

## Policy Insights for the Expansion of Rural Broadband in Mississippi

### INTRODUCTION

The rapid pace of communication technology drives innovation in the workforce and reflects social demand for improvements in goods and services. Irrespective of the addressed delivery mechanism, broadband continues to grow as the underlying technology responsible for our use of data, video and voice communications. The issues surrounding connectivity, in particular internet access, make for intriguing policy perspectives as questions of access, costs, and regulation become prevalent discussion points. Voltaire is credited with saying, "if you wish to converse with me, define your terms." This brief seeks to offer insight into the infrastructure, data challenges, and providers to help add context to the issue of rural broadband development. Moreover, it provides analysis of what local governments and organizations, states, and the federal government are doing to improve rural conditions and offers a guide to addressing rural access and broadband adoption.

#### *A. Defining Broadband Accessibility*

Defining broadband in terms of speed has been the source of debate dating back to the late 1990s. The Federal Communications Commission (FCC) has provided reports of its regular inquiries on the definition of broadband, acceptable speed, access, and other factors. The FCC defines broadband as advanced telecommunications capability, which is defined further as "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high quality voice, data, graphics, and video telecommunications using any technology." The FCC in 2015 did however offer an updated technical definition for the speed at which they consider broadband: 25 megabits per second (Mbps) download and 3 Mbps upload (25/3). However, this was expanded from a previous statutory definition of 4 Mbps download/1 Mbps upload and with the stroke of a pen (technically the application of section 706 of the Telecommunications Act of 1996) removed a large percentage of the United States population from being counted in "broadband" access areas.

People often use the term broadband with the consideration that in a society which seeks to establish the common welfare of its people, the modern necessity of connectivity requires expansion of this tool to all of its citizens. ISPs (internet service providers), being the gateway to access for the individual, businesses, or other organizations provide a bevy of technologies which allow for one to digitally connect. Each technology type

