**Arizona Technology Council (AZTC)**

**Public Policy Guide 2023**

**State & Federal Broadband Sections (Final)**

**State Broadband Sections:**

**Transportation/Digital Infrastructure**

**Principle**

Arizona citizens benefit from improved safety, enhanced mobility, reduced travel time and bolstered commercial opportunities through multimodal corridors linking the state to Mexico, Canada, the Intermountain West and neighboring states, particularly California. The corridors should include roadways and telecommunications pathways coupled with rail and energy rights-of-way when appropriate.

The onset of the pandemic and subsequent restrictions on public convening have exposed major gaps and deficiencies in the availability, reliability and affordability of broadband internet connections in society at large and especially in rural areas. These conditions have existed since the broad adoption of the internet as a fundamental utility for commerce and communication, but today’s absolute dependency on the network as many people still work, interact and learn from home has exponentially increased the priority of investing in new infrastructure, advanced technology solutions and support services to help close these gaps. Arizona's ability to support and sustain its residents, businesses and institutions while poising ourselves for growth depends upon our robust capabilities to connect citizens, businesses and institutions via reliable high-speed broadband.

There was also less travel during the pandemic as workers and students were able to study and work remotely within the restrictions of broadband accessibility. However, as Arizona and the nation emerged from the pandemic, the need for safe and reliable transportation will continue to grow. Transportation is also deeply connected to the response to sustainability challenges. Both policy and infrastructure need to reflect these changing priorities.

In response to the pandemic and subsequent issues, the federal government invested in transportation-related activities and digital infrastructure at nearly unprecedented levels. Funds distributed through federal COVID-19 relief efforts distributed by the American Public Transportation Association provided initial support for broadband and connectivity deployment. The Infrastructure and Jobs Act (IIJA) then provided funding not only for traditional transportation projects but for mobility technology such as EV charging and substantial improvements in broadband and connectivity. A new emphasis on serving underserved communities, including rural areas, runs throughout the legislation.

Arizona is expected to receive up to $200 million per year through FY2026 in highway funding from this legislation. Additional federal grant money is available for major projects, bridges, safety project and tribal transportation funds. In addition, the Arizona Department of Transportation (ADOT) has used federal funds to complete a plan under the National Electric Vehicle Initiative for EV charging development. The agency will receive additional funds in late 2022 for deployment and installation of charging facilities. ACA has taken a leadership role in broadband development in collaboration with ADOT, allowing additional use of transportation right of way for fiber and small-cell wireless installation. ACA is expected to be able to draw down an additional $5 million for continuing broadband efforts.

**Positions**

**Emerging Technologies –** Continue to support ACA initiatives such as the Institute of Automated Mobility and Smart State efforts to foster the advancement of Arizona’s technology sector and drive the state’s position as the leader in these emerging technologies. Advances in 5G, IoT, autonomous vehicles, smart cities, artificial intelligence, distributed ledger technology, augmented reality and rich mobile-content delivery will drive edge-computing deployment and massive growth in data center computational and storage capabilities. Promote policies that encourage the development and growth of new and emerging technologies that further establish Arizona as a global innovator. Support a regulatory environment that provides appropriate safety and protection standards but otherwise unleashes the power of human creativity and ingenuity.

**Broadband Regulatory Reform and Support Policies –** Remove or reduce barriers generating unnecessary costs or delays and otherwise inhibiting expansion of privately funded, high-speed broadband infrastructure that meets the needs of all Arizonans. Broadband must not only be available but also robust, redundant and affordable to meet the critical requirements of rural community economic development, business operations, education, workforce attraction and retention, citizens’ access to services, telemedicine and public safety. Proactively coordinate with government at all levels to ensure rights of way are readily and affordably available and support fair and predictable government permitting and oversight across jurisdictions to encourage private broadband investment and deployment.

Encourage and support field test opportunities for 5G and other advanced wireless services to help position Arizona as a living lab for these transformative communication technologies. Encourage cities and towns to adopt reasonable engineering standards for shallow depth trenching to allow a more cost-competitive broadband deployment. Continue to ease regulatory burdens and simplify processes for deployment of wireless sites and vertical infrastructure, including micro-cellular transceivers and distributed access systems (DAS) for necessary densification, considering the ever-increasing need for mobile connectivity, 5G infrastructure demands and other advanced wireless services. To the greatest extent practical, state, regional and local governments should make their current infrastructure of buildings, water tanks, towers and other vertical structures available for utilization by wireless providers at reasonable costs and share an inventory of such assets to aid wireless industry planning and expansion. Overall, the policy for broadband should be pragmatic and recognize its unique economics: high fixed costs, spillover effects and modularity along with rapid technological change. State and local transportation agencies should be funded for the costs of adding broadband-enabling infrastructure such as highway adjacent conduits, as traditional transportation funds cannot normally be used for this purpose.

