2021 Broadband Report

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In a year unlike any other, broadband has become widely appreciated as critical 21st century infrastructure … connecting students and teachers, patients and physicians, families, and communities. Unfortunately, too many Georgians still lack access to this basic infrastructure. Since 2018, the Department of Community Affairs (DCA) and Georgia Technology Authority (GTA) have championed the state's broadband efforts with a singular purpose: bring high-speed internet access to unserved Georgians.

Recently, the National Governors Association published a white paper on *Governor Strategies to Expand Affordable Broadband Access*. This report highlighted Georgia's location-based mapping as a best practice. Indeed, **Georgia's mapping initiative is regarded as the new gold standard**; however, Georgia can be proud that its state broadband program had in place every element identified in these best practices, including cross-cutting governance structures, strategic partnerships, and grant funding frameworks.

Collaboration is a hallmark of the Georgia Broadband program. The involvement of private and public sector leaders, as well as numerous state agencies, is envied among other state broadband programs. Provider participation has enabled the program's success to date. Similarly, community involvement – including public funding – is important. This is especially true when the conversation expands beyond profit-driven solutions (which have yielded the current landscape) to community-oriented solutions that ensure service for those who remain unserved.

Over the past 18 months, public-private partnerships have yielded investment to serve thousands of new locations. Collectively, these investments contribute to the overarching goal of serving unserved Georgians. **In 2021, 9.1% of locations in Georgia remain unserved** – representing a 1.0% decline over the prior year. However, there are still 482,374 locations that lack access to acceptable quality broadband, so there is much work yet to be done.

In accordance with the Georgia Broadband program's 2018 enabling legislation, SB 402, this annual report highlights the status of statewide broadband deployment, as well as the program accomplishments of the past year, a few of which include continued public-private cooperation, technical assistance to local communities, and a first-in-the-nation broadband mapping program. This body of work is attributable to an outstanding team of professionals, as well as extensive participation and involvement from hundreds across the state. Thank you for your interest in this important work.

Broadband Collaboration

Provider Engagement

Broadband service is critical 21st century infrastructure. The State of Georgia is committed to the public policy objective of expanding infrastructure access to unserved Georgians. The state broadband program is focused on ensuring that entire communities are served. Accomplishing this community-driven approach is complex, and providers play an essential role. Private providers offer experience and knowledge of technology, network engineering and deployment, as well as operations and maintenance of the broadband network.

In 2018, an advisory committee was formed to aid Georgia's broadband deployment efforts. A representative group of providers, local governments, electric cooperatives, and state agencies have worked collaboratively for three years. The sustained commitment of **ACCG**, **AT&T**, **Comcast**, **Windstream**, **Georgia Cable Association**, **Georgia Economic Developers Association (GEDA)**, **Georgia EMC**, **Georgia Cities (GMA)**, **Georgia Telecom Association**, as well as DCA, GTA, and the Georgia Department of Transportation (GDOT) is unique among state broadband programs. This collaboration has contributed to streamlining local ordinances, developing the broadband availability map, designing a state grant framework, as well as valuable insights on various state and federal policy matters.

Inter-Agency Coordination

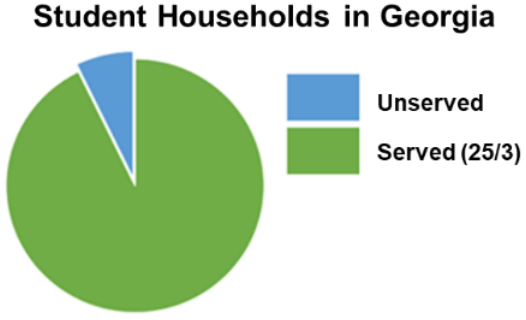
Addressing the digital divide also involves coordination across numerous state agencies. The Georgia Broadband program has regularly convened state agencies to share information, strategize, and develop deployment initiatives. Active participants include DCA, GTA, and GDOT, as well as the Departments of Education and Public Health, University System of Georgia, Technical College System of Georgia, Georgia Emergency Management Agency, State Properties Commission, and Department of Economic Development.

The broadband project activity across agencies is extensive and too numerous to detail in this report. Ongoing projects include rethinking education models and extending the concept of "campus" to include entire communities. Issues such as NexGen 911 and broadband workforce development are on the collective radar. Such coordination remains a focal point of the Georgia broadband program. The following examples highlight a few ways these relationships have proven instrumental, particularly during the pandemic.

Student Connectivity & Remote Learning (Department of Education)

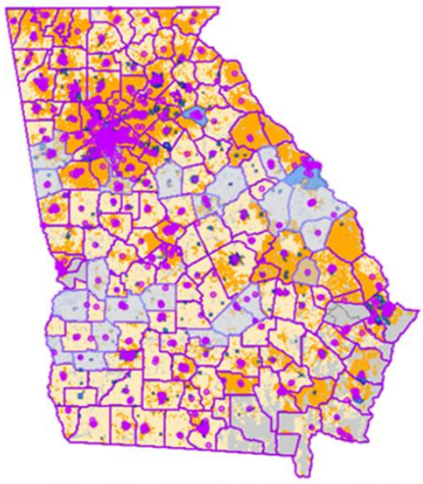
In March 2020, 1.8 million public school students, 120,000 teachers, and 50,000 school administrators were challenged to shift to digital learning overnight. To aid student connectivity, Governor Kemp allocated $30 million from the Governor's Emergency Education Relief (GEER) funds to the Department of Education (DOE).

Immediately, DOE engaged the broadband team to determine how to best allocate funds. Leveraging broadband availability data to precisely identify who is and is not served, the broadband team identified **135,756 unserved student households**.



The broadband team also assisted with expanding home access to broadband for students residing in multi-family housing and other low-to-moderate income areas. After identifying more than 49,000 students residing in low-income housing, the broadband team leveraged data from other DCA programs to assist DOE in targeting and engaging landlords to deploy solutions to serve these unserved students.

Georgia's robust broadband data facilitated targeted assistance and deployment of connectivity solutions such as mobile wi-fi rangers, expansion of school bandwidth, placement of wi-fi antennas, and other at-home connectivity solutions.



More than 49,000 students reside in low-income, multi-family housing

Connectivity Working Group (State and Local School Officials)

Georgia Broadband collaborated with state and local officials to publish ***Georgia's Restart Guide for Connectivity and Devices***. This tool armed school districts and teachers with important information to address digital and hybrid learning environments as schools began to reopen in the fall.