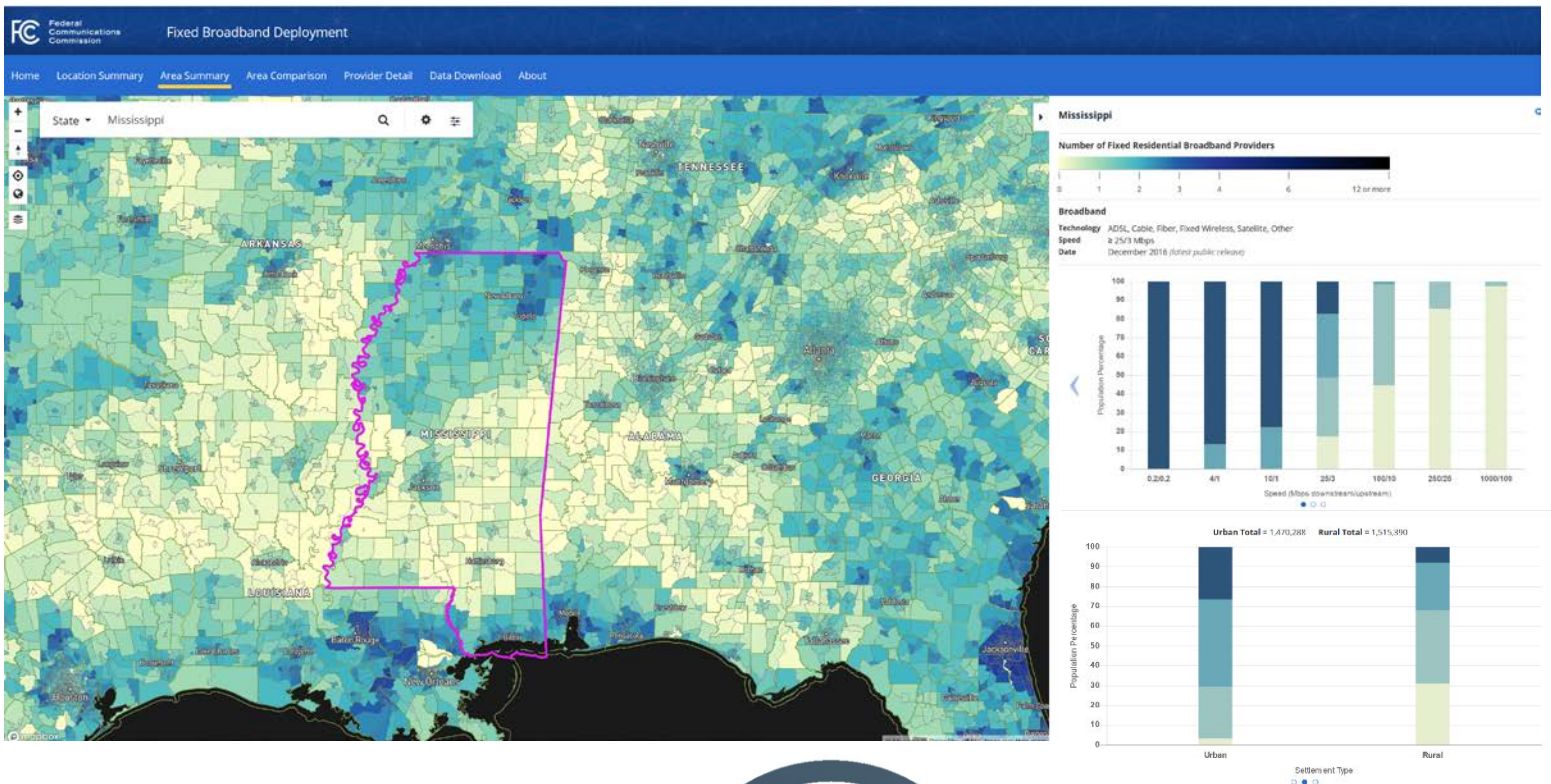


caters to a particular client and situation, though many will admit there are still certain locations and individuals who have difficulty finding access to reliable and efficient internet. The reflection on this tool and its expansion as a public good raises many questions, not due to its necessity in a modern context, but due to the cost of provision and the advancements made by private providers.

### B. Current Infrastructure

A significant point of contention in the broadband discussion is that of fixed versus mobile wireless connections. Fixed implies a hard-wired broadband connection is available to a household and can be accessed by traditional hook-up means, whereas, mobile wireless is connectivity available on smartphones across the country. Both technologies, however, face a contentious debate on the accuracies of coverage. To the average consumer, the technological details of how broadband is supplied to an end user is fundamentally and relatively inconsequential when the desired characteristic demands are for speed and cost. The burden of logistics fall squarely on the providers of the service. There are three major types of access to commercial and residential broadband internet services currently utilized: fixed broadband, satellite broadband, and mobile broadband are those commonly used to provide connection to the rest of the digital world. These infrastructure options available to supply consumers with broadband services range, not only in the geographic availability to access, but also on many levels of technological and physical complexity.