**State Government Broadband Planning and Initiatives –** Leverage ACA’s 2022 Arizona Statewide Broadband Middle-Mile Strategic Plan to advance a comprehensive statewide broadband strategy and robust oversight mechanisms as the pandemic brings new waves of federal monies. Grow ACA’s Broadband Office to meet the planning, funding and governance challenges ahead, as well as establish a Broadband Development Authority that coordinates and optimizes use of these digital-equity funding resources by Arizona communities, education institutions and nonprofit organizations. Ensure a level playing field for incumbent and new entrant broadband providers and a technology-neutral approach.

Provide up-to-date state broadband mapping capabilities to track broadband coverage and fiber deployments integrated with crowdsourced speed test data, and demographic and community anchor institution details. Make the data and mapping tools publicly available through the AZGEO Clearinghouse and open sourcing, leveraging them in Arizona’s response to the Federal Communication Commission’s (FCC) pending maps based on its Broadband Data Collection program driving state allocations of IIJA broadband, equity, access and deployment funding.

Help coordinate cross-jurisdictional infrastructure deployments with the Bureau of Land Management, U.S. Forest Service, Bureau of Reclamation and other federal, regional, state and tribal landowners to ensure timely and reasonable planning and permitting processes. Consider additional regulatory reform and incentives that further drive rural broadband deployment by electric cooperatives recently authorized to deploy deep fiber and serve residential and enterprise broadband customers.

Pursue a minimum broadband download speed goal of 100 megabits per second (Mbps) and at least 20 Mbps upload to guide infrastructure investments and program implementation to the greatest extent practical while considering geography, topography and excessive cost factors. Although the FCC still defines broadband as an internet connection at a speed of 25 Mbps download and 3 Mbps upload, newly funded programs are moving to 100/20 Mbps or even 100/100 Mbps as their minimum standards to support data intensive applications such as IoT, telemedicine, e-learning and entertainment that will have ever-increasing bandwidth requirements.

Allow ADOT to grant private telecommunications companies access to its broadband conduit in a non-exclusive and non-discriminatory manner while creating the Smart Highway Trust Fund to manage leasing revenues. Support ADOT’s allowing private service providers to install, operate and maintain telecommunications equipment within ADOT right of ways by the department’s authorizing additional fiber and wireless connectivity. The Arizona’s Smart Highways initiative is funded for building fiber capacity between Flagstaff and Nogales on sections of Interstates 17 and 19 and along Interstate 40 from Flagstaff to the California border. The Broadband Middle-Mile Strategic Plan focuses on open-access, middle-mile fiber deployment, helping refine ADOT’s mission and way forward. ADOT is encouraged to develop its business model by engaging a public-private partnership to manage these and other new fiber investments with defined, fundamental principles that should guide the future goals for middle-mile fiber investment and deployment fomenting an open platform which allows a wide range of public and private communication uses going forward.

Identify funding for deployment of additional fiber along Interstate 40 east of Flagstaff and on and other strategic segments, leveraging the availability of federal and broadband-designated funds for expansion. The department should develop its business model, engage a public-private partnership to manage these and other new fiber investments and work towards evolving Arizona’s regulations to allow a wide range of public and private communication uses.

Work with ACA, Office of the Governor and Arizona Department of Administration to leverage federal funding to help implement their strategic plans for broadband deployment in rural areas and digital access for all while helping drive regional and local government policies that encourage investment. That includes access to the use of right-of-way, infrastructure undergrounding requirements, mobile infrastructure expansion and expedited/blanket building permit issuance.

**Leveraging ACA and Other Broadband Grants –** Grow ACA’s new Broadband Office by empowering it to continue awarding and managing broadband grants to local partnerships and ventures with clear, achievable plans that provide or improve broadband services in unserved and underserved rural areas while also offering community assessments or technical designs, matching funds for grants and specific project implementation investments. With the recapitalization of ACA’s Broadband Grant Fund, evolve the program goals and rules focused on providing matching funds to offset planning and construction costs for expanding broadband services and digital equity programs for underserved populations. The state should commit to ongoing funding for these purposes to continue expanding and sustaining the broadband grant program beyond the current surge of generational federal spending.

Allow the Broadband Office to maximize and leverage the use of E-rate funding that can help bring broadband services to the many rural schools and libraries with unresolved broadband issues. ACA should act as a clearinghouse to identify and line up complementary broadband grants and other financial support. ACA also should cultivate public-private partnerships working towards an overall broadband infrastructure approach that meets the full range of needs for all rural communities in the most cost-effective manner, including policies and practices encouraging competition from multiple service providers in each community to serve rural residences, businesses, local governments, health care facilities and public safety.

**Digital Access –** Ramp up Digital Equity Act programs in Arizona to support closure of the digital divide and promote equity and digital inclusion through the planning grant, capacity grant and competitive grant phases by partnering with the Digital Equity Institute, Arizona Broadband Stakeholder Network (AZBSN), the library community and others to pursue maximum positive impact among targeted demographic groups through broad and innovative community-based initiatives.