Connecting County Health Departments (Department of Public Health)

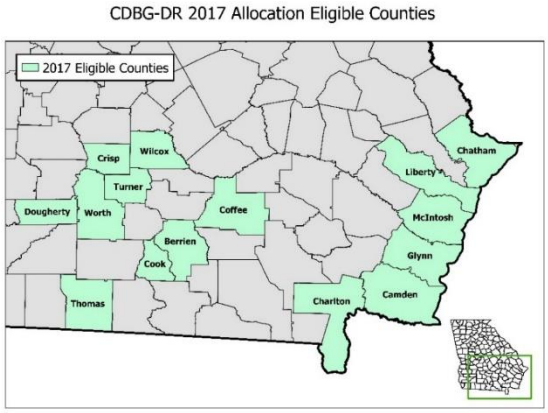
At the onset of the pandemic, many Georgians were unable to access hospitals and physician offices, and instead were driven to use telehealth resources. It was quickly apparent that those lacking broadband access suddenly lacked the ability to access routine and specialized healthcare. The Department of Public Health (DPH) engaged the broadband team to help equip all 159 county health departments with high speed connectivity, in order to enable patient access. Leveraging relationships with internet service providers, Georgia Broadband quickly convened providers from each unique geography, and was ultimately able to bridge the digital divide among patients by enabling access to local health departments via telehealth resources.

Affordable Housing Development (Department of Community Affairs)

The Georgia Broadband team works with other divisions of DCA, including the Housing Finance Division. In 2020, the broadband team facilitated the inclusion of a broadband element in Georgia's Qualified Allocation Plan (QAP). The QAP dictates the allocation of low-income housing tax credits for developers to construct affordable, multi-family housing. This change helps to ensure that new affordable housing developments or renovations are equipped with fast and robust broadband capability.

Disaster Recovery and Mitigation – CDBG (DCA, GTA, GEMA)

In 2017 and 2018, Georgia was impacted by a series of natural disasters that were particularly devastating to southern parts of the state. In 2020, HUD provided Community Development Block Grant (CDBG) disaster recovery funds to address unmet needs that were a result of these disasters, as well as to mitigate future losses. These funds are competitively awarded to address local priorities.



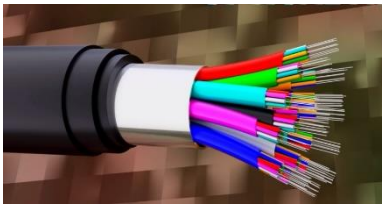
To analyze communications infrastructure across all 15 eligible counties, the Georgia Broadband program successfully competed for and received $750,000. A partnership with GTA and the Georgia Emergency Management Agency (GEMA), this project will result in a guide to inform local and state officials and help drive investment decisions to address infrastructure gaps and to leverage existing assets to improve network resiliency, particularly as it relates to public safety and disaster response.

Interstate Knowledge Sharing and Cooperation

Georgia Broadband is also active in the State Broadband Leaders Network, hosted by the National Telecommunication and Information Agency (NTIA). Georgia works with other states and federal agencies to share knowledge, insights, and best practices. These forums facilitate an exchange of ideas, as well as a venue to provide input and feedback on federal initiatives, including funding programs.

Community Engagement and Technical Assistance

Understanding the Basics



Broadband infrastructure is a complex and confusing topic for many community leaders. Providers can be valuable partners, especially when it comes to understanding technology, network capabilities, project costs, and limitations. **The Georgia Broadband team encourages public-private partnerships and strives to provide basic, unbiased information and assistance**.

As it relates to expanding existing networks, the bulk of capital expenses – i.e., labor, cable, equipment, and network capacity – is in the "last mile" that distributes broadband to homes and businesses.

Fiber-to-the-home provides the highest quality broadband service, in terms of both speed and latency. Fiber is the most scalable and future proof network infrastructure in which to invest; however, fiber-to-the-home typically comes at a higher cost per location. Hybrid fiber coax, which is used by some cable companies, is another good option for quality service. Copper-based DSL infrastructure is widely available but has limitations, including speed and high maintenance costs. Fixed wireless solutions can typically deliver 25/3 Mbps service when there are no line-of-sight obstructions like hills, trees, and buildings. Fixed wireless solutions, in many cases, require less capital investment and can be suitable for some rural locations. Low Earth Orbit satellite service such as SpaceX's Starlink is in early deployment and beta testing and has yet to realize the promise of the potential being marketed.

Infrastructure Type	Capital Cost Per location	Speed performance	Reliability	Maintenance Cost	Available Urban	Available Rural
Fiber to the home	Moderate	Very high	High	Low	Low	Low
Cable (HFC)	Moderate	High	Moderate/High	Moderate	High	Moderate
Copper (DSL)	Moderate/Low	Moderate/Low	Moderate/Low	High	High	Moderate
Fixed Wireless	Moderate/Low	Moderate/Low	Moderate	Moderate	Low	Low
Satellite (LEO)	High	Moderate	?	?	Low	Low

Source: CTC Technology & Energy

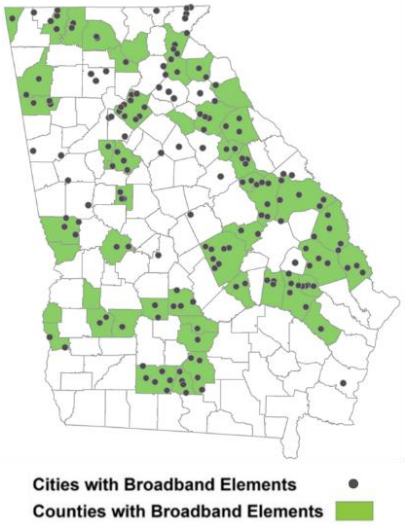
Network planning is complex and requires a solid understanding of technical and financial considerations. As with any capital project, a detailed pro forma is necessary and should include such information as number of served locations, cost to serve, customer adoption, and anticipated revenues. Financially viable projects must demonstrate an ability to:

- Achieve operating revenues needed to recover operating and administrative expenses.
- Generate and sustain working capital to maintain the network.
- Produce positive cash flow within a reasonable period of time and across the network's projected life.

Most providers offer deep technical knowledge and expertise necessary to architect network solutions. On the other hand, local leaders tend to possess a more complete understanding of community needs and may have access to public capital necessary to justify a return on private investment. In order to bring broadband service to unserved communities, the Georgia Broadband program strives to connect providers and community leaders in public-private partnership to serve the preponderance of those who are unserved.

Local Government Assistance

The Georgia Broadband team regularly engages with community leaders and elected officials on a variety of broadband-related topics. To date, more than 280 communities have engaged and demonstrated a commitment to pursuing broadband expansion by formalizing their connectivity goals in a comprehensive plan. (This indication of community readiness was provided for in the enabling legislation, SB 402.) Many communities have taken further steps beyond identifying goals and objectives. Such steps include elimination of barriers to investment, identification of local funding sources, and pursuit of the Broadband Ready designation.