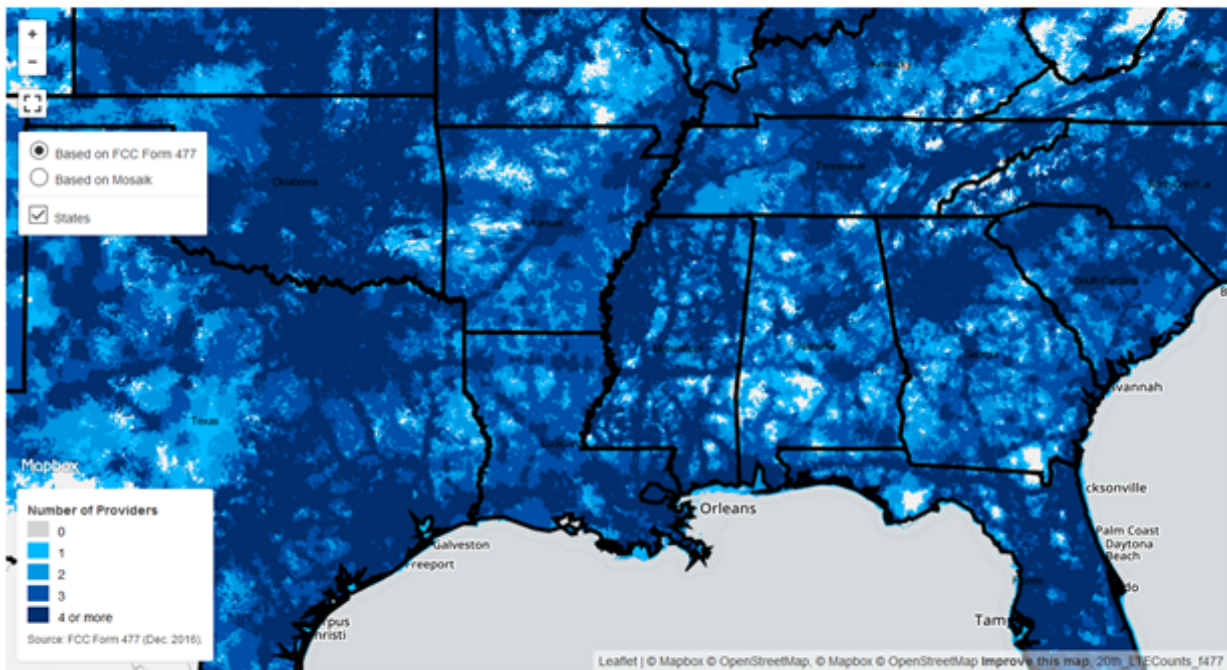
Mississippi continues to lag behind other states in the southeast in fixed and mobile wireless availability. The map below details the lack of providers as the Census tract level and the percentage of Mississippians with access to the different levels of internet speeds.





The map and charts to the left show that rural populations face a compounded problem, that of access and limited availability. As of 2016 roughly 20% of Mississippians do not have access of broadband as defined by the FCC. While a majority of individuals living in urban populations have “access” to high speed internet, the percentage of rural residents in Mississippi without access is significantly higher (+30%). Data collection and management issues exist to question the accuracy of these figures, but anecdotally it is worth mentioning that there exists a number of complaints of lack of access from citizens across Mississippi in news and social media outlets. Complicating this issue is the limited availability of LTE coverage in the State. LTE is loosely defined by the FCC as wireless connectivity of 5Mbps/1Mbps, which is well below the 25Mbps/3Mbps threshold laid out by the FCC. The coverage map below shows some limited LTE presence in rural areas of MS, with quite a few gaps in the state covered by as few as 1 provider.

## LTE Coverage by Number of Providers - YE 2016



Source: Based on Jan. 2017 Mosaik, Dec. 2016 Form 477, and 2010 Census data. Note that the number of service providers in a census block represents network coverage only. Network coverage does not necessarily reflect the number of service providers that actively offer service to individuals located in a given area.

### C. Challenges with Broadband Data

One of the primary challenges of broadband is how access (or lack of access) rates are calculated. Numerous reports show the disagreement of measurement and data collection, including the FCC’s most recent report, leading to heightened dissatisfaction with the allocation of resources to address issues of rural access.



Some suggest that access requirements are considered met when an individual resides within a US Census designated block. In rural areas, these Census blocks can cover a large swath of land encompassing a number of households. Anyone inside these blocks is considered to have access to broadband service, even if fixed and wireless options are not available, as they are considered to be within a distance that is “reasonable to obtain access at a minimal cost”.

