

**CLOSING THE DIGITAL DIVIDE IN RURAL
AMERICA**

HEARING

BEFORE THE

**COMMITTEE ON AGRICULTURE
HOUSE OF REPRESENTATIVES**

ONE HUNDRED EIGHTEENTH CONGRESS

FIRST SESSION

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CLOSING THE DIGITAL DIVIDE IN RURAL AMERICA

WEDNESDAY, JUNE 21, 2023

HOUSE OF REPRESENTATIVES,
COMMITTEE ON AGRICULTURE,
Washington, D.C.

The Committee met, pursuant to call, at 10:03 a.m., in Room 1300 of the Longworth House Office Building, Hon. Glenn Thompson [Chairman of the Committee] presiding.

Members present: Representatives Thompson, Lucas, Crawford, LaMalfa, Rouzer, Bost, Johnson, Baird, Mann, Feenstra, Miller of Illinois, Rose, Molinaro, De La Cruz, Langworthy, Duarte, Nunn, Van Orden, Chavez-DeRemer, Miller of Ohio, David Scott of Georgia, Costa, McGovern, Adams, Spanberger, Brown, Davids of Kansas, Caraveo, Salinas, Perez, Davis of North Carolina, Budzinski, Sorensen, Crockett, Jackson of Illinois, and Craig.

Staff present: Nick Rockwell, Paul Balzano, Adele Borne, Wick Dudley, Erin Wilson, John Konya, DeShawn Blanding, Kate Fink, John Lobert, Ashley Smith, and Dana Sandman.

OPENING STATEMENT OF HON. GLENN THOMPSON, A REPRESENTATIVE IN CONGRESS FROM PENNSYLVANIA

The CHAIRMAN. Morning, welcome to the House Agriculture Committee hearing room, as we gavel in this morning, we just pause and—kind of tradition, what we have with the Agriculture Committee, and give thanks for what we are provided. And so, I will take the privilege of leading that prayer here this morning, and then we will get gaveled in right after that.

Heavenly Father, we love you so much. We thank you for all that you provide for us. Lord, we thank you for the privilege that each and every one of us have of serving on this Committee, Lord, to be stewards of what you provide us as we lift up those who provide for this nation all the things that are essential, food, fiber, building materials, energy resources, and, quite frankly, the technology, and all the resources that you have provided us to capitalize for the benefit of the lives of those who live in rural America, and, quite frankly, throughout this country. And so, we ask your blessings over these proceedings, and I pray this in the name of my savior, Jesus Christ. Amen. All right.

So the Committee will come to order. Welcome, and thank you for joining today's hearing entitled, *Closing the Digital Divide in Rural America*. After brief opening remarks Members will receive testimony from our witnesses today, and then the hearing will be open to questions. So let me start off.

Throughout this Congress the House Committee on Agriculture has had countless discussions on ways that we can empower our farm families and build a robust rural economy, and a pillar of these discussions is providing rural communities with access to high-speed, affordable, and reliable broadband internet connectivity. The digital divide has left many Americans unable to access dependable, fast internet service. Disconnected Americans lose opportunities to grow their businesses, acquire new skills, or even engage in daily activities. And while I am fortunate to live in an area which offers quality internet service, although I will say not a regular basis to my home, my district is not immune to these challenges.

I represent 18 counties, totaling $\frac{1}{3}$ of the land mass in rural Pennsylvania, and I can tell you there exists a checkerboard of connectivity. Americans without high-speed internet access are slipping further behind as more and more aspects of American society are conducted online. Despite decades of effort, and billions of dollars spend, too many communities are still on the wrong side of the divide. With its unique reach, expertise, and experience serving rural America, USDA's Rural Utilities Service, or RUS, is well positioned to serve a leading role in our nation's rural broadband strategy.

Contrary to other Federal agencies working to close the digital divide, USDA is the only Federal agency that has offices and devoted staff in all 50 states, enabling constituents to have direct access to those who are reviewing, implementing, and managing connectivity programs that meet the needs of rural communities. The House Committee on Agriculture has worked hard on a bipartisan basis to close the connectivity gap, including through the 2018 Farm Bill. These modifications were the result of years of work to create policies and programs that address the difficulties faced by rural communities.

Sadly, too many of those policies and programs remain dormant. These include programs and policies that address qualifying areas, long-term network viability, support for our most remote communities, and program integrity. However, last Congress, this Committee introduced, marked up, and passed unanimously bipartisan legislation, H.R. 4374, the Broadband Internet Connections for Rural America Act, or BICRAA, which set the stage for an historic commitment and investment in rural broadband, and for us to finally close the digital divide.

Specifically, the bill codified the ReConnect Program and merged it with USDA's existing retail rural broadband program, provided last minute technical and financial assistance to rural communities seeking to improve their broadband service, ensured accurate mapping of broadband connectivity in rural areas, promoted borrower accountability, and protecting taxpayers with new tools to ensure promised services are delivered to rural communities. It also increased resources available to build-out middle-mile infrastructure, and allocated funds to invest in distance learning and telemedicine capabilities.

While this bill did not receive floor consideration in the 117th Congress, it will be the foundation for the broadband subtitle in the 2023 Farm Bill, which brings us to today, where we will hear di-

rectly from stakeholders about the importance of USDA's broadband programs. It is also an opportunity to discuss important policy ideas, including minimum eligibility requirements, build-out speed requirements, workforce and supply chain issues, broadband mapping, and agency coordination, as well as precision agriculture programs.

Now, I have always said the best policies come when we work together, and I look forward to continuing to work with the Ranking Member on crafting the broadband provisions for the 2023 Farm Bill. Together, we can provide the Department of Agriculture the tools it needs to bring broadband connectivity to rural America quickly, and responsibly, and with sustainability. Simply put, we must meet the current and future needs in rural America.

We have a great panel of witnesses today who understand the challenges and the complexity of rural broadband networks, bringing innovative solutions to life, and most importantly, serve their communities. I appreciate each of them for making time to be with us today, and I look forward to the conversation.

[The prepared statement of Mr. Thompson follows:]

PREPARED STATEMENT OF HON. GLENN THOMPSON, A REPRESENTATIVE IN CONGRESS
FROM PENNSYLVANIA

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- Ensured accurate mapping of broadband connectivity in rural areas;

- Promoted borrower accountability and protecting taxpayers with new tools to ensure promised services are delivered to rural communities;
- Increased resources available to build-out middle-mile infrastructure; and
- Allocated funds to invest in distance learning and telemedicine capabilities.

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I appreciate each of them for making time to be with us today and look forward to the conversation.

The CHAIRMAN. I would now like to welcome the distinguished Ranking Member, the gentleman from Georgia, Mr. Scott, for any opening remarks he would like to make.

**OPENING STATEMENT OF HON. DAVID SCOTT, A
REPRESENTATIVE IN CONGRESS FROM GEORGIA**

Mr. DAVID SCOTT of Georgia. Well, thank you very much, Mr. Chairman, for convening today's hearing. Expanding high-speed, reliable, and affordable broadband access in rural America is a top priority of mine in this farm bill. I appreciate the opportunity to once again join forces with you, Mr. Chairman, to highlight its importance and chart a path to finally bring high quality internet service to every single part of rural America. Now is the time.

High-speed, reliable, and affordable broadband is something each of us here in Congress count on daily to stay in touch with loved ones, conduct business, schedule appointments, make purchases, and to stay informed. In addition to day to day uses, broadband addresses other longstanding inequities through expanding access to healthcare, educational, and workforce development opportunities. Broadband is now an integral part of our daily lives, but most areas in rural America go without broadband, and that must change now.

Friends, it is also very important for us to know that the United States Department of Agriculture has a long history of serving rural America through making sure that rural America has the resources and investments necessary to support modern infrastructure, all the way back to 1935. Remember, some of us do, when the Rural Electrification Administration was created under the Department of Agriculture to bring electricity to rural areas? And the Rural Electrification Administration now operates under the Rural Utilities Service moniker, reflecting that the agency provides an array of loans, grants, and loan guarantees to deliver rural broadband, in addition to electricity and drinking water, to our rural communities.

And since its enactment just before the 2018 Farm Bill, the Re-Connect Program, administered by the USDA, has delivered a total of \$3.86 billion to create and improve high-speed internet access to rural customers. As the primary program used to deliver broadband and financial funding to rural America, I look forward to working with my House and Senate Agriculture colleagues to codify and provide permanence for this program through our upcoming 2023 Farm Bill.

And as we consider changes to broadband programs in the 2023 Farm Bill, it is my priority to ensure that these programs support reliable delivery of high-speed, reliable, and affordable broadband that can support modern uses, such as telehealth, precision agriculture, distance learning, and our remote work jobs and business opportunities, as well as many other potential future uses not yet even imagined. To ensure responsible and effective use of the historic Federal investments in broadband, any investments made must support future-proof and scalable broadband networks. That means establishing progressive standards for speed, as well as including considerations for affordability of broadband services, and overall network capacity.

And, finally, I would like to discuss Federal agency coordination. The bipartisan infrastructure bill (Pub. L. 117–58) signed into law provided \$65 billion for broadband, with the bulk of that going to NTIA’s BEAD Program. As implementation of that program is ongoing, it is of utmost importance that any Federal agencies working to expand broadband coverage establish open lines of communication and continue to coordinate resources and projects. As the only Federal agency with the sole mission of serving rural America, USDA Rural Development must take the leading role in expanding high-speed internet to each and every part of our rural communities.

I look forward to hearing from the distinguished panel of witnesses that sits before us today on these issues, and any other thoughts you all may have to improve USDA broadband programs and deliver high quality broadband to rural communities now. Thank you, Mr. Chairman.

The CHAIRMAN. I thank the gentleman. The chair would request that other Members submit their opening statements for the record so that witnesses may begin their testimony, and to ensure that there is ample time for questions. Welcome once again to our distinguished panel that we have here. A pretty impressive panel for this topic, Mr. Ranking Member.

Mr. DAVID SCOTT of Georgia. Yes.

The CHAIRMAN. Our first witness today is a former colleague in Congress, the Honorable Jim Matheson, who is the Chief Executive Officer of the National Rural Electric Cooperative Association. Our next witness, who is Mr. James Assey, Executive Vice President of NCTA, the Internet and Television Association. Our third witness today is Mr. David Zumwalt, the President and Chief Executive Officer of the Wireless Internet Service Providers Association. Our fourth witness today is Mr. Tom Stroup, President of the Satellite Industry Association. Our fifth witness is Mr. Bill Hurley, Chair of the Agriculture Sector Board for the Association of Equipment Manufacturers. And our sixth, and final, witness today is Mrs.

Shirley Bloomfield, the Chief Executive Officer of NTCA, the Rural Broadband Association.

So, thank you, all of our impressive witnesses, for joining us today, and we are now going to proceed to your testimony. You will each have 5 minutes. The timer in front of you will count down to zero, at which point your time has expired, and hopefully we could wrap up whatever point that you are in the middle of. Mr. Matheson, Congressman, please begin when you are ready. Welcome back.

STATEMENT OF HON. JIM MATHESON, CHIEF EXECUTIVE OFFICER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, ARLINGTON, VA

Mr. MATHESON. It is good to be here, thank you. Thank you, Chairman Thompson, Ranking Member Scott, and Members of the Committee for this opportunity. I am Jim Matheson, CEO of the National Rural Electric Cooperative Association, also known as NRECA. NRECA is the national service association for 900 electric co-ops that serve 42 million people in 48 states, and as cooperatives, they are owned by the consumers that they serve, and that gives us an interesting perspective on meeting consumer needs, because the consumers are the owners of the utility. Their mission, of course, is to provide low-cost, reliable power to their members, and it has been that way since the 1930s. They have a long-standing commitment also to improve their communities in which they serve, and they are actively engaged in many rural economic development efforts that go beyond electrification.

Now, today more than 200 of our members, 200 electric co-ops, are involved in rural broadband deployment efforts. They recognize the impact that reliable high-speed internet will have on their communities, and they also recognize the challenges of deploying that in low density, rural, and remote areas. For many cooperatives, the story of rural broadband development today mirrors the story of rural electrification nearly 100 years ago. The cost of building and maintaining networks in sparsely populated areas, in difficult terrain, can be prohibitive for many providers. It is a cost-intensive process, with little return on investment. Since cooperatives are owned by the people they serve, they understand the need for broadband in these areas, and the challenges associated with deploying the infrastructure, which is why some of our members have chosen to include broadband in their book of business.

So as this Committee works to develop the next farm bill, electric cooperatives think there are great opportunities to make improvements to broadband programs at USDA. Specifically, we encourage the Committee to make the ReConnect Program permanent and easier to access, provide robust funding for rural broadband through USDA, prioritize symmetrical speeds and scalable networks, and invest in middle-mile infrastructure.

An affordable and reliable internet connection is critical for growth and development of rural America, we all know that. Broadband is no longer a luxury, but instead it is a necessity for business, for education, for healthcare across the whole country. Internet-based services are a routine part of modern life, and it is increasingly clear the bandwidth and capacity must meet the needs

not just of today. They need to anticipate the needs of tomorrow. Last Congress this Committee advanced the Broadband Internet Connections for Rural America Act, which would make USDA's Re-Connect Program permanent, and would provide consistent funding moving forward. As discussions continue around the future of this and other broadband programs at USDA, let me offer just some—a few recommendations.

First, Congress should prioritize scalable, future-proof networks in any future rounds of Federal funding. Without the ability for networks to grow in response to increased bandwidth needs and consumer demands, the challenge of solving the broadband gap in rural America won't go away. In urban areas, gigabit speed networks are becoming increasingly common, yet in many cases the discussion about rural access seems to focus on what is good enough. Broadband services should be equitable no matter where an individual chooses to live, and taxpayer dollars will be best spent supporting networks and technologies that can meet both current and future needs.

Second, the definition of an *area unserved by broadband* should be raised to include areas that do not have at least 100/100 megabits per second. Building networks in low density, hard to reach areas is challenging, but Congress must prioritize networks that can meet consumer demand and ensure the residents of these areas are able to receive a quality service regardless of whether they are considered unserved or underserved.

Third, the time-consuming and difficult application process should be streamlined. The submission portal is not user-friendly, and some have commented that attempting to fill out the program application is like having a second job. For small providers with limited resources, this is incredibly challenging, and could be prohibitive. And finally, the Committee should once again authorize a middle-mile program at USDA. Access to this infrastructure can make a big difference in reducing the cost to deploy last mile networks in rural areas. However, many rural providers lack access to a robust middle-mile connection.

Electric cooperatives are increasingly deploying fiber infrastructure as part of their electric utility network, which enables a high bandwidth, low latency internal communication system to support electric utility operations. Beyond lowering energy costs, a fiber backbone allows co-ops to expand other technology offerings, such as distributed energy resources, electric vehicle access, or expanding retail broadband. Leveraging excess fiber capacity from their internal communication systems to provide middle-mile access to other third party providers, such as local cable providers, small telephone companies, and wireless internet service providers enables a critical link between the internet service provider's local network and the broader internet ecosystem.

Let me just close by saying rural electric cooperatives are deeply committing to bridging the digital divide and connecting rural homes and businesses with reliable and sustainable high-speed broadband service. As this Committee considers opportunities to expand broadband access in rural America, I do appreciate the opportunity to provide the cooperative perspective on USDA's broadband programs. NRECA and the nation's electric cooperatives

look forward to working with this Committee, and others in Congress, to address these issues and close the digital divide once and for all. Thank you.

[The prepared statement of Mr. Matheson follows:]

PREPARED STATEMENT OF HON. JIM MATHESON, CHIEF EXECUTIVE OFFICER,
NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, ARLINGTON, VA

Chairman Thompson, Ranking Member Scott, and Members of this Committee. Thank you for inviting me to testify today. My name is Jim Matheson and I serve as the Chief Executive Officer of the National Rural Electric Cooperative Association. NRECA is the national service organization for more than 900 rural electric cooperatives that provide electric service to approximately 42 million people across 48 states. Rural electric cooperatives are member-owned, not-for-profit, and formed to provide safe, reliable electric service to their member-consumers at the lowest reasonable cost. They have a longstanding commitment to improving the communities in which they serve, and many are actively engaged in rural economic development efforts that go beyond electrification.

Today, more than 200 electric cooperatives are involved in rural broadband deployment efforts, recognizing the impact that a reliable high-speed internet connection can have on their communities and the challenges of deploying this infrastructure in low density, rural, and remote areas. For many cooperatives, the story of rural broadband deployment today mirrors the story of rural electrification nearly 100 years ago. The cost of building and maintaining networks in sparsely populated areas with difficult terrain is prohibitive for many providers. It is a cost-intensive process with little return on investment. Since cooperatives are owned by the people they serve, they understand the need for broadband in these areas and the challenges associated with deploying this infrastructure, which is why some have chosen to expand their services to include broadband.

As this Committee works to develop the next farm bill, electric cooperatives believe there are great opportunities to make improvements to broadband programs at the U.S. Department of Agriculture. Specifically, we encourage the Committee to:

- Make the ReConnect program permanent and easier to access
- Provide robust funding for rural broadband through USDA
- Prioritize symmetrical speeds and scalable networks in any future rounds of Federal funding
- Invest in middle-mile infrastructure

Broadband is Critical for Rural America

An affordable and reliable internet connection is critical for the growth and development of rural America. Broadband is no longer a luxury, but instead a necessity for business, education, and healthcare access across the country. The Coronavirus pandemic highlighted the ongoing disparity between urban and rural access to a broadband connection and made clear how critical a high-speed internet connection is for rural economic development and quality of life. Without these connections, families may choose not to return to the small towns where they grew up, businesses choose to locate elsewhere, and farmers struggle to access the latest technologies that help lower input costs and improve yields. Internet based services are a routine part of modern life, and it is increasingly clear that bandwidth and capacity must meet the needs of today and anticipate the needs of tomorrow.

For many rural communities, the U.S. Department of Agriculture (USDA) has been a longtime trusted partner for rural economic development efforts. Rural electric cooperatives have been partnering with the agency for more than 80 years on efforts to build reliable electric networks in rural areas. What started in the 1930s as a partnership between rural communities and the Rural Electrification Administration has evolved into a much-needed, modern financing tool to build, maintain, and modernize electric, water, and telecommunications infrastructure through today's Rural Utilities Service (RUS). Federal programs administered by RUS are designed to address the unique challenges facing rural communities, such as low population densities and vast terrain, providing financing and technical assistance to improve the quality of life in hard-to-reach areas.

Many cooperatives have started deploying broadband in their service territories in large part because no one else will do it. Since cooperatives are owned by the people they serve, they understand the need for broadband in their rural service areas and the challenges associated with deploying this infrastructure. Electric cooperatives of all sizes are entering the broadband business due to demand from

their members, who in many instances have no other alternative for a reliable internet connection. Despite these challenges, many cooperatives have built reliable, future proof networks capable of providing symmetrical speeds to both consumers and businesses.

For electric cooperatives, investments in broadband have produced significant benefits both internally and externally. Electric cooperatives are increasingly deploying fiber optic infrastructure as part of their electric network builds, which enables a high bandwidth, low latency internal communications system to support utility operations. Via this infrastructure, co-ops can monitor their systems in real time, improve response times to outages, and better manage utility resources. It also allows the co-op to improve the resiliency of the electric network and deploy smart grid technologies, such as advanced metering infrastructure, which can help reduce the overall costs to consumers. Beyond lowering energy costs, a fiber backbone allows co-ops to expand other technology offerings, such as distributed energy resources, electric vehicle access, or retail broadband service.

Through USDA's Electric Loan Program, electric cooperatives and other utilities can invest in smart grid technologies to improve grid security and reliability. The program allows recipients to use up to ten percent of the loan to construct broadband infrastructure in areas lacking a minimum acceptable level of broadband. This program correctly recognizes the dual-use nature of assets used for broadband communications services and electric cooperative smart grid technologies.

While retail broadband offerings have been successful for some cooperatives, others are choosing not to provide retail service, but instead are leveraging excess fiber capacity from their internal communications systems to provide middle-mile broadband access to other third-party providers, such as local cable providers, small telephone companies, and wireless internet service providers. This provides a critical link between the internet service provider's local network and the broader internet ecosystem. Access to this infrastructure can make a big difference in reducing the cost to deploy last mile networks in rural areas, however many rural providers lack access to a robust middle-mile connection. In the 2018 Farm Bill, this Committee recognized the importance of middle-mile networks and authorized a program at USDA to expand middle-mile infrastructure into rural areas. Unfortunately, the program has not moved forward. We encourage the Committee to consider reauthorizing the program, as strong middle-mile access is critical to last mile deployment and ensuring that every American receives reliable internet access.

As electric utilities, cooperatives own and maintain utility poles and rights-of-way for the safe and reliable distribution of electricity to their members. Ensuring the safe, affordable, and reliable delivery of electricity is the first priority for every electric cooperative. When safety, space and capacity allow, co-ops lease out excess space on their poles for the delivery of telecommunications services by third party providers, or even their own broadband subsidiary. This relationship provides communications companies with cost-based access to an existing pole distribution network for a small fraction of the significant costs that co-ops have incurred to build and maintain these systems.

Some within the communications industry have called for a one-size-fits-all rate for cooperative pole attachments. NRECA and all electric cooperatives strongly encourage the Committee to reject any proposals that would implement this type of regulation. As locally owned and democratically governed entities, electric cooperatives work in good faith to negotiate reasonable rates for pole attachments so that the burden of financing rural broadband deployment does not unfairly fall on rural electric customers. On average, electric co-ops serve seven customers per mile, compared to approximately 34 customers per mile served by larger investor-owned utilities. A one-size-fits-all approach does not accurately reflect the unique cost of building and maintaining a pole distribution network in low density, hard-to-reach rural areas that can differ from state to state and co-op to co-op.

The "Broadband Internet Connections for Rural America" Act

Last Congress, this Committee advanced the Broadband Internet Connections for Rural America Act,¹ which would make USDA's ReConnect program permanent and provide consistent funding moving forward. As discussions continue around the future of this and other broadband programs at USDA, I'd like to offer some recommendations.

First, Congress must prioritize scalable, future-proof networks in any future rounds of Federal funding. Without the ability for networks to grow in response to increased bandwidth needs and consumer demands, the challenge of solving the broadband gap in rural America will persist. In urban areas, gigabit speed networks

¹<https://www.congress.gov/117/bills/hr4374/BILLS-117hr4374rh.pdf>.

are becoming increasingly common, yet in many cases the discussions around rural access seem to focus on what is “good enough.” Broadband services should be equitable no matter where an individual chooses to live, and taxpayer dollars will be best spent supporting networks and technologies that can meet current and future needs, rather than investing in standards that are or soon will be obsolete.

Second, the definition of an area unserved by broadband should be raised to include areas that do not have at least 100/100 Mbps. Building networks in low density, hard to reach areas is challenging, but Congress must prioritize networks that can meet consumer demand and ensure that residents in these areas are able to receive quality service regardless of whether they are considered unserved or underserved.

Third, the program must be streamlined. The ReConnect application process is time consuming and difficult. The submission portal is not user friendly, and some have commented that attempting to fill out the program application is like having a second job. For small providers with limited resources, this is incredibly challenging and can be prohibitive. The application also lacks so-called “safeguards,” meaning that if an applicant forgets to attach necessary information, such as their audited financial statement, the application platform will still certify and allow the applicant to submit rather than giving a warning that the required documentation has not been submitted. If that happens, there is no ability to go back and submit the missing documentation, which disqualifies the application. As Congress considers opportunities to modify or improve the application process moving forward, providing pathways to correct easily rectifiable errors or omissions would be helpful.

The Broadband Internet Connections for Rural America Act also includes robust funding for the USDA Community Connect Program. While a smaller and less popular program than ReConnect, cooperatives who have used this program have found it to be easy to manage and are typically able to complete the project within the program’s 3 year build requirement. The program also includes an 80/20 grant/match ratio that is incredibly helpful for projects in low density rural footprints. However, one of the challenges that cooperatives have faced with the program is the requirement to facilitate a community center within the proposed funded service area. Due to the inherent rurality of these areas, there are not typically existing facilities conducive to hosting such a site. Flexibility to allow the community center to be facilitated in areas adjacent to and within a reasonable distance of the proposed funded service area could provide the dual benefit of expanding broadband access in rural areas while also facilitating an internet connection at an existing community facility, such as a library.

Prioritize Scalable, Future-Proof Networks

For many rural consumers, the promise of a broadband connection has gone unfulfilled. Recent Federal programs have defined “unserved” as areas lacking service at 25/3 megabits per second (Mbps) and “underserved” as areas lacking service at 100/20 Mbps. However, the Federal Communications Commission (FCC) today still defines broadband as 25/3 Mbps—a definition that was put in place nearly 10 years ago with limited consideration of raising that definition to be more reflective of current consumer demands. This must change. According to recent reports,² nearly 70% of U.S. homes receive internet service offering speeds of 200 Mbps or more, and more than 25% of homes are subscribing to gigabit or faster speeds. Other reports indicate that we are trending toward multi-gigabit networks by 2030.³ It is clear that technology and user demand for bandwidth are exponentially increasing, which is why networks built in rural areas must be able to keep up with these growing demands.

The FCC has recognized this fact itself. In the FCC’s 2021 Section 706 Report,⁴ it noted that, as of December 2019, the vast majority of Americans had access to fixed terrestrial broadband service at 250/25 Mbps. Specifically, the Report states, “Between 2018 and 2019 . . . the deployment of 250/25 Mbps also increased from approximately 86% to over 87% of the population.” If over 87% of the population has access to fixed terrestrial broadband service at 250/25 Mbps, it is difficult to comprehend why the Commission continues to maintain that the current dated definition of 25/3 Mbps is sufficient. This fact also begs the question of why most broadband programs and general consensus has landed on updating the definition of broadband to 100/20 Mbps, a definition that is well below what more than 87%

² https://openvault.com/wp-content/uploads/2023/02/OVBI_4Q22_Report.pdf.

³ <https://www.fiercetelecom.com/telecom/fba-tips-household-broadband-speed-need-to-surpass-2-gbps-by-2030>.

⁴ <https://www.fcc.gov/document/fcc-annual-broadband-report-shows-digital-divide-rapidly-closing>.

of the population had access to in 2019. The Universal Service provisions in the 1996 Telecommunications Act requires comparable services at comparable rates between urban and rural areas. Rural communities should not be treated as second class citizens and be relegated to “good enough” broadband.

For farm communities, adoption of precision agriculture technology enables farmers and ranchers to optimize their operations, lower input costs, and increase product yields. Incorporating new technologies into farming operations allows for the adoption of automatic irrigation, soil health monitoring, improved weather forecasting, and real time monitoring of facilities. Some applications, such as the use of sensors in farm equipment, require low bandwidth but a wide range of field coverage. Other tools, such as the use of drones for the application of fertilizer or herbicides, require high bandwidth and low latency. New technologies to aid and improve agricultural operations are constantly being developed and released to market, creating a growing demand for bandwidth in and around the farm and underscoring why a robust and scalable network connection is essential.

As Congress looks at USDA’s broadband programs via the upcoming farm bill, scalable, future proof networks must be prioritized. The economics of deploying reliable, high-speed internet infrastructure in rural and remote areas is challenging for any provider, with low population densities and difficult terrain presenting little opportunity for return on investment. However, consumer demands for broadband speeds and capabilities continue to grow.⁵ With that in mind, minimum build to speeds in any future rounds of Federal funding should be at least 100/100 Mbps symmetrical, and reevaluated on a consistent and regular basis to ensure that rural communities and families receive adequate broadband service both now and into the future. This will also eliminate the need for Congress to fund incremental network upgrades down the line.

Recently, Reps. Zach Nunn and Angie Craig introduced the ReConnecting Rural America Act, a bill that would codify the ReConnect program, prioritize symmetrical network speeds, and would provide the flexibility for the Secretary of Agriculture to reevaluate the minimum acceptable level of broadband service provided to rural areas. These flexibilities are important in ensuring that rural communities and families receive adequate broadband service now and into the future.

Reevaluate How Overbuilding is Defined

Duplicating Federal support to build broadband networks is a serious concern. However, the level of service that federally supported networks provide must be considered when discussing the topic of overbuilding. As previously discussed, Federal programs acknowledge anything under 25/3 Mbps to be considered “unserved,” and anything under 100/20 Mbps to be considered “underserved,” yet it was only recently that these standards were adopted for some broadband programs. For example, the 2018 Connect America Fund Auction at the FCC allowed providers to bid in a 10/1 Mbps speed tier, and those winning providers will continue to receive support through 2028. Similarly, the first two rounds of ReConnect, which made awards in 2019 and 2020, respectively, had a minimum build to requirement of 25/3 Mbps.⁶ Federal programs do not move quickly, which is why future-looking standards must be put in place.

Any discussion of reforms or constraint against overbuilding should be coupled with an evaluation of ongoing Federal support programs, and the quality of service those programs are supporting. Rural Americans should not be relegated to sub-par, “good enough” broadband service simply because an area is already receiving or has a commitment to receive support to build a network that does not meet current Federal definitions of broadband or consumer demands. Similarly, continuing to provide Federal support for networks that no longer meet the definitions of “served” is not good public policy nor is it a good use of taxpayer dollars. Instead, this will leave many rural residents without adequate service unless another ISP is willing to tackle the high costs associated with building this infrastructure in hard-to-reach areas without any additional support.

Permitting Reform is Needed

The National Environmental Policy Act (NEPA) regulations present a significant challenge to rapid infrastructure deployment, often delaying projects and driving up costs. Co-ops face NEPA requirements when seeking a variety of Federal permits, approvals, and financial assistance, such as access to power line rights of way on

⁵ <https://www.broadbandtechreport.com/test/article/14293999/openvault-finds-usagebased-broadband-consumption-on-par-with-flatrate>.

⁶ https://www.rd.usda.gov/sites/default/files/foa_2_awards_report_508c.pdf.

Federal lands. In some instances, NEPA has been applied differently by Federal agencies, or even within different field offices of an agency.

For example, when a cooperative in Colorado won a USDA ReConnect award to provide broadband service, they planned to use existing electric infrastructure for the project and did not anticipate any permitting problems. However, the project sought to cross land managed by the U.S. Interior's Bureau of Land Management (BLM), which required full oversight and review of the proposed USDA funded infrastructure project simply because the project involved broadband service rather than electric service. As a result, the co-op was required to undergo an expensive, time consuming, and onerous permitting process through BLM that added months of delay and an unanticipated, and unbudgeted, \$800,000 to the project. For electric service, the existing rights of way are sufficient, and the co-op can upgrade their facilities without the added time and expense. But because this co-op was attaching broadband infrastructure to their existing poles in the existing right of way, BLM treated the project as a greenfield build which triggered a full environmental review.

In many instances, existing rights-of-way and easements only apply to electric service and not to broadband, which impacts not only cooperatives deploying broadband but any electric utility seeking to lease out excess fiber capacity to third-party telecommunications providers. Many cooperatives are including fiber to support electric operations or implement smart grid technologies. Fiber installed to support electric operations is typically allowed in electric utility rights of way, but if a co-op leases excess fiber to a third party for retail broadband, or chooses to provide retail broadband themselves, it could trigger a violation. Often, the utility must renegotiate the right of way or easement agreement with each state or Federal agency, local jurisdiction, or private landowner, which can take years and can cost millions of dollars.

The National Broadband Map Still Presents Challenges

In November 2022, the Federal Communications Commission (FCC) released the pre-production drafts of the National Broadband Maps, which are required to be used by the National Telecommunications and Infrastructure Administration (NTIA) to calculate how much states will receive in BEAD based on the number of unserved and underserved locations in each state. The maps released by the FCC display a more granular, location by location picture of where broadband service exists across the country and are a significant step forward from the previous maps, which tracked broadband deployment on a Census block level basis.

As part of the ongoing mapping process, the FCC collects self-reported, location level data from Internet Service Providers (ISPs) through the Broadband Data Collection (BDC), which happens twice per year. This data reflects the advertised availability of broadband service or where it could be installed, as reported by the ISPs in those areas. Once the maps were released, the FCC invited the public to review the data displayed and submit challenges highlighting inaccuracies.

NRECA worked to organize a multi-pronged response to the new maps, coordinating with cooperatives to submit over 260,000 availability challenges across multiple states, in addition to a grassroots education campaign to help cooperative members understand the map data and how to submit an individual challenge. Given the historic amount of funding made available through the upcoming BEAD program, it is critically important to NRECA and its members that this data is correct. Inaccuracies could mean that cooperative members miss their chance at a broadband connection through this historic funding opportunity.

Despite significant progress in improving the map's accuracy over the past 6 months, it is clear that there are still discrepancies between what the map displays and the realities on the ground. The continued reliance on advertised speeds instead of actual speeds opens the door to gamesmanship with mapping data and could prevent rural areas from receiving a high-speed internet connection.

Continued coordination between the FCC, NTIA, and [USDA] on broadband mapping initiatives would help ensure map accuracy. USDA is a uniquely focused agency with substantial knowledge of rural issues and areas, and has relationships with rural communities. USDA is a valuable partner for communities seeking to access and implement Federal programs, and increasingly the agency is playing a key role in helping to connect rural areas with the broadband resources they need to thrive. Given their rural focus, increased coordination with USDA on mapping accuracy and challenges could prove beneficial to ensuring rural communities are accurately reflected in mapping updates.

Conclusion

Rural electric cooperatives are deeply committed to bridging the digital divide and connecting rural homes and businesses with reliable and sustainable high-speed broadband service. As this Committee considers opportunities to connect all rural communities, I appreciate the opportunity to provide the cooperative perspective on USDA's broadband programs, and your attention to this important and timely issue. NRECA and the nation's electric cooperatives look forward to working with this Committee and others in Congress to address these issues and close the digital divide once and for all.

The CHAIRMAN. Thank you, Mr. Matheson. Mr. Assey, please begin when you are ready.

STATEMENT OF JAMES M. ASSEY, JR., J.D., EXECUTIVE VICE PRESIDENT, NCTA—THE INTERNET AND TELEVISION ASSOCIATION, WASHINGTON, D.C.

Mr. ASSEY. Thank you, Chairman Thompson, Ranking Member Scott, and Members of this Committee. It is a distinct pleasure and honor to appear before you today on this important topic. As we review our current and future efforts to close the digital divide across rural America, it is worth reflecting on the journey. A journey that, perhaps informed by our own experiences during the COVID pandemic, that is propelled by our growing understanding that broadband and high-speed connectivity are increasingly central to how we learn, how our families connect, how our businesses operate, and generally how we participate in a 21st century society.

That journey started long ago. It has been fueled over time by competition and private capital investment that has resulted in the rapid growth of networks across much of the country. Over the last decade the cable industry alone has invested over \$185 billion to build and expand both the reach and the capabilities of its networks. Today, 86 percent of the country has access to wired broadband from a cable and/or fiber provider. Two cable companies alone, Charter and Comcast, reach roughly $\frac{1}{3}$ of all rural homes and businesses, and 99 percent of the homes passed by cable networks in rural America can receive internet service at speeds of 100 megabits or better.

Yet, despite such significant progress, we know our journey is not yet complete. There are still significant areas where broadband's ubiquity is frustrated by the unique economic challenges of low population density and high cost to construct and operate networks. Government programs, like those administered under the Department of Agriculture's Rural Utilities Service, have the potential to overcome these obstacles, offering assistance that will incent further investment in rural communities. But without careful design, such programs can also result in government spending that may benefit individual companies but does little to shrink the universe of the unserved.

As we think about the next chapter of this journey, we should recognize some advantages and some challenges that we face. On the plus side of the ledger, Congress has recently provided an unprecedented amount of resources to shrink the digital divide. At just the Federal level over \$160 billion has been allocated over the past 4 years to aid broadband expansion. Some of this funding is already flowing to broadband projects, but far more is expected in the future. In addition to more funding, we are building better

broadband maps that help us develop a common understanding of areas without service, and we are seeing early signs of better coordination among competing agencies that are tasked with similar objectives. These developments give us hope that we are poised to make significant strides over the next few years in reducing the rolls of the unconnected. But along with such opportunity comes risk.

Indeed, history has shown us that, in the absence of proper program design, focus, and coordination, there remains a high risk that resources will be squandered, and that good intentions will fail to translate into broadband connections for those most in need. For that reason, as the Committee considers new legislation addressing RUS broadband programs, it should recognize that future actions to close the digital divide may have less to do with a call for new capital, and more to do with the direction needed to ensure a proper program design and administration. In particular, we would urge the Committee to consider the following areas of reform.

First, the need for greater clarity and focus in directing funding distributions to unserved areas. Second, the need to modernize application requirements, that would encourage participation among qualified providers. Third, the need to eliminate status-based scoring priorities, and other preferences that thwart fair competition. And last, the need to address execution challenges, like permitting, and access to utility poles, that can stall the efficient completion of construction projects.

Many of these challenges are reflected in the Rural Internet Improvement Act (H.R. 3216) sponsored by Representatives Cammack, Soto, Jackson, and Gluesenkamp Perez. This bill appropriately recognizes the need for prioritizing funding to unserved areas, and suggests other reforms that will improve the focus, fairness and efficiency of existing RUS programs. With proper oversight and efficient administration, the next 5 years offer us the best chance yet to shrink the digital divide and bring the benefits of broadband to all. We in the cable industry look forward to working with you, the Members of this Committee, on that journey. Thank you.

[The prepared statement of Mr. Assey follows:]

PREPARED STATEMENT OF JAMES M. ASSEY, JR., J.D., EXECUTIVE VICE PRESIDENT,
NCTA—THE INTERNET AND TELEVISION ASSOCIATION, WASHINGTON, D.C.

Chairman Thompson, Ranking Member Scott, and Members of the Committee, thank you for inviting me to discuss our members' experience with USDA's broadband funding programs and our suggestions to make these programs even more successful. My name is James Assey, and I am the Executive Vice President of NCTA—The Internet and Television Association ("NCTA"). NCTA represents the nation's largest broadband providers, which construct and operate fiber-rich high-speed internet networks that reach over 77% of the U.S. population, including a large and growing number of rural homes and businesses.

Over the last few years, our nation's response to challenges arising from the pandemic has put a renewed urgency and spotlight on the importance of ensuring every American can access the internet through a high-speed connection. In common cause, our industry has risen to that challenge, accelerating the pace of innovation and forging new broadband connections both throughout and outside their traditional service areas. Collectively, cable ISPs have invested more than \$185 billion in private capital over the last decade to build and upgrade networks across America, including \$21.7 billion in 2022 alone. This capital has extended the collective

reach of cable broadband networks, adding about 6.4 million households between December 2018 and December 2021, nearly a third of which are rural households.

But, just as important, this massive investment has revolutionized the capabilities of these networks and their value to consumers, leveraging new technology and rapid innovation to launch the development of cable’s 10G platform that is bringing ‘speed at scale’ to millions across America. Currently, 99% of U.S. homes passed by cable are capable of receiving a 1 Gigabit service from their cable ISP. And with even more scalable, technological innovation on the horizon, the future, wide-scale diffusion of networks offering 10 Gigabit connections to U.S. households is well within view.

The dividends of these investments are not only collected in urban and suburban environments, but also increasingly in rural communities where the high-speed capabilities of cable broadband networks are bringing world-class broadband to rural communities throughout the country. Charter and Comcast alone serve nearly a third of all rural homes and businesses. In fact, when robust, high-speed broadband is available in rural America, it is more likely to be from a cable provider than any other platform:

Rural Units Served (Total U.S. Rural Units = 36.7 Million)

Tech	Number of Rural Units Served (millions)	Service Available at 100/20 or better (millions)	Service Available at 1 Gig or better (millions)	% of Rural Footprint at 1 Gig or better
Cable	17.5	17.1	16.4	94%
Telco †	20.1	5.5	4.4	22%
Fixed wireless	29.0	4.8	0.5	2%

† including copper, fiber, and fixed wireless.

Source: FCC *National Broadband Map*.

Despite this growth and these significant advances, we know that the job is not yet done and the challenges ahead are formidable. Unserved communities generally lack broadband facilities for one primary reason—they are prohibitively expensive to serve. The cost of deploying infrastructure over expansive, difficult terrain is often exponentially higher than other areas. At the same time, the potential revenue to offset those expenses is inversely less where fewer people and businesses reside. Government funding is essential to offsetting these dynamics and incenting companies to serve those communities.

At USDA, one of the most promising programs to help cable and other ISPs reach unserved households in rural areas had been the Rural eConnectivity program run by the Rural Utilities Service (“RUS”), better known as the “ReConnect” program. Unlike other RUS broadband funding programs, this program was, at its creation, tightly focused on helping to direct capital investment in building broadband networks in unserved areas through a competitive process that, in distinction to past practice, allowed all providers to participate and compete on a level playing field.

Over the last 5 years, the cable industry worked extensively with RUS and Congress to make significant improvements to the ReConnect program, making it easier and more attractive for competitive providers, who were not traditional recipients for RUS support, to participate. Some progress has been made. For example, RUS has taken needed action to modernize outdated application and data requirements that were overwhelming for many would-be applicants to assemble, especially for providers with nationwide operations.

Unfortunately, more recent updates have created new obstacles. Changes to the program have made winning funding awards extremely difficult for cable ISPs, and have clouded the program’s focus away from unserved areas. Specifically, RUS has changed the scoring methodology for the program and injected new bias so that certain providers—in particular, municipalities, nonprofits and cooperatives—get an automatic significant scoring preference, as do those that build using unionized contract labor. Additional points are awarded for those providers willing to agree to onerous open access mandates, which most providers are not willing to do.

These calculated changes impede fair competition and have made it extremely difficult for cable ISPs to secure funding, even when they seek to serve areas where no one else wants to deploy. In addition, the agency’s action in significantly relaxing the required minimum percentage of unserved homes required of project applications has created new problems and drawn dollars away from areas where they are most needed. Indeed, scarce resources that should be directed toward bringing service to unserved households are instead being used to subsidize network overbuilds

in ways that further challenge the economics of serving remote areas, and worse, do nothing to reduce the number of unserved households.

Beyond considering the internal changes required to promote greater efficiency and effectiveness of RUS programs, the next Farm bill must also grapple with the external challenges of encouraging greater coordination and consistency among a number of Federal and state agencies that will similarly focus on closing the digital divide. To promote efficiency and minimize waste, it will be more important than ever that we direct greater coordination and collaboration among Federal and state agencies engaged in similar efforts. With so many billions of Federal funding dollars being focused on broadband expansion over the next several years, we believe that it is more important than ever to get these programs right and to put controls in place that will prevent inefficiency and waste.

As the Committee considers these issues, we believe that matters addressed in the Rural Internet Improvement Act, introduced by Representatives Cammack, Soto, Jackson and Perez, would go a very long way toward making needed changes and establishing clear Congressional direction. Most notably, the Rural Internet Improvement Act provides important protections against overbuilding, modernizes eligibility rules, reduces excessive data burdens in both the application and funding phases, and calls for substantially increased coordination among the various agencies distributing broadband funding.

Cable's Decades Long Commitment to Rural America

Before discussing cable's experience with USDA funding programs, I want to underscore that cable ISPs have made it their mission to ensure that our most rural communities are at the leading edge of technology.

Our growth in recent months has included important progress in reaching previously unserved areas, thanks both to cable's commitment to invest in rural areas and to partnerships with the FCC, through its CAF II and RDOF auctions, and with the states we serve. For example:

- **Cable's Private Investment in Rural Areas**

- Comcast invest billions of dollars every year to expand and evolve its network—more than \$20 billion from 2018–2022 alone, and \$33 billion in the past decade. Comcast added 813,000 new passings in 2021, and an additional 840,000 in 2022, including many in rural areas. The company recently announced that it is further accelerating connecting more homes, by planning to pass one million additional new addresses in 2023, bringing the total new passings in just 3 years to 2.65 million homes.
- Charter also continues to invest billions of dollars every year to expand and evolve its network—more than \$40 billion from 2018–2022 alone. Charter has also committed to significant expansion in rural areas in states across the country. In March, Charter announced a \$12 million commitment to rural broadband expansion in Maine, which will bring gigabit-speed broadband access to over 3,500 unserved homes and small businesses in several towns in Somerset and Oxford counties. Concurrently, Charter announced an investment of approximately \$70 million in Maine, part of a company-wide network evolution that will enable the delivery of symmetrical and multiple gigabit speeds across the state. This 100% Charter-funded investment is expected to be substantially complete across the company's Maine service area, which comprises more than 700,000 homes and businesses, by the end of 2025.

- **Cable's Partnerships with Government To Bring Service to Unserved Areas**

- Charter Communications plans to build nearly 100,000 miles of new U.S. broadband infrastructure through its RDOF expansion alone—a distance that would circle the equator more than four times. As part of that commitment, Charter announced a \$5 billion investment that will connect more than one million unserved, mostly rural homes and small businesses to reliable, high-speed broadband service at speeds up to a gigabit per second. While the RDOF funds will go a long way to connecting people, approximately \$4 of every \$5 of this build-out will come from private capital invested by Charter—they and other cable ISPs are investing their own funds to connect people in rural areas.
- In addition to RDOF and Federal programs, Charter has participated in dozens of state broadband funding rounds and hundreds of local funding opportunities, earning subsidies to build to more than 300,000 locations since 2021. For example, through Louisiana's Granting Unserved Municipalities Broadband Opportunities ("GUMBO") program, which was funded through

the ARPA, Charter was awarded more than \$10 million in grants to support broadband expansion across three Louisiana parishes. Upon completion, this investment will deliver high-speed internet access to more than 2,000 currently-unserved homes and businesses.

- Comcast has been awarded grants from Federal, state and local programs in 24 states, including multiple awards to build-out its gigabit broadband network to homes that are unconnected to broadband today, including more than 30,000 unserved homes in Georgia and over 51,000 in Florida.
 - Comcast has also been awarded funds from Pennsylvania's Unserved High-Speed Funding State Program to reach unserved homes in Lycoming, Armstrong and Union counties, as well as from the Build Illinois Bond Fund, ARPA/Connect IL Round 2 to bring service unconnected homes in Whiteside county.
 - In 2022, Cox committed hundreds of millions of dollars to expand its fiber infrastructure to provide best-in-class high-speed internet to un- and under-served areas. This included establishing a Market Expansion Team ("MET"), which is solely focused on expanding Cox's network to un- and underserved areas beyond the existing service area. The MET supports Cox's focus on advancing digital equity by bringing Cox's robust network to communities without broadband in a world where communities need to be connected to thrive. Since 2022, Cox has successfully secured nearly \$100 million in grant funds and matched that with more than \$100 million in private capital to extend services to almost 50,000 homes in eight states, in addition to many wholly self-funded projects. Through these partnerships, Cox has activated service in about 30 previously unconnected communities with more currently under construction, and that's just the beginning. Looking ahead 12 months, Cox plans to more than double that number.
 - Mediacom was awarded \$13.4 million in grant funding from the State of Alabama, to help extend broadband to nearly 20,000 locations there. Its new locations will span multiple counties, including locations in northwest Baldwin County, southwest Escambia County, and Mobile County.
 - In Sherburne County, Minnesota, Midco is utilizing private capital, RDOF funds and local partnerships with the county and six townships to complete several broadband expansion projects. From 2020–2024, nearly 10,000 homes and businesses in the county will be connected with over 1.5 million' of new broadband infrastructure constructed. In total, Midco's investment in Sherburne County since 2020 is over \$32 million.
 - In Alaska, GCI is deploying fiber to some of the most remote communities in the country. GCI paired \$25 million in ReConnect funds with over \$50 million of its own capital to support its Alaska United—Aleutians Fiber Project, which provided terrestrial broadband service for the first time to Unalaska/Dutch Harbor and five other communities—King Cove, Sand Point, Akutan, Chignik Bay, and Larsen Bay. GCI also has been awarded a \$31 million ReConnect grant in support of its Lower Kuskokwim Fiber Expansion Project, which will bring fiber-optic infrastructure to five Yukon-Kuskokwim Delta communities in Western Alaska.
- **Cable's Innovative Solutions to Support Rural Communities**
 - Nestled alongside a pond and horse farm in rural Eastover, South Carolina, is Camp Cole—a fully accessible camp and retreat facility for children, teens, and adults facing serious illnesses and other physical, mental, and emotional health or life challenges. Internet connectivity is critical to providing many campers with the resources they need, including monitoring medical devices, conducting video calls with doctors and care providers, and ensuring counselors can communicate across the campus. During construction of the Camp Cole facility, camp staff reached out to Charter about getting the rural property online. Within a few short months—and at virtually no cost to them—Camp Cole was connected to Charter's high-speed Spectrum Internet, and today campers and staff enjoy 300 Mbps speeds across the property.
 - In Colorado, Charter has used various wireless technologies such as 5G, WiFi, and Citizens Broadband Radio Spectrum ("CBRS") spectrum to deliver service to transform how Wells Bridge Farm does business. Wells Bridge Farm was able to deploy a WiFi network and enable connected sensors to provide enhanced security to the farm's main gate and real-time glimpses into what was occurring on the farm, and with the animals, offering opportunities for proactive care for the horses and enhanced productivity for the farm. The

success of this wirelessly connected smart farm now paves the way for similar digital solutions in other communities.

- Midco relies on an existing broadband network to connect relay towers, thereby extending a signal miles beyond where the physical wires stop. Midco uses traditional towers, as well as grain elevators or water towers, to reach homes or farms miles away from those wired networks. This means they can still receive broadband service without the need for an ISP to lay miles and miles of fiber in challenging terrain. Midco, which serves communities throughout South Dakota, North Dakota, Minnesota, Kansas, and Wisconsin, has championed the use of fixed wireless for precision agriculture. Some of these communities have fewer than 100 people, with miles and miles of land separating one neighbor from the other.

These examples underscore cable's commitment to expand networks and reach those areas that need it most.

While cable ISPs are reaching new homes with broadband fiber every day, they also remain keenly aware that government funding will be needed to reach places where challenging terrain or other factors make private investment alone too uneconomical. For broadband to reach rural America as quickly as possible, it is critical that funding programs be technology-neutral, encourage the broadest participation of qualified broadband providers, and be as flexible as possible. And that leads me to our current concerns about the current direction of the ReConnect Program and other broadband funding programs administered by RUS.

Restoring Program Focus and Continuing Needed Coordination Will Help Rural America

As further rural build-out intensifies in the coming years to reach more unserved communities, the effectiveness of RUS broadband programs will depend on Congressional action to restore a clarity of purpose and to promote coordinated and consistent action that promotes fair competition. Recent changes to the ReConnect program have significantly shifted the focus of this program away from the portions of rural America lacking broadband access. This shift should be reversed.

First, Congress should act to restore ReConnect's focus on unserved areas and establish a common understanding of what it means to be "unserved." While the original ReConnect program required that at least 90% of households in a project area qualify as unserved to be eligible for funding, the most recent round of funding significantly relaxed this requirement and considered areas to be eligible for funding even when as many as 50% of households already had access to broadband service. The most likely result of this change is that monies will be diverted from the areas that are 90% unserved, which are typically the hardest areas to serve, and those areas will remain unserved.

The agency also has changed the speed thresholds used to determine when an area already has "sufficient" access to broadband service, which has clouded the agency's commitment to focus scarce resources first on reducing the number of households without any acceptable broadband connectivity. When eligibility is restricted to areas that do not receive a basic level of broadband service, such as 25/3, we know that funding will be used to bring broadband where it did not previously exist. But when areas with some level of service are defined as eligible for funding on a par with those with nothing, providers will naturally pursue those projects that are less expensive to deploy broadband to, *i.e.*, those with better potential economic return, while those areas most in need of assistance will again end up at the back of the line.

This needs to change. There should be an absolute priority for qualified applications to extend service to areas without 25/3 service, and most funding should be put to that use. For example, you could provide that 75% of the funding needs to be for projects without 25/3, or you could provide that no funding could be granted for projects in underserved areas (those that have service that is between 25/3 and 100/20 speeds) until at least 80% of areas lacking 25/3 have been covered.

Additionally, RUS does not sufficiently take into account where areas are already being built out due to awards from other government programs when it determines which areas should be considered unserved. Allowing government broadband programs to grant funding in places where other government awards have already been committed for broadband construction dangerously decreases the effectiveness of the program. For example, NCTA member Midco was overbuilt by two ReConnect awards in rural South Dakota, even though it was already building a fixed wireless network serving those areas that was being partially funded by an FCC grant. Because Midco had not yet finished construction, the area was still considered "unserved," and so its challenges to those funding awards were denied. Programs

need to be coordinated so that there is a common understanding of eligibility, one that takes into account areas already funded for deployment.

Second, Congress should direct RUS, in reviewing applications, to limit scoring preferences to those that relate to applicant experience or platform performance. Points for being a particular type of entity (*e.g.*, an electrical or gas cooperative), or for agreeing to assume extra regulatory obligations (*e.g.*, particular wage standards) do nothing to ensure that broadband networks will reach rural America quickly and will be run well, and are simply inappropriate vehicles for directing funding to favored providers.

Third, as it has in other broadband programs, Congress should ensure that performance standards (sometimes referenced as “build to” speed requirements) retain some element of flexibility to produce solutions that are forward-leaning, but also robust and cost-effective. As we have seen in the context of the FCC’s RDOF auction, an open competitive process for subsidy awards can be structured to incent extremely robust and scalable platform solutions, but too high a performance threshold can also lead to situations where requirements preclude some areas from attracting willing providers. Programs need flexibility to accommodate different technological solutions, and guidelines for identifying those areas where flexibility can and should be accommodated. States may offer a helpful guide in delineating such areas. The BEAD Program, for example, allows states to designate an “Extremely High Cost Per Location Threshold,” above which the state can pick a proposal using an alternative technology when doing so would be less expensive, ensuring that the very highest cost areas are not ignored if they cannot be served effectively by fiber.

Fourth, there are significant, burdensome data requirements in the ReConnect program, such as those designed to evaluate an applicant’s financial viability. The application process should be simplified by limiting the amount of data to what is truly required to evaluate an applicant’s viability. For financial requirements, RUS should allow applicants to demonstrate financial viability in various ways beyond an exclusive first lien on grant-funded assets. For example, an applicant should be permitted to rely on a bond rating performed by an expert credit rating agency to establish their financial viability.

Finally, with numerous Federal agencies and nearly all states dedicating funding to broadband deployment, it is increasingly important to ensure that all relevant agencies, and to the extent possible state programs that are awarding grants for build-out, are aware of current awards so as to ensure that government support is coordinated and being used efficiently to reduce the number of unserved households and to help achieve the goal of universal connectivity. The recent Memorandum of Understanding Regarding Information Sharing between the FCC, U.S. Department of Agriculture, the National Telecommunications and Information Administration of the U.S. Department of Commerce, and the U.S. Department of the Treasury is an important first step towards reaching that goal, but further actions will be required in the coming years as the pace of grant activity and broadband construction intensifies.

One important aspect of coordination would be to take steps to make the programs, their eligibility standards, and their requirements as consistent as possible. Entities seeking funding should not be able to “forum shop” for the least restrictive program. NCTA member Midco faced a situation where they successfully challenged a provider under the ReConnect program from overbuilding their network in rural North Dakota, but the applicant responded by applying for funding in that same area under the ARPA Capital Projects Fund program, and succeeded in obtaining funds to overbuild Midco’s existing service.

To avoid this result, government entities awarding funding for broadband infrastructure (including RUS) should promptly report those awards to the Federal Communications Commission, so that maps used for granting broadband funding are consistent, and everyone works off a common data set in determining areas eligible for funding. Ideally, maps should show all areas where Federal, state, or local funding has been awarded pursuant to enforceable commitments, so that remaining dollars can be targeted at the areas not yet covered. Programs should work together towards the common goal of connecting more Americans and reducing the rolls of the unserved.

Why the Rural Internet Improvement Act Would Improve RUS’s Broadband Programs

As the Committee considers a new farm bill, one promising piece of legislation to draw from is the Rural Internet Improvement Act of 2022. It would make many key improvements to the ReConnect program, enhancing participation and results, so that broadband reaches rural America faster. In particular, it would—

- Target funding to the neediest rural areas, by limiting all types of funding to areas in which at least 90% of households lack access to broadband, with the highest possible priority for applications proposing to serve areas without 25/3 service.
- Update the minimum build-out speed requirements to 100/20, which is a reasonable speed that allows for different technological solutions.
- Protect against wasted dollars by excluding funding in areas where a provider has been granted funding under another Federal, state, or local broadband funding program, or where a provider is otherwise required to build broadband by a Federal, state or local government entity (except that the provider who secured such funding could obtain additional ReConnect funding if they used such funding for different, non-duplicative expenses, or they agreed to build broadband with faster speeds or expedited deployment milestones than were originally required).
- Simplify the application process, by limiting the amount of data required in applications to the greatest extent practicable, including allowing applicants to demonstrate financial viability in the least burdensome way and requiring the Secretary to establish means by which applicants can offer various forms of loan collateral and security, not just an exclusive first lien on grant-funded assets. For example, it would allow a company with a sufficient bond rating to use the bond rating to establish their financial viability, and would generally require a much closer look at whether all the data required to apply for funding is really relevant and necessary.
- Establish better communication between Federal agencies when awards are made and improve the challenge process, so that money is spent transparently and does not duplicate other agencies' efforts.

These changes would go a long way towards our shared goal of connecting rural America, and we ask you to give them careful consideration to incorporating them into any program revisions. We also urge that you avoid any changes that would compromise program efficiency and sacrifice needed focus, and that you ensure that RUS give all applicants equal consideration, even if they are not prior borrowers. If ReConnect is reoriented to its original focus, it can succeed in making meaningful contributions to bringing broadband to rural Americans currently lacking service.

* * * * *

In closing, I commend the Committee for its focus on ensuring that the billions of dollars being spent on broadband deployment benefits all Americans—including those in rural America. Progress has been made in some Federal and state programs to target funding at unserved areas, largely by improving the design of those programs to better identify unserved areas and by defining broadband service in a way that prioritizes people living in hard-to-reach areas that may require a menu of technologies to serve each and every household. We hope that the ReConnect program and other new programs will be changed so that they are implemented with similar goals and guardrails in place. Thank you again for inviting me here today, and we look forward to working with you on these important issues.

The CHAIRMAN. Thank you, Mr. Assey. Mr. Zumwalt, please begin when you are ready.

STATEMENT OF DAVID M. ZUMWALT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION, WASHINGTON, D.C.

Mr. ZUMWALT. Thank you, Chairman Thompson, Ranking Member Scott, and Members of this Committee. Thank you for convening this important hearing. My name is David Zumwalt, and I am the President and CEO of WISPA—Broadband Without Boundaries, representing nearly 1,000 members that provide connectivity to unserved and underserved communities across the country.

Wireless Internet Service Providers, or WISPs, serve nine million Americans nationwide and deploy a variety of technologies, including fiber, as well as wireless, to deliver reliable broadband services. Most of their subscribers live and work in rural areas that other providers have historically overlooked or chosen not to serve.

WISPs and entrepreneurial community businesses, are often putting up their own capital to serve their neighbors. They come in many sizes, and their importance is enormous to the communities they serve. They live there, bank there, send their children to school there, and in some cases farm there. They are the hometown ISPs.

At the outset of the pandemic, WISPs were quick to adapt to changes in consumer demand to meet our nation's essential connectivity needs. WISPs know all too well that the digital divide is a long way from being closed. These challenges are particularly acute for our nation's farmers, who are facing higher costs and difficult supply chain issues. Connectivity is more critical than ever, and many applications, such as precision agriculture, require wireless broadband. Every American, regardless of where they live, should have broadband internet access. Recognizing the urgency of this moment, we are eager to stand with you in fulfilling our nation's connectivity mission.

The farm bill has been assisting rural communities' transition to the digital age for many years. As such, it is critical that, going forward, the farm bill's broadband programs stay focused on those communities that are truly unserved. WISPA strongly supports the goals of the ReConnect Program, however, without careful structuring and a clear process, the program risks undermining our shared goals of connecting rural communities quickly. RUS's most recent funding round exemplifies some of these issues.

First, ReConnect should not establish, as gating criteria, a requirement that applicants must provide 100 megabit per second symmetrical service. At present, ReConnect funded projects must be capable of delivering this symmetrical service to every location. In our experience, rural consumers are not asking for 100 megabits per second upload speeds, nor does it represent what urban subscribers are actually using today. To make symmetry a requirement would effectively prevent many providers from even applying for funding, leaving communities unconnected. It would force many communities to wait longer for service when they could have reliable broadband much sooner by utilizing the right tool for the right job, an assortment of proven technologies that can get the job done.

If requirements such as symmetrical speeds are locked in statute, RUS will be precluded from having the flexibility it needs. Lack of flexibility may leave many areas unserved, or force those awarded to wait years longer for service, which is counter to the purpose of the program. USDA has defined *sufficient access to broadband* as any rural area in which households have fixed terrestrial broadband service of 100 megabit downstream and 20 megabit upstream. This is reasonable, and aligns with industry experience, and should be the standard for the farm bill. By contrast, a 100/100 requirement will deflect funding to communities with more than sufficient broadband already, leaving out places that lack any broadband at all. It makes no sense to divert taxpayer dollars from where they are needed most to overbuild areas that are already connected.

This leads to our second recommendation. Subsidizing overbuilding in areas where local providers are already delivering reliable broadband distorts the market. It wastes taxpayer dollars and

slows our whole of national effort to bridge the digital divide. Every community is different, and therefore requires different solutions. Placing a thumb on the scale to benefit one type of technology or provider, or to fund areas subsidized with other government funding, does no favors for Americans who are in urgent need of broadband access today. It increases the time unserved communities must wait for connectivity at the financial and societal expense of those communities.

Every community, regardless of size, location, or geography, deserves reliable broadband service. This is no small task. It will take all of us working together to ensure no community is left behind. On behalf of WISPA's members, the thousands of ISPs already at work in the digital divide, thank you again for holding this important hearing and inviting me to testify. I look forward to continuing to work with the Committee and look forward to your questions. Thank you.

[The prepared statement of Mr. Zumwalt follows:]

PREPARED STATEMENT OF DAVID M. ZUMWALT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION, WASHINGTON, D.C.

Chairman Thompson, Ranking Member Scott, and Members of the Committee, thank you for holding this important hearing and for the opportunity to testify. My name is David Zumwalt, and I am the President and CEO of the Wireless Internet Service Providers Association (WISPA)—*Broadband Without Boundaries*, representing the companies that provide connectivity to unserved and underserved households and businesses across the country.

Prior to joining WISPA, I served as Chief Operating Officer of Broadband VI, a major Internet Service Provider in the U.S. Virgin Islands whose needs for robust broadband for economic growth is unchallenged. Because of our work, in 2021, Broadband VI was awarded \$84.5 million in FCC funding to supplement its private investment in Territory-wide broadband expansion. I have also served as Executive Director of the University of the Virgin Islands Research & Technology Park, a partnership of private sector, government and university stakeholders that supported the USVI's network-connected knowledge-based business sector. During my tenure, RTPark sought, but was ultimately unsuccessful in securing, \$4.7 million in financing from the U.S. Department of Agriculture Rural Utilities Service (RUS) in 2008 but did secure \$5.5 million in matching funds from the U.S. Department of Commerce Economic Development Administration in 2009. I have witnessed first-hand the benefits of these programs that seek to lift rural and economically challenged communities.

WISPA's nearly 1,000 members include broadband service and infrastructure providers, equipment manufacturers, and technology companies that work every day to close the digital divide in many of our country's most rural and remote communities. Our members' stories are often remarkably similar. Tired of waiting for someone else to bring broadband to them and their neighbors, they took their private capital and built a solution, connecting families, businesses, first responders and community anchor institutions.

WISPA advocates for the widespread deployment of broadband. This is best accomplished by allowing the utilization of the "right tool for the right job" so that all communities, regardless of size or location, can reap the benefits of reliable, affordable, and robust connectivity as quickly as possible.

WISPA and our members are grateful for the leadership of this Committee in promoting our shared goal of closing the digital divide with ubiquitous, reliable, and resilient broadband networks.

Importance of WISPs

WISPs serve nine million Americans, mostly in unserved, under-resourced, and Tribal territories. Our members offer cost-effective, competitive, and innovative services for these communities. WISPs deploy a variety of technologies, including fiber as well as licensed, shared, and unlicensed wireless spectrum, to deliver reliable broadband service to their customers at affordable prices, often in areas ignored by others because the deployment costs are prohibitive.

WISPs are mostly small and medium sized businesses. Many of our members have fewer than twenty-five employees, and almost 70 percent have ten or fewer full-time employees. Often investing their own private, at-risk capital, our members are truly community-based and entrepreneurial companies. According to our latest member survey, more than 75 percent of WISPA's operator members serve primarily rural areas and very often to small populations, communities that have often been passed over by the larger, national carriers. Many WISPs may be small, but to the communities they serve, their importance is enormous.

Fixed wireless broadband has proven to be a powerful and reliable tool in getting these communities online. According to a 2021 report by The Carmel Group, WISPs can deploy fixed wireless service to residential consumers at about $\frac{1}{9}$ the capital cost of fiber-to-the-premises. These favorable economics enable WISPs to serve smaller and more remote communities, where it is not cost-effective for other technologies to be deployed.

Typical speeds that fixed wireless providers offer continue to increase as technology advances, and equipment costs become more competitive. Download speeds exceeding 1 Gbps are possible with current fixed wireless technology, with equipment available from multiple manufacturers. Our industry is one of the most dynamic, scalable and flexible in the entire broadband ecosystem, characterized by rapid, cost-effective deployment, speedy technology innovation, and many new entrants.

Moreover, fixed wireless is being deployed much more quickly than many other alternatives. The basic network elements are a tower or tall building, commercially available radio transmitters and consumer-premises equipment, and, of course, licensed and unlicensed spectrum. And WISPs don't need thousands of subscribers to make a business case; often, only a handful of potential customers will justify beginning deployment to multiple locations in an area. In sparsely populated rural areas, that's critical for consumers who should not have to continue to wait for a higher, and sometimes unattainable, critical mass of potential customers for more expensive fiber installation to their homes and businesses.

The need for fast deployment and the ability to connect rural and remote communities was never clearer than during the COVID-19 pandemic. Access to fixed wireless technology was a lifeline for many Americans. Every child who had to attend school from their bedroom, every patient who needed to access their doctor via telemedicine, every business owner who relied on Zoom to connect with customers and suppliers—none of them could afford to wait for technology to be deployed. They needed to be online, and I am proud to say that WISPs across the country upgraded their networks where necessary to meet increased consumer demand and delivered for their communities. And they continue to do so.

In addition, investment banking firms and private equity funds have made dozens of investments in our members' businesses over the last few years. They are attracted by solid management, favorable growth potential and the large untapped rural markets that will drive new deployment and increased revenue. This trend is ongoing and, along with government funding, positions our members as significant players in the years to come.

Closing the Digital Divide

Due to the hard work and vision of this Committee, great progress is being made to connect all Americans. However, as businesses largely based in rural communities, WISPs know all too well that the digital divide is still a long way from being closed.

Despite the enormous positive impact of broadband, many Americans still do not share these benefits. There remains a substantial number of Americans who cannot fully participate in today's economy and democracy, whose children tend to lag in school, and whose communities are not able to keep pace with the economic growth potential that broadband brings. While the number of new broadband subscribers continues to grow, the rate of broadband deployment in urban, suburban, and high-income areas is outpacing deployment in rural and low-income areas. This disparity has long-term adverse economic and social consequences for those left behind. WISPA is committed to addressing this disparity.

These challenges are particularly acute for our nation's farmers, who are facing higher commodity prices and difficult supply chain issues. Connectivity, real time data, and opportunities to sell their commodities in an expedient and efficient manner are more critical than ever. And many applications used by farmers, such as precision agriculture, require wireless broadband to blanket vast acres of farmland to be useful.

Every American—regardless of where they live—should have access to the very best internet and reliability that they need. Americans in rural areas have no less

a need for fast broadband than those in urban centers. The questions this Committee faces are, how do we most quickly provide the level of connectivity that rural communities need in ways that leave nobody behind? And how do we ensure that taxpayer dollars are spent in the most efficient and productive ways possible?

We cannot allow this opportunity to bridge the digital divide slip away. The NTIA BEAD program should not be the be-all and end-all for broadband deployment, and USDA can have a significant and positive impact on broadband that is complementary to that program, if the farm bill is written and implemented in a technologically neutral way that respects public and private investment. Recognizing the urgency of this moment, WISPA members stand ready to roll up their sleeves and get to work. The stakes are too high, connectivity is too important, and many rural communities have waited far too long.

WISPs' Experiences with ReConnect

The farm bill has been assisting rural communities entering the digital age for many years. For this reason, it is critical that the farm bill's broadband programs stay focused on those communities that are truly unserved. No community should be asked to wait even longer for broadband so that other communities receive upgraded network build-outs they don't actually need.

WISPA strongly supports the goals of the ReConnect program and supports the investments Congress has provided to bring broadband to more Americans, particularly those in unserved and underserved communities. However, we have seen that, without careful structuring and a clear process, the program risks undermining our shared goals of connecting rural communities with the greatest need quickly. The RUS's most recent funding round exemplifies some of these issues.

First, RUS required that any facilities to be constructed with ReConnect award funds "must be capable of delivering 100 Mbps symmetrical service to every premise in the proposed funded service area." Symmetrical service means that download speeds identically match upload speeds.

Some Members of Congress have expressed support for prioritizing symmetrical speeds. Consumers clearly value download and upload speeds differently, and it makes sense for RUS to consider them independently. To make symmetry the primary gating criteria for eligibility when consumers are not even asking for or using it when they have access to it, would prevent many providers from even applying for funding, leaving many communities out in the cold. In addition, this type of requirement would add significant time to deployment, in many cases forcing communities to wait additional years, when they could have service much quicker by utilizing other technologies.

The gap between downstream and upstream traffic has consistently grown over the last 10 years. Recently, the ratio of downstream consumption to upstream is 14 to 1. Current consumer trends demonstrate significant increases in downstream consumption while upstream traffic increases at a fraction of the rate. Today's consumers do not utilize upstream bandwidth at the same rate they use downstream and speak to it with their dollars and usage. Video streaming makes up over 80 percent of all internet traffic, $\frac{2}{3}$ of which is traffic from downloads. Even popular applications that utilize relatively high upload bandwidth, such as two-way video conferencing, do not require anything near symmetrical speeds. Studies have shown video conferencing requires approximately $\frac{1}{3}$ of the upstream bandwidth compared to downstream.

Networks are optimized based on consumer use patterns. The WISP industry has responded by engineering networks to favor downloads to meet their customers' demand. Even if demand for upload speeds somehow doubles down the road, it will remain far below download speed demand. Basing criteria on speculative predictions about future demand for upload speed—when, as we speak, many communities remain completely unserved—would be counterproductive, especially for an investment of this magnitude.

For these programs to be successful and cost-effective, as many broadband providers as possible should be encouraged to participate. Symmetrical service may work in some communities, but not every location is the same. Erecting artificial, unnecessary, and wasteful barriers to participation would exclude many projects that would now provide connectivity to the most remote communities. If rigid requirements, such as symmetrical speeds, are locked in statute, it precludes RUS from having the flexibility to consider projects that address other key priorities. Lack of flexibility may leave many areas unserved or force those awarded to wait years longer for service, which is counter to the purpose of the program.

Second, USDA defined sufficient access to broadband as "any rural area in which households have fixed, terrestrial broadband service defined as 100 megabits per second (Mbps) downstream and 20 Mbps upstream." The result of this requirement

is that ReConnect funding will wind up going to communities with more than sufficient funding already, leaving out places that lack any broadband at all. It simply makes no sense to divert taxpayer dollars from where they are needed the most to overbuild areas that are already connected.

Simply put, subsidizing overbuilding in areas where innovative, local providers are delivering broadband, or have an enforceable commitment to do so, inequitably distorts the market. It wastes taxpayer dollars. And it still leaves many Americans without any access to broadband.

At a minimum, locations subject to an “enforceable commitment” to provide broadband service through a state or Federal program should be off-limits for initial ReConnect funding. This will address two issues. First, it will ensure that taxpayers’ contributions to the FCC’s Connect America Fund and Rural Digital Opportunity Fund will not be used to subsidize multiple providers in the same market—in effect, the government would be competing with itself.

Second, exempting from ReConnect funding locations subject to an existing “enforceable commitment” will protect the integrity of the programs and the reliance interests of those CAF and RDOF recipients that are hard at work investing government funding and their own capital in deploying broadband in rural communities. It will also enable them to attract outside capital on more favorable terms.

Third, RUS included as a key criterion for awarding grants “local governments, nonprofits and cooperatives.” The best provider of broadband in any given community could be a local government, a not-for-profit, a cooperative or a private commercial company. We recognize the invaluable work that rural cooperatives have done in connecting their small communities. But we believe that the best way to ensure the most people are connected to the internet—especially in areas where rural cooperatives are not present—is to allow any provider who can best serve a community to access ReConnect funding. As Congress made clear in the IJA, the government should not be in the business of picking winners and losers. The farm bill should not perpetuate this flawed industrial policy.

Each of these issues shares one thing in common: they fail to recognize that every community is different, and therefore every solution must be different. Placing a thumb on the scale to benefit one type of technology, or one kind of provider, does no favors for Americans who are in desperate need of broadband access. It simply favors certain parties and likely increases the time unserved communities must wait for connectivity, at the financial and societal expense of the American public.

For these reasons, it is important that the farm bill broadband programs remain truly technologically neutral, both explicitly and by not using proxies—such as the requirement of symmetrical 100 Mbps upload and download speeds—whereby only a single technology can meet the required standard. A failure to adhere to technological neutrality will only exponentially increase costs and further delay broadband deployment to high-cost rural areas. If the farm bill goes down that path, it will run out of money before even getting to the farms and rural residents most in need of connectivity.

Recommendations for the Next Farm Bill

As you develop the 2023 Farm Bill, this Committee has an historic opportunity to lay the groundwork for achieving our shared goal of bringing connectivity to every American. With that in mind, I would like to share some recommendations we hope the Committee will consider:

- *Base Awards on Cost Effectiveness.* Cost-effectiveness should be the primary criterion for determining which projects are funded. This will ensure that limited taxpayer resources are allocated and targeted to connecting as many rural Americans as possible. All Americans, including those who live in hard to serve areas, should have access to internet service before public funds are used to support additional networks in communities that are already connected.
- *Modernize USDA Programs.* The USDA should revise its criteria for rural broadband development grants and loans so that the limited available funding is allocated to those projects that truly deliver broadband coverage rapidly to the most Americans for the lowest possible cost. In addition to the up-front costs of deployment, these programs should consider the total costs to the end consumer, so that Federal support is not allocated to deployments that consumers will not be able to afford nor desire.
- *Do Not Provide Funding to Overbuild Broadband Networks or Networks for Which Other Subsidies (Federal and state) Have Been Approved.* Recipients of loans, grants and loan/grant combinations under this program should not be allowed to use proceeds to fund infrastructure in areas that are already served or where there is an “enforceable commitment” to serve by another provider of-

fering a certain level of service or a provider that is the recipient of subsidies from other government support programs. Limited public resources should be directed to areas where no service is available. Operators deploying private, at-risk capital to connect rural Americans should not face the risk of subsidized competition, and the agency should also not apply support in areas that are already subject to support through, *e.g.*, the Connect America Fund. This risk chills private investment and distorts the marketplace.

- *Prioritize Incumbent Providers for Upgrades.* Where taxpayer dollars are to be spent for areas where this Committee decides the speeds are “underserving” the community, priority should be given to those ISP’s who are currently serving the community. Chances are that ISP did something no one else wanted to do, not a Co-op nor a large provider, they built a network (most likely with their own money) where no one else would—why should they be punished with government funded competition. Instead, those incumbents should be given the first opportunity to take the capital to upgrade their service to the Committee’s desired level, which can most likely be done for less dollars—once again further stretching our limited taxpayer resources further.

Last Congress, this Committee passed H.R. 4347, the Broadband Internet Connections for Rural America Act. WISPA supports the goals of this legislation and commends the Committee for its commitment to connecting rural communities. WISPA supports the funding tiers included in the legislation that gives priority funding to projects in unserved communities. Focusing on unserved areas first and achieving that objective is the fastest and most cost-effective way to stretch limited Federal dollars.

We also believe that the USDA broadband deployment subsidy programs envisioned by H.R. 4347 would benefit by requiring RUS to engage in a proceeding that solicits public comments that can help to streamline the application process for the ReConnect and other USDA broadband deployment programs. In October 2022, GAO found that significant numbers of ReConnect program applicants were rejected by USDA and ReConnect program applicants who were accepted responded that they were substantially disappointed with the ReConnect application process. Their experiences with the ReConnect application process have discouraged some from applying to the program in the future.

In addition, I would like to thank Reps. Cammack, Soto, Gluesenkamp Perez, and Jackson, along with their Senate colleagues, Sens. Thune, Luján, Fischer, and Klobuchar, for introducing the Rural Internet Improvement Act. This bill contains several important provisions that will improve the ReConnect program and target its funding towards areas of need. Specifically, the legislation limits funding to areas where at least 90% of households lack access to broadband service. This approach will ensure that those communities in most need of connectivity will be served first, instead of continuing to have to wait for even the most basic broadband service. I urge the Committee to consider including many of the provisions included in the Rural Internet Improvement Act in the farm bill.

Conclusion

Every community, regardless of size, location, or geography, deserves reliable broadband service. This Committee has an extraordinary opportunity to expand digital inclusion and take dramatic steps to bridge the digital divide. Industry and the government must step up and work together to meet this moment. This is no small task: it will take every tool available to ensure the rapid deployment of networks so that no community is left behind. That is why the leadership of this Committee is so critical. Your efforts are vital to ensuring that all communities can reap the benefits of robust and reliable broadband.

WISPA and its members stand ready to help every community find the right tools to connect them to the digital economy. This means diversity in approaches, modes of deployment, and paying attention to the needs of each community. WISPs provide the right tool for the right job. WISPs help drive America’s innovation economy and fuels the nation’s economic future.

WISPA appreciates the opportunity to partner with the Committee in addressing these important issues. We are deeply grateful for the bipartisan recognition of the importance of universal connectivity by this Committee, by Congress, by the FCC, and the Biden Administration. All have implemented policies to promote broadband deployment.

Thank you again, Chairman Thompson and Ranking Member Scott, for holding this important hearing and inviting me to testify. I look forward to continuing to work with you and the rest of the Committee to make real progress on these very important issues. I look forward to your questions.

The CHAIRMAN. Mr. Zumwalt, thank you so much for your testimony. And now, Mr. Stroup, please begin when you are ready.

**STATEMENT OF THOMAS A. "TOM" STROUP, J.D., PRESIDENT,
SATELLITE INDUSTRY ASSOCIATION, WASHINGTON, D.C.**

Mr. STROUP. Chairman Thompson, Ranking Member Scott, and distinguished Members of the Committee, thank you for inviting me to testify before you today. I am Tom Stroup, President of the Satellite Industry Association. Satellite communications are transforming the operation of our nation's farms and ranches. Satellites, unlike terrestrial communications, bring a range of unique attributes that benefit farmers and ranchers. This includes the ability to cover broad geographies without the need for expensive terrestrial infrastructure, as well as increased resiliency and rapid deployment. In addition, recent innovations in the satellite industry have made the delivery of high-quality, high-speed broadband and IoT connectivity to everyone, everywhere across the United States a reality.

Satellites provide service to rural and remote areas of the country, where it remains uneconomical for terrestrial services to deploy and offer both speeds and prices comparable to terrestrial alternatives. These services are available directly to the consumer today, covering all 50 states, and delivering broadband speeds of up to 200 megabits per second. Satellites enable remote farms with livestock sensors, soil monitors, and autonomous farming equipment in rural America, far beyond where terrestrial wireless and wire line can reach or make economic sense to deploy.

Precision GPS technologies allow farmers to increase crop yield by optimizing use of fertilizer, pesticides, herbicides, and applying site-specific treatments to fields. Earth imaging satellites provide high resolution imagery that allows farmers to determine when to plant, water, or fertilize crops. And satellite advances in weather forecasting help farmers prepare for drought, floods, and other adverse weather conditions.

Satellites are critical to 5G and IoT applications that will enable the next generation of farming technologies. Satellite communications allow for remote control of driverless tractors and network connectivity between equipment at large farms where equipment may not be in the same sight line. Indeed, John Deere estimates 50,000 to 100,000 of its machines will be connected to satellites by 2026.

We are at a time of tremendous innovation in the space industry, with nearly 8,000 active satellites in orbit today, and plans for tens of thousands more through the end of the decade. And individual geostationary communication satellites are launching that provide greater capacity than some existing fleets combined. Costs are dropping for both space and ground systems, which has resulted in a decrease in the cost of capacity of 90 percent over the past 8 years. Most importantly, satellite services are available now across the entire country without the need for additional build-out. As the Information Technology and Innovation Foundation notes, no single broadband technology holds all the advantages. With finite resources and widely varying topography, we need a flexible combination of all available access technologies to bridge the digital divide.

In order to further connectivity, we recommend the Committee prioritize these seven items. First, include provisions that offer financial incentives or tax breaks to satellite internet providers to encourage their participation in rural broadband expansion. Second, allocate specific funds or grants to support the development and deployment of satellite projects, particularly those focused on serving rural and remote areas. Third, ensure that legislation adopts technology-inclusive language and requirements, allowing for flexibility and inclusivity in deployment strategies. Congress should encourage competition and innovation among various broadband providers, including satellite companies, and allow affordable solutions to reach rural America where fiber build-out is not economically feasible.

Fourth, interagency collaboration is needed to simplify and streamline the regulatory processes for satellite internet providers. This includes working to adopt and implement a common set of performance targets to reflect the needs of agriculture, a recommendation supported by the Precision Ag Connectivity Task Force. Fifth, ensure sufficient spectrum resources are available for satellite, broadband, and IoT providers to deliver high-quality and high-speed services. Sixth, encourage partnerships with satellite companies and other stakeholders, such as local communities, educational institutions, and public agencies. And finally, allocate funds for research and development initiatives focused on advancing satellite technology, capacity, and affordability that will lead to increased opportunities for rural connectivity. I appreciate the opportunity to appear before you, and I am happy to answer any questions. Thank you.

[The prepared statement of Mr. Stroup follows:]

PREPARED STATEMENT OF THOMAS A. "TOM" STROUP, J.D., PRESIDENT, SATELLITE INDUSTRY ASSOCIATION, WASHINGTON, D.C.

Chairman Thompson, Ranking Member Scott, and distinguished Members of the Committee, thank you for inviting me to testify before you today. I am Tom Stroup, President of the Satellite Industry Association (SIA).¹ SIA is a U.S.-based trade association that represents the leading satellite operators, service providers, manufacturers, launch services providers, space situational awareness companies, and ground equipment suppliers.

Satellite communications are transforming the operation of our nation's farms and ranches. Satellites, unlike terrestrial communications, bring a range of unique attributes that benefit our nation's farmers. This includes the ability to cover broad geographies without the need for expensive terrestrial infrastructure, increased resiliency, and rapid deployment. In addition, recent innovations in the satellite industry have made the delivery of high quality, high-speed broadband and internet of things (IoT) connectivity to everyone everywhere across the United States a reality.

Satellite communications and services are well-poised to help our farmers meet [today's] real challenges—from addressing food insecurity, to monitoring weather and water, to overcoming supply chain challenges. Satellites are capable of providing broadband and IoT to rural and remote areas of the country where it remains

¹ *SIA Executive Members include:* Amazon; The Boeing Company; DIRECTV; EchoStar Corporation; HawkEye 360; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Northrop Grumman; OneWeb; Planet Labs PBC; SES Americom, Inc.; Spire Global Inc.; and Viasat Inc. *SIA Associate Members include:* ABS US Corp.; The Aerospace Corporation; Artel, LLC; AST Space Mobile; Astranis Space Technologies Corp.; Aurora Insight; Blue Origin; Comtech; Eutelsat America Corp.; ExoAnalytic Solutions; Hughes; Inmarsat, Inc.; Kymeta Corporation; Leonardo; Lynk; Omnispace; OneWeb Technologies; Ovzon; Panasonic Avionics Corporation; Skyloom; Telesat; ULA and XTAR, LLC.

uneconomical for terrestrial services to deploy, and provide both speeds and prices comparable to terrestrial alternatives. These services are available directly to the consumer today, covering all 50 states and delivering broadband offerings up to 200 megabits per second (Mbps). Satellite broadband is also used by business and government enterprises, for both fixed and mobile purposes, using a range of spectral bands to deliver assured access to broadband communications. Further, satellites are providing critical backhaul internet connectivity to local Internet Service Providers and community institutions in remote locations.

Satellite enables remote farms with livestock sensors, soil monitors, and autonomous farming equipment in rural America, far beyond where terrestrial wireless and wireline can reach or make economic sense to deploy. Precision GPS technologies allow farmers to increase crop yield by optimizing use of fertilizer, pesticides, herbicides, and applying site-specific treatments to fields. Earth imaging satellites provide regular high-resolution imagery that allows farmers to determine when to plant, water, or fertilize crops and can be used to provide crop yield estimates, conduct scout monitoring, and monitor global food security. Satellite advances in weather forecasting help farmers prepare for drought, floods, and other adverse weather conditions.

Satellites are critical to 5G and IoT applications that will enable the next generation of farming technologies. Satellite communications allow for remote control of driverless tractors, or networked connectivity between equipment at large farms where equipment may not be in the same sightline. According to John Deere CTO Jahmy Hindeman, the company is “pretty bullish on the opportunity that the commercialization of all things space is bringing to agriculture at the moment . . . The response from farmers has been overwhelmingly positive. In the sense that for many of them, I call it the 0 to 1 problem, from no connectivity in places they wished that they had it to full connectivity in those places tomorrow. We don’t think in many of those cases terrestrial cell will ever be a solution.”² John Deere estimates 50,000–100,000 of its machines will be connected to satellites by 2026.³

The satellite industry today is investing constantly to ensure it can address the challenges of the future and to make its technologies available to every American. We are at a time of explosive innovation in the space industry, with nearly 8,000 active satellites on orbit today^{4–5} and plans for tens of thousands more through the end of the decade, and individual geostationary communications satellites launching that provide greater capacity than entire existing fleets combined. Satellite companies are working to optimize the use of spectrum, by investing in high-throughput satellites and flexible, software defined payloads that allow for instantaneous reallocation of spectrum resources and the mitigation of harmful interference. Costs are dropping for both space and ground systems through the use of modular satellites, digital engineering, inter-satellite links and cloud-integrated ground stations, which minimize the need for expensive ground architecture, which has resulted in a drop in cost of capacity of 90% over the past 8 years.⁶ Flat panel and phased-array antennas lower consumer costs and enable better connectivity that has been essential to the deployment of non-geostationary satellite constellations.

Most importantly, satellite services are available now across the entire country without the need for additional build-out. As the Information Technology & Innovation Foundation notes, “No single broadband technology holds all the advantages. With finite resources and widely varying topography, we need a flexible combination of all available access technologies to bridge the digital divide . . . if we try to subsidize fiber everywhere, overbuilding will crowd out private investment.”⁷ In some remote areas, the cost of the USDA ReConnect program’s fiber build-out has allo-

²“Manifest Space: Space Enabled Farming With Deere CTO, 5/18/23” <https://closingbell.simplecast.com/episodes/manifest-space-space-enabled-farming-with-deere-cto-5-18-23-Y23iyvUg>.

³Tita, Bob, “Deere Seeks Satellite Network to Connect Far-Flung Farms” *Wall Street Journal*, 1 May 2023, <https://www.wsj.com/articles/deere-seeks-satellite-network-to-connect-far-flung-farms-65c37b0f>.

⁴“NORAD GP Element Sets Current Data”, CelesTrak, 14 June 2023 <https://celestrak.org/NORAD/elements/>.

⁵Up from 1,167 in 2013; see Satellite Industry Association, “2014 State of the Satellite Industry Report”.

⁶Satellite Industry Association, “2023 State of the Satellite Industry Report”.

⁷Brake, Doug, and Bruer, Alexandra, “Broadband Myth Series: Do We Need Symmetrical Upload and Download Speeds?”, Information Technology & Innovation Foundation, 12 May 2021 <https://itif.org/publications/2021/05/12/broadband-myth-series-do-we-need-symmetrical-upload-and-download-speeds/>.

cated costs per passing of up to \$204,000 per passing,⁸ and according to Tarana Wireless, a full-fiber approach to BEAD would cost upward of \$200B,⁹ staggering amounts for communities that can receive satellite broadband today. Additionally, fiber has been plagued by supply chain and labor shortages, in many cases doubling the cost of fiber programs supported by the Rural Development Opportunity Fund.¹⁰

¹¹ In order to foster further broadband and IoT connectivity, we recommend the Committee prioritize:

- **Incentives for Satellite Internet Providers:** Include provisions that offer financial incentives or tax breaks to satellite internet providers (broadband and IoT) to encourage their participation in rural broadband expansion. This could help attract more companies to invest in satellite infrastructure and services.
- **Funding for Satellite Broadband and IoT Projects:** Allocate specific funds or grants to support the development and deployment of satellite broadband and IoT projects, particularly those focused on serving rural and remote areas, including directly to farms/ranches for last acre build-out. This can help lower the financial barriers for satellite companies to expand their networks and reach underserved regions.
- **Making Requirements Technology-Inclusive:** Ensure that legislation adopts technology-inclusive language and requirements, allowing for flexibility and inclusivity in broadband and IoT deployment strategies. By avoiding prescriptive mandates that favor specific technologies, bills can encourage competition and innovation among various broadband and IoT providers, including satellite companies, and allow for the affordable solutions to reach rural America where fiber build-out is not economically feasible. This approach would enable satellite internet providers to compete on an equal footing and encourage the development of cutting-edge satellite technologies and infrastructure. Moreover, technology-agnostic requirements can also facilitate collaboration and partnerships between different types of broadband and IoT providers, enabling hybrid solutions that leverage the strengths of multiple technologies to deliver robust and reliable broadband and IoT connectivity to rural areas.
- **Streamlined Regulatory Processes:** Interagency collaboration is needed to simplify and streamline the regulatory processes for satellite internet providers. This includes working to adopt and implement a common set of performance targets to reflect the needs of Agriculture, a recommendation supported by the Precision Ag Connectivity Task Force.¹² Additional work could involve reducing bureaucratic hurdles and improving the reporting process for programs such as the Rural Utilities Service (RUS), expediting license approvals, and promoting cooperation between government agencies to facilitate satellite deployment.
- **Spectrum Availability:** Ensure sufficient spectrum resources are available for satellite broadband and IoT providers to deliver high-quality and high-speed services. The bill could advocate for the protection of satellite spectrum and explore opportunities for sharing or repurposing underutilized spectrum bands.
- **Collaboration and Partnerships:** Encourage partnerships between satellite companies and other stakeholders, such as local communities, educational institutions, and public agencies. Collaborative efforts can help leverage existing infrastructure, share resources, and expand the reach of satellite broadband and IoT services.
- **Research and Development:** Allocate funds for research and development initiatives focused on advancing satellite technology, capacity, and affordability. This can support innovation within the satellite industry, leading to improved performance, lower costs, and increased opportunities for rural connectivity. This includes increasing awareness and recruitment efforts in STEM programs.

⁸Goovaerts, Diana, “The cost of running fiber in rural America: \$200,000 per passing” <https://www.fiercetelecom.com/broadband/cost-running-fiber-rural-america-200000-passing>.

⁹Ferraro, Nicole, “Fiber-only approach to BEAD would cost over \$200B, says Tarana”, Light Reading, 17 Apr. 2023 [https://www.lightreading.com/broadband/fttx/fiber-only-approach-to-bead-would-cost-over-\\$200b-says-tarana/d/d-id/784398](https://www.lightreading.com/broadband/fttx/fiber-only-approach-to-bead-would-cost-over-$200b-says-tarana/d/d-id/784398).

¹⁰Goovaerts, Diana, “ISPs: Inflation has doubled RDOF build costs”, Fierce Telecom, 24 Oct. 2024, <https://www.fiercetelecom.com/broadband/isps-inflation-has-doubled-rdof-build-costs>.

¹¹Haiaar, Joshua, “Inflation Drives Up Cost of Broadband Internet Projects” 11 June 2023, <https://www.mitchellrepublic.com/news/inflation-drives-up-cost-of-broadband-internet-projects>.

¹²“Task Force for Reviewing the Connectivity and Technology Needs of Precision Agriculture in the U.S.”, 10 Nov. 2021, <https://www.fcc.gov/sites/default/files/precision-ag-report-11102021.pdf>.

I appreciate the opportunity to appear before you and I am happy to answer any questions.

The CHAIRMAN. Mr. Stroup, thank you so much. Mr. Hurley, please begin when you are ready.

STATEMENT OF BILL T. HURLEY, VICE PRESIDENT, DISTRIBUTION, AMERICAS, AGCO CORPORATION; CHAIR, AG SECTOR BOARD, ASSOCIATION OF EQUIPMENT MANUFACTURERS, DULUTH, GA

Mr. HURLEY. Chairman Thompson, Ranking Member Scott, and distinguished Members of the Committee, thank you for the opportunity to appear before you, and for holding this hearing today. My name is Bill Hurley. I currently serve as Chair of the Ag Sector Board of the Association of Equipment Manufacturers. I am also a Vice President with the AGCO Corporation headquartered in Duluth, Georgia.

I was born and raised in Franklin, a small town in central Texas with a population of less than 2,000. My family had a small farm not far from there in a place called Ridge, where my grandmother lived. I spent a lot of time on that farm, and with my grandmother, and I vividly remember the challenges that came from the ten families sharing the party line. While we have come a long way since then, today's hearing is a reminder that we have still not fully closed the digital divide in rural America.

AEM is a North American based international trade group representing off-road heavy equipment manufacturers, with more than 1,000 companies and more than 200 product lines in the ag and construction-related sectors worldwide. The equipment manufacturing industry supports 2.3 million jobs in the United States and contributes \$316 billion a year to the U.S. economy. The men and women who make the equipment that builds, powers, and feeds the world are not just welders, fabricators, and machinists. Many are farmers and ranchers, and one in three of them live and work in rural communities. Our industry is not only deeply connected to rural America, we are a big part of it.

Equipment manufacturers are proud to provide American farmers and ranchers with the next generation of innovative tools, but they cannot take advantage of the benefits of precision ag technologies without reliable and affordable connectivity across all of rural America. Precision ag leverages technologies to enhance sustainability through more efficient use of critical inputs, such as land, water, fertilizer, and pesticides. For example, at full adoption, herbicide use could be reduced by 15 percent, and water use could be decreased by 21 percent. However, today just $\frac{1}{4}$ of farms in the U.S. are currently able to leverage precision ag due to the lack of high-speed connectivity.

Reliable internet access and smart policies that help farmers and ranchers adopt these cutting edge technologies will lead to a transformative shift in ag practices that drive productivity while conserving resources. A multi-faceted strategy, including fiber optic, low-Earth orbit satellites, and 5G will continue to close the rural connectivity gap, enabling farmers and ranchers to leverage important technologies and management strategies that will help them produce more with less. For these technologies to deliver their full

value, we need technology-neutral development of broadband dollars.

It is imperative that all aspects of rural America are connected, from the hospital to the school, and from the farmhouse to the field. We should not prioritize one technology over the other, but rather take an all-encompassing approach. If not, many parts of rural America will be left further behind. Other game-changing technologies, such as soil and weather sensors, machine learning and autonomy, and equipment tracking rely on connectivity. The opportunity in front of us is to prioritize connectivity for the essential food supply chain across rural America *versus* entertainment streaming speed.

The 2023 Farm Bill is this Committee's opportunity to fully embrace the potential of these technologies by including two bipartisan pieces of legislation in the final package. The Precision Agriculture Loan Program Act of 2023 (H.R. 1495) establishes the first Federal Precision Ag Loan Program within the Department of Agriculture's Farm Service Agency. Loans at lower interest rates and extended terms will give small- and mid-size producers the tools that they need to monitor, manage, and maximize their operations, while significantly reducing their environmental impact. The PRECISE Act (H.R. 1495, Producing Responsible Energy and Conservation Incentives and Solutions for the Environment Act) designates precision ag as an applicable practice in the EQIP Program, and allows ag technologies which do, and will continue to, play a huge role in conservation. AEM believes that these two bipartisan bills provide an all-encompassing approach for the adoption of precision ag technologies, and respectfully urges the Committee to include them in this year's farm bill.

The implementation of precision ag technologies depends on the successful deployment of broadband dollars. It is imperative that we work together to ensure that rural America has the same affordable and reliable connectivity as the rest of the country. I thank you for inviting me here to testify today, and the Association of Equipment Manufacturers, Mr. Chairman, looks forward to continuing to work with Members of this Committee.

[The prepared statement of Mr. Hurley follows:]

PREPARED STATEMENT OF BILL T. HURLEY, VICE PRESIDENT, DISTRIBUTION, AMERICAS, AGCO CORPORATION; CHAIR, AG SECTOR BOARD, ASSOCIATION OF EQUIPMENT MANUFACTURERS, DULUTH, GA

Chairman Thompson, Ranking Member Scott, and distinguished Members of the Committee. Thank you for the opportunity to appear before you and for holding this hearing today on closing the digital divide in rural America.

A. Introduction

My name is Bill Hurley, and I currently serve as Chair of the Ag Sector Board of the Association of Equipment Manufacturers. I am also a Vice President with AGCO Corporation, headquartered in Duluth, Georgia.

I was born and raised in Franklin, a small town in central Texas with a population of less than 2,000 people. My family had a small farm not far from there in a place called Ridge, where my grandmother lived. I spent a lot of time on that farm, and I vividly remember the challenges that came from ten families sharing a party line. While we have come a long way since then, today's hearing is a reminder that we have still not fully closed the digital divide in rural America.

The Association of Equipment Manufacturers is the North American-based international trade group representing off-road, heavy equipment manufacturers, with more than 1,000 companies and more than 200 product lines in the agriculture and

construction-related sectors worldwide. The equipment manufacturing industry supports 2.3 million jobs in the United States and contributes \$316 billion a year to the U.S. economy.

The men and women who make the equipment that builds, powers, and feeds the world are not just welders, fabricators, and machinists. Some are farmers and ranchers. And one in three of them live and work in rural communities across the country, compared to just one in five people overall in the United States. Our industry is not only deeply connected to rural America—we are a big part of it.

Equipment manufacturers are proud to provide American farmers and ranchers with the next generation of innovative tools that will keep our agriculture sector competitive for generations to come. But farmers and ranchers cannot take advantage of the benefits of precision agriculture technologies without reliable and affordable connectivity across all of rural America.

B. The Benefits of Precision Agriculture Technology

Precision agriculture leverages technologies to enhance sustainability through more efficient use of critical inputs, such as land, water, fertilizer, and pesticides. For example, herbicide use could be further reduced by 15 percent at full adoption. Water use could decrease by 21 percent at full adoption of precision agriculture technologies.¹ Just ¼ of farms in the United States are currently able to leverage precision agriculture technologies due to the lack of high-speed connectivity. There is a great opportunity for growth in this area. Reliable internet access and smart policies that help farmers and ranchers adopt these cutting-edge technologies will lead to a transformative shift in agriculture practices that drive productivity while conserving resources.

C. Precision Agriculture Connectivity Needs

A multifaceted strategy including fiber optic, low earth orbit (LEO) satellites, and 5G will continue to close the rural connectivity gap, enabling farmers and ranchers to leverage important technologies and management strategies that will help them produce more with less. For precision agriculture technologies to reach their full potential, we need technology-neutral deployment of broadband dollars. It is imperative that all aspects of rural America are connected, from the hospital to the school and from the farmhouse to the field.

We should not prioritize one technology over the other, but rather take an all-encompassing approach, or many parts of rural America will be left further behind. Other game-changing technologies such as soil and weather sensors, machine learning and machine autonomy, equipment tracking, and food traceability will increasingly rely on connectivity. The opportunity in front of us is to prioritize connectivity for the essential food supply chain across rural America *versus* entertainment streaming speed.²

D. Opportunities To Advance Precision Agriculture Through the Farm Bill

The 2023 Farm Bill is this Committee's opportunity to fully embrace the potential of these technologies by including three bipartisan pieces of legislation in the final package:

- *The Precision Agriculture Loan Program Act* establishes the first Federal precision agriculture loan program within the Department of Agriculture's Farm Service Agency. Loans at lower interest rates and extended terms will give small- and mid-sized producers the tools they need to monitor, manage, and maximize their operations, while significantly reducing their environmental impact more effectively. I would like to thank Representatives Feenstra and Panetta for introducing this bipartisan legislation.
- *The PRECISE Act* designates precision agriculture as an applicable practice in the EQIP program. Precision agriculture technologies do and will continue to play a huge role in conservation. Adoption of these technologies allows American producers to do more with less. I would like to acknowledge Representatives Finstad, Hinson, Craig, and Panetta for working together in a bipartisan fashion on this bill.

¹Association of Equipment Manufacturers, *The Environmental Benefits of Precision Agriculture in the United States* (2021), <https://newsroom.aem.org/download/977839/environmentalbenefitsofprecisionagriculture-2.pdf>.

²Association of Equipment Manufacturers, *The Future of Food Production* (2022), <https://www.aem.org/AEM/media/docs/Whitepaper/AEM-Future-of-Food-Production.pdf>.

The Association of Equipment Manufacturers believes that these two bills provide an all-encompassing approach for the adoption of precision agriculture technologies, and respectfully urges the Committee to include them in this year's farm bill.

The Promoting Precision Agriculture Act builds on a recommendation from the FCC's Precision Agriculture Task Force, which the Association of Equipment Manufacturers played an integral role in creating and which includes several equipment manufacturers. This important bill directs the Department of Agriculture and the National Institute of Standards and Technology to work together with equipment manufacturers to create standards around interoperability. Having uniform standards for our industry will give American farmers and ranchers more free market options when choosing the technology solution that best fits their operations. I would like to thank Representatives Davis Mann for introducing this bill.

E. Conclusion

The implementation of precision agriculture technologies depends entirely on the successful deployment of broadband dollars. It is imperative that we work together to ensure that rural America has the same affordable and reliable connectivity as the rest of America.

Thank you for inviting me to testify today. The Association of Equipment Manufacturers looks forward to continued engagement with Members of this Committee as we work to close the digital divide and strengthen rural communities. I look forward to your questions.

The CHAIRMAN. Mr. Hurley, thank you so much for your testimony. I am now pleased to recognize Mrs. Bloomfield. Please begin when you are ready.

STATEMENT OF SHIRLEY BLOOMFIELD, CHIEF EXECUTIVE OFFICER, NTCA—THE RURAL BROADBAND ASSOCIATION, ARLINGTON, VA

Mrs. BLOOMFIELD. Chairman Thompson, Ranking Member Scott, Members of the Committee, good morning, and a sincere thanks for the opportunity to testify today. NTCA members across the country deploy cutting-edge broadband networks in deeply rural areas and deliver services that are just as robust in those that are available in urban markets. Eighty percent of the customers have access to fiber-to-the-home technology. These providers stand ready to help bridge the digital divide in areas that they serve today and to go beyond to keep their good work in deploying broadband to connect the rest of the world. So, building upon these efforts, I really appreciate the opportunity to share how critical this Committee's efforts are, with USDA oversight, to the deployment of broadband in rural communities.

I am Shirley Bloomfield, CEO of NTCA—The Rural Broadband Association. We represent over 850 community-based providers who are leading innovation in small town and rural America. NTCA members offer broadband, voice, and other advanced communication services across over 30 percent of the land mass, but with less than five percent of the population. This part of the country was left behind nearly a century ago by nationwide carriers, and there is no question that small rural internet service providers are a critical part of the equation as we work to provide rural Americans with affordable and reliable internet services that will meet the needs of today and withstand the test of time.

RUS, within USDA, has played a very significant role in enabling much of this deployment to date, and it is uniquely well positioned to serve and close the divide for the benefit of still unserved Americans. And it should be tasked with doing so in a way that will ensure that the divide stays closed. As Members of the Com-

mittee assess how best to structure broadband funding programs, success in these programs should be measured by actual results on the ground rather than promises made. And we should all note that what matters most to rural Americans is not merely the deployment of broadband, but the quality, reliability, and affordability of the services they receive.

As this Committee and Congress deliberates the 2023 Farm Bill, I offer some recommendations on how to close the divide. First, we should build networks in rural American that are just as robust and reliable as those available in urban areas. I encourage the Committee to make sure program requirements are driven by the long-term needs of these communities. To that end, the farm bill should maintain high-speed symmetrical broadband networks of 100/100 megabits. This threshold has been in place for several rounds of USDA's ReConnect and has led to four to five times greater demand for funding than is available. It ensures that the needs of rural consumers are met, it is the best use of limited taxpayer dollars by building it right the first time, and promotes meaningful competition among providers of all types.

So, with that in mind, this farm bill is not the time to move the program, and the rural Americans it serves, backwards. When the Federal Government helped to provide telephone, electric, and water infrastructure in rural America in the last century, we didn't set lower standards. We ensured that rural Americans did not become second class citizens, and it was an investment that has paid off many times over, as we have the strongest rural economy in the world. Second, close coordination with Federal and state agencies is essential. There are enough un- and underserved Americans awaiting connectivity to not waste precious resources overbuilding government-supported networks with government funds.

Third, we urge policymakers to look local when it comes to identifying broadband solutions in rural America, and to leverage the expertise and the experience of smaller community-based providers, regardless of their corporate form, in overcoming these challenges. NTCA service providers are based in their communities and have a longstanding relationship and track record of performance. It is a very different measure of customer service when you are running into your customers in the grocery store. Last, the Committee should consider ways to streamline historical preservation requirements and environmental reviews that often result in significant delays. In fact, we still have members who were notified of winning ReConnect Round 1 who have yet to receive their funding due to these delays.

I also want to take this opportunity to thank Members of the Committee, Representatives Nunn and Craig, and other cosponsors for introducing the ReConnecting Rural America Act (H.R. 4227), which would ensure networks continue to be built at 100 symmetrical, agency coordination is strengthened, there is a level playing field with those local providers with a proven track record being strongly urged to participate. And I also want to thank Representative Feenstra for his recently introduced Rural Broadband Modernization Act (H.R. 3964), which includes many of these same very important provisions.

I thank the Committee for its leadership. We still clearly have much work to do, in both deploying networks where they remain lacking, and operating networks where they are already built, and this is where this Committee plays a really important role in helping to build and sustain broadband in rural markets that could not otherwise justify such investments. With the RUS programs, you help to provide the tools that not just help rural America survive, but to thrive. So I look forward to sharing more about what we can see on the ground, and what we are seeing on the ground, as NTCA's members continue to build smart rural communities, and to help fuel a needed rural renaissance. Thank you very much.

[The prepared statement of Ms. Bloomfield follows:]

PREPARED STATEMENT OF SHIRLEY BLOOMFIELD, CHIEF EXECUTIVE OFFICER,
NTCA—THE RURAL BROADBAND ASSOCIATION, ARLINGTON, VA

Introduction

Chairman Thompson, Ranking Member Scott, and Members of the Committee, good morning and thank you for the opportunity to testify about the continued role of the broadband programs overseen by the U.S. Department of Agriculture (“USDA”) as part of this Committee’s review of the “farm bill’s” rural development programs. With the help of these and other important broadband programs, NTCA members across the country deploy cutting-edge broadband networks in deeply rural areas and deliver services that are as robust and reliable as those available in urban markets. These providers stand ready both to help close the digital divide in areas beyond those that they serve today, and to sustain their good work to date in keeping millions of rural Americans connected to the rest of the world. Building upon such efforts, I greatly appreciate you holding this hearing and the opportunity to speak to you today.

I am Shirley Bloomfield, Chief Executive Officer of NTCA—The Rural Broadband Association (“NTCA”), which represents just over 850 community-based companies and cooperatives that are leading innovation in rural and small-town America. NTCA members and companies like them offer broadband, voice, and other advanced communications services across more than thirty percent of the country’s geography where less than five percent of the U.S. population resides. There is no question that small rural internet service providers are a critical part of the equation as we work to provide Americans with affordable and reliable internet services that will meet the needs of today and stand the test of time.

Every day, NTCA members work hard to deliver for rural America. Their steadfast commitment to serving the communities that they—and many of you—call home makes them America’s trusted communications solution providers. On average, each member serves nine public safety entities (police, fire, *etc.*) and seven schools in their areas with fixed broadband. NTCA members have worked for decades to invest in our nation’s future by deploying essential state-of-the-art communications infrastructure. Over eighty percent of their customers on average have access to 100 Mbps broadband service or better. Over sixty percent of their customers on average have access to Gigabit speeds. These accomplishments are staggering when you consider that the average population density in these areas is about seven customers per square mile, or roughly the average density for the entire state of Montana.

The Rural Utilities Service (“RUS”) within USDA has played a significant role in enabling much of this deployment to date, and it is uniquely positioned to close the digital divide for the benefit of millions of still-unserved Americans—and it should be tasked with doing so in a way that will ensure that divide stays closed. As Members of this Committee assess how best to structure broadband funding programs, success in broadband programs should be measured by results rather than promises, and we should all note that what matters most to rural Americans is not the mere deployment of the network but the quality of the services they receive. Some programs in recent years have offered the promise of better broadband, with announcements asserting that tens or hundreds of thousands of Americans will be connected to broadband at some point in the future due to Program X or Initiative Y. Some of these programs will undoubtedly deliver on that promise in coming years, at least in part and in certain places. But NTCA submits that the best proofs of concept can be found—and the best lessons drawn for future program design—by looking at

which programs have in fact already delivered on the promise of reliable and sustained broadband access in rural areas.

NTCA's Experience With RUS Broadband Programs

RUS telecommunications and broadband loans and grants have helped enable and unleash billions of dollars in Federal and private capital investment in rural communications infrastructure. A mix of local presence and commitment, entrepreneurial spirit, private capital, public capital through RUS financing programs, and ongoing support through the high-cost universal service fund ("USF") programs overseen by the Federal Communications Commission ("FCC") have empowered NTCA members and other community-based providers like them to deploy reliable networks and offer robust and affordable services across wide swaths of rural America.

NTCA members have been the recipients of a number of RUS loans and grant awards through programs such as the ReConnect program, the Rural Broadband program, Distance Learning and Telemedicine grants, and the Telecommunications Infrastructure program. Through ReConnect alone, 159 NTCA members have been awarded grants or grant and loan combinations to serve approximately 441,000 households, 21,000 businesses, and 14,000 farms.¹

NTCA recommends that Congress approach proposals for new broadband programs with a thoughtful eye and a preference for leveraging proven concepts such as many of these prior efforts. In lieu of creating new initiatives that might compete or even conflict with existing efforts, Congress should consider how well-functioning existing programs, like many of those listed above, can be enhanced and expanded to achieve even better results and reach remaining unserved areas with service levels that meet the needs of users both immediately and over the life of the network that the Federal Government is helping to fund.

The Case for High-Speed Internet Access in Rural America

While broadband has value universally, it is especially important for rural Americans who often must rely even more than their urban counterparts on online access given the challenges of distance and density. From telehealth, remote work, distance learning, and precision agriculture, the opportunities for rural Americans are substantial when given the ability to access high-speed, reliable internet services.

For example, telemedicine can play a crucial role in bridging the gap between veterans and the Veterans Affairs system by providing them with seamless access to telehealth services, virtual consultations, and online resources, ensuring timely and convenient healthcare support regardless of their geographical location. Nearly a quarter of the United States veteran population resides in rural communities, underscoring the importance of leveraging connectivity to deliver critical services over great distances.² In fact, the Veterans Health Administration, which has long been a pioneer in the use of telemedicine, conducted a pilot program which included seven hospitals, ten multi-specialty outpatient clinics and 28 community-based primary care clinics. The 900 patients in the trial were able to utilize home telehealth devices, which allowed them to self-manage their health. The results were dramatic: a 40% reduction in emergency room visits, a 63% drop in hospital admissions and an 88% decrease in nursing home bed days of care. While the total cost savings resulting from the dramatic decrease in resource utilization was substantial, perhaps even more impressive was the 94% patient satisfaction.³ High-speed internet is not just a luxury; it is a lifeline for rural America, bringing greater telemedicine functionality and helping residents overcome the challenges of distance that make so many tasks more expensive and time consuming.

Moreover, one of the most difficult challenges facing rural America is keeping younger generations from moving away or ultimately helping them to come back home. However, thanks to the unique opportunities of teleworking and remote learning, many parts of rural America are seeing positive growth. Technology is shaping the next generation of American jobs. Manufacturing, agriculture and health care are among sectors that are demanding more highly-skilled employees than in the past. Increased training and education opportunities are imperative for many rural areas that face demographic and economic challenges. In rural areas, broadband can be used to support secondary and post-secondary education and

¹<https://www.usda.gov/reconnect>.

²"Rural Veteran Health Care Challenges." Veteran Affairs: <https://www.ruralhealth.va.gov/aboutus/ruralvets.asp>.

³Broderick, Andrew, "The Veterans Health Administration: Taking Home Telehealth Services to Scale Nationally," The Commonwealth Fund Case Studies in Telehealth Adoption, Jan. 2013, http://www.commonwealthfund.org/-/media/Files/Publications/Case%20Study/2013/Jan/1657_Broderick_telehealth_adoption_VHA_case_study.pdf, p. 5.

training: broadband-enabled services can be used to overcome instances in which small or insular areas lack sufficient economies of scale to support interest in advanced or specialized courses.

Rural broadband providers are playing vital roles, leveraging their networks and working closely with local educational institutions. For example, Rainbow Communications of Everest, Kansas, provides fiber connectivity to Highland Community College, the oldest college in the state. The network enables the college to offer numerous courses at various sites. The college also supports the agricultural industry through courses that include precision agriculture and diesel mechanics; both are necessary as farms rely increasingly on precision agriculture that blends traditional mechanical equipment with analytical tech and GPS guided systems.⁴ Meanwhile, in Alaska, the arrival of a submarine cable line allowed for one family to move back to its hometown while allowing the parents to retain their current jobs that required access to high-speed internet. This increased connectivity also provided their children with the ability to participate in classes and coursework that were not offered at the local school.

Of course, while substantial distances in rural areas make broadband access a necessity for many aspects of life, there may be no more uniquely rural application for high-performing broadband than precision agriculture. Precision agriculture has revolutionized farming practices and enhanced the overall agricultural landscape. By leveraging advanced technologies such as GPS, drones, sensors, and data analytics, precision agriculture enables farmers to make informed decisions based on real-time information, leading to increased productivity, resource efficiency, and sustainability. In rural areas where farming is a vital economic activity, precision agriculture offers immense benefits. The value of precision agriculture is conveyed effectively when agriculture is viewed as a business of logistics. Row and specialty crops are particularly suited to tech-enabled efficiency during planting and cultivation that enable farmers to harvest and deliver product to market at peak times. Precision agriculture also facilitates better future planning. Visual inspection of crop development (either by surface imaging or drones) combined with sensors that assess soil conditions can help farmers create a forward-looking plan of action. Or, in one instance, an NTCA member's customer in South Dakota uses a live-video feed in a calving barn to monitor newborn calves and mothers from the comfort of home.⁵

As the President of the Missouri Farm Bureau aptly observed during a hearing hosted by this Committee last September, "Truly the farm of the future has to be connected . . . with at least 100 [symmetrical]. It's what we need to be shooting for. My rural hospital says the same thing, they need a hundred up, a hundred down in order to do telemedicine in a way that is truly a good experience for the provider as well as the patient."⁶ These broadband-enabled benefits combine to serve greater economic efficiencies and opportunities for the agriculture industry as a whole.

Building Future-Proof Networks

With billions of dollars and millions of unserved Americans at stake, it is prudent and responsible for the Federal Government to invest taxpayer resources based upon more than speculation as to potential performance, marketing hype, and overstated claims of capability not borne out of real-world applications throughout rural America. The minimum speed and other performance criteria for receiving Federal funding must be determined by the needs of rural consumers and not set by the maximum capabilities some in the industry feel they can offer. With so much on the line in terms of dollars and unserved customers, this is not the time to award participation trophies. Setting standards is not a matter of technological neutrality—it is a matter of public interest and fiscal responsibility.

To keep pace with consumer demand, the minimum speed for eligible projects administered by USDA to receive funds should be set at 100/100 Mbps—just as was the case in Rounds 3 and 4 of the ReConnect Loan and Grant Program. It has been argued that the 100/100 Mbps minimum speed threshold is too high and that it may prevent certain providers from applying for the program. However, during Rounds 3 and 4, the program was oversubscribed by four to five times, proving that more than enough providers are willing and able to build the kinds of networks that consumers need today and well into the future.

⁴"Rural Broadband and the Next Generation of American Jobs." NTCA—The Rural Broadband Association: https://www.ntca.org/sites/default/files/documents/202103/SRC_whitepaper_the_next_generation_of_american_jobs.pdf.

⁵"From Fiber to Field: The Role of Rural Broadband in Emerging Agricultural Technology." NTCA—The Rural Broadband Association: <https://www.ntca.org/sites/default/files/documents/2021-07/06.14.21%20SRC%20Ag%20Tech%20Final.pdf>.

⁶See, <https://agriculture.house.gov/calendar/eventsingle.aspx?EventID=7426> at minute 2:48:00.

While some will argue that such an approach is not “technology neutral” and that this would favor fiber, we have seen providers and manufacturers of technologies of all kinds proclaim the ability to deliver services at these speeds or even higher, and providers that prevailed in the FCC’s USF auctions similarly pledged that they could use technologies of all kinds to deliver even Gigabit speeds—so it is unclear why some feel as if demanding this minimum level of performance would now somehow shut them out.⁷ Moreover, it is not a violation of technological neutrality merely to set high standards and expectations—the public interest and fiscally responsible use of government funds demands nothing less. It is true that not all technologies are equally capable in all cases, and it does not violate a principle of “technological neutrality” to take stock of and account for the relative attributes and limitation of different technologies as demonstrated in the marketplace.

For example, while many NTCA members have experience leveraging fixed wireless technology to serve end-users in hard-to-reach areas, the consensus with respect to such services among these members is that even as they may offer a means of initiating service, they are less desirable as long-term solutions to overcome the digital divide (which, as the title of this hearing suggests, is what programs like Re-Connect should aim to achieve). In addition to interference and other reliability issues that can affect unlicensed spectrum specifically, fixed wireless networks require relatively clear lines of sight and other optimal conditions to realize their potential. Technologies that rely upon high-band spectrum in particular can be difficult to implement in rural areas given limited propagation over great distances. Finally, spectrum capacity can present a substantial issue, as the more users that place demands on a cell site or antenna can degrade the experience of the other users sharing that capacity. Put another way, just because certain technologies can perhaps be used to serve *anyone* does not mean they necessarily can serve *everyone* at a sustained level of performance—which is the essential long-term objective of sound universal service policy.

To be clear, wired and wireless facilities are necessary to support the full complement of ag tech solutions. Therefore, the collective interest of the ag and tech industries, alongside policymaker interest in supporting U.S. farm markets and expanded broadband deployment, should drive actions to develop and maintain robust future-proof scalable broadband networks that can enable wired and wireless solutions alike.

Some will also claim that consumers do not need 100 Mbps symmetrical services, and we should therefore build lesser networks leveraging government dollars. But the marketplace indicates that consumers—your constituents and our members’ customers—already believe and expect otherwise. Ookla, the global speed test provider, reported average U.S. fixed broadband speeds of 179/65 Mbps in January 2021—which means the “build-to” speeds that some in the industry are advocating for now (100/20 Mbps) were outdated more than 2 years ago. It is predicted that the average U.S. fixed broadband speeds will be 1,500/599 Mbps by 2030.⁸ In other words, anything less than 100/100 Mbps is outdated and even this speed threshold may soon be surpassed, which is why treating it as a minimum standard that can evolve over time as new awards are made is a sensible and pragmatic approach.

A letter addressed to this Committee on March 14, 2023, underscores the robust support by rural stakeholders of all kinds—county governments, educational institutions, electric utilities, rural broadband providers, health care providers, economic development organizations, and banking institutions—for robust symmetrical broadband. In addition to NTCA, the following organizations signed onto that letter:

National Rural Electric Cooperative Association
Fiber Broadband Association
National Association of Counties
National Association of Development Organizations
National Rural Health Association
National Rural Economic Developers Association
The Power and Communication Contractors Association
National Rural Education Association

Rural Community College Alliance
National Rural Telecommunications Cooperative
Farm Credit Council
CoBank
National Cooperative Business Association
National Utility Contractors Association
Rural Telephone Finance Cooperative

These stakeholders represent a broad cross-section of entities with a vested interest in the vitality and long-term viability of rural America, and their constituencies

⁷ See, e.g., <https://www.prnewswire.com/news-releases/gigabit-6-ghz-fixed-wireless-is-a-reality-301553129.html> and <https://www.fiercewireless.com/tech/tarana-provides-1-gig-speeds-its-fixed-wireless-access>.

⁸ “Eliminate the Digital Divide in Rural North America with Fiber.” The Fiber Broadband Association.

are at the heart of the communities that are intended to be benefit from the farm bill.⁹

I would again encourage this Committee to make sure program requirements are driven ultimately by the long-term needs of rural communities. I would also encourage this Committee to avoid the mistakes of too many broadband programs past, where 4/1 Mbps or 10/1 Mbps sounded like terrific ideas to build—only to find a few years later that we needed to start over because we had aimed too low. Indeed, if anything, Congress should view the 100 Mbps symmetrical threshold as a *baseline*, and give USDA the flexibility to increase this standard over time as needs and use cases for broadband evolve.

NTCA's Farm Bill Priorities

1. Meeting the Needs of Consumers Today and Tomorrow

Federal broadband investments should support technology that can be readily upgraded to deliver the fastest speeds over the long-term life of the assets being built, rather than supporting technologies that may appear cheaper to deploy now but will be unable to provide meaningful internet access over time that keeps pace with consumer demand without the need to be substantially rebuilt (perhaps again at the expense of Federal dollars). To this end, the farm bill should support high-speed symmetrical broadband networks that offer a minimum of 100/100 Mbps speeds. As discussed above, this is a reasonable threshold that will ensure consumers realize the benefits of these investments backed by Federal dollars for years to come, while also promoting meaningful competition among providers of all kinds to seek to win such awards and serve these customers.

2. Identifying Eligible Areas

Close coordination among Federal and state agencies is essential to avoid deploying duplicative government-funded broadband networks in a rural area that cannot support even a single network without such funding. The farm bill should specify the ways in which ReConnect funds will interact with funds already awarded under other programs; specifically, ReConnect funds should not be awarded to any provider in an area where a different provider is already the recipient of: (a) an RUS telecom program loan or grant (so that the agency does not put at risk its own prior committed awards); (b) support from Federal universal service programs that is being used to deploy 100/20 Mbps or better service (so that RUS does not undermine the FCC's important sustainability initiatives); and/or (c) an award under any other Federal or state broadband grant program where the recipient is obligated to deliver 100/20 Mbps or better service and is meeting those obligations.

Relatedly, to ensure that broadband deployment funds are targeted to where they are most needed, an area should not be deemed eligible for ReConnect funding unless 90% of locations in that area lack at least 100/20 Mbps service. To be clear, networks built in eligible areas should be required to meet a minimum threshold of 100/100 Mbps speeds as noted above—in other words, 100/100 Mbps should be considered the minimum of *what to build*. But using 100/20 Mbps as the criterion for determining *where to build*—what areas will be considered unserved—will help in making the most of government broadband funding and bringing as many Americans as possible up to better standards of service.

3. Project Delays After Notice of Awards

The 2023 Farm Bill should address historical preservation requirements and environmental reviews that often result in significant delays between notice of awards and receipt of the funds necessary to commence construction. While RUS can take certain steps on its own to mitigate such delays to some degree by, among other things, allowing providers to work toward seeking approval of environmental and historical reviews prior to an award, Congress should consider other means of streamlining network deployment while still providing reasonable protections for important historical and environmental concerns that apply in certain contexts. We appreciated the opportunity to testify before, and the recent work by, the House Energy and Commerce Committee regarding bills to address broadband-related permitting delays, and NTCA is supportive of that legislation. We encourage this Committee, however, to consider additional means of providing relief specific to deployments pursuant to USDA and RUS programs, including promoting programmatic agreements and evaluating other measures that the agency could implement to streamline preservation reviews and environmental clearances.

⁹“100 Symmetrical ReConnect Coalition Letter.” March 13, 2023. Letter. <https://www.ntca.org/sites/default/files/documents/2023-06/100SymmetricalReConnectCoalitionLetter.pdf>.

4. *Matching Funds*

The farm bill should make clear that providers receiving grants need not spend matching funds in full prior to drawing down grant funds. The obligation to expend all matching funds prior to receipt of any grant resources is onerous and unnecessary to ensure providers have “skin in the game” with respect to grant-funded deployment. Consideration should also be given, as it has been in the Broadband Equity, Access, & Deployment program, to reducing the need for matching funds in deeply rural areas that often present the most significant economic challenges to serve.

5. *No Provider Preference Based Upon Corporate Structure*

The farm bill should codify that providers seeking grants or other funding will not be favored based merely upon their form of organization or commercial status. Providers of all kinds should be allowed to apply to programs on a level playing field where they can meet the substantive standards for doing so.

Conclusion

In an era of transformative technological developments, regulatory challenges, and marketplace competition, NTCA members are advancing efforts to close the digital divide by delivering robust and high-quality services over networks that are built to last. Their commitment to building sustainable networks makes rural communities fertile ground for innovation in economic development, e-commerce, health care, agriculture and education, and it contributes billions of dollars to the U.S. economy each year. The rural broadband industry and our nation as a whole can tell a great story of success to date in delivering service, but we still clearly have much work to do both in deploying networks where they remain lacking and operating networks where they have already been built—and this is where public policy plays an important role in helping to build and sustain broadband in rural markets that would not otherwise justify such investments and ongoing operations.

I thank the Committee for its leadership on and interest in these issues, and I look forward to working with you on behalf of NTCA members and the millions they serve to realize a shared vision of a rural America that gets and stays connected.

The CHAIRMAN. Thank you, Mrs. Bloomfield, for your testimony, and thank you all for your important testimony today. At this time Members will be recognized for questions in order of seniority, alternating between Majority and Minority Members, and in order of arrival for those who joined us after the hearing convened. You are going to be recognized for 5 minutes each in order to allow us to get to as many questions as possible. And I now recognize myself for 5 minutes.

Mr. Matheson, as you know, USDA is the prime agency to help address the needs of rural America, including access to high quality, broadband connectivity. Since the early 2000s USDA has received billions of dollars to accomplish this goal, with thousands of projects receiving Federal funding. Do you believe that USDA is best suited to address the rural connectivity issues?

Mr. MATHESON. Well, clearly the other agencies are involved, like the FCC and NTIA, as has been mentioned, but I do think USDA is uniquely positioned to be an important voice in this circumstance because USDA, number one, understands rural America, and the Rural Utilities Service specifically understands what it takes to provide utility services in these very expensive, hard to serve parts of our country. I think that makes the program work better. I think USDA’s participation in broadband deployment has had an effect where it has moved other Federal agencies to be more aggressive than they might otherwise have been. I think USDA has been a leader in pushing for better speeds, better requirements, and so I wholly endorse RUS being active in rural broadband development, and I think that perspective is very valuable to rural America.

The CHAIRMAN. Very good. Thank you for that. Mrs. Bloomfield, Mr. Zumwalt, do you share similar views?

Mrs. BLOOMFIELD. My members have long used RUS as their primary banker, actually. So, when I think about an agency that has really taken on the mantle of broadband, RUS was actually an early leader in funding a lot of the network and infrastructure that we see across the country. And, just playing upon Mr. Matheson's remarks, the other thing is the agency has general field reps that are out in the field. So, when we talk about what are the speeds, what are the demands, what the community's needs are, they actually have folks in the field who are verifying where is the infrastructure, where is the infrastructure not yet to be built? So I also think they have made the wise use of some of the investments.

We certainly have other Federal programs that are in place, we have state programs that are in place, but I think RUS has been very diligent, and has probably been the early leader in ensuring that rural America has connectivity.

The CHAIRMAN. Very good, thank you. Mr. Zumwalt, thoughts?

Mr. ZUMWALT. Most of our members have had success in other programs besides the RUS programs, although some are participating. I would agree that USDA is the proper place for this activity because of a longstanding history that USDA has representing the interests of farmers and our agricultural community. But as precision ag, in particular, comes into the forefront, our members are wanting to participate more. Historically, RUS has tended towards established players in the cooperative industries, for example, so what we would be looking for is to certainly encourage USDA to continue to work closely in collaborating with the other agencies. For example, the FCC National Broadband Map is important in making sure that we don't have overlapping funding programs at a Federal level trying to serve the same need from different directions.

But I have experience with RUS as well, and my feedback would be anything that we can do to broaden the inclusion of any solution, any provider that can close the digital divide, I think USDA can do that, and so absolutely support efforts to do that.

The CHAIRMAN. Thank you. Mr. Assey, according to a December 2022 GAO report, some stakeholders have expressed concern regarding the ability of the broadband infrastructure deployment industry to attract enough workers needed to deploy broadband infrastructure, and I have also heard this concern as rural America continues to face a lack of skilled workers in key sectors, including telecommunications. Given the influx of Federal funding for broadband infrastructure, what can we do to strengthen private workforce development opportunities and grow labor opportunities for those in this sector?

Mr. ASSEY. Yes, I think that you have put your finger on an issue that affects anybody who is in the communications network building arena, and it really goes to where we stand today, at the precipice of a major initiative to extend networks. It is one of the things that many of the companies that I represent are in the business of doing this on a day in, day out basis. Whether or not they are applying for government support or not, it is important for them to have a skilled workforce to be able to extend, upgrade net-

works on a regular basis. So, we work with private industry groups to make sure there is workforce certification and development.

But there is no question that we are going to need more people if we want to advance rapidly in building networks, and we are going to be competing in a labor pool for workers that are going to not just be building communications networks, they are going to be building roads, bridges, other sorts of things too. So it is certainly something that we welcome working with this Committee, and others in Congress, to try and improve.

The CHAIRMAN. Thank you so much. My time has expired. I am now pleased to recognize the gentleman from Georgia, the Ranking Member, for 5 minutes of questions.

Mr. DAVID SCOTT of Georgia. Thank you, Mr. Chairman. Lady and gentlemen, as I mentioned in my opening statement, since the Rural Electrification Act (Pub. L. 74-605) in 1936, the U.S. Department of Agriculture has been the only Federal department with the primary mission to serve rural America. And with their presence in rural communities across our country, they are, in my opinion, the best equipped to meet the needs of rural communities. However, out of the \$65 billion that we provided through bipartisan infrastructure investment, only \$2 billion was provided for USDA's Rural Development broadband. And also, in the bipartisan legislation that Chairman Thompson and I passed through the Committee last Congress, we will invest \$43.2 billion in the Rural Development broadband programs to reach the most underserved rural areas.

And so, to each of you, I got this important question. Could you tell us the importance of giving the U.S. Department of Agriculture the leadership role in deploying broadband to rural America, and also what, in your opinion, level of financial resources will be necessary for rural communities to access Federal funding, and to meet our collective goal of expanding broadband service to 100 percent of rural America? Each of you, please. Mr. Matheson, we will start with you and go down.

Mr. MATHESON. Okay.

Mr. DAVID SCOTT of Georgia. And after you, the lady, so we can get—

Mr. MATHESON. Okay. Look, to expand on what I previously said about the value of the Department of Agriculture perspective, they know rural America, they prioritize issues that matter to rural America in their broadband funding, in terms of rurality or low population density. That is one of their criteria they look at. Look, this is important for these rural areas. Let us put this out there. Internet service matters, affordability matters. America's electric cooperatives serve 92 percent of the persistent poverty counties in America, so investments in broadband for these counties that have persistent poverty, it is an opportunity for economic development to mean something, in terms of looking forward in the future. I think the Department of Agriculture has the right perspective to do this.

Look, there is a lot of other money you mentioned, Mr. Scott, in terms of programs.

Mr. DAVID SCOTT of Georgia. Yes.

Mr. MATHESON. I get that, and we are going to pursue all those opportunities, but we are glad RUS has an important role.

Mr. DAVID SCOTT of Georgia. Mrs. Bloomfield?

Mrs. BLOOMFIELD. Thank you very much. I think that USDA understands rural America like nobody else. No other Federal agency understands the needs on the ground, and how important connectivity is for rural Americans, who, frankly, suffer from the handicap of distance, whether it is to education, medical services, whether it is tools for precision ag. So, there is no other agency that is more in tune to what rural America actually needs. But that is one of the reasons why I think they have taken a leadership role, and, frankly, set a higher standard for service than other agencies, and any of these other programs have, in part because they know that rural Americans really do need these services.

We saw during the pandemic how people used internet and broadband for all of the different reasons that they did, but I still see—I look at companies like Pineland Telephone Cooperative down in Georgia, that, frankly, today all of their customers have symmetrical speeds because they know that that is the way people can utilize getting to market, doing the services they need, and, frankly, make sure that we continue economic development. So, USDA has been primarily focused on really how to best serve rural America, so I think they are a very critical player.

Mr. DAVID SCOTT of Georgia. And, Mr. Stroup?

Mr. STROUP. Thank you. Thank you. Unlike most of the other representatives here, our infrastructure is deployed in space, and so there is no further cost associated with covering rural America. The service that you get is comparable between cities, between rural America. So, really, the additional funding would be made available for access to Earth stations, to consumer equipment. But, I definitely feel that USDA has an important role to play. I would also like to emphasize the point that Mr. Zumwalt made previously, which is the need for coordination between the other funding organizations. Thank you.

Mr. DAVID SCOTT of Georgia. So, the entire panel, my time has passed, but it is important that each of you do agree that the United States Department of Agriculture is the one best suited to lead and coordinate the effort. Is that correct?

Mr. ZUMWALT. Yes.

Mr. DAVID SCOTT of Georgia. Thank you.

Mr. ROUZER [presiding.] The gentleman's time has expired.

Mr. DAVID SCOTT of Georgia. Yes. Thank you.

Mr. ROUZER. I recognize Mr. Crawford for 5 minutes.

Mr. CRAWFORD. Thank you, Mr. Chairman. Mrs. Bloomfield, talking about long-term, we know what it looks like now, we know what broadband looks like currently, and USDA's role in that. How do you think Congress should help to ensure that we are looking long-term, meeting the needs of consumers, specifically with regard to broadband deployment loan and grant programs?

Mrs. BLOOMFIELD. So, I think the Committee has really taken a forward look, so I really appreciate your asking that question. I think we get really wrapped up in capital expenses, so what does it cost to actually build the infrastructure? And I think one of the other reasons we are very bullish about different technologies—it

is going to take every tool in the toolkit, but definitely focused on fiber deployment where possible. Because of the fact that in a rural area, for example, at the end of the day your op-ex (operation-expenditures) becomes lower it means—we have a thing in rural America, when we provide service, that is called windshield time. Our techs have to drive 3, 4, 5 hours to get out to a home that has a trouble-shoot. Using technology that will reduce those op-exes actually just makes these operations more efficient.

The other thing is I think we are just on the cusp, in these rural areas, of actually seeing some of the services that really can transform lives, like telemedicine. And I think having that future-proof network, thinking forward, not just what we need today, but what we need tomorrow in those networks also makes a great deal of sense. The other thing I will say, when I look at how Americans are consuming broadband, the idea if you build something, that you have to go back in 3 years to upgrade, I think it will force all of us to look back and say we missed an opportunity to do it right the first time.

Mr. CRAWFORD. Thank you. From your perspective, what do you think is the best way to streamline coordination to avoid a duplicative process among the agencies? Things like overbuilding, bureaucratic holdups with other agencies. One of the things that I have heard—recurring theme from all of you all is that USDA is best positioned as the Executive agency, so I think that we can agree. But how do you harmonize that effort? Give me your thoughts on how we can reduce that.

Mrs. BLOOMFIELD. That is going to be the literally billion dollar challenge coming up. But that is where—and I know you have heard reference today to the maps that are coming out that the FCC produced. Congress appropriated \$7 million to produce these maps. We are going to see the results in just a matter of days. I think making sure that every agency, as they are rolling out funds, as USDA is making an award in an area, that those areas get taken off those maps, that they show as served, so that we continue to make sure that we are really focused on the unserved.

That really needs to be a priority, that those who are waiting for connectivity get it, then those who are underserved, and then those who, filling in some of those other gaps. So, I would say the mapping is going to be key. I know that there are ongoing discussions. I know that USDA and the Secretary have been very engaged in coordinating, but that coordination is going to become even more necessary in 2024, when the BEAD money starts to flow out the door from NTIA.

Mr. CRAWFORD. I know you represent a lot of rural telecoms across the country, so could you give me some insights into how your member organizations have worked with USDA to sort of advocate for resource allocation for those projects?

Mrs. BLOOMFIELD. So, they have been traditional borrowers since the telephone program was created decades ago. So, they traditionally had telephone loans, and obviously morphed very quickly into broadband because the need was so great in rural America. So, I think there are a couple of things that—one of the things that has really struck us is we think, through getting USDA to really take on that leadership mantle, has been some of the streamlining. Get-

ting some of the reviews, and things like—when you have had previously disturbed areas, that you don't have to go through the regulatory process again, because USDA, just like every one of us, is looking for workforce. So they really don't have a lot of the staff that they need to actually process a lot of the funding.

But I think, again, the leadership mantle