-term sustainable economic development. The 2012 plan included draft strategies for reducing barriers to broadband development, incentivizing or otherwise encouraging vendor investment in infrastructure, and fostering public-private partnerships to resolve capacity issues in rural areas. However, circumstances at the time resulted in this plan not being adopted.⁴

That same year, the Digital Arizona Highways Act was signed into law. This landmark law was designed to incentivize private-sector investment making it easier to deploy middle-mile fiber-optic infrastructure alongside Arizona's highways in rural communities. While the law still stands, it appears to have had little to no impact on expanding broadband, largely because the 2012 plan failed to move forward.

In 2011, the Navajo Tribal Utility Authority and a co-applicant—Commnet Wireless, LLC—received \$32.19 million dollars of American Recovery and Reinvestment Act of 2009 (ARRA) funds to build out 550 miles of middle-mile, fiber-optic cable in Arizona and New Mexico. The project required approximately a 30 percent match for a total of \$45.9 million. According to the National Telecommunications and Information Administration (NTIA), issued in 2013,⁵ 570 fiber miles have been deployed, along with 32 new communications towers, to support 4G Long-Term Evolution (LTE) wireless coverage in both states. This demonstrates an early attempt to expand broadband infrastructure to tribal and rural communities in Arizona.

During the same era, the Tohono O'odam Tribe and the Hopi Nation received grant funds through the NTIA Broadband Technology Program (BTOP) to improve broadband infrastructure. Additionally, GovNet—a specialized telecommunications firm—also received grant funding for an infrastructure project. Meanwhile, the NTIA provided \$6.6 million to the State to advance broadband mapping and policy, and libraries in the state received \$5 million toward broadband adoption and creation of Job Help Hubs to serve the unserved, underserved and those who were unemployed.

⁴ DAC AZ BSP Alternative Viewpoints Section Draft 02_01_13. This document is intended to address the diverse points of view that surfaced during the DAC Broadband Strategy Task Group process, in discussion at DAC meetings, and with the engagement of numerous stakeholders throughout most of 2012.

⁵ https://www2.ntia.doc.gov/files/grantees/nt10bix5570055_navajo_tribal_utility_authority_company_ppr2013_q3.pdf



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In addition, the Arizona State Library combined the NTIA/BTOP grant with a matching grant from the Bill and Melinda Gates Foundation to deploy more than 500 public-access computers in libraries and to set up the Job Help Hubs, which provide training for using the internet for job searches, resume writing and career retraining. Trainers were deployed to rural underserved areas if citizens were unable to visit the public library nearest to them. This work is still ongoing, as some of the libraries have found ways to sustain this very successful program.

Grant opportunities are viewed as cyclical, with new opportunities occasionally arising; however, history has shown that grants cannot entirely solve the problem of inadequate access to broadband services. Bandwidth accessibility is a critical issue in rural areas, but even in urban markets some sectors—K-12 education in particular—are experiencing constraints. Bandwidth demand continues to grow exponentially and must be addressed from a holistic perspective moving forward.

In 2017, with a State-adopted plan for expanding broadband access still absent, Governor Doug Ducey made the following statement, recognizing the continued critical need for broadband services for those living in rural Arizona:

“We need to make sure all Arizona kids are prepared for the 21st century. Many Arizona public schools are leading the nation when it comes to science and technology. But too many students, specifically in our rural areas, and in our tribal nations are missing out. It’s 2017, but outside of our urban areas, broadband is still spotty. Let’s fix this, by connecting to high-speed internet. Let’s break the firewall and get connected.”

Encouraged by Governor Ducey’s statement, ADOA contracted with MCP to engage stakeholders and interested community members from rural areas, and to renew the State’s focus on broadband strategic planning for rural Arizona.

4 APPROACH

ADOA, in cooperation with the Governor’s Office, Arizona Corporation Commission (ACC) and the Arizona Commerce Authority (ACA), held a kickoff meeting with providers. This was followed by a series of five facilitated focus group meetings with relevant stakeholders across Arizona to collect valuable input about broadband in rural communities.

Not including ADOA staff and MCP facilitators, 131 participants attended the six sessions, with strong participation from the broadband service provider and education communities.



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At the focus group meetings, stakeholders provided valuable input about broadband availability in rural communities and the challenges and limitations faced due to limited or inconsistent access to broadband capabilities.

Focus group participants shared their perspectives on the following topics:

- The current state of broadband in their communities
- Their vision for the future of broadband, what might affect achieving that vision, and strategies for overcoming obstacles
- The desired capabilities and features of broadband service
- Best practices implemented in other states to bring broadband to rural communities
- Priorities to address in the Plan

When asked to grade the current state of broadband statewide, the focus groups grades ranged from “C” to “D-” with an average grade of “D.” Stakeholders qualified these grades based on a variety of factors, including:

- Lack of consistent and resilient broadband service, and access to a variety of providers from which to choose
- Better broadband coverage in major cities and towns, and worse to no coverage further outside cities and towns
- High cost for poor service, especially when comparing Arizona’s rural connectivity with that of other states

Most participants had a negative opinion about state and local broadband in Arizona, but with valid reasons. Grades generally were higher in cities because broadband typically is more accessible and reliable; meanwhile, grades were lower in rural areas where there is inconsistent (or no) service and/or a lack of diverse vendors/service providers from which to choose, and because users pay higher costs for slower service.

The focus group meetings provided numerous insights into the broadband experience in Arizona’s rural and underserved communities, as follows:

- Improve accessibility to broadband

STAKEHOLDER MEETINGS

Broadband Provider Meeting

Scottsdale
June 29, 2017

Focus Group Meetings

City of Payson/Gila County
July 27, 2017

City of Prescott/Yavapai County
October 11, 2017

City of Douglas/Cochise County
October 13, 2017

City of Kingman/Mohave County
October 16, 2017

Town of Parker/La Paz County
October 17, 2017



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- Add additional community anchor sites outfitted with broadband capabilities
- Encourage carrier competition by diversifying the vendor marketplace, offering multiple providers from which to choose
- Treat broadband like a public utility instead of a private service
- Identify a state-level “owner” for managing the statewide expansion of broadband
- Engage high-level leadership to champion the statewide expansion of broadband
- Establish standards that require broadband providers to deliver a minimum level of service
- Improve the affordability of broadband while delivering a standard level of service
- Improve the speed of broadband connections
- Improve redundancy and resiliency so that there is no single point of failure
- Determine what infrastructure and capacity already exists
 - Develop a common operating picture of existing infrastructure to include the location of dark fiber already in place
- Identify a strategy for leveraging grant funds across disciplines (e.g., public safety, health, education) to focus efforts holistically on broadband expansion, and to break down silos
- Eliminate regulatory barriers to expanding broadband services

These insights resulted in three overarching themes: accessibility, oversight/implementation, and funding. These three themes resonate throughout the Plan.

Following the October 2017 focus group meetings, an additional group of state-level stakeholders met in January 2018 for a facilitated strategic planning workshop. Planning participants were drawn from a cross-section of the stakeholder community representing education and libraries, economic development, healthcare, grants, government, infrastructure, research and others. At the workshop, attendees validated the focus group findings⁶ and collaborated on the Plan’s goals and initiatives.

5 CURRENT STATE

Arizona has reached the apex in its struggle to expand broadband to all of its citizens—rural, urban, suburban and tribal. Broadband touches, and is often the foundation for, some of the most critical and relevant initiatives underway in the state—such as the government’s transition from paper to digital transactions. Further, businesses, schools, libraries, hospitals, and public safety rely on internet access to perform their jobs and shape the future.

⁶ Findings were reported in a separate document: *State of Arizona Broadband Focus Group Findings* delivered to ADOA in December 2016



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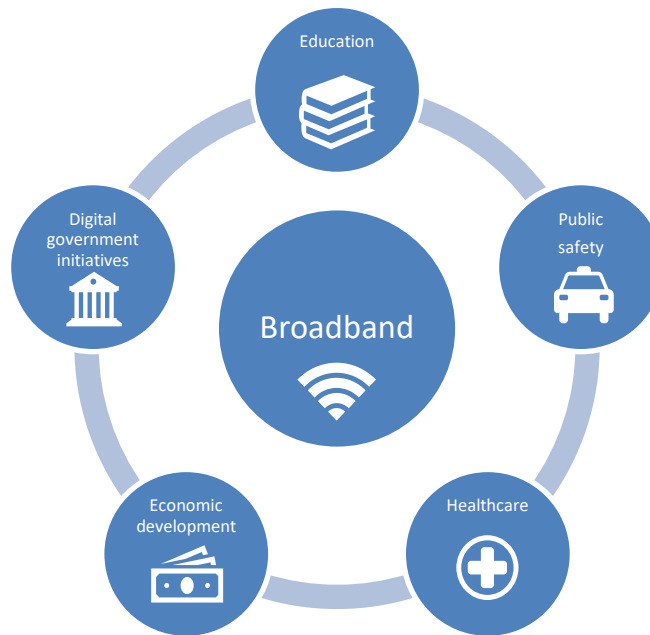


Figure 1: Key Initiatives Requiring High-Speed Broadband to Succeed

According to Broadbandnow.com Arizona ranks 29th “most connected state” in the country, with 87 percent of the population having access to at least 25 megabits per second (Mbps) download speed. The average broadband speed statewide is 26.2 Mbps, up from 19.7 Mbps in 2012. While this is better than the Federal Communications Commission (FCC) current benchmark standard of 25 Mbps download/3 Mbps upload for fixed broadband services, challenges still exist. There is debate in many sectors that the FCC’s benchmark standard is too low and already outdated and enables incumbent service providers to claim “broadband” is available and adequate. These benchmark broadband speeds prove inadequate for many community anchor institutions (CAI)⁷. They also fall short of the speeds requested in most E-Rate⁸ grant applications during the current grant cycle—a minimum download speed of 100 Mbps, and often 1 gigabit per second (Gbps) or higher.