Perhaps the largest challenge to Fiber to the Home (FTTH) rollouts is the upfront capital expenditures. Per home costs are estimated to be in the thousands of dollars, and return on investment is a gray area. This financial uncertainty can stifle or altogether prevent the construction of these networks. Programs such as the Connect America Fund Phase II (CAFII) are almost certainly needed in rural areas as a catalyst and to sustain momentum for these efforts.

Providing broadband connections wirelessly has the distinct and obvious advantage of no underground or overhead wires for delivery. Upgrades to services would certainly be more economical, and the wireless delivery method could possibly withstand the next paradigm shift from technological breakthroughs. However, as the state of wireless broadband delivery is currently, when too many connections are made at one BTS (base transceiver station), a bottleneck will occur and service will be slowed. Scalable mediums to handle broadband traffic demands will be required for reliable service.

Turf war challenges, where workarounds are being developed in some areas, include questions surrounding right-of-ways and availability of utility poles, ducts, or other related infrastructure. These are examples of the many legal and policy struggles congruent with the supply of broadband access.

## PROVIDING RURAL BROADBAND ACCESS

### A. *Broadband Policy*

#### **Mississippi**

- i. Expansions made through private enterprise and federal grants.

While Mississippi has made strides in improving the capacity for its citizens to be connected to the internet, most of the improvement can be credited to private enterprise. What significant investments have been made were those stemming from federal grant authorizations. Investments such as the Contact Network, Inc. infrastructure grants to build broadband networks in the Delta and underserved south and central Mississippi Counties have provided access to schools, community centers, and has allowed for the groundwork to be laid for expansion for future service to individual homes and businesses by local providers. There has also been investment made towards adoption of the internet by those who are now receiving access to illustrate the opportunities connectivity provides. The broadband council established under Governor Barbour’s tenure sought to utilize and coordinate these resources, though, as with many other states, the resources diminished in the post-recession recovery and the council and centralized efforts have as well.



ii. Policy Factors

Other states, as will be discussed in more detail to follow, have enacted legislation which makes rural funding and expansion opportunity at the local-level more capable. Mississippi lawmakers, most notably HB1650 (2017), have proposed legislation to attempt to fund rural broadband development, though this bill, unlike some we will see, does so through authorized bond sales. Notably Mississippi's electricity co-opts, expanded in the new deal era to provide electricity to rural locations, are barred from ventures which do not directly relate to the provision of electricity for their cooperative membership. Mississippi Code Ann. Section 77-5-205 specifies this statutory limitation and the Mississippi Supreme Court case *Tallahatchie Valley Electric Power Association v. Mississippi Propane Gas Association, Inc.* (2002) further upheld the limitation.

### Neighboring States

- i. Georgia: While Georgia isn't a neighboring state (per se) the legislature did pass a law in the 2018 session called "Achieving Connectivity Everywhere (ACE) Act" which sought, among other things, to remove the restriction on local electric membership cooperatives and allow them to be providers of broadband. As House Ways and Means Chairman Jay Powell stated the bill "does everything but the funding" and "if you've got the framework in place, you can fund it anytime". The funding though is a very important aspect and one that many states are looking into more directly.
- ii. Tennessee: Senate Bill 1215, passed and signed into law April 2017, was a landmark bill for this area in broadband investment. Known as the "Tennessee Broadband Accessibility Act" the act creates a fund known as the Tennessee broadband accessibility fund. It is funded based on available revenue at the end of each fiscal year (may also receive gifts, grants, and appropriations). The act defines underserved and sets a 10mbps/1mbps access limitation. The act limits cooperatives from offering additional services such as video but allows for broadband. The act also creates tax credits to incentivize investment. A more intriguing aspect to the act is the provision of deference to locations which have demonstrable support for broadband investment. The state has provided a documentable pathway for these locations to be identified.
- iii. Alabama: Senate Bill 149, the "Alabama Broadband Accessibility Act" signed into law April 2018 makes way for the Alabama Broadband Accessibility Fund which allows for allocation, grants, and donations. It also defines a minimum threshold (10/1), rural and underserved areas, and creates a grant program to these rural and underserved areas. Alabama has also allowed its member led electric cooperatives to invest in broadband. As Bruce Purdy, General Manager of the North Alabama Electric Cooperative (NAEC) highlights in an experience report, NAEC's interest in involvement in broadband was two-fold:



1) economic development and 2) delivery to members lacking quality access to the internet. He stated a primary concern was being priced out by competitors in the future and that hurdles in the project included sourcing high quality contractors and ensuring adequate cash flow as the project was funded with a \$19 million grant from the American Recovery and Reinvestment Act and \$4.5 million in borrowed funds. He said up to 90% of the problems they encountered were due to the provision of video services. Other co-opts in Alabama have additionally come to provide its membership with broadband including Freedom Fiber (Tombigbee Electric Co-opt), Wiregrass Co-opt (partnered with Troy Cable), and the Farmers Telephone Cooperative (built in 1952 with partnership through the Sand Mountain Electric Co-opt) to name a few.

- iv. Arkansas: Code Section 23-18-306, similar to Mississippi, specifically outlines the purpose of cooperatives as “furnishing of electricity to persons.” Similarly to Mississippi, Arkansas received money through the American Recovery and Reinvestment Act. They were able to offer mapping services to all of their counties and work with providers to aid in development. The 2007 Connect Arkansas Act allowed for this to be done through a single identified entity which would coordinate these efforts. While the federal grant funds for the program no longer exist, the state has continued to work towards provision of broadband expansion as evidenced by their efforts to deliver service to all school districts and partnering with ISPs to invest in expansion.
- v. Louisiana: Like many of the states mentioned above, Louisiana was granted funding for development in the post-recession period including development of more than 900 miles of fiber including schools, communities, hospitals, and impoverished Delta areas. The funding also covered capacity building, planning, and adoption services through partner institutions and agencies. According to section 12:426 of the Louisiana revised statutes, their electricity cooperatives have the option to choose to be under Public Service Commission (PSC) jurisdiction upon membership vote. Thus for the availability of government funding/loans to expand broadband they would need to be under the state’s regulatory arm (PSC).

### **Federal Policies/Initiatives**

- i. American Recovery and Re-investment Funding: As can be seen the grants and initiatives from this act allowed for the groundwork to be laid so that states could effectively understand their current broadband allocation, under and unserved areas, as well as make some investments for schools, hospitals, and needy areas. All 50 states utilized the monies to make research toward a national broadband map. The funding from this source has since dried up, however several states have moved to continue the momentum of this funding. Funding initiatives can be found at the National Telecommunications and Information Administration website.



- ii. FCC/FTC Policies on Broadband: The FCC under the Telecommunications Act of 1996 is granted the authority to define broadband and issue statements as to its adoption and deployment. The FTC can regulate the companies and their activities in the marketplace. The regulation of broadband as a utility has been somewhat altered recently as issues such as net neutrality have been adopted by the FCC and then removed. Though for ISPs and broadband application/state-level policy it remains to be seen how hands on these agencies will go beyond setting the benchmark for service and what might drive definitions of underserved and/or broadband benchmarks. Until 2015 the benchmark for broadband was 4Mbps down and 1 Mbps up, which has since been changed to 25Mbps down and 3 Mbps up. There are ongoing discussions about the needs of consumers and the standards with which the FCC should apply to the technical definition of broadband.
- iii. USDA: The USDA recently announced the funding of \$600 million in rural broadband access loans and loan guarantee as part of the “Farm Bill.” Thus definitions of rurality and underserved areas as well as the technical definitions of broadband will serve to allow both for-profit and non-profit entities eligibility to invest in rural broadband expansion. The USDA also offer Community Connect, Telecom Infrastructure, and Distance Learning/Telemedicine Grants.