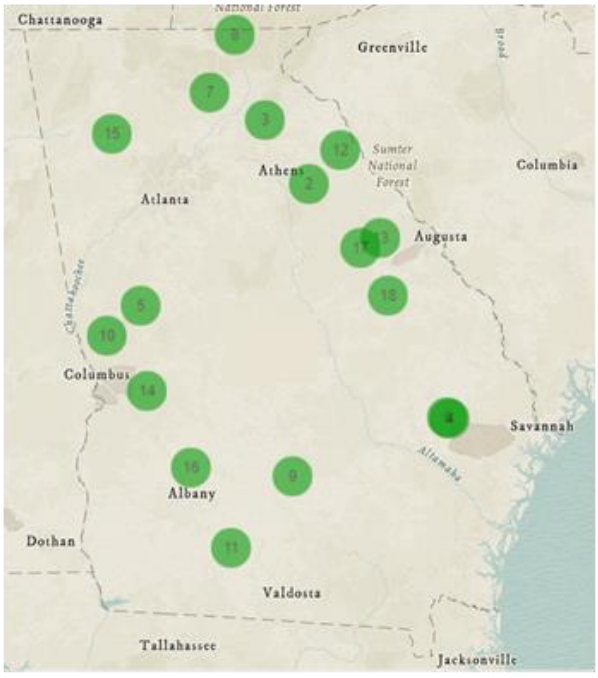


Broadband Ready Community Designation

To date, **17 Georgia communities have been designated a Broadband Ready Community**. This designation recognizes communities that have taken proactive steps to attract providers by reducing investment obstacles. Examples include streamlining right of way and permitting processes.

Broadband Ready Designated Communities

Oglethorpe County	Colquitt County
Banks County	Elbert County
Evans County	McDuffie County
City of Woodbury	Marion County
City of Claxton	Bartow County
Lumpkin County	Lee County
City of Hiawassee	Jefferson County
City of Fitzgerald	Warren County
Harris County	



Tools and Resources for Local Governments

The Georgia Broadband office has developed tools and resources to assist local communities and providers make good decisions about broadband deployment. The broadband team has primarily focused on educating local leaders – for whom broadband may be daunting – and facilitating connections with providers. One important tool for communities and providers alike is the Georgia Broadband Availability Map, along with cost data that provides detailed information tailored to a local community. Typically, Georgia Broadband is asked to assist with topics such as:

- Identifying unserved homes and businesses
- Understanding investment options and costs
- Connecting communities and providers
- Identifying funding sources
- Supporting the Broadband Ready designation
- Highlighting connectivity needs
- Identifying opportunities to leverage assets

The following examples highlight specific assistance provided to local communities.

Oglethorpe County

County leaders understood the significance of the digital divide in their community. With 3,604 locations (48.1% total) unable to access high-speed internet, Oglethorpe County showed tremendous initiative by applying for and receiving Georgia's first Broadband Ready Community designation. Since receiving the designation, Oglethorpe County has made strides to close the digital divide. In 2019, the Economic Development Authority (EDA) committed $350,000 to a pilot program, and in 2020, the EDA entered an agreement with a fixed-wireless provider to serve 1,000 households in Oglethorpe County.

City of Woodbury

Woodbury is the first city in Georgia to receive the Broadband Ready Designation. For years, its residents critiqued the lack of high-speed broadband service in their community. In response, the City pursued the Broadband Ready Designation as its first step on a path to expand service for its citizens. The council allocated $45,000 for an initial project that included fiber installation and antenna placement, and in an innovative public-private partnership, the City of Woodbury purchased broadband infrastructure and now operates a $35 per month service.

Washington County

Exemplary community leadership in Washington County has pursued expanded broadband service for its citizens. Recognizing that over 4,000 (36.8%) homes and businesses lack the ability to subscribe to high speed internet, the community launched a broadband task force to strategize deployment options. The Georgia Broadband office shared data tools and identified best practices to assist the task force in their efforts. This support included connecting local leaders with cities and counites across the state to help develop a demand aggregation survey. Recently, Washington EMC, in partnership with Conexon, announced plans to build a network to serve the entire county. This announcement was made possible, in part, through the hard work of the community task force, with support from Georgia's Broadband program.

Monroe County

Monroe County set aside $700,000 in SPLOST funds for the purpose of improving internet access and initiated a competitive bid process in the hopes of soliciting additional investment from internet service providers to conduct business in the county. Eventually, the county partnered with two local EMCs and Conexon to expand services throughout Monroe County. The local school board contributed an additional $300,000 towards total project cost. Fiber is now being deployed throughout Monroe County and the project is estimated to be completed in Q1 2022.

Haralson County

Haralson County has shown tremendous innovation in their quest to solve the digital divide in their community. Starting in 2014, county leaders dedicated $200,000 in SPLOST towards a partnership with a wireless provider to provide services to 145 previously unserved households. More recently, Haralson County engaged Comcast to explore expansion opportunities, and these discussions led to Comcast's announcement of a $9 million project to serve over 3,000 households throughout the county. Last year, SyncGlobal and Carroll EMC announced Phase I of a project designed to provide the region – including a third of Haralson County – with high-speed internet services. Discussions surrounding Phase II are ongoing, and Haralson County continues to engage and incent the private sector by proposing tax abatements for new broadband infrastructure investments. Overall, Haralson County's success demonstrates the benefits of working collaboratively to create effective public-private partnerships.

Mapping Unserved Areas

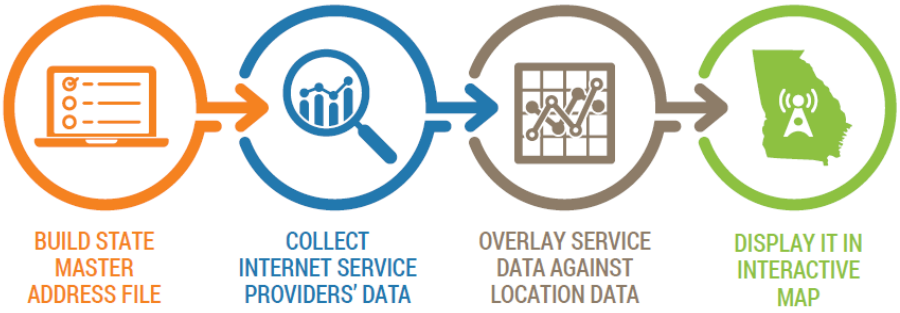
Georgia Broadband Availability Map

In June 2020, Governor Kemp released the inaugural Georgia Broadband Availability Map. When launched, **the Georgia broadband map set a new gold standard in broadband mapping**. Georgia became the first state to map broadband availability at the street-address level.

The Broadband Availability Map uses a location-level methodology that precisely maps access to broadband at every home and business in Georgia. The map is created by overlaying the location of every home and business in the state with provider service availability records. All total, there are more than 5 million locations that are mapped, including data contributed and verified by 44 retail broadband service providers.

"This innovative map will enable the private sector to better see where Georgians lack access to high-speed internet, improve open-market competition and help providers explore partnerships to address the connectivity needs of our state."

- Governor Brian Kemp



This map is updated annually, with the full participation of Georgia's 44 retail internet service providers. The Georgia Broadband team, including an exceptional team at UGA's Carl Vinson Institute of Government, are in regular contact with all providers, including multiple touch points throughout the year to ensure data accuracy. This initiative would truly not be possible without the strong collaboration of the provider community.

As a result of this collaboration, Georgia has garnered significant acclaim. Improved mapping and data more accurately demonstrate the need and urgency to solve the digital divide. National outlets have commended Georgia's effort to create an accurate, granular depiction of who does and does not have service.

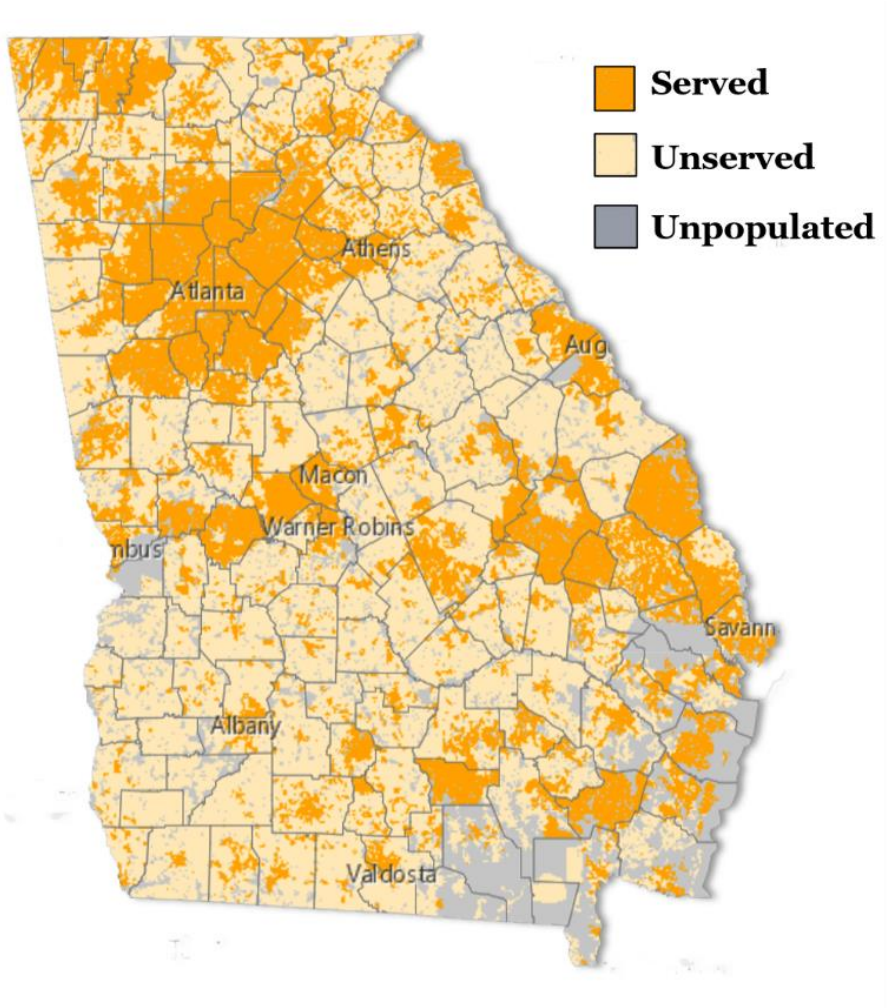
U.S. News & World Report · c|net · government technology · The Atlanta Journal-Constitution · Georgia Magazine

BENTON INSTITUTE for BROADBAND & SOCIETY

"THE GEORGIA BROADBAND MAP IS THE MOST GRANULAR IN THE NATION"

- GIGI SOHN, DISTINGUISHED FELLOW AT GEORGETOWN LAW INSTITUTE FOR TECHNOLOGY LAW & POLICY; FCC STAFFER (2013-2016)

The 2021 Broadband Availability Map depicts large areas of the state that remain unserved. Of Georgia's **482,374 unserved locations**, nearly 75 percent are in rural Georgia. This fact is clearly apparent on a statewide map.



It is noteworthy that public attention and public-private investment does have an impact. Since last year, the number of unserved locations has declined by roughly 25,000. Taking into account a significant number of new locations in a growing state, this yields a full percentage point (1.0%) improvement year over year. However, a significant number of Georgians still lack quality broadband access.

The benefits of Georgia's enhanced methodology, especially over preexisting federal maps that consider a census block served if only a single location can receive service, have been touted by many. The National Governors Association now cites accurate broadband mapping as a recognized best practice. "The Georgia initiative's 2020 map showed significantly more areas of the state lacked broadband coverage than had been identified by the 2019 FCC Form 477 map."

The Tennessee Advisory Commission on Intergovernmental Relations recently released a report suggesting Tennessee follow the broadband map-making lead of Georgia, which found that at least 255,000 homes and businesses "are at best only partially served," even though their census blocks are listed as served by the FCC.

And in August 2020 – just months after the launch of the Georgia Broadband Map – the President signed the Broadband DATA Act directing the FCC to collect more granular, precise coverage data. Congress allocated $65 million in December for the FCC to develop an enhanced mapping methodology. It is too early to determine the timeline for rolling out new federal coverage maps; therefore, the state will maintain its mapping initiative to equip state and local officials, providers, and community leaders to make effective, need-based decisions about broadband investment.

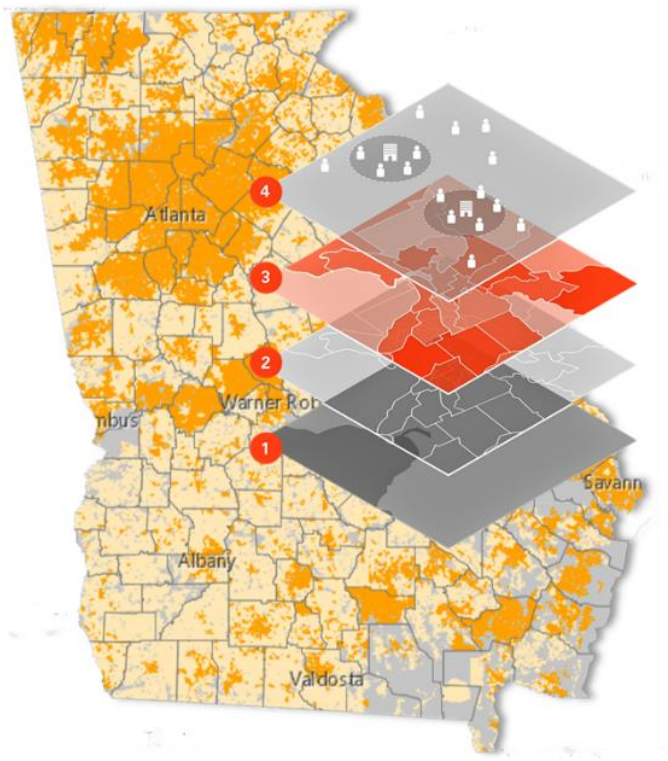
Visualizing Broadband Availability & Other Data Sources

The Georgia Broadband Availability Map empowers state, local, and departmental leaders with granular, accurate broadband availability data that has proven paramount in quickly and effectively deploying connectivity solutions to populations that need broadband the most.