The incompatibility between the benchmark standard and the local need speaks to the theme of providers being able to say broadband service is available, while dismissing the fact that it may not be sufficient or reliable. Further, in many rural areas the service is not only unreliable, it also is unaffordable. Single

⁷ Community Anchor Institutions (CAI) include Schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities.

<https://www.broadbandmap.gov/source/maps#community-anchor-institutions>

⁸ E-Rate is the FCC grant program that enables schools and libraries to procure affordable telecommunications and internet services.



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points of failure exist and there is a distinct lack of redundancy, putting residents and visitors in serious danger when outages occur because critical services become inaccessible.

A U.S. Census Bureau American Community Survey report on computer and internet usage in 2015 indicated that 78 percent of Arizonans have internet service in the home.⁹ Although this number looks promising, reporting by census block is problematic. If one corner of a census tract is covered, the FCC considers the whole census tract covered. Another issue, is that the FCC data is based on information self-reported by carriers. The standard for this data is the advertised data rate available to at least one household in a census block—but not necessarily available to the entire block. This too overstates actual availability.

According to the FCC's 2016 Broadband Report, 13 percent of the Arizona population still does not have broadband access.

Despite some improvements, it is still a fact: 898,724 Arizonans (13 percent of the population)¹⁰ do not have access to fixed advanced telecommunications. Moreover, 20 percent of the population is still underserved, meaning they have no more than two broadband service providers, and receive access speeds so slow that they cannot utilize the internet to take advantage of online opportunities that require high-speed connectivity.

According to the FCC, here is how broadband service stacks up in Arizona:

- 82.6 percent of Arizonans have some access—which does not mean they have service—to broadband service of 100 Mbps or faster
 - In Nevada 92 percent of the population has access to the same download speed; 95 percent in Utah
- Only 11.4 percent of Arizonans have access to 1-gigabit broadband connections
- Only 9.7 percent of Arizonans have access to fiber-optic service
- 912,000 Arizonans have access to only one wireline internet provider, leaving them no option to replace their service with another potentially more affordable provider
- Another 429,000 people in Arizona don't have any wireline internet providers available where they live and must rely on wireless or satellite providers
- There are five primary providers servicing Arizona with an average download speed of 40–50 Mbps

⁹ <https://www.census.gov/content/dam/Census/library/publications/2017/acs/acs-37.pdf>

¹⁰ [Federal Communications Commission \(FCC\) 2016 Broadband Progress Report](#)



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- The cost of fixed residential service ranges, depending on delivery method—digital subscriber line (DSL), cable or fiber)—starting at \$40 per month for 25 Mbps download and rising to \$60 per month. In places where cable is not available, 10 Mbps DSL at \$40 may be the only option available.

The newly released FCC 2018 Broadband Deployment Report attempts to paint a picture of progress by using a sampled ratio of the population. However, in Arizona only 34 percent of rural areas have access to service meeting the FCC’s 25 Mbps download/3 Mbps upload benchmark standard for broadband speed. The report also states that only 8.2 percent of the tribal population has access to service meeting this standard. The table below provides the FCC’s most recent data for Arizona counties showing the population access to fixed and mobile broadband services.¹¹

State, County or County Equivalent	Population Evaluated	% of Pop. with Fixed 25 Mbps / 3 Mbps	% of Pop. with Mobile 5 Mbps / 1 Mbps	% of Pop. with Fixed & Mobile	Population Density (sq. mile)	Per Capita Income (2016)
Arizona	6,914,677	85.60	99.10	85.60	60.9	
Apache County	72,866	0.00	68.00	0.00	6.5	\$13,428
Cochise County	125,309	57.40	99.70	57.40	20.3	\$23,757
Coconino County	140,704	53.40	98.00	53.40	7.6	\$24,711
Gila County	53,614	65.70	94.20	65.10	11.3	\$21,470
Graham County	37,679	66.70	99.30	66.70	8.2	\$17,710
Greenlee County	9,712	50.20	99.10	50.20	5.3	\$23,778
La Paz County	20,357	40.20	100.00	40.20	4.5	\$21,447
Maricopa County	4,234,451	92.20	100.00	92.20	460.3	\$28,791
Mohave County	205,056	76.50	99.70	76.50	15.4	\$22,026
Navajo County	109,759	44.60	70.10	44.60	11.0	\$16,564
Pima County	1,014,536	91.20	100.00	91.20	110.4	\$26,204
Pinal County	414,872	67.60	100.00	67.60	77.3	\$21,982
Santa Cruz County	45,996	78.60	99.80	78.60	37.2	\$18,860
Yavapai County	225,455	77.50	99.90	77.50	27.753	\$26,584
Yuma County	204,311	83.50	99.90	83.50	37.053	\$19,483

¹¹ https://apps.fcc.gov/edocs_public/attachmatch/DOC-349000A1.xlsx



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5.1 TRIBAL LANDS

FCC documents indicate an overall trend nationwide—and in Arizona—of leaving tribal communities behind in the deployment of advanced telecommunications capabilities.

Forty-one percent of all Americans living on tribal lands nationwide lack access to advanced telecommunications capabilities. The circumstances are even more difficult for Americans living on tribal lands in rural areas, according to the report, as 68 percent of them lack access to advanced telecommunications capabilities, compared with 14 percent of Americans living on tribal lands in urban areas.¹²

In January 2016, the Government Accountability Office (GAO) issued a report to Congress regarding lack of broadband service in tribal areas; the GAO called for additional coordination and better performance measurement of high-speed Internet access programs on tribal lands.¹³ Of the 21 tribes interviewed, including the Navajo Nation and San Carlos Apache Tribe of the San Carlos Reservation in Arizona, all reported having some internet access but cited barriers to improved internet speed. These barriers include the high cost to connect to middle-mile infrastructure and lack of sufficient administrative or technical expertise among tribal members. While the FCC placed special emphasis on improving internet access in tribal lands, no specific performance goals or measurements have been developed.

In Arizona, 162,382 people living on tribal lands (95 percent) have either unserved or underserved telecommunication infrastructure needs. They do not have access to fixed advanced telecommunications capabilities, and often resort to local CAIs for their only connection to the rest of the digital world.

The map below represents the most recent data available from the FCC regarding broadband capabilities in Arizona as of June 2016. The hash-marked areas depict that most individuals living on tribal lands or in rural areas do not have access to fixed broadband service as defined by the FCC. Note that there is no map data available that corresponds to the just-released FCC 2018 Broadband Deployment Report.

According to a statement from FCC Commissioner Mignon Clyburn in the 2018 FCC report, “A whopping 66.2 percent of Americans living in rural and tribal areas—as compared to 2.1 percent of Americans living in urban areas—still lack access to fixed 25/3 broadband.”

¹² https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1.pdf

¹³ <http://www.gao.gov/assets/680/674906.pdf>



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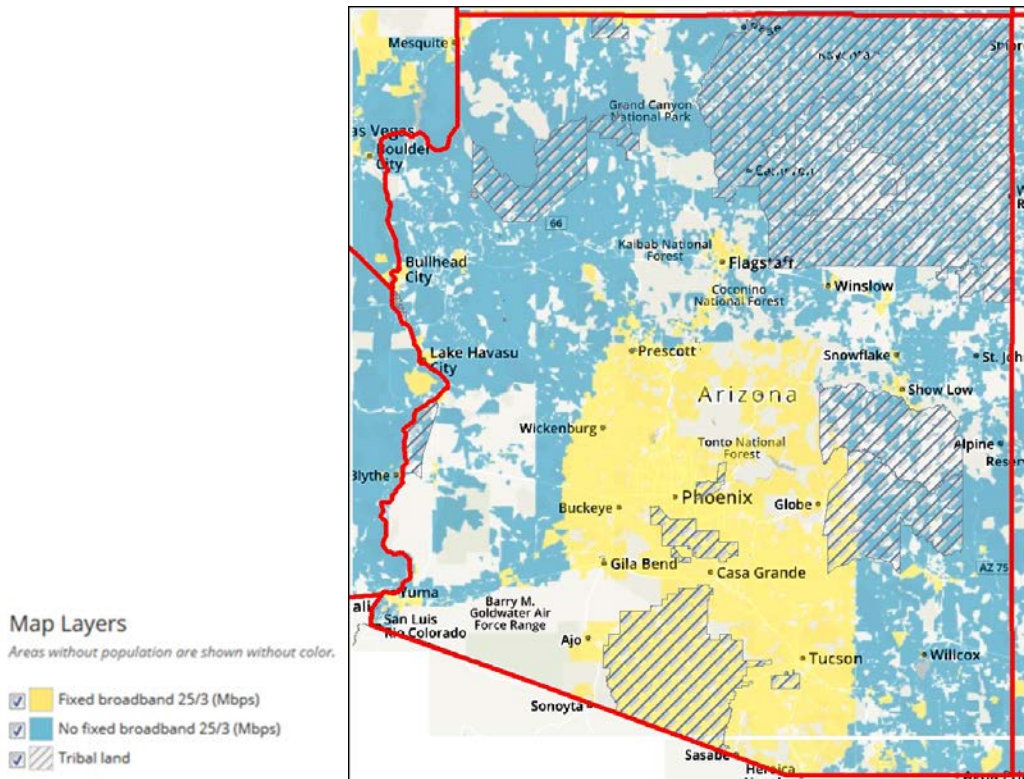