B. *Current Provider Structures*

**Private Providers**

Of the 2,500+ ISPs in the United States, private corporations as a whole have been in business the longest, have more capacity and industry knowledge in providing quality services, but also stands to be among the first to lose with regard to the current interests in public broadband provision. Clearly, the larger providers (e.g. AT&T, Verizon, Comcast, Dish/HughesNet) have a vested interest in keeping the broadband service market competitive. This competition though can only be as competitive as it relates to the cost/benefits of technological deployment and investment.

**Public Providers**

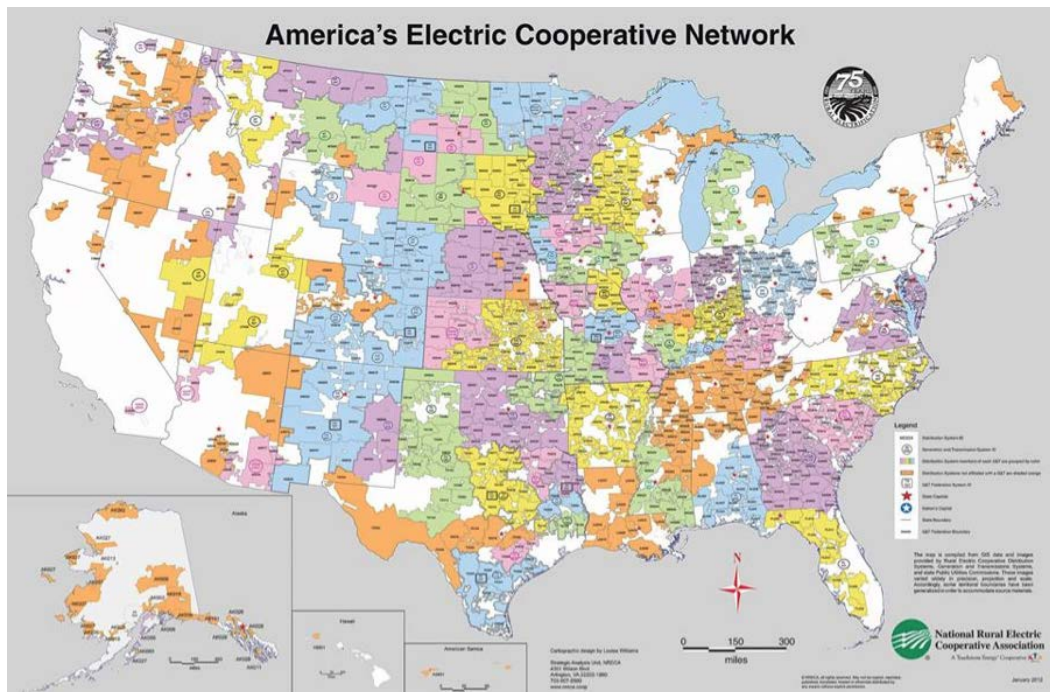
Studies have shown community-owned networks, providing broadband internet access to its citizens, can be a better choice for service than private competitors. As of early 2018, more than 750 communities have chosen to build their own broadband networks. The rates charged for access from these public providers tend to be clear and stable, as compared to the “teaser” and temporary rates private companies use to entice consumers toward their service products. Additionally, transparency given the public status can lead to more public input in the investment.





i. Rural Co-ops

For over 75 years electric co-operatives have been the electrical power connection for over half of America. This long-standing backbone of service seems to be a natural fit for adding fixed broadband to the mix of utilities. Co-ops are member-owned and committed to community stability and growth, a business trait often not shared by the profit-motivated corporate Internet providers. Discussions surrounding rural cooperatives focus on the unique characteristics of citizen-owned utilities providing more accessibility and general acceptance of service. In addition, rural cooperatives cover a large portion of the United States, and an even greater coverage ratio of the State of Mississippi. This coverage swath exemplifies the current reach electric co-ops manage, and the potential outreach for expansion of broadband through these providers, should this be a path co-ops would choose to traverse. As mentioned, it is impermissible for Mississippi's electric co-ops to provide services other than electricity.