The Carl Vinson Institute of Government is an important partner to the Georgia Broadband program. In addition to producing the annual Georgia Broadband Map, CVIOG helps the broadband team provide specialized support to local communities.

Cost Analysis and Mapping

The Georgia Broadband team has conducted cost analysis for the entire state and has determined the average capital cost for each of the 291,086 census blocks based on fiber to the home and fixed wireless technologies. Typically, the more locations in a census block the lower the average cost. Larger census blocks with fewer locations that are more dispersed generate the highest cost blocks. Census blocks can be grouped into low, medium and high cost for further analysis when considering changes to government funding contribution for broadband projects to reach the higher cost locations.



Uses of Georgia Broadband Availability Map

- Accurately identify unserved areas
- Stimulate private investment and prioritize limited public funding
- Assist communities, providers, and funders who seek to address the issue of broadband connectivity
- Improve public policy and funding decisions
- Support cost analysis, deployment, and other initiatives aimed at bridging the digital divide
- Prevent use of public funds to overbuild, or duplicate service
- Provide a baseline for evaluating progress of broadband deployment to serve the unserved.

Broadband Investments

Over the past 24 months, at least 20 significant investments have been made in Georgia's broadband infrastructure. Most involve significant public-private partnership. Some of this investment was spurred by the passage of SB 2, which Governor Kemp signed in April 2019. This legislation authorized electric membership cooperatives (EMCs) to provide broadband service or to leverage EMC infrastructure to assist with deployment of broadband. Elsewhere, existing providers have been expanding their networks to unserved areas.

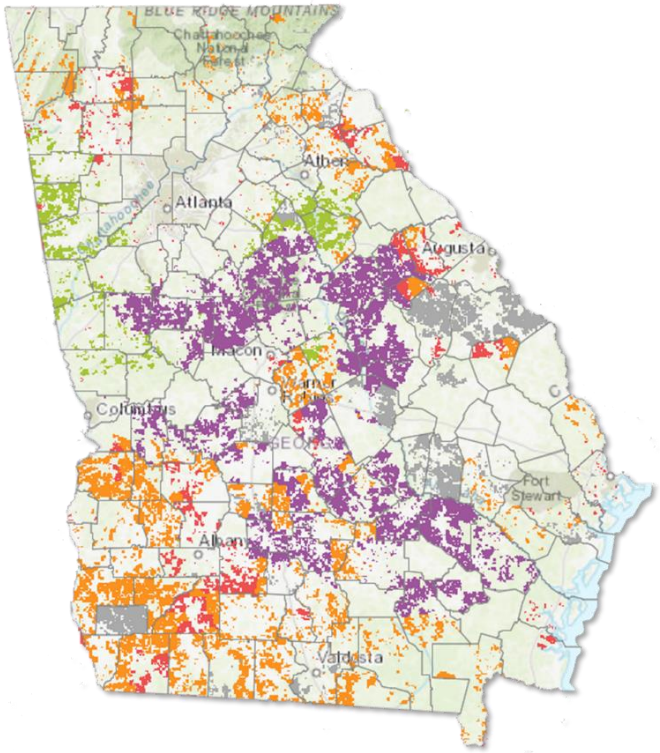
USDA ReConnect

To date, **Georgia Broadband has supported five successful ReConnect applications, yielding more than $23 million of investment to connect more than 6,500 locations**. Following Round 1 awards in Gilmer County ($4.4 million to Ellijay Telephone Co.), McIntosh County ($1 million to Darien Telephone Co.), and Evans County ($4 million to Pembroke Telephone Co.), USDA announced two Round 2 awards in 2020:

- SyncGlobal (e.g. DoveTel Communications) – **$12.5 million** to provide fiber-to-the-home service in portions of Heard and Carroll County
- Pembroke Telephone Company – an additional **$4.6 million** to continue build-out of a fiber-to-the-home network in Evans County

Rural Digital Opportunity Fund

In December, the Federal Communications Commission (FCC) announced Phase I awards of the Rural Digital Opportunity Fund (RDOF) Auction 904. **Fifteen companies were awarded $326 million to serve more than 179,000 locations in Georgia.** This represents approximately one-third of those currently unserved and is very exciting news. However, this program does have some remaining hurdle, including project completion benchmarks that do not start until year three with completed build-out not expected until year six. Despite the timeline and other issues, this level of investment has already had a meaningful impact on the activity around the state.



Community Partnerships

Leveraging Georgia Broadband data and technical assistance, recently announced initiatives have tapped federal funds, local investments, and community partnerships in pursuit of service to more than 180,000 currently unserved locations. The following examples highlight a few of those investments.

Kinetic & Colquitt EMC

In July 2020, Kinetic by Windstream announced a partnership with Colquitt EMC to embark on expansion of its coverage area in southwest Georgia. Under this newly-formed partnership, Kinetic and Colquitt EMC will share responsibilities for expanding the fiber network, with the EMC contributing labor, make-ready, and pole attachments to "edge out" Windstream's existing gigabit fiber network into unserved areas.

Ellijay Telephone Company & Amicalola EMC

In December 2020, locally owned Ellijay Telephone Company and Amicalola EMC announced an innovative partnership to provide enhanced high-speed internet services to over 6,000 customers across four North Georgia counties. Amicalola EMC will invest $7 million in Cherokee, Dawson, Lumpkin, and Pickens Counties to construct 220 miles of broadband lines, a 500-mile fiber optic ring, and 250 miles of fiber to accommodate customer growth.

Conexon & Washington EMC

In April 2021, Conexon and Washington EMC announced a $54.5 million investment to deploy high-speed fiber internet to more than 12,000 locations across ten Middle Georgia Counties (Baldwin, Emanuel, Glascock, Hancock, Jefferson, Johnson, Laurens, Warren, Washington and Wilkinson) as early as first quarter 2022. Governor Kemp spoke at this announcement and noted the significant investment and impact that this partnership will have on an entire region that is significantly unserved today.

SyncGlobal & Carroll EMC

Following its $12.5 million USDA ReConnect grant, SyncGlobal and Carroll EMC announced Phase I of a $40 million expansion project in May 2021. This expansion aims to serve an additional 10,000 homes and businesses in areas that surround the USDA-funded investment, primarily in eastern Haralson County. Work is expected to be complete in 24-36 months.

State Infrastructure and Reduction of Deployment Barriers

Broadband Installation on State Right of Way

The Georgia Department of Transportation (GDOT) has continued to explore a re-launch of the Interstate Broadband Public-Private Partnership Project. This effort has a dual aim of expanding Intelligent Transportation Systems (ITS) to all of Georgia's Interstates, including along approximately 900 miles of rural highway, as well as potentially serving as trunkline infrastructure to help reduce the costs of rural broadband buildout. Additionally, in carrying out provisions of 2018's ACE Act, GDOT has begun to develop a policy for use of State rights-of-way along rural, non-interstate routes. This policy will provide strategic, long-term direction to guide GDOT decision-making that could fill gaps in middle-mile infrastructure and lower the cost of private-sector buildout of broadband to unserved rural areas, while also readying Georgia's roadways for future transportation technology deployment statewide.

Regarding permit and use fees for rights-of-way on State routes, GDOT continues the longstanding policy that non-profit utility providers, including electricity and telecommunications, do not pay any fees. This no-fee for non-profits policy will be especially helpful for the Electric Membership Corporations (EMCs) that were recently awarded more than $82 million from the Federal Communications Commission's Rural Digital Opportunity Funds (RDOF) to avail high-speed internet to over 60,000 rural Georgia households.

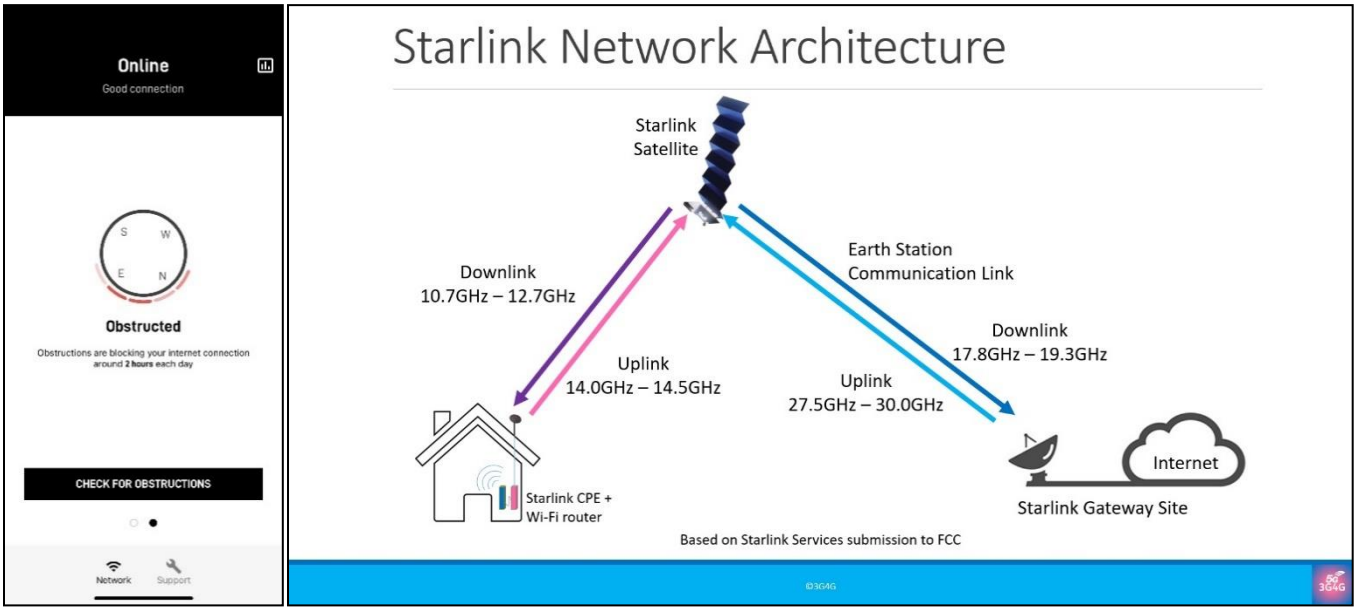
Additionally, GDOT has performed a thorough analysis, sought and considered substantial input from private-sector telecommunications providers, and proposed a restructuring of the rights-of-way permitting and use fees. The objectives are to both modernize and simplify outdated policies as well as substantially reduce GDOT-affiliated costs for private-sector buildout of rural broadband infrastructure to unserved areas of the state. In June 2021, the State Transportation Board issued the proposed rule revision, for GDOT to begin taking public comment.

Existing and Emerging Technologies

Satellite, Low Earth Orbit (LEO)

LEO satellites are 60 times closer to Earth than traditional satellites, allowing for faster speeds, lower latency, and the ability to support services typically not possible with traditional satellite internet. LEO is not a proven alternative to terrestrial broadband infrastructure, like fiber-to-the-home or hybrid fiber/coax or various fixed wireless technologies. However, LEO may be suited for areas where connectivity has historically been a challenge.

LEO-Starlink is an Elon Musk owned startup as part of his companies like SpaceX. SpaceX is currently deploying thousands of LEO satellites to support Starlink, and Starlink is constructing terrestrial earth stations connected via fiber. This service is currently in a beta mode of operation in limited areas of the continental US. LEO does appear to have some service application; however, it is unlikely to compare to terrestrial wireline service that is available now. There are currently performance issues that may improve over time and with more infrastructure investment. Today, however, Starlink has limited availability and remains a beta product that requires near-perfect line of sight to its satellites in order to achieve the company's stated goal of 100Mbps down and 20Mbps up speeds. Trees, buildings, and even poles easily obstruct the signal, so most any obstruction on the horizon can cause service disruption.



Wireless broadband

According to the 'Wireless Broadband Options for Georgia' report conducted by CTC Technology and Energy, wireless technologies are numerous and complex to understand, design, and deploy as a broadband solution. While wireless technologies may require a lower capital investment, they are not suitable in all areas nor are they always the most cost-effective way to serve.

The Georgia Broadband team has identified several technologies that can meet basic criteria necessary to provide viable, cost effective and sustainable broadband service to unserved areas of the state. Following in-depth analysis (including cost), Educational Broadband Service (EBS) and Citizens Broadband Radio Service (CBRS) are currently most capable of delivering acceptable service and performance. Other emerging spectrum and technologies remain under consideration and evaluation.

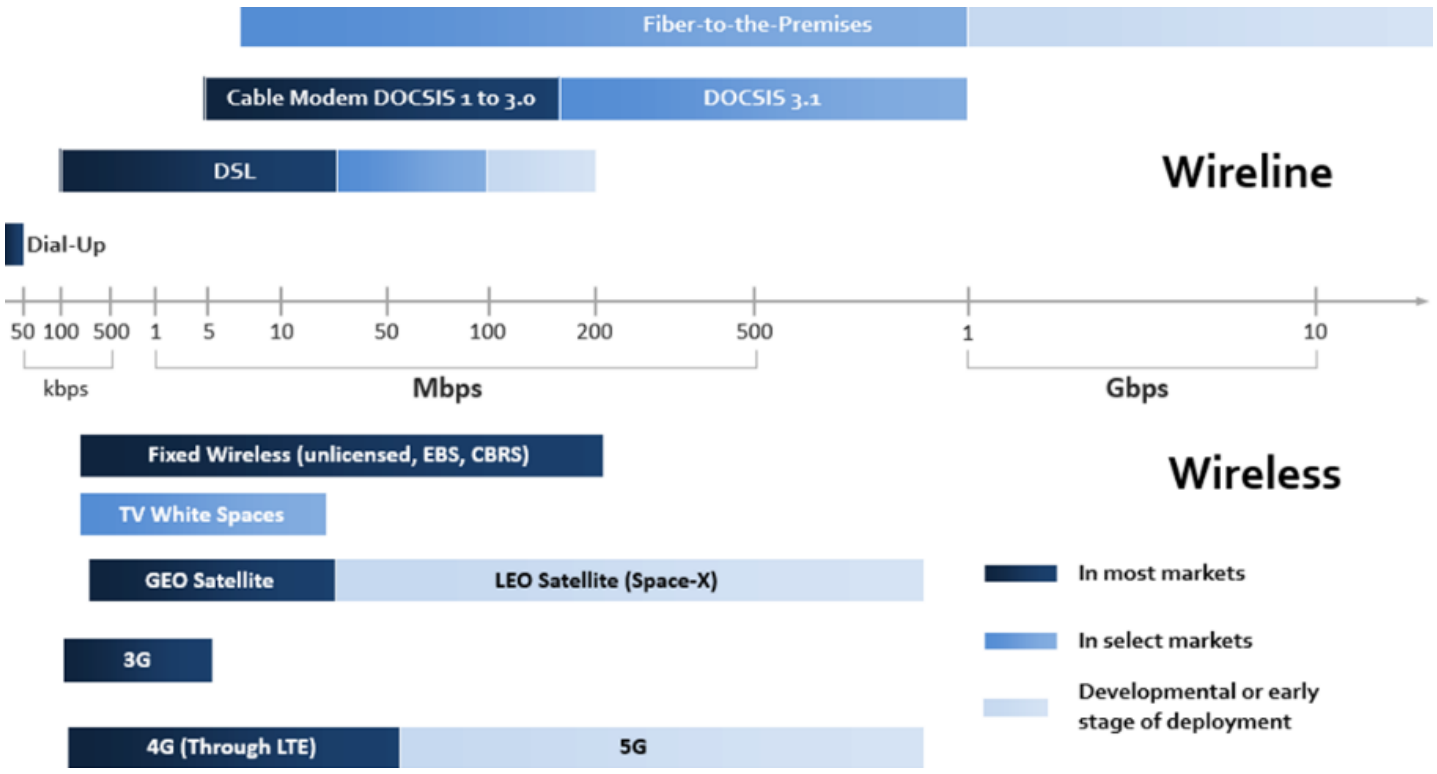
To deploy, operate, and maintain wireless technologies requires considerable expertise and organizational resources. Few, if any, local governments or state entities have the expertise and resources necessary to deploy wireless technologies; however, some providers do have the resources and the ability to deploy fixed wireless solutions.

The primary cost driver for fixed wireless is spectrum, which involves a host of technical characteristics. The farther a radio frequency can reach, the more locations it can cover, thus lowering overall investment cost. The lower the frequency, the better it will penetrate or go around obstacles, thus improving performance. Other cost drivers include the authorized power at which to operate, as well as the population density, tower availability, tower lease costs, and subscriber adoption rates in the designated service area.

EBS is the best technological and financial fit for most fixed wireless networks. In terms of technology, EBS is allocated higher operating power and thus has superior signal propagation. This translates to more locations served from each tower … and at higher speeds. EBS also performs better through foliage and over challenging terrain. Due to its technological advantages, EBS also proves to be a more cost-effective solution. EBS spectrum is currently available in some areas of the state and for purposes other than education.

Where EBS spectrum is unavailable, CBRS provides the next-best performance option. CBRS does not propagate as far as EBS – and is therefore less optimal for rural application – but is still an effective broadband option in certain circumstances. CBRS is especially viable in urban and suburban areas, as well as campuses or areas where more concentrated population exists, i.e., housing developments.

Like LEO satellite, wireless technologies tend to be affected by line-of-sight obstructions such as trees, hills, and buildings that are prevalent. Also, few wireless providers build networks that provide connection speeds comparable to cable broadband or fiber networks, and such investment can be costly and may not yield desired returns on investment. However, fixed wireless may be a viable alternative if cable or fiber is not possible or cost-effective. This should be determined thorough a detailed analysis of the proposed service area.



Public Funding Opportunities

Federal Funding for Broadband Access

Coronavirus State and Local Fiscal Recovery Funds (American Rescue Plan – US Treasury)

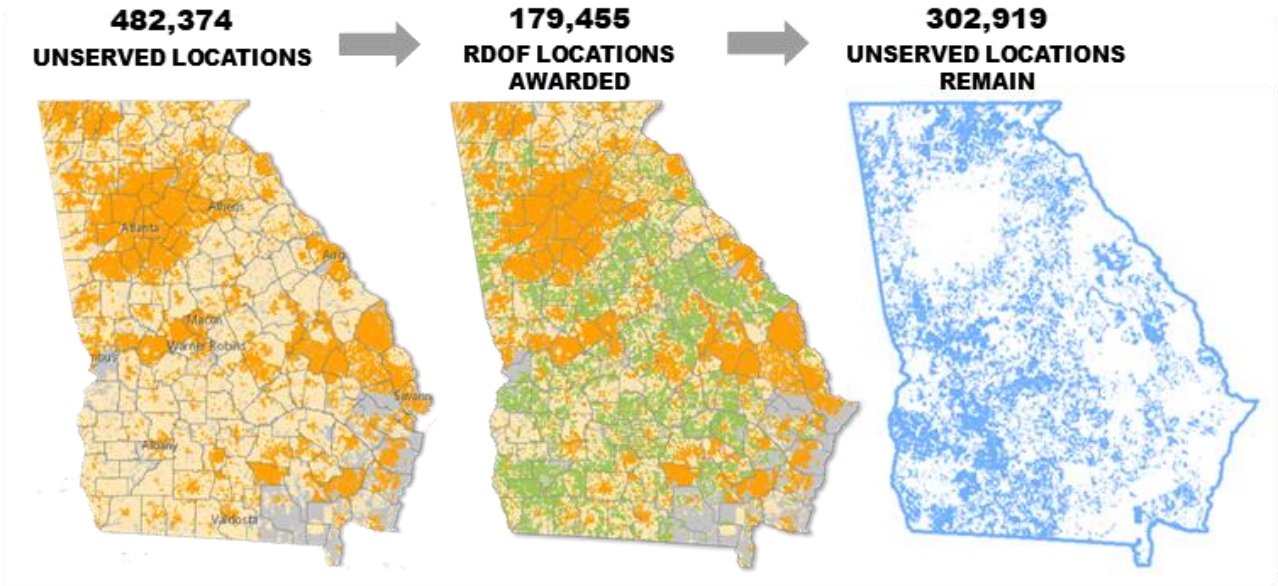
The U.S. Department of Treasury recently released preliminary guidance on use of State and Local Fiscal Recovery Funds, which amounted to approximately $8.4 billion to cities, counties, and state government in Georgia. Based on initial Treasury guidance, broadband expansion is an eligible use for these funds. Treasury has indicated intent to fund projects that achieve last-mile connections that provide reliable high-speed service of 100 Mbps upload *and* download (synchronous). This definition encourages the deployment of fiber optic investments. Additional federal guidance is anticipated in the coming months, and local communities should consider broadband needs, as well as the ability to use these "local" funds to leverage additional state investment.

ReConnect Round III (USDA)

USDA recently announced the next round of ReConnect grant funding, which will make $635 million available to prospective applicants. The Georgia Broadband team will continue to support USDA grant applications and to share important information with providers serving the state of Georgia in order to capitalize on this funding opportunity.

Rural Digital Opportunity Fund (FCC)

Phase 2 of the RDOF program is not set to roll-out until the FCC has adopted an enhanced broadband coverage map (like Georgia's). It is still too early to determine Phase 2 timing, which may take years. However, the six year roll-out of Phase 1 will have a material impact on more than 179,000 locations in Georgia, so the state Broadband team will remain engaged to encourage the overall success of this program.



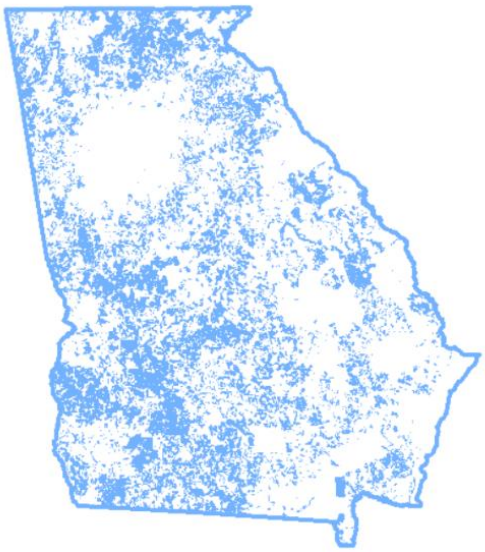
For example, RDOF awards were eligible for both capital and operating expenses. Understanding the capital needs and sources of funds will be important not only to serving the 179,455 RDOF locations, but potential others who remain unserved.

National Telecommunications and Information Agency (NTIA) Grant Programs

The Consolidated Appropriations Act of 2021 included billions of dollars to expand the deployment of broadband services, which included the establishment of three grant programs administered by NTIA.

State Funding for Broadband Access

One Georgia Authority



As part of Governor Kemp's AFY21/FY22 budget, the Governor included $30 million for broadband grants in the One Georgia Authority budget. Building on the excellent work of the Georgia Broadband team, including the launch of the Broadband Availability Map, the Authority is poised to make grants to local governments and authorities to benefit public-private partnerships that deploy high-quality service to unserved Georgians.

This funding assistance program will leverage the robust tools that have already been developed, including a qualified and approved provider list designed to facilitate local governments and authorities in the process of quickly engaging a provider partner that is best suited to address local needs. This list was developed through a competitive statewide procurement intended to qualify providers with the necessary expertise, experience, and financing ability to design, develop, construct, and maintain broadband networks to serve communities.

Digital Inclusion and Affordability

Broadband accessibility encompasses both availability and affordability. Recent efforts to connect student populations across the state have highlighted issues of digital inequality. Above all, individuals need the ability to subscribe to a broadband service. There are several programs that exist to make service more affordable for the end-user. In addition, most major broadband service providers have created their own affordability programs designed for low-income customers.

Lifeline

The FCC provides Lifeline as a program to make communications services more affordable for low-income consumers. Lifeline provides up to $9.25 in monthly discount on service for eligible low-income subscribers. To participate in the Lifeline program, consumers must either have an income at or below 135% of the Federal Poverty Guidelines or participate in certain federal assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), Medicaid, Federal Public Housing Assistance, Supplemental Security Income, the Veterans and Survivors Pension Benefit, or certain Tribal Programs.

Historically, Lifeline has been underutilized. In Georgia, there are more than 1 million households that qualify; however, only 31% (320,739) utilize the program. While Georgia's utilization rate is above the national average, the fact that fewer than 1/3 of eligible participants are enrolled highlights the need for greater awareness.

Emergency Broadband Benefit

The Emergency Broadband Benefit (EBB) is an FCC program designed to help families and households struggling to afford internet service during the COVID-19 pandemic. EBB provides a discount up to $50 per month towards broadband service for eligible households. Eligible households can also receive a one-time discount of up to $100 to purchase a laptop, desktop computer, or tablet from participating providers.

A household is eligible if a member of the household meets one of the criteria below:

- Income at or below 135% of the Federal Poverty Guidelines *or* participation in certain federal assistance programs, e.g., SNAP, Medicaid, or Lifeline
- Approved to receive benefits under the free and reduced-price school lunch program or school breakfast program, including through the USDA Community Eligibility Provision in the 2019-2020 or 2020-2021 school year
- Received a Federal Pell Grant during the current award year
- Experienced a substantial loss of income due to job loss or furlough after February 29, 2020 *and* total household income in 2020 is at or below $99,000 for single filers and $198,000 for joint filers
- Meets the eligibility criteria for a participating provider's existing low-income or COVID-19 program

Conclusion

The collaborative work of the Georgia Broadband program has effectively positioned the state to address this important public policy objective to ensure 21st century infrastructure is available to all Georgians, no matter where they live. The coronavirus pandemic has presented opportunities for state agencies to collaborate and leverage broadband data and resources. Provided the variety of significant funding resources now available, there is ample opportunity to address this important priority in the year ahead.

Thanks to the entire Georgia Broadband team, including our community partners and providers. A special thanks to those who have contributed significant time and effort over the past year, including:

Broadband Advisory Council – **ACCG, AT&T**, **Comcast**, **Windstream**, **Georgia Cable Association**, **Georgia Economic Developers Association, Georgia EMC**, **GMA**, **Georgia Telecom Association**

State Agencies – Community Affairs (**DCA**), Georgia Technology Authority (**GTA**), Transportation (**GDOT**), Economic Development (**DEcD**), Education (**DOE**), Emergency Management (**GEMA**), Public Health (**DPH**), **State Properties Commission**, Technical College System (**TCSG**), University System of Georgia (**Board of Regents**)

Georgia Broadband team – **Deana Perry**, **Bill Price**, **Brittney Hickom**, **Jason Sell**, **Eric McRae** and the UGA Carl Vinson Institute of Government (**CVIOG**)