Figure 2: Fixed Broadband Service Available in Arizona

5.2 ARIZONA PUBLIC LIBRARIES AND SCHOOLS

Significant progress has been made in delivering broadband access to schools and libraries because of 20 years of E-Rate funding. However, despite the availability of such funding, 101 school districts in Arizona still need fiber connections. Fiber is the only technology that can scale to meet the ever-growing bandwidth needs of digital learning. According to the Education Superhighway,¹⁴ a non-profit corporation with the mission to upgrade internet access in every public-school classroom, 48 Arizona school districts need bandwidth upgrades to make digital learning possible. This requires a minimum of 100 kilobits per second (kbps) per student. In addition, 187 districts report insufficient Wi-Fi service, 15 Arizona public libraries spend approximately \$4.5 million dollars on internet annually and get reimbursed an average of 80 percent through E-Rate funding.

¹⁴ Education Superhighway: https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/Arizona_Snapshot_2017.pdf

¹⁵ http://www.compareandconnect12.org/maps/AZ?view=TARGET_DISTRICTS&opportunity=FIBER



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To help schools and libraries, the State set aside \$11 million as a 10 percent match for E-Rate funding for broadband deployments from 2017 to 2019. The FCC has set goals for schools and public libraries to reach by 2020. As part of the 2020 goal, schools must reach broadband speeds of at least 100 kbps per 1,000 students by 2018. Another 2018 goal calls for public libraries to reach broadband speeds of 100 Mbps when they serve a population area less than 50,000, and speeds of 1 Gbps when serving population areas above 50,000.

Rural schools face some specific technological issues, including limitations regarding middle-mile capacity, local access to long-haul routes that transit the state, and a lack of long-haul routes in northern Arizona in particular. (The “middle mile” refers to the segment of a telecommunications network that links the network core to a local termination point, while the “last mile” is the link that connects the termination point to the customer’s premises; long-haul routes are used to interconnect cities separated by great distances.) Districts that have or are in the process of building wide-area networks (WANs) by leveraging the E-Rate state matching fund program are still stifled by lack of middle-mile access and capacity to interconnect with the internet and other networks at urban points of presence.

5.2.1 Cost and Funding

Cost is another significant issue that affects the ability of schools and libraries to access broadband service—it costs a great deal of money to provision such service, particularly if it is implemented via fiber-optic cable, and these costs rise dramatically in rural areas where distance and topography are critical factors. Accordingly, many schools and libraries are challenged to provide high-speed broadband services to support E-learning. Some economic support has been offered—39 of the internet service providers in Arizona report that they provide the minimum bandwidth of 100 kbps per student needed for digital learning. However, nine providers are not meeting this goal, including Cox Communications and CenturyLink, which serve the largest number of students and receive a combined total of \$601,785 in monthly E-Rate funds.

The monthly costs for a school district wide-area connection range from \$100 at an urban charter school in Goodyear, AZ to as much as \$12,333.33 for the rural Red Mesa Unified School District in Teec Nos Pos. Within Arizona, the average monthly rate paid by school districts is \$1,495. This is a significant cost for a rural or tribal school district.

Monthly cost per megabit ranges from \$0.57 in Marana School district to \$120.86 in rural Blue Elementary school district. According to the Education Superhighway, Arizona ranks 39th overall for broadband affordability.



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In early 2017, ACC approved an increase in the Arizona Universal Service Fund (AUSF) rate, from \$.01 to \$.15 per month, which was to be added to residents' phone bills for one year and used as matching funds for the E-Rate program. This increase is expected to generate \$8 million that will help provide carriers with the funds they need to serve high-cost and rural areas throughout Arizona. It is too soon to know the extent to which this effort has impacted delivery of broadband service to underserved areas.

In total, Arizona commits \$11 million to the E-Rate program in fiscal year 2018 — representing a 10 percent match—to support broadband deployments in schools and libraries. Of this total, \$3 million was appropriated by the legislature to the Arizona Department of Education (ADE) for this broadband expansion project. The remaining \$8 million represents matching funds from the ACC—in the form of an E-Rate “special construction” fund—that schools and libraries can leverage to implement broadband internet service.

5.3 HEALTHCARE

Today a range of clinical telemedicine and telehealth services are transforming healthcare delivery in Arizona, the United States, and throughout the world. These services depend on reliable high-speed broadband communications for secure high-definition medical-grade video conferencing and rapid transport of medical imaging, as well as many other types of patient data. Much like our highways and roads enable paramedics and ambulances to speed patients to the nearest emergency room, broadband networks carry video, audio, images and data at the speed of light to distantly located, expert physicians and advanced nurse practitioners. This enables them to assess patients and direct their care more quickly, often while the patient is still at the scene or en route, which is vital for critically ill or injured patients. However, like roadways, broadband networks are susceptible to high traffic volumes and outages that can impede access to high-priority medical services. Improving the reach, reliability and capacity of broadband networks is critically important to the ability to deliver timely, high-quality healthcare to Arizona's population.

Arizona Telemedicine Program (ATP), with its team of dedicated network engineers, has leveraged secure network communications and applications—coupled with proactive network monitoring, maintenance, and troubleshooting—to maintain a high-availability network communications service for clinical, educational, and administrative applications. These include the following:

- Teleradiology
- Telepsychiatry
- Tele-burn
- Tele-infectious disease
- Telecardiology



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- Tele-cancer survivor self-management education and support groups
- Telemedicine training and education
- Continuing medical education for nurses and other healthcare professionals

Connect2Health^{FCC} (C2HFCC) is a senior-level, multi-disciplinary task force under the FCC designed to move the needle on broadband and advanced healthcare technologies. Recognizing that technology innovations in clinical practice and care delivery are poised to fundamentally change the face of healthcare, C2HFCC is charged with exploring the intersection of broadband, advanced technology, and health.

The task force will focus on further charting the broadband future related to healthcare. Their data shows that more must be done to encourage internet adoption and access to broadband. In 2017, the FCC identified counties with critical broadband needs in terms of impact to healthcare.¹⁶ Apache County was identified as “critical,” having no broadband internet access to support access to telemedicine services, which should be a priority for helping to reduce diabetes and obesity in the population. Significant work regarding diabetes has been done in many Arizona counties, including Santa Cruz as well as the Four Corners Area; however, there is still much disparity in terms of reliable and affordable rural broadband.¹⁷ A 2017 study¹⁸ commissioned for the Summit/Navajo County Consortium to assess broadband infrastructure in Navajo and Apache counties highlighted the need of rural healthcare providers for reliable broadband service. The report recommended constructing a greenfield middle-mile network, and possibly establishing a non-profit entity to facilitate the use of E-Rate and Healthcare Connect funding. The report also referenced taking advantage of the Connect America Fund – Phase II.

In January 2018, Governor Ducey outlined comprehensive solutions to address the opioid crisis in the Opioid Epidemic Act. The Act included several recommendations for addressing the opioid epidemic through expanding treatment, improving enforcement and oversight and preventing addiction. Expanding broadband access to the unserved and underserved areas of the state is essential to provide the services needing to address this epidemic.

5.4 PUBLIC SAFETY

Enacted in 2012, the Middle Class Tax Relief and Job Creation Act (the Act) in Title VI created the First Responder Network Authority (FirstNet) and authorized it to enter into a public/private partnership to

¹⁶ https://www.fcc.gov/sites/default/files/priority_counties_in_broadband_and_health_2017.pdf

¹⁷ For information on diabetes pilots and telecom grant history see ADVICE: Arizona Diabetes Center for Excellence <http://telemedicine.arizona.edu/clinical-services/advice>

¹⁸ VantagePoint Report for Summit/Navajo County Consortium; May 31, 2017



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design, implement and operate a nationwide public safety broadband network (NPSBN). For five years, FirstNet worked with the public safety community to develop the requirements that would need to be met by the NPSBN. Those requirements ultimately served as the basis for the publication of a request for proposals (RFP) to solicit a private-sector partner to build and operate the NPSBN. On March 30, 2017, FirstNet announced it had awarded the national contract to AT&T. State plans were released by AT&T in June 2017 and in August 2017 Arizona agreed to opt into the FirstNet network.