ii. Public/Private Partnerships

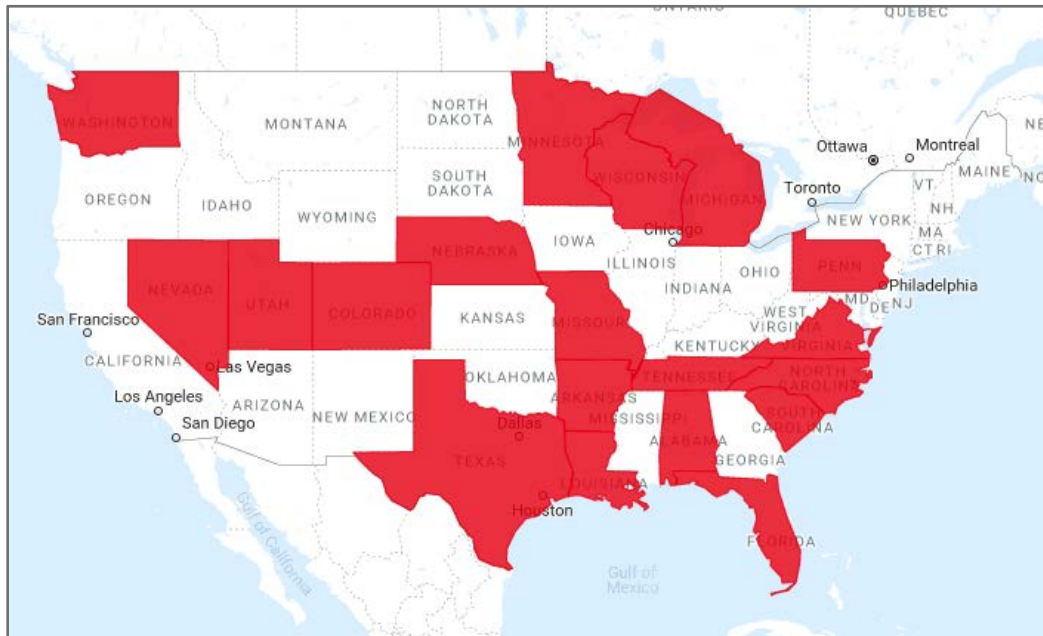
Public-Private Partnerships (PPP or P3) have recently become the exception to the rule when it comes to the dichotomous choice of providing broadband access to citizens. There are many forms of these partnerships. One such method involves local government streamlining permits and other barriers for private firms to design, control, and operate the network. Another approach involves a public entity financing, constructing, and owning the network as a private ISP operates the traffic and provides the maintenance. The private firms would lease the network in this circumstance. The balance of risk and reward in these joint efforts makes





each unique endeavor extremely complex. The rural towns of Iowa, in particular Indianola, IA (Population of 15,785 in 2016) and Pella, IA (population of 10,255 in 2016), are good examples of test beds for P3 initiatives.

As seen in the map on the next page nineteen states have legal barriers that discourage or prevent communities from the ability to decide on local provisions for broadband access.



Map source: <https://muninetworks.org/communitymap>

## POLICY CONSIDERATIONS

- A. ***State-level:*** Mississippi has an opportunity to leverage public private partnerships, remove barriers to entry in the broadband market, and make investments in not only infrastructure, but in turn the people of the state to utilize this tool to increase knowledge, productivity, and grow the state. Given the growth of the private market and the potential for mal-investment, considerations must be made for all future actions. These will be explored in the hurdles and challenges which will seek to identify paths toward a state-level adoption of broadband programs and statutory initiatives.
- B. ***Local-level:*** Localities in Mississippi have an opportunity within themselves to lay the groundwork of broadband adoption and investment. Not only can they begin offering online services and connecting with citizens through online platforms; localities also have an opportunity to address areas of concern through working with education partners and/or organizations to develop literacy and training programs, helping entrepreneurs and local businesses, and working with providers/philanthropic organizations to establish assistance programs.