Recent years have brought unprecedented demand for digital access/digital inclusion, including the need for affordable internet access and other digital inclusion and digital equity resources. The pandemic illuminated the long-standing deficiencies in affordable broadband access in Arizona, particularly in tribal, rural and other underserved communities and low-income neighborhoods. But digital access is more than just fast, affordable and reliable broadband. While everyone should have access to low-cost service plans, all Arizona citizens have other digital requirements met, including affordable devices such as computers, smartphones and home hotspots; digital literacy and digital skills training, along with quality and available technical support; access to digital content, applications and other resources; and help with cybersecurity. Many organizations across Arizona are helping promote the ACP and community planning. Libraries are key players, providing digital skills training and support while acting as telehealth points of service and disseminating digital resources. Arizona is creating a Digital Equity Plan as part of the federal Digital Equity Act. This plan will clarify what our state needs are beyond infrastructure to advance digital inclusion in un- and underserved populations. The comprehensive plan will be a roadmap for government agencies, municipalities, tribes and non-profit organizations to invest in initiatives, driven by the data collected to provide the most benefit for the covered populations. Arizona will leverage the upcoming planning grant, capacity grant and competitive grant opportunities, partnering with the Digital Equity Institute, AZBSN, the library community and many other government, education, community and nonprofit organizations to pursue maximum positive impact with targeted demographic groups through broad and innovative state and community-based initiatives.

**Arizona’s Community Role in Broadband –** Activate broadband action teams to encourage local broadband deployment through streamlined and consistent processes for right-of-way use, planning and permitting to align with neighboring and municipal best practices from around the nation. To achieve common broadband goals, rural leaders should engage all interested parties, including service providers, governments of different jurisdictions, residents, business owners, utility service providers, landowners and other key parties. This will help provide maximum leverage of the federal investment. Arizona’s Final Mile Project was funded by the Arizona Department of Education to manage a request-for-proposal process contracting for the design, construction, implementation and provision of educational broadband services to students’ homes in five rural underserved communities. The state should further invest in the expansion of this innovative program helping drive connectivity.

The Arizona Technology Council supports the AZBSN as it facilitates opportunities for collaboration, coordination, information sharing and communication among key public, private and nonprofit stakeholders. The Council recommends AZBSN’s Strategy Report of 2020 to serve as the guide for current and future state broadband strategic planning and that ACA and AZBSN partner on future community engagement and digital equity initiatives. In addition, the Council supports utilization of the Federal Reserve’s Community Reinvestment Act funding for broadband and digital access remediation where applicable.

**Arizona Corporation Commission –** Examine and evolve the ACC’s long-standing Arizona Universal Service Fund currently geared only toward legacy telephone support in high-cost areas. Modernizing the fund as many other states have would allow broadband deployment support in similar high-cost circumstances or be programmatically applied as matching funds to community and electric cooperative broadband infrastructure projects.

**Support Expansion and Retention of the Data Center Industry –** Continue to support and evolve a business-friendly operating environment and economic development programs to further Arizona’s data center attractiveness and growth. The advantageous operating environment promotes the retention and expansion of enterprise and co-location data centers, which has contributed to unprecedented growth in existing and planned data center inventory. Other favorable factors include affordable and robust power with renewable options, excellent weather, a lack of natural disasters, good workforce availability and diverse broadband access.

**Digital Government Best Practices –** Adopt digital-government best practices for internal operations and delivery of citizen services while driving the increased use and adoption of high-capacity digital connectivity and technologies across major application sectors, including education, health care, public safety, e-commerce, e-government, remote work and mobile enablement. State, local and tribal government should continue to migrate to cloud services and use infrastructure, platform as a service (PaaS) and software as a service (SaaS) offerings to provide staff and operational efficiencies at lower cost while ensuring reasonable cybersecurity and data privacy protections are in place.

**National Public Safety Broadband Network –** Leverage new FirstNet-driven infrastructure improvements, including fiber extensions, tower construction and small-cell deployment to facilitate expansion of broadband for rural communities. FirstNet was approved by all U.S. states and territories and is being built out by AT&T to provide interoperable, wireless public safety communications for first responders. The Council supports policies for cost-effective and timely FirstNet deployment through easing regulatory requirements such as permitting and right-of-way access, as well as broad adoption by public safety agencies to provide extended benefits to rural Arizona.

**Education, Workforce and Workplace**

**Principle**

The lack of skilled talent continues to be a top challenge and barrier to business growth, with the skills mismatch that exists for high-tech jobs even more evident as Arizona’s economy recovers and rebuilds. Additionally, data shows the pandemic has had significant impact on education outcomes from pre-K through higher education, including declines in third grade reading, eighth grade math, high school graduation and postsecondary enrollment. A robust, aligned K-12 and postsecondary education and workforce development system connected to labor market needs ensure an inclusive, equitable economic recovery, eliminate inequities and provide all Arizonans with education and career opportunities is more important now than ever. Expanding access to and participation in quality advanced coursework for all students, particularly those who are typically underrepresented in these courses, is also critical to preparing students for higher education and careers. At all levels, STEM education must be proactively supported, with access to high-quality STEM education available for all students. Workforce development and retention strategies and funding should be coordinated and aligned with targeted high-skill, high-wage and high-demand industry sectors, with an increased focus on underserved communities and individuals.