Further, Arizona has been working with FirstNet since 2012 in planning for the deployment of the NPSBN, especially to rural parts of the state. AT&T has rural deployment milestones incorporated into its contract with FirstNet. The State will continue to work with FirstNet/AT&T through the NPSBN planning effort to drive further broadband deployment in unserved and underserved areas. As AT&T deploys new fiber and towers in Arizona with their construction partners, other mobile service providers will “tag along” and lease from that infrastructure inventory to expand their geographic coverage and support their evolution from 4G to 5G offerings.

There is another dimension related to public safety, concerning service provider and infrastructure diversity, particularly in northern Arizona and other rural areas. Within the last several years, there have been disruptions (fiber cuts and other network problems), affecting 911 centers, healthcare facilities and other critical services. Redundancy and service provider/route diversity are critical, particularly in the middle mile.

5.5 ECONOMIC AND COMMUNITY DEVELOPMENT

Many of Arizona’s rural residents and businesses find that they do not have high-capacity digital services available at all, or the available services do not provide sufficient capacity to support new video-intensive internet services such as E-learning, telehealth, telework and internet television (IPTV), etc. These shortcomings have been limiting factors affecting the availability of jobs, educational opportunities, public safety and healthcare services in such areas.

The ACC, ACA, and ADOA have identified access to affordable broadband service as a critical element affecting innovations in education, public safety and healthcare, as well as the furtherance of economic development and enhancement of public safety services.

It is the understanding of some stakeholders that virtually all economic development entities in the state, including rural regional, county and municipal entities, include broadband service as a critical element of their plan. However, these entities have little ability or financial wherewithal to implement any solutions. The Digital Arizona Highways Act signed in 2012, which established the Digital Arizona Council (DAC) and Digital Arizona Program (DAP) was meant to give private-sector providers the ability to more



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economically extend broadband services to poorly served rural Arizonans by expanding the use of existing state roadway rights of way (ROW); however, it has shown limited success. Further, DAC and DAP were dissolved when funding was no longer available.

ACA, in collaboration with Deloitte US, is working to advance a Cross-Border Connected Cities (CBCC) initiative with the objective to drive smart city principles to the border region. In November 2016, Governor Ducey sent a letter of support for the CBCC concept and pilot projects in the Arizona-Sonora megaregion to the members of the U.S. Chamber of Commerce and its Mexican counterpart, Consejo Coordinador Empresarial. A key challenge however, is the lack of ubiquitous broadband service in the region, which hinders novel technology applications to process trade and people effectively and efficiently at United States ports of entry. It also has significant implications in terms of positioning many of these communities for increased external investments and growth.

The figure below depicts the level of fixed broadband service in Arizona, in relation to schools, libraries and medical facilities. The data was downloaded from Esri, a vendor of geographic information system (GIS), mapping and location platforms, and the Arizona State Land Development portal.

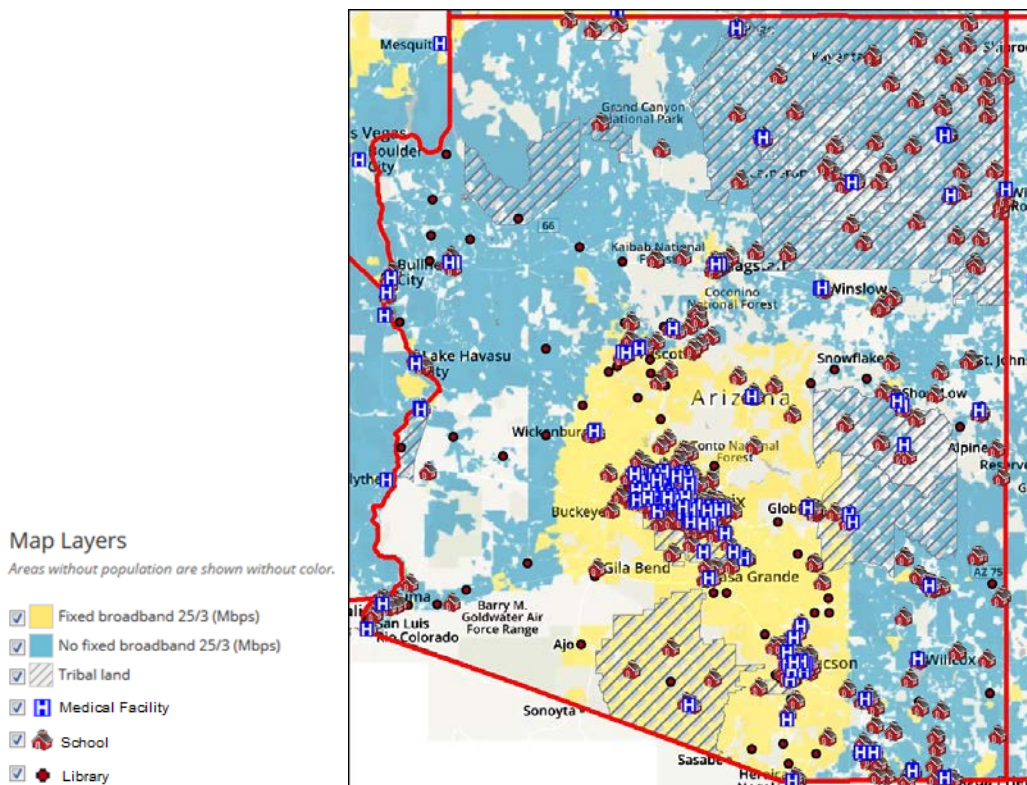


Figure 3: Fixed Broadband Areas in Arizona



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6 VISION AND DESIRED FUTURE STATE

6.1 VISION

Stakeholders statewide provided candid input on the urgency of the broadband access problem and exhibited a fundamental desire for action and progress, especially after the 2012 effort failed to move forward in any substantive manner.

Focus group participants shared their ideas about the vision for the future of broadband in rural Arizona. Their input was used to craft the vision statement for this Plan.

Many stakeholders see broadband as an essential service or utility that should be overseen by a public—not private—entity. This theme resonates across the state. In that vein, stakeholders think the broadband initiative needs a clearly defined state-level owner/office responsible for coordinating between local public stakeholders representing education, public safety, healthcare, individual citizens, elected officials, economic development entities, and private broadband providers.

This vision statement reflects the needs and wishes communicated by Arizona stakeholders during the focus group meetings and the strategic planning workshop. The vision is as follows:

ONE STATE ENTITY TO COORDINATE DIVERSE STAKEHOLDERS, FUNDING SOURCES AND SERVICE PROVIDERS TO DELIVER TECHNOLOGY-NEUTRAL, AFFORDABLE, RELIABLE BROADBAND SERVICE AT A COMPETITIVE PRICE STATEWIDE.

STAKEHOLDER INPUT ON THE VISION

Broadband must be resilient, reliable, and affordable

Broadband providers must provide a minimum level of service

Rural and urban areas must have the same level of service

Broadband must be seen as a public or essential service, like water and electricity, mail delivery, and construction and maintenance of a highway system

The state must establish a single office to coordinate statewide broadband governance, buildout, and delivery

The state needs a competitive broadband marketplace with a variety of technologies and service offerings from a large number of providers to help drive coverage, pricing, and advanced applications, and to level the playing field



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6.2 DESIRED FUTURE STATE

As part of the stakeholder-driven broadband planning workshop held in January 2018, attendees identified and explored initiatives that could help them reach the vision. These initiatives represent the actions that can be strategically employed to move Arizona from its current stalled state described above to a more desirable future state that is closer to the vision.

Not all 23 of these initiatives can realistically be implemented within the first year. Therefore, the first-year priority initiatives identified by stakeholders during the strategic planning workshop are listed below in the order of importance. They are also highlighted in bold text within the tables below.

1. Establish, adequately staff, and fund a state broadband office or entity for managing and overseeing the statewide expansion of broadband (Goal 2)
2. Create a statewide broadband infrastructure plan (Goal 3)
3. Leverage current funding sources and identify new financial support sources beyond grant funds for sustainability (Goal 4)
4. Identify and leverage existing broadband infrastructure and capacity (Goal 3)
5. Continue and/or expand the use of special broadband funding through the Arizona Corporation Commission (ACC), Arizona Universal Service Fund (AUSF), Arizona Department of Education (ADE) and Arizona State Library and Public Libraries beyond E-Rate matching fund projects (Goal 4)
6. Create and implement an education, outreach and public involvement plan around Arizona broadband initiatives (Goal 5)
7. Establish an advisory body of diverse stakeholders to help with regional and multi-jurisdictional collaboration and planning (Goal 2)
8. Examine alternative deployment and ownership models (Goal 6)

While none of the first-year priority initiatives fall within Goal 1 (*Broadband is accessible and affordable*), all of the other goals and initiatives are the foundation to tie into it or build off it. The initiatives in Goal 1 are essential to continued progress.



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ACCOUNTABILITIES

In the absence of a State Broadband Office, given that broadband is an issue across all sectors in which ACA operates, ADOA will collaborate with ACA to coordinate accountability for these goals—along with others listed in the accountability section of each goal—to move broadband forward until such time as a State Broadband Office is established.

The following tables identify six goals with corresponding initiatives, benchmarks, and parties identified for accountability in reaching these desired goals. As initiatives are undertaken and benchmarks achieved, the accountable parties must routinely report progress to a state-level entity focused on broadband initiatives. Further, the Plan must be reviewed and updated on an ongoing basis. This is essential to proactively work within the dynamic broadband ecosystem and prepare for the technology and social disruptions that result from new capabilities.



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ACCESSIBILITY	
Goal 1: Broadband is accessible and affordable	
Initiatives	Benchmarks
1. Develop standards that define minimum levels of service (upload/download speeds)	Define minimum and ideal upload/download speeds for rural/urban areas Communicate desired standard with all relevant broadband providers
2. Develop cost targets (per megabit) for providing commercial and residential broadband service	Define reasonable cost-per-megabit for commercial and residential broadband service Communicate desired standards with relevant broadband providers
3. Develop community broadband access initiatives that expand free public broadband access opportunities	Identify at least one community broadband initiative that expands free public access to be leveraged in 100 percent of counties statewide Provide a platform for simplified buying at beneficial pricing for other entities such as schools, libraries, healthcare institutions, regional government, and others as appropriate
4. Develop a business case for providers to invest in infrastructure, which increases healthy competition and affordability	Draft and socialize business case with providers within one year of Strategic Plan release
Accountability	
State Broadband Office Broadband Advisory Board Arizona Department of Administration State chief information officer (CIO)	State Procurement Office Arizona Commerce Authority ABOR



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GOVERNANCE & IMPLEMENTATION	
Goal 2: Broadband expansion is strategically governed and implemented	
Initiatives	Benchmarks
1. Establish, adequately staff, and fund a state broadband office or entity for managing and overseeing the statewide expansion of broadband	<p>One state-level office or individual takes responsibility for coordinating broadband planning efforts and informs stakeholders</p> <p>State entity or individual completes at least one initiative in the Strategic Plan</p>
2. Establish an advisory body of diverse stakeholders to help with regional and multi-jurisdictional collaboration and planning	<p>Identify potential members to serve on Advisory Board and issue invitations</p> <p>Advisory Board meets at least quarterly</p>
3. Use multi-year state information technology (IT) procurement contracts to aggregate broadband demand	Provide a platform for simplified buying at beneficial pricing for other entities such as schools, libraries, healthcare institutions, regional government, and others as appropriate
4. State broadband entity facilitates and encourages public-private partnerships	<p>Identify extensive list of public-private opportunities to expand broadband</p> <p>Identify at least one public-private partnership as statewide best practice or model</p>
5. Identify and leverage best practices from other states	Identify and implement at least three best practices
Accountability	
State Broadband Office Broadband Advisory Board ACA	ADOA State CIO ADOT ABOR



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INFRASTRUCTURE	
Goal 3: Existing broadband infrastructure is identified, leveraged, and expanded	
Initiatives	Benchmarks
1. Create a statewide broadband infrastructure plan	Draft statewide infrastructure plan that identifies existing infrastructure, opportunities for expansion and areas with greatest need/highest priority, and which emphasizes rural middle-mile infrastructure
2. Identify and leverage existing broadband infrastructure and capacity	<p>State entity and/or Advisory Board works with service providers and local, regional and state stakeholders to complete a map of current broadband infrastructure</p> <p>Improve public access showing availability of wireline and wireless broadband services, as well as fiber infrastructure, to the greatest extent practical</p> <p>Work with service providers to determine current and future capacity capabilities and needs</p>
3. Improve coordination between broadband providers and public/private entities	Private and public entities meet regularly and work in coordination to increase/improve infrastructure
4. Improve redundancy and resiliency	State entity and/or Advisory Board coordinates with providers to mitigate single points of failure
Accountability	
State Broadband Office ADOA State CIO ADOT	ACA Governor’s Office of Public Private Partnership (3P) ABOR



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FUNDING	
Goal 4: Broadband funding opportunities are identified, leveraged, and expanded	
Initiatives	Benchmarks
1. Continue and/or expand the use of special broadband funding through the ACC, AUSE, ADE and Arizona State Library and Public Libraries beyond E-Rate matching fund projects	<p>Submit funding justifications to both continue and expand the functionality and amount of these funding sources</p> <p>Create and maintain a list of “shovel ready” broadband projects that could be implemented when additional funding is available</p>
2. Leverage current funding sources and identify new financial support sources beyond grant funds for sustainability	<p>Create a single online source of broadband funding opportunities</p> <p>Realize one project successfully supported using alternative funding such as a public-private partnership</p>
3. Maximize and leverage the use of E-Rate funding	<p>Investigate and extensively document non-traditional options for obtaining broadband and share with stakeholders</p> <p>E-Rate administrators communicate program opportunities with 100 percent of identified stakeholders</p> <p>90 percent of the public libraries to apply for and obtain E-Rate funding each year</p> <p>90 percent of schools to apply for and obtain E-Rate funding each year</p>
4. Identify opportunities to leverage broadband funding across stakeholder groups to remove funding source silos	<p>Identify at least one collaborative opportunity per region to leverage broadband funding across varied funding sources</p>
Accountability	
State Broadband Office ADOA State CIO ACC	ADOT ADE ABOR Arizona State Library and Public Libraries



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EDUCATION & OUTREACH	
Goal 5: Citizens understand the impact of broadband and promote adoption	
Initiatives	Benchmarks
1. Create and implement an education, outreach and public involvement plan around Arizona broadband initiatives	<p>Create extensive stakeholder distribution list per region representing: education, libraries, commerce, healthcare, technology, public safety, policy, government, broadband providers, and executive-level decision-makers</p> <p>Draft broadband education, outreach and public involvement plan</p> <p>Communicate with stakeholders as identified in this plan</p>
2. Through grant and funding source training, educate stakeholders on grant opportunities, how to apply, and best practices for success	Develop an online, recorded training module about broadband grant/funding opportunities; ensure that module provides details about how to complete applications for at least two grant sources
Accountability	
State Broadband Office ADOA State CIO	Arizona State Library and Public Libraries ABOR



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POLICY	
Goal 6: Policies are implemented to incentivize the provision of/reduce barriers to broadband	
Initiatives	Benchmarks
1. Examine alternative deployment and ownership models	State broadband entity or other identified entity researches and prepares recommendations
2. Define and promote broadband as essential to the state’s critical infrastructure and economic competitiveness	Partner with ACA to explore feasibility and prepare business justifications to inform and execute recommendations
3. Remove or reduce regulatory barriers	State broadband or other identified entity researches and prepares plan to remove or reduce regulatory barriers Meet with broadband providers and document issues with cross-jurisdictional broadband infrastructure permitting and deployment Meet with stakeholders and document barriers to broadband infrastructure deployment
4. Incentivize redundancy and resiliency initiatives	Facilitate discussions focused on exploring incentive and resiliency initiatives
Accountability	
State Broadband Office ADOA State CIO	ACA ABOR ADOT



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7 BARRIERS TO ACHIEVING THE VISION AND DESIRED FUTURE STATE

In a strategic planning process, it is imperative to realistically identify the potential barriers to success and acknowledge the risks they pose to achieving the vision and the desired future state. While the barriers to success can be somewhat uncomfortable perceptions or realities, stakeholders must resist losing sight of the bigger picture and goal at hand.

From discussions with core stakeholders and communities of interest, it is clear that the roadblocks experienced in 2012 still exist today. These roadblocks will remain rooted, failures will repeat themselves, and little to no progress will be made until a single entity is created with the authority to oversee this initiative and hold stakeholders accountable for progress on the identified broadband initiatives.

Of the many constraints to achieving the vision, stakeholders identified one in particular as the biggest obstacle: *The reluctance of broadband providers to invest in building out infrastructure in rural communities.* Stakeholders think that providers are resistant to building out broadband infrastructure in rural areas because there is not enough of a return on investment (ROI), i.e., not enough customers would subscribe to broadband services to generate revenue for the provider to make a profit.

Stakeholders that participated in the focus groups identified the following constraints to achieving the shared vision for broadband, especially in rural Arizona:

- Lack of infrastructure (dark fiber), an understanding of where it exists, and/or provider willingness to share maps and data
- Lack of affordability
- Avoiding the pitfalls that prevented the adoption and implementation of the 2012 broadband initiative
- Lack of legislative support
- Lack of vendor/provider competition; so, they control pricing
 - High costs of service that cannot be socialized or justified
- Generational and socioeconomic gaps in the desire to adopt and implement “new” technology
 - Areas with aging or poorer populations may not demand the same services as younger or more affluent communities
- Siloed funding sources across local, state, and federal programs and disciplines (e.g., healthcare, education, public safety) that cannot be combined to use for a collaborative broadband solution
- High expectations of the public and local leaders that are unrealistic; some areas in the state may never see affordable broadband
- A difficult-to-navigate E-Rate program, with changing rules, stringent scrutiny of applications, limited staff at the state level to guide the applicants, staff turnover at the applicant level, and a lack of funds to pay their share



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- Potential turf wars over which entity should manage a statewide broadband initiative
- Geographic issues: impacts of topography and weather, and distance between consumers
- Resistance of tribal councils to grant rights of way to build out infrastructure on tribal land
- Lack of middle-mile and last-mile coverage

Recent federal initiatives show promise in removing barriers. On January 31, 2017, FCC Chairman Ajit Pai announced the formation of a new federal advisory committee, the Broadband Deployment Advisory Committee (BDAC or Committee), which will provide advice and recommendations to the Commission on how to accelerate the deployment of high-speed internet access, i.e., broadband service, by reducing and/or removing regulatory barriers to infrastructure investment. The Commission's intention at the time was to establish the BDAC for a period of two years.

The BDAC is intended to provide an effective means for stakeholders with interests in this area to exchange ideas and develop recommendations for the Commission, which will in turn enhance the Commission's ability to carry out its statutory responsibility to encourage broadband deployment to all Americans.¹⁹ The BDAC's first meeting was held April 21, 2017.

Several working groups were formed including one intended to develop a model code for states to accelerate broadband deployment. A working group targeting the removal of state and local regulatory barriers also was formed. In January 2018, the BDAC released its Report of the Removing State and Local Barriers Working Group,²⁰ which identified the following six categories that constitute regulatory barriers to broadband deployment: Ambiguity; Discrimination; Excessive Fees; Inflexibility; Inordinance; and Noncompliance.

To address these barriers, the working group offered the following recommendations (which are discussed in more detail in the Recommendation section below) to the FCC for consideration:

- Encourage earlier and more comprehensive collaboration between broadband providers and local officials by: (1) promoting the creation and use of a "Broadband Ready" checklist, with input from all stakeholders, to facilitate improved, expedited information flow; and/or (2) publishing model codes.
- Provide clarity on what actually constitutes an "excessive" fee for rights-of-way access and use, and encourage greater transparency of fees.
- Study whether a streamlined mediation and arbitration process administered by a neutral third party (similar to a process detailed in 47 USC §252) would expedite deployment by resolving disputes more quickly.

¹⁹ <https://www.fcc.gov/broadband-deployment-advisory-committee>

²⁰ <https://www.fcc.gov/sites/default/files/bdac-regulatorybarriers-report-012018.pdf>



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- Explain its approach to preemption decisions so that all stakeholders are on notice regarding the potential role of this action in removing state and local regulatory barriers to broadband deployment.
- Explore how to leverage other expert stakeholders to provide localities and states with opportunities for acquiring the knowledge and skills needed to streamline the deployment of new broadband networks.

The FCC published a Report and Order in the Federal Register on December 28, 2017, Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment.²¹ Most provisions took effect January 29, 2018. This was aimed at reducing unnecessary regulatory barriers to the deployment of high-speed communications networks. This Report and Order will reform the pole-attachment policies by:

- Codifying a rule excluding capital costs recovered via make-ready fees from pole-attachment rates
- Establishing a 180-day “shot clock” for resolution of pole-attachment access complaints
- Providing incumbent local exchange carriers (LECs) with access to infrastructure owned by other LECs.

8 BEST PRACTICES

Across Arizona, many initiatives are underway that might be leveraged to accomplish the goals identified in this Strategic Plan. To reduce time to implementation, it is critical that Arizona leverage these best practices already underway within the state, or in other states, as appropriate. For example, all school districts should be taking advantage of E-Rate funding to support their broadband access.

8.1 BROADBAND INITIATIVES IN ARIZONA

Arizona counties and institutions already are utilizing available funding sources and deploying a variety of tools to deliver broadband service to communities that serve to achieve both the Governor’s priorities as well as the goals and initiatives set forth in this Plan. Understanding this is not an exhaustive list, detail on each of the initiatives identified by the focus groups is available in the State of Arizona Broadband Focus Group Findings report published in December 2017.

In addition to the initiatives highlighted in this report, the State, under the auspices of the ADOA 911 Office, funds the operation of, and provides guidance for, a 911 network under a managed service contract with CenturyLink, except for Maricopa Country, which owns and operates its own countywide 911 network.

²¹ [Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment](#)



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A potential 2018 opportunity involves increasing the use of the Universal Service for High Cost Areas—Connect America Fund (CAF). The FCC Phase II auction will award up to \$198 million annually for 10 years to service providers that commit to offer voice and broadband services to fixed locations in unserved, high-cost areas. The auction is scheduled to begin on July 24, 2018. Bids would be awarded to service providers that would deploy based on performance tiers for speed and latency. Based on Census Blocks Groups (CBGs), 12,102 locations within Arizona would be eligible for CAF funds. Stakeholders should engage service providers and encourage them to submit a bid.²²

Another example is the Arizona Board of Regents (ABOR), which under the direction of the three state universities operates a very-high-speed data network to support the research and educational needs of the universities. Through the Sun Corridor Network, the universities access national and international research and education networks—e.g., Internet2, Department of Energy, National Oceanic and Atmospheric Administration (NOAA)—to enable extensive collaborations among domestic and international education, research, and commercial institutions. The Sun Corridor Network makes excess capacity available, where practical and affordable, to the Arizona K-12 community and libraries. Virtually all research conducted by the Arizona universities is supported by this network. The Sun Corridor Network is one of 42 such regional networks operating in the U.S.

8.2 BROADBAND INITIATIVES OUTSIDE ARIZONA

The information contained below provides information that can lead to the identification of best practices that the State can leverage to meet the benchmark of several goals and initiatives identified in this Plan. This includes Goal 2, Initiatives 1 and 2, along with Goal 6, Initiative 1.

States that have realized success in expanding broadband access have established one state-level entity to provide the required oversight for planning and implementation. This entity helped establish the foundation for accomplishing the strategic goals and objectives of a statewide broadband plan. If Arizona were to establish a similar entity, it would provide the necessary oversight, coordination and accountability

STATE BROADBAND OFFICES

- [Alabama Office of Broadband Development](#)
 - [Connecticut State Broadband Office](#)
 - [Maine: ConnectME Authority](#)
 - [Massachusetts Public Safety Broadband Office](#)
 - [Minnesota Office of Broadband Development](#)
 - [New Mexico Office of Broadband and Geospatial Initiatives](#)
 - [New York State Broadband Program Office](#)
 - [North Carolina: Broadband Infrastructure Office](#)
 - [Utah Broadband Outreach Center](#)
 - [Wisconsin State Broadband Office](#)
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²² <https://www.fcc.gov/general/universal-service-high-cost-areas-connect-america-fund#releases>



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necessary to support the Governor's five priorities. During the 2018 budget cycle, ADOA submitted a proposal to establish a State Broadband Office (Appendix B). States that have been successful in establishing broadband offices are listed to the right. Below are additional examples of local, regional, and state government approaches to oversight and implementation of a broadband initiative.

In 2016, New Mexico established the Department of Information Technology (DoIT) Office of Broadband & Geospatial Initiatives (OBGI) as an expansion of the successful New Mexico Broadband Program (NMBBP). They have four initiatives; Broadband for Libraries (BB4L), Broadband for Business (BB4B), Broadband for Safety (BB4S), and Broadband for Health (BB4H). In 2017, the NMBBP conducted a Broadband for Business Study to provide an actionable roadmap with actionable recommendations for improving affordable and reliable access to broadband services for businesses to support economic development.

This report made recommendations that apply to Arizona including establishment of a permanent funding source for the state broadband office, as well as using the State's buying power to encourage joint purchasing or forming partnerships. Additionally, the report also recommends leveraging service to CAI in hopes of making broadband deployment more cost-effective to residents and businesses in the surrounding areas. This report also points out that many of New Mexico's tribal areas do not have access to broadband service and continue to rely on copper phone lines with limited cable television (CATV) or DSL connectivity.

Regional public networks constitute a category of long-standing and successful broadband initiatives. Approximately 40 states have one version or another of such a network. Many are state funded or sponsored. Many are standalone P3s or non-profit entities. Business models and scope vary. Some serve the public spectrum (government, public safety, K-12, libraries,

OVERSIGHT AND IMPLEMENTATION BEST PRACTICES

[Blacksburg, Virginia](#)

This city, which is home to Virginia Tech University, has broadband in every household as a municipal utility.

[Iowa](#)

Built infrastructure and then leases it to carriers.

[Next Century Cities—Ammon, Idaho](#)

This municipality built its own fiber network to cover 16,000 homes. As a result, end users pay less per month.

[Kentucky Wired](#)

A statewide fiber network of more than 3,000 fiber miles being built as a public-private partnership.

[Oregon Project](#)

BTOP-funded project to advance eight individual communities' goals through the increased adoption of broadband services and the increased utilization of broadband-enabled applications.

[South Carolina](#)

Created Connected Community program to identify local technology assets, complete an assessment of local broadband access, adoption, and use, and develop an action plan for pursuing solutions.



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research institutions, etc.), some are limited to a few public sectors. Many operate primarily or exclusively using private-sector service providers' services. Many have an economic development focus. Noteworthy regional public networks include:

- Utah — [Utah Education Network \(UEN\)](#)
- Texas — [Lonestar Education and Research Network \(LEARN\)](#)
- Michigan — [Merit](#)
- Ohio — [Ohio Academic Resources Network \(OARNet\)](#)
- New York — [New York State Education and Research Network \(NYSERNet\)](#)
- Oregon — [Network for Education & Research in Oregon \(NERO\)](#)

Many of these regional public networks have acted as a catalyst for broadband infrastructure expansion.

9 CALL TO ACTION

This Plan sets forth cost-effective, flexible approaches to advancing reliable broadband services to Arizonans in both rural and urban areas of the state.

Stakeholders at all levels have expressed their increasing weariness with planning and are ready for action. The challenges that need to be overcome at all levels cannot be underestimated. Successful implementation of this Plan depends on stakeholders from all levels of government and various disciplines working together to overcome operational, technical, resource, funding, and legislative barriers.

This commitment to coordination can remove barriers and develop public policies and market-driven approaches that incentivize private-sector investment to provide affordable broadband access throughout the state.

If Arizona continues on the path of uncoordinated, siloed activities, the risks to education, job readiness, healthcare, research, public safety communications, energy and the environment only will increase. The brightest minds will remain untapped. State economic development will falter as businesses gravitate to other regions with greater broadband infrastructure, capacity, and resiliency. In a variety of other ways, Arizona will fall increasingly behind the curve of industry and innovation that is supported by, and only available with, reliable broadband services.

Progress begins when stakeholders and state-level partners collaborate to establish governance and work together across all communities of interest toward a common vision. Without leadership and cohesive



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collaboration between the many independent broadband projects underway statewide, money will continue to be wasted as projects remain siloed and benefit only individual communities of interest. Cost savings will not be realized until communities of interest leverage the resources available across disciplines and levels of government. Implementing this plan with that support can transform education, healthcare and research, improve public safety and government operations, create major new opportunities for business and employment, reduce energy consumption and protect the environment, and enable long-term future of sustainable economic development.

Stakeholders are confident that the long-term benefits to the state greatly outweigh the costs of implementing this Plan. The measurements associated with the goals and initiatives set forth will result in data that can quantify the long-term benefits and costs. As is demonstrated by the plethora of local, regional, state and national broadband efforts, including the President's January 2018 signing of the executive order, Streamlining and Expediting Requests to Locate Broadband Facilities In Rural America, these benefits are critical to Arizona's future. Across the country, there is increasing state and federal government assistance in supporting communities in developing the required broadband infrastructure and associated services. Taking action is an investment in Arizona that will yield immense societal returns for current and future generations.

Without action to advance broadband service in Arizona, the state will continue to fall behind, set false limitations on its residents' ability to excel, and increase risks of delays in receiving public safety and healthcare services in underserved and remote locations.

There are many important actions defined in this Plan that, if taken, will result in improved broadband for the diverse communities of interest. If these communities engage and embrace the opportunity before them to collaborate, they can advance their own missions while contributing to the greater good for all citizens.

The challenge of broadband as it relates to Arizona's success is the responsibility of citizens, businesses, communities and governments at all levels. When this is acknowledged, these stakeholders can begin to act, and bold and positive action can be taken.

When, if not now, is it the right time to remove the barriers to reliable, affordable and accessible broadband? When, if not now, is it time to fix issues and overcome economic, governance, and infrastructure challenges so that all citizens have equal, affordable and reliable broadband access?



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Appendix A: Broadband Initiatives in Arizona

Table 2: Broadband Initiatives in Arizona

Location	Broadband Initiative
Apache County	Leveraging E-Rate to bring another infrastructure provider into the area to improve connectivity
Cochise County	The Cochise County College is using microwave to deliver education between campuses Ongoing E-Rate initiative to support schools and libraries
Coconino County	Ongoing E-Rate initiative to support schools and libraries
Education	Arizona Education Broadband Initiative
Gila County	Ongoing E-Rate initiative for fiber build out to anchor institution Copper Corridor
Hospitals	Using microwave to provide broadband connectivity
La Paz County	Egg farm put fiber in at its own cost, because provider would not do it due to the cost Ongoing E-Rate initiative to support schools and libraries
Libraries	Libraries let residents check out mobile hotspots. This is a Digital Inclusion project for the community
Navajo County	An E-Rate request for proposals (RFP) is pending to support the schools' and libraries' broadband initiative Health department, schools and libraries meet with the chief information officers (CIOs) of healthcare entities and the college to coordinate efforts through a consortium
Tusayan	Installing Wi-Fi devices on school buses and parking them in strategic areas
Yavapai County	Ongoing E-Rate initiative to support schools and libraries
Yuma County	Smart Borders program
Other	Arizona Universal Service Fund – Broadband Special Construction Matching Fund Program



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CASE STUDIES

Commonwealth of Kentucky

In 2013, multiple agencies submitted budget requests for increased funding for high-speed, high-capacity fiber networks. It seemed prudent to fund these needs in a more coordinated way to leverage increased capacity across the entire enterprise. Concurrently, the push for reliable, accessible and affordable broadband was one recommendation from the Shaping Our Appalachian Region (SOAR) initiative, created in 2013 by then Governor Steve Beshear and Congressman Hal Rogers.

Because the Finance and Administration Cabinet (FAC) procures goods and services for the Commonwealth, they began to research and determine the best way to obtain improved internet access, speed, capacity, affordability and reliability. The FAC issued a request for information (RFI) and gathered responses from incumbent service providers and potential partners about their capacity to provide enhanced services and their level of interest in working on broadband opportunities.

Solicitations were released for an investment partner and for a concessionaire arrangement. After working with the two winners of those RFPs, the public-private-partnership (P3) model was determined to be the best approach. The Commonwealth entered into a contract with Macquarie Capital to design, build, operate and maintain the KentuckyWired network. The network will provide both dark and lit fiber.

The KentuckyWired network plans to install more than 3,000 fiber miles into every county in the Commonwealth, both rural and urban. The network is designed as a middle-mile network to anchor institutions with private internet service provider (ISP) connections to offer fiber-to-the-home (FTTH) service, as well as provide access to cellular carriers.

Currently, KentuckyWired has deployed 619 fiber miles with the project scheduled to be completed by early 2020. The network will connect all of Kentucky's 120 counties with up to 100 Gbps of bandwidth. Private companies will be able to offer high-speed, high-capacity internet service to underserved or unserved areas. Not only residents but, the government, agriculture, healthcare, public safety, higher education and business sectors all will benefit from the project. Excess capacity will be marketed by Macquarie Capital acting as a wholesaler as part of a 30-year revenue-sharing agreement.

Approximately half of the 288 fiber strands will be leased to private companies to build the last-mile portion of the network. Funding for the project comes from \$307 million in public-private bonds, \$23.5 million in federal grants and \$30 million from the Kentucky general fund.



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State of Ohio

In the mid-1990s, the State of Ohio developed an RFP designed to entice telecommunications service providers to offer the State uniform costs for telecommunications services. In the 1990s, 56-kbps, analog dial-up service was the common method for businesses and residents to access the internet; at the time, the transport services available from telecommunications service providers were digital and high-speed, including DS1 (1.544), DS3 (45 Mbps), OC3 (150 Mbps), OC12 (622 Mbps) and OC48 (2.5 Gbps).

The project was named the State of Ohio Multi-Agency Communications System (SOMACS). A group of LECs responded to the RFP and was awarded the 10-year contract. To fulfill the State contract, the LECs upgraded their infrastructure by constructing fiber into multiple areas of the state.

All State agencies were required to use the SOMACS contract for any telecommunications services; this provided the State with discounted services and the vendors were challenged to keep up with the service orders.

Two years into the contract, the OC48 core infrastructure was unable to support the demands for higher bandwidth services and quickly was upgraded to OC192 (9.6 Gbps). The fiber infrastructure that was built to support the requirements of this State contract continued to be upgraded by replacing the existing technologies with higher-bandwidth technologies that now reach 100 Gbps of bandwidth.

This was a win-win for the State and the vendors and supported the building of the fiber infrastructure.

State of Tennessee

The State of Tennessee foresaw the need to consolidate their telecommunication requirements under one State agency dedicated to supporting the State agencies after computers were first introduced into the State payroll department. To support these new technologies in the early 1970s, the governor stated that all State computer functions were to be centralized under one division known as the Office for Information Resources (OIR).

Over the years this division's name was changed to Strategic Technology Solutions, its responsibilities grew, it eventually decided to implement a unified network that would support all agencies in the state. An RFP for network services was developed and the result was the network known as NetTN.

BellSouth was the first contracted provider of network infrastructure; it had to implement high levels of fiber upgrades to meet the contract's resiliency and redundancy requirements. AT&T had to do the same when it became the contracted provider. The contract benefits the State and its agencies in that it requires



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discounted uniform costs regardless of where broadband service is deployed in the state. Today NetTN, for which AT&T continues to provide network infrastructure, supports K-12 education, private colleges and universities, the University of Tennessee, libraries, local businesses, and Next Generation 911.

Arizona Telemedicine

The Arizona Telemedicine Program was formed at University of Arizona Health Sciences out of a pilot program in 1995, with the program being funded by the legislature starting in 1996. The Arizona Telemedicine Council created by the state legislature provides oversight and assists in the development of the telecommunications network.

Using broadband bidirectional video conferencing, psychiatrists in one location can interact with patients at distant locations. Both patients and psychiatrists have embraced the technology and most feel that it is equivalent to face-to-face encounters. According to the University of Arizona, hundreds of thousands of dollars have been saved in the state by leveraging telepsychiatry. The Northern Arizona Regional Behavioral Health Authority (NARBHA) is recognized as a national leader in telepsychiatry and has won three national awards. NARBHA organized RBHAnet, which links four regional mental-health providers covering the entire state.^[1]

The Health Choice Integrated Care telemedicine network is based in Flagstaff, and has more than 90 sites, which include:

- HCIC headquarters in Flagstaff, with 13 video endpoints
- 36 clinical endpoints in northern Arizona
- Six clinical endpoints in the greater Phoenix area
- The Arizona State Hospital campus in Phoenix
- the Navajo (Window Rock), White Mountain Apache (Whiteriver) and Gila River (Sacaton) regional behavioral health authorities
- Hualapai Health Department and Supai Village medical clinic
- The Arizona Department of Health Services/Division of Behavioral Health Services in Phoenix

Through HCIC's Flagstaff hub site, RBHAnet is permanently connected to the University of Arizona telemedicine network, a Tucson-based network of more than 80 sites statewide. With this connection:

- HCIC is able to offer all RBHAnet endpoints continuing medical education units (through the University of Arizona's weekly psychiatric grand rounds) and specialty physician consulting

[1] <http://telemedicine.arizona.edu/press-releases/Arizona%20is%20National%20Leader%20in%20Telebehavioral%20Health>



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- University of Arizona and RBHAnet sites are able to interconnect regularly for statewide meetings, roundtables and training sessions.

Arizona I-19 Wi-Fi Corridor

In 2005, a Wi-Fi (wireless broadband) corridor was implemented with Homeland Security funding on a 30-mile section of Interstate 19 in Arizona near the Mexican border. Part of the CANAMEX corridor, this section presents an interesting opportunity for the Arizona Department of Transportation (DOT) to utilize data-collection techniques for monitoring traffic and road condition parameters, and to enhance first responder communications and information sharing.

The CANAMEX corridor is a joint project of Arizona, Nevada, Idaho, Utah and Montana, with the primary objective of stimulating investment and economic growth in the region and enhancing safety and efficiency within the corridor. Accomplishing this objective will maximize the economic potential for the United States, Canada, and Mexico. CANAMEX includes transportation, commerce and communications components. The project was funded by a DHS border-area grant awarded to Arizona Emergency Management and implemented by the Arizona Telecommunications and Information Council (ATIC). Outcomes of the project were as follows:

- The appropriate end-user IT personnel were engaged to allow for use of encryption, whitelisting, creation of virtual private networks (VPNs) and to provide for interagency communication.
- Twenty antenna nodes were placed along the corridor and are operational covering approximately 30 miles. (Two additional nodes were placed near the Rio Rico fire halls for special applications.)
- More than 70 mobile access points (MAPs) were distributed to nine different agencies for installation in vehicles and some stationary sites.
- Five cameras are operational and in use by the University of Arizona telemedicine program, Santa Cruz County hazardous materials (hazmat) teams and fire departments. An additional four cameras are being planned for use by U.S. Customs and Border Protection (CBP) and by the Santa Cruz County license plate recognition program.
- Mobile units are getting up to 6 Mbps transfer speeds. As more traffic is added to the Network, transfer speeds are leveling out at 2–4 Mbps.
- The network is operational and fully supports stationary coverage throughout the corridor. Mobile or roaming coverage in certain areas along the corridor is currently conditioned by the inability of specific nodes to sustain an adequate signal-to-noise ratio to all end-user devices. Those areas of the network are in the process of being reconfigured with alternate antenna arrays to limit the impact of extraneous radio noise.
- The Spillman computer-aided dispatch (CAD) system has been deployed by the Santa Cruz County Sheriff's Office and is being used in test data mode in conjunction with the Wi-Fi network.



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- Integration of the University of Arizona telemedicine program, allowing them to establish VPN connections with offices in Tucson.
- Access by the Arizona Department of Public Safety for their advanced license plate recognition (ALPR) software
- Completion of an IP video surveillance test demonstration for U.S. Customs and Border Protection.



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Appendix B: Arizona Broadband Office Proposal

SUMMARY

State of Arizona government has made several attempts to coordinate and expand affordable broadband access across the state. The Governor's priorities of education, healthy citizens, public safety and economic development all require access to affordable broadband services for success. The creation of an Arizona Broadband Office within the Governor's office or other independent agency, funded through available federal grants and state resources, is necessary to effectively coordinate, manage and collaborate on the various projects and resources needed to implement broadband services across the state.

DESCRIPTION OF THE ISSUE

The Arizona Corporation Commission, Arizona Commerce Authority and the Arizona Department of Administration have identified access to affordable broadband services as a critical element to innovations in education and health, the furtherance of economic development and enhancements to public safety services.

Arizona citizens, particularly students in rural and underserved areas, deserve the same access to educational opportunities, healthcare and other resources as those in metropolitan and higher-economic areas. Many of Arizona's rural residents and businesses find that they do not have high-capacity, high-speed digital communications services available at all, or the available services do not provide sufficient capacity to support new video-intensive internet services such as E-learning, telehealth, telework and internet protocol television (IPTV). These shortcomings have been limiting factors affecting the availability of jobs, educational opportunities, public safety services and healthcare services in such areas.²³

Among other attempts to accelerate Arizona's economic recovery and growth, the Digital Arizona Highways Act was signed in 2012 and established the Digital Arizona Council and Digital Arizona Program. The legislation was meant to give private-sector providers the ability to more economically extend broadband services to poorly served rural Arizonans by expanding the use of existing state roadway rights of way; however, it has shown limited success. Furthermore, the Digital Arizona Council and Digital Arizona Program were dissolved when funding was no longer available.

In current discussions with core stakeholders and communities, themes are emerging that demonstrate the roadblocks experienced in 2012 still exist today. These roadblocks will remain rooted, failures will repeat

²³ Digital Highways - <https://aset.az.gov/digital-highways>



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themselves and little to no progress will be made, until a single entity is created with the authority to oversee, hold stakeholders accountable, and track progress of the various broadband initiatives across the state.

The required oversight will provide the foundation to accomplish the strategic goals and objectives of a statewide broadband plan that ultimately will make it possible to achieve the Governor's vision. Other state initiatives that have been successful in such an approach include the Connecticut State Broadband Office, ConnectME Authority, Minnesota Office of Broadband Development, New Mexico Office of Broadband & Geospatial Initiatives, and Utah Broadband Outreach Center.

A state broadband plan will take coordination and collaboration to ensure alignment of the State's digital and innovation priorities, and to serve as a guide to operational, technical, resource, funding, and legislative decisions regarding broadband services in Arizona.

PROPOSAL

The establishment of an Arizona Broadband Office located in the Governor's office or other independent agency that will provide leadership and cohesive collaboration between the many independent broadband projects being implemented around the state.

The Arizona Broadband Office will:

- Develop a state broadband plan
- Lead a multi-agency planning group to align broadband technology infrastructure goals with the Governor's five priorities: education excellence; 21st century economy; protecting communities; fiscal responsibility; and healthy citizens
- Make recommendations to the Governor and legislature regarding policies, elimination or modification of regulatory barriers, and funding
- Coordinate and update mapping of broadband assets and analyze data on broadband availability and capacity
- Provide technical assistance to counties and communities on broadband initiatives
- Coordinate and leverage existing grant and funding opportunities through FirstNet, Telehealth, and E-rate
- Research funding opportunities and create grant opportunities to fund projects in unserved and underserved communities
- Facilitate coordination between broadband providers and public and private entities



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FUNDING CONSIDERATIONS:

Critical to the success of an Arizona Broadband Office is adequate resources and authority to effectively achieve the mission. An Arizona Broadband Office should include key personnel with the expertise and authority to coordinate state agencies, tribal and local governments, as well as private-sector broadband providers doing business in the state. The office should be staffed with two full-time equivalents (FTEs). To provide the expertise necessary to coordinate and spur broadband progress for Arizona, the staff will require extensive subject-matter expertise. One FTE will require expertise in broadband technology and the other will require project management, leadership, and relationship-building strengths.

State Funding Opportunities

Arizona Universal Services Fund (AUSF)

- AUSF's High Cost Fund was created to help fund the cost of providing basic telephone services to customers in Arizona. An emergency rulemaking was promulgated to add a surcharge to be used toward matching funds for federal E-Rate projects in Arizona.

**Current rules do not allow this fund to be used for general broadband efforts; however, with the appropriate rule changes and ACC approvals, it could be a source of revenue for the Arizona Broadband Office.*

- Arizona Commerce Authority – Rural Economic Development funding

Federal Grant Opportunities

- National Telecommunications and Information Administration (NTIA)

**Current State and Local Implementation Planning Grant Program (SLIGP) funds used to support governance and implementation of FirstNet's NPSBN in the state could be leveraged to support activities of the Arizona Broadband Office.*

- Federal Communications Commission (FCC)—Connect America, E-Rate, Telemedicine
- U.S. Department of Agriculture (USDA) Rural Development
- U.S. Department of Homeland Security