## INSIGHTS TO OVERCOME HURDLES AND CHALLENGES

*This section will highlight some insights and offer broad advice taken from anecdotal and evidential claims from those who are in government organizations, service providers, trade groups, and other research institutions.*

- i. **Building a Coalition/Establishing Lead Agency** – The state has an opportunity to establish a central planning authority with which to coordinate the state’s efforts on broadband expansion. Whether this agency be involved in development, transportation, or public utility the intent is the same, to measure the state’s progress and work with various actors, agencies, and providers (both current and prospective) to leverage resources and offer guidance toward the goal of providing broadband to its citizens. The centrality offers an opportunity to strategically plan and execute while building knowledge and offering support. The rest of these insights can be core principles upon which they build their efforts.
- ii. **Defining Broadband Goals and Areas of Improvement** – The state should make very clear their goals (both technical and social) and paths to these goals. They should be at the forefront of leading the communities and educating the partners in ways to develop a broadband strategy and be a resource for executing this strategy.
- iii. **Increasing/Improving Adoption** – While much emphasis can be placed on the actual accessibility issues, as important is understanding the opportunities broadband connection actually provides as a tool for social connection, business development and growth, and information enhancement. Providing information or working within the workforce development/training and small business/entrepreneur environments will allow individuals the training to be confident in both establishing broadband connections but also making the most out of it.
- iv. **Ensuring Project Cost Controls** – The state (or other entities), should it seek to do more than monitor and provide information, must ensure that projects are well planned and that partnerships and purchases are made with fiscal prudence.
- v. **Managing State Fiscal Resources** – The fiscal resources of the state, being dollars taxed from citizens and business, deserve the utmost care and responsible management. Trade-offs will always be necessary and caution should always be exercised, especially when embarking upon large and costly programs. Proper feasibility and economic analysis should accompany projects and where possible management should be held accountable for issues pertaining to the projects.
- vi. **Planning for Improvement** – Part and parcel to partnership and development is the expectation that improvement will be needed. This can be through efforts such as dig-once whereby the groundwork pipes are laid when new road construction takes place as to make easier running the broadband cables at a later date. It can also be putting in better polls capable of holding the wired and wireless technologies of the future. Most importantly it is encompassing the understanding that this technology is rapidly developing and what is currently available will evolve and we should understand that our investments now will most likely (as with all infrastructure) require maintenance and improvement costs in the future.



## CONCLUSIONS

Broadband connectivity access and adoption in rural areas continues to be an issue of public importance. Technological offerings of fixed, mobile, and satellite in their various abilities and costs, as well as the private and public extent to which these are offered makes considerable the need for good information and high-quality data and public coordination. Given the rapid pace of the technology and the growing depth of importance it plays in modern social and economic spheres, our political leaders and those active in recognizing the potential “digital divide” we currently find ourselves in will need help and support in finding ways to tackle this issue. Some of the potential paths toward moving the needle for greater connectivity, access, and adoption will take statutory support and other paths will take community engagement and material support. What our research has uncovered and what our future research in the area will seek to highlight is that all efforts will need to be provided accurate information, address the hurdles and challenges to the provision of broadband, and continuously engage in dialogue and planning which seeks to establish this tool as one of benefit for the citizens of not only Mississippi, but all who can participate and prosper in a digitally connected world.



## NOTES:

This brief is part 1 of a 3 part series on the expansion of broadband to rural and underserved communities. Part 2 will focus on the technical aspects of broadband technology deployment and part 3 will focus on cost considerations including funding streams and economic cost-benefit considerations.

This brief utilized a host of sources for data and description and some direct quotes. The sources of all this information can be accessed online at:

<http://www.sig.msstate.edu/research/broadband>

Should you have any questions about the findings in this brief please contact: [bfarrell@sig.msstate.edu](mailto:bfarrell@sig.msstate.edu)

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