**E-Learning –** Develop a coordinated strategy to promote and support adoption of innovative ideas and new technologies based upon lessons learned during the pandemic in libraries, K-12 and higher education, including blended learning, flipped classrooms, digital curriculum, virtual online labs, makerspaces, robotics instruction and competency- and outcome-based e-learning approaches. Establish an Office of Digital Teaching and Learning within the Arizona Department of Education (ADE) to serve local education agencies seeking assistance, support or coordination and act as a bridge to other organizations and institutions with concurrent and overlapping responsibilities, maintaining a keen focus on supporting educator excellence and capacity building for the agencies. Drive increased use of digital curriculum, STEM programs and consortiums to better prepare students for the jobs of the future and improve learning outcomes for diverse student populations and needs. Expand opportunities for online teacher training such as ASU Preparatory Academy’s Digital Arizona Virtual Teacher Institute. A significant cluster of e-learning and innovative educational companies and institutions could create the opportunity for Arizona to be a leader in innovation and transformation of educational technology and outcomes, including workforce development.

**Broadband Access –** With guidance from ADE’s Tech Task Force and Long-Term Plan Subcommittee recommendations, continue to enable broadband availability for rural K-12 schools and libraries, as well as higher education at predictable, reasonable costs while driving online education applications and collaborative activities to improve learning delivery and development of workforce skills and pathways. Support the Office of Digital Teaching & Learning as a conduit between local education agencies and technology resources in support of digital equity for K-12 in Arizona. The pandemic revealed K-12 and higher education are facing enormous, unanticipated challenges as they virtualize their services and enable remote participation since some remain unserved or underserved today. The homework gap is real and pressing for many disadvantaged students and their families, negatively impacting their ability to participate in today’s learning environment.

Focus, plan and invest to resolve shortcomings that remain in student access to computing devices, software and technical support. Such support within schools and for students, faculty and administrators working remotely needs to be provided through a variety of mechanisms and programs. Because libraries especially have been focal points for community broadband access inside and around their facilities, libraries should continue to expand and be accompanied by public technical support services. Launch and fund programs to provide disadvantaged students with devices and applications that allow them to participate remotely.

Build on recent progress with E-rate programs by having the Arizona Commerce Authority’s (ACA) state broadband director work with the ADE and Arizona State Library, Archives and Public Records. E-rate programs support rural infrastructure expansion, availability of reliable, affordable broadband for their institutions and telecom equipment and services. Add staffing at ACA to coordinate the aggressive pursuit of E-rate, as well as other grants and participation in industry programs. Encourage ACA and the Office of the Governor to engage national organizations and industry partners to help form and assist coalitions of school districts, counties and regions to successfully qualify for and implement E-rate projects.

**Universities and Higher Education**

**Principle**

The Arizona Technology Council actively works to support Arizona's universities—Arizona State University (ASU), The University of Arizona (UArizona) and Northern Arizona University NAU)—and improve the technology infrastructure upon which they rely. Its members and the state rely heavily upon Arizona's universities and community colleges to provide a highly skilled and talented workforce. In addition, the universities provide a world-class platform for research and development, which can be translated into commercial opportunities that include the transfer of technology to Arizona's private sector. The universities engage the communities throughout the state and rely upon technology to provide education, research and other valuable community services.

**Tri-University Digital Equity Initiatives –** Support Arizona’s three state universities’ taking up the cause of digital equity and developing a variety of outreach experiences, stakeholder engagements, innovative initiatives and grant-funded opportunities for research and proof-of-concept projects connecting the underserved and advancing community infrastructure. ASU’s Lighting Up the Future has been cooperating with the other universities, ACA, Sun Corridor Network, the Institute for Digital Progress and the Digital Equity Institute among others, building a coalition to address digital equity challenges.

**Sun Corridor Network –** Encourage policies to enable the Sun Corridor Network (SCN), Arizona universities’ research and education collaborative network, to flourish and expand services to a broader base of users. A robust SCN enables discovery, innovation and research outcomes among postsecondary researchers and educators. This infrastructure is critical to attracting world-class researchers and research funding to Arizona. A future-proofed P-20 education technology infrastructure is essential to enable modern digital-learning technologies and methods necessary for a workforce equipped for the knowledge-based economy. The Arizona Department of Education is currently limited in its ability to partner with SCN due to the department’s nature as a provider (vendor) in E-rate transactions with schools and districts. We encourage the department to explore avenues for partnership with SCN, possibly transitioning from provider to statewide consortium lead requiring one-time financial support to seed the transition to a consortium lead and shared service provider.

Support the network’s public-private partnership strategy to bring high-bandwidth access to Internet2—the national education/research network and community—and the commercial internet to the Arizona P-20 community. Support the network’s participation in ADOT’s investment in highway-corridor fiber deployments and their anticipated public-private partnerships to grow and manage a robust state network. This will lead to the improvement of rural broadband network capacity and availability across the region, as well as improved regional research collaborations. Successful rollout of these strategies will enable the network and its member universities—ASU, UArizona and NAU—to bring better and lower-cost internet and Internet2 access to K-12 schools, community colleges, universities, tribal nations, government entities and other institutions by leveraging economies of scale and shared infrastructure while driving better broadband availability for all. Support the network’s National Science Foundation grant-funded efforts to interconnect Arizona’s community colleges in support of joint science-research drivers and STEM education initiatives. Support SCN’s efforts in expanding eduroam as a solution that enables authorized users on specific educational, library and public space wireless networks to roam with their existing credentials onto a great, cooperative collection of such networks, boosting the value proposition of all the institutional infrastructure investments being made in these networks.

**Biosciences and Health Care: Telehealth**

**Principle**

Telehealth and its integration into electronic delivery of health care should continue to be enabled and broadly adopted throughout Arizona. That includes educating and advocating for uniform deployment and enforcement of the new telemedicine laws at state and local levels, as well as facilitating expansion of the statewide telehealth infrastructure and ecosystem.

**Positions**

**Telemedicine and Telehealth –** Prioritize and invest in expanding telehealth infrastructure and the availability of the underlying technologies necessary for its robust application. Provide remote social services and behavioral health lifelines, as well as remotely connect families to isolated patients. Telemedicine has become even more necessary and critical for Arizona’s health care facilities, providers and patients in the wake of the COVID-19 pandemic. It will be especially important to health care providers who increasingly depend on broadband to recruit, train and prepare the workforce of the future, as well as support staff in interprofessional training, collaboration and simulations and emergency preparedness activities. Build on past support for participation in medical and nursing interstate licensure through legislation to join the National Council of State Boards of Nursing Advanced Practice Registered Nurse Compact. This would enable out-of-state medical professionals to deliver telemedicine consults and services in Arizona and medical professionals based in Arizona to reciprocally deliver teleservices to those in other compact participating states.

Continue to support expanded telemedicine parity, licensure and electronic establishment of doctor/patient relationship laws that are driving Arizona telemedicine adoption and enhancing access to health care. Additional refinements include amending existing policies and rules for implementing the new telemedicine laws from which patients and health care providers are already benefitting. However, still lacking is uniform understanding of the new telemedicine parity and licensure laws that expanded service coverage and removed statutory and regulatory barriers, resulting in a lag in providers’ participation that negates their ability to reach their potential. With the new telehealth permanency law, we need to educate and advocate for uniform deployment and education of the new laws at state and local levels by building a strong working consensus among providers, payers and users of telemedicine and telehealth services.

**Federal Broadband Section:**

**Broadband, Digital Access and Digital Equity for All**

The COVID-19 pandemic has exposed major gaps and deficiencies in the availability, affordability and reliability of broadband internet connections in the United States at large, but especially in rural and tribal areas. These underlying conditions have existed since the broad adoption of the internet as a fundamental utility for commerce and communication. The pandemic has amplified the digital divide and reinforced the importance of having available, affordable and reliable broadband connectivity for all as government, businesses, the workforce, schools and health care systems have transitioned to digital platforms and practices.

The transition to digital learning by K-12 schools and higher education has been particularly difficult for many rural and low-income communities due to lack of broadband connectivity at home. Tribal nations and remote rural communities continue facing barriers to planning and deploying communications services, including their remote settings, sparse population densities and limited access to middle mile and long-haul fiber connections.

The federal government recognized these mounting needs as reflected in recent, precedent-setting broadband polices focused on new investment and regulatory reforms. As the exponential increase in citizen, business and institutional broadband needs continues, the government should further prioritize, invest in and evolve regulations, enabling new broadband infrastructure, advanced technology solutions and support services to help close these gaps and better provide sufficient digital access to all.

**Broadband Reforms and Initiatives Across Federal Agencies**

**Principle**

Given the number of federal agencies and programs involved in regulating the telecommunications industry with responsibilities to help remediate the digital divide, especially supporting rural broadband deployment, it can be challenging for state government, institutions, small providers and rural communities to identify and pursue appropriate federal investment and deployment opportunities. Businesses, local governments, electric and telephone cooperatives, tribes and other rural entities also face imposing burdens in applying for and managing federal funds. Telecommunications reform has always come in spurts as we once again find ourselves on the cusp of incredible innovation and sweeping transformations.

**Positions**

The Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA), a research and development agency of the U.S. Department of Commerce, along with the U.S. Department of Agriculture’s (USDA) Rural Utility Service (RUS) lead most of the federal wireless and broadband regulatory evolution, grant and loan programs, wireless spectrum availability and auctions, as well as project and industry oversight. The federal government should work to simplify and reform industry regulations while streamlining the processes and management burdens through which grants, and loans are handled. As recommended by the Government Accountability Office in its recent report “Broadband: National Strategy Needed to Guide Federal Efforts to Reduce Digital Divide,” more than 100 federal programs are administered by 15 agencies, leading to a fragmented, overlapping patchwork of funding whose activities should be synchronized with a national broadband strategy.

**Minimum Broadband Speeds:** The FCC, NTIA, USDA, RUS, DOC’s Economic Development Administration and other agencies are rightfully pursuing a minimum broadband speed goal of 100 megabits per second (Mbps) download and at least 20 Mbps upload to guide infrastructure investments and program implementation to the greatest extent practical. Many broadband applications that promote rural, economic and community prosperity are better served by such increased speeds, especially telehealth, e-learning, business and other applications relying on real-time performance or moving large amounts of data. A scalable, non-symmetric minimum performance level should continue to be employed as application bandwidth needs and network capacity continue to grow. However, consideration should be given to not unnecessarily preclude wholly adequate solutions from fixed and mobile terrestrial wireless and emerging satellite constellations. Additionally, federal agencies should provide clear criteria and formulas for how much backhaul providers must have in place to support reasonable anticipated use across populated communities at the minimum required speed offerings, as grant applicants’ current ad-hoc estimates and justification of backhaul capacity vary greatly, leading to inconsistent planning.

**Broadband Mapping and Grant/Loan Determinants:** High-quality data is necessary to ensure public broadband investments and deployment efforts correctly prioritize areas that are cost-effective and lack access. During the past decade, significant state and national broadband mapping efforts have been made, but they have been fraught with inaccuracies and issues. Under its current Form 477 reporting protocols, the FCC considers a census block served if a single residence in the block has access to broadband, which tends to grossly overstate broadband availability in larger, rural census blocks. The FCC’s use of “maximum advertised,” not actual speeds, when mapping broadband coverage further distorts reporting on the broadband speed customers receive. Inaccurate or overstated data prevents businesses, local governments and other entities from applying for and securing federal funds to assist underserved or unserved communities.

The Broadband Deployment Accuracy and Technological Availability (DATA) Act (S.1822) was enacted in March 2020 to require the FCC to change the way broadband data is collected, verified and reported. The FCC is now collecting and should soon be disseminating more granular and accurate broadband service availability data from wired, fixed-wireless, mobile and satellite broadband providers. This will help construct a broadband serviceable location fabric atop which broadband maps can be overlaid to report detailed and accurate broadband service availability data by location. With congressional funding, the FCC and NTIA should build on recent progress to create better public mapping tools with improved user interfaces and experiences, high accuracy assurances, better information on available providers and services, the addition of the location and characteristics of community anchor institutions (CAI) and the overlay of demographic and open-source data sets to aid individual and institutional broadband consumers, as well as economic development stakeholders.

**Federal Grants, Loans and End-User Support:** Congress has dramatically ramped up infrastructure funding for broadband grants and loans to providers, communities, education, libraries, telehealth and public safety that will be managed through FCC, NTIA and USDA programs. As we continue to respond to the pandemic and the changes it has brought, we need to commit to continuity in new broadband infrastructure funding accompanied by agency and program process reform. There also should be reconsideration of long-standing barriers, revisiting the concepts and metrics for unserved and underserved, excessive application and reporting procedures and significant match or cash-on-hand requirements.

The USDA’s ReConnect Program contains a requirement that areas designated to receive support through the FCC’s Connect America Fund Phase II can only pursue ReConnect funding through the entity that is receiving FCC assistance. This is an example of the kind of restriction that should be reformed since it inherently limits deployment of adequate broadband capability in many rural areas. CAIs should receive equal priority in funding considerations alongside unserved residential customers, be enabled to establish gigabit-level connections and have those CAI infrastructure investments further leveraged through “to and through” policies.

The Council strongly supports additional funding for the Digital Equity Act, the Emergency Connectivity Fund program and a permanent program to defray the cost of broadband subscriptions, devices and skilling to provide important support for low-income, disadvantaged and other communities on the less fortunate side of the digital divide.

**E-Rate Support for Schools and Libraries:** Efforts to promote flexibility within the FCC’s E-Rate program should be supported to deliver home connectivity solutions for unserved and underserved students and respond to connectivity issues associated with the COVID-19 pandemic. The FCC with congressional enablement, if necessary, should open E-rate-funded networks to the surrounding community, provided E-rate dollars do not pay for these extensions. Funding would support bus and bookmobile Wi-Fi and other creative efforts that seek to bring broadband into the community to address the homework gap. The FCC should provide consistent funding for Category Two equipment and services while continuing to expand what is covered, including adding coverage for necessary network security equipment and services. In addition, it should offer something similar to the recent E-Rate two-year special build program in which Arizona and 16 other states that provided 10% matching funds were able to leverage hundreds of millions of dollars in new fiber infrastructure project funding to reach underserved rural schools and libraries. The FCC also should improve the Form 470 drop-down menu to eliminate applicant and service provider confusion, streamline and strengthen the competitive bidding process and clarify the transition of services and gift rules.

**Simplify and Strengthen the Universal Service Fund:** The FCC’s Universal Service Fund (USF) provides essential and ongoing financial support to ensure all consumers have affordable broadband access to services, including schools, libraries and health care providers. The FCC should commence a process for stakeholders to debate and the FCC to resolve how best to reform the universal service mandate, safeguarding and improving the USF by reforming the high-cost support mechanism and low-income support mechanism currently geared toward legacy POTS telephone support, which would allow broadband deployment support in similar circumstances. The FCC should give applicants the option to seek funding from the E-rate and Rural Health Care (RHC) programs in a single application, reject placing an overall cap on the entire USF, and replace the outdated contribution mechanism with a more stable, long-term funding source and processes.

**Reform the Rural Health Care Program:** Congress should substantially increase funding based on demand data and the FCC should improve the administration of its RHC program that currently suffers from insufficient funding and a slow, cumbersome administrative process. Additionally, the FCC and Universal Service Administrative Co. should process RHC program applications faster with more transparency. The FCC should establish rates based on competitive market forces and actual costs. Finally, RHC program rules should be reformed to no longer discriminate against consortia.

**Land Management and Rights of Way:** Federal land management agencies—particularly the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs and Federal Highway Administration—play crucial roles in permitting and siting broadband infrastructure. The federal government should implement improved planning and permitting coordination between public lands management agencies and tribal governments, as telecommunications projects often cross multiple federal lands and tribal jurisdictions. The government should drive collaboration across agencies, simplify processes and improve timelines for permitting broadband infrastructure projects crossing federal and tribal lands and rights of way including the introduction of shot clocks, especially those co-located with existing structures and other linear infrastructure, such as roads, rail lines, transmission lines and pipelines. States should be included to further coordinate, data share and ease multijurisdictional project planning and permitting, which has traditionally presented obstacles to private and public investment.

**Wireless Siting:** FCC wireless siting reform is key to 5G leadership as the uptake of more advanced, higher-speed mobile services continue unabated and traditional mobile providers make inroads into fixed wireless services. As wireless providers invest hundreds of billions of dollars in necessary upgrades and new networks, the escalating costs and burdens of siting new towers and transmitters have become significant barriers to continued American wireless leadership. In addition, densification with small cells necessary for 5G urban performance makes reform even more critical even as advanced antenna and signal processing technology improve urban service delivery. Each locality may have its own rules and timelines governing the permitting and installation of wireless infrastructure. This leaves wireless providers to navigate a maze of disparate policies and potential project timelines, often antiquated procedures and at times, impractical fee structures. The FCC previously set some national guidelines for states and municipalities regarding wireless infrastructure, but it now needs to implement a national strategy and framework to enable and drive the wireless networks of the 21st century.

**Net Neutrality and the Carriage of Content and Packets:** Net neutrality is critical to maintaining a vibrant internet. A modern framework is needed that encourages the freedom and innovation that makes the internet the vital tool it is today. Today’s FCC operates on the assumption that providing internet services—traditional or broadband—is not common carriage and cannot be regulated as if it is. The FCC should be given new authority over broadband and allowed to lock in widely agreed upon protections for internet traffic with clear rules that prohibit providers from blocking or throttling access to lawful content. This would provide market stability, system transparency, consumer choice and freedom for online-service vendors to innovate and scale new applications and businesses.

**Free Up Spectrum for Innovation, Rural Broadband, 5G and IoT/IIoT:** Wireless spectrum is a valuable resource that can help support innovative and cost-effective connectivity solutions across the nation. Auctioning additional spectrum licenses alone cannot meet the ever-growing demand for data and innovative pathways to market. Unlicensed spectrum is an essential complement to licensed spectrum and can open new applications and markets in innovative and dynamic ways as Wi-Fi has ably demonstrated. NTIA’s recent declarations that broadband networks based solely on unlicensed spectrum are “unreliable” goes against the positive performance of many such networks done right and should be reconsidered.

Wireless broadband use has skyrocketed in recent years. Demand for wireless data and broadband speed is expected to continue to grow exponentially. The FCC and NTIA should continue to free up additional licensed and unlicensed spectrum real estate by building on recent actions. They include the Educational Broadband Service Tribal Priority Window (2.5 GHz); the opening of Citizens Broadband Radio Service (3.5 GHz) and TV White Space (470-790 MHz) for licensed and lightly licensed use with Spectrum Access System services; and the opening of an enormous swath of spectrum (1.2 GHz) in the 6 GHz band for unlicensed use such as Wi-Fi 6E, LTE-style mobile and microwave backhaul. The two agencies should continue to pave the way for 5G, V2X for autonomous/connected vehicles, and IoT/IIoT for smart everything and more with low-band, mid-band and high-band (mmWave) spectrum reform and reallocations under licensed, lightly licensed and unlicensed strictures from sub-GHz to at least 100 GHz.

The FCC and NTIA should strive to increase competition and availability of services through additional and innovative access to licensed and unlicensed spectrum. They should maximize the potential for unlicensed use of TV White Space spectrum with its non-line-of-site capabilities and reach well suited to remote rural service provision. They also should allow schools, libraries, nonprofit organizations, local governments and tribes the opportunities to obtain unused educational broadband service and other spectrum licenses to serve rural markets.

**Congressional Broadband Reforms and Initiatives**

**Principle**

Congress holds the power of the purse and sets the guidelines and rules by which federal agencies operate. There has been much progress since the Telecommunications Act of 1996, but a major update in governance expectations and structures is long overdue.

**Positions**

**One-Off Rural Broadband Acceleration Funding:** As part of the federal government’s pandemic relief assistance, Congress has allocated substantial one-time funding focused on accelerating rural broadband infrastructure deployment in genuinely unserved and underserved areas. Those are where the economic benefit from increased connectivity is greatest, and a multi-pronged approach can be used to build on existing agencies and their programs. However, long-term strategic investments and ongoing support should follow to secure gains and continue to address the remaining digital divide.

**Broadband Block Grants to the States:** Beyond providing substantial additional funding for traditional federal agency broadband grant and loan programs, Congress has allocated ample block grants to each state and territory through the U.S. Treasury’s Capital Project Fund and Infrastructure Investment and Jobs Act (IIJA) Broadband Equity, Access and Deployment (BEAD) funding for states’ executive branches to prioritize, distribute and manage in addressing general broadband infrastructure issues and responding to digital access and digital equity. However, the IIJA BEAD funding will be delayed while new coverage maps are rolled out, challenged and adjusted, so Congress should take additional action to accelerate matters.

**Broadband Subsidies Direct to Citizens:** Having established a robust subsidy program with the Emergency Connectivity Fund’s provider credits to help low-income Americans gain connectivity by underwriting their broadband access costs, Congress and the FCC need to follow up with universal service reform and other programmatic solutions to make such benefits permanent.

**Tribal Broadband Support:** Congress and federal agencies should pursue policy, programmatic and fiscal opportunities to improve broadband connectivity on tribal lands, including designing federal programs to promote partnerships among tribes, states and various broadband providers. Federal broadband programs should allocate a designated portion of their available funding to supporting projects on tribal lands.

**Help Remove Regional and Local Barriers to Deployment:** Federal financial support should be used to encourage local jurisdictions to remove deployment barriers. Local and state governments should streamline access to public rights of way and utility poles, adopt “dig-once” policies, install conduits during roadwork, and ensure fees are based on costs and remain competitively neutral. Congress could go further by making receipt of federal infrastructure funds contingent on adopting a model municipal code that would streamline access to rights of way and municipal infrastructure such as utility poles and government buildings.

Policies governing access to utility poles can have a significant impact on the pace of broadband deployment to unserved and underserved markets. This means regulators and pole asset owners need to provide a consistent framework that recognizes the variety of circumstances that affect local pole attachment use, streamlines the pole attachment process, and expedites broadband deployment to communities with rates, terms and conditions that are non-exclusive, non-discriminatory, reasonable, predictable and prompt.

**Electric Cooperatives Take the Field:** Federal agencies should continue expanding the eligibility of electric and telephone cooperatives to pursue USDA and FCC broadband deployment program support, as cooperatives’ existing infrastructure and access to rights of way can help promote low-cost connectivity solutions for rural communities.

**Leverage CAI-Funded Connections to Communities:** Federal programs often direct broadband infrastructure funding to community anchor institutions (CAI) such as schools, libraries, health care and regional government. These institutions could help leverage additional public and private investments in surrounding rural areas if Congress would legislate a more holistic funding approach that supports infrastructure deployment “to and through” CAIs.

**Promote Regional Internet Exchanges:** Congress should take steps to encourage the growth of regional internet exchanges, as they would help promote cost-effective, reliable broadband service in rural areas by serving as open interchanges and peering points available to all broadband providers serving the area.

**Other Action:** Congress should revisit and replace the legacy Communications Act to better define and refine definitions of services and modernize regulatory structures. Lawmakers also should reform the FCC’s merger review process and provide funds necessary to implement the Broadband DATA Act (S.1822). Additionally, Congress should fund research and test beds for innovative new wireless equipment and services.

**Arizona Technology Council (AZTC) Public Policy Guide:**

[**https://www.aztechcouncil.org/public-policy/**](https://www.aztechcouncil.org/public-policy/)

**Broadband Policy Editor and Primary Author of State & Federal Broadband Section:**

Mark Goldstein, International Research Center, [markg@researchedge.com](mailto:markg@researchedge.com)

With contributions from Jeff Sobotka, Arizona Commerce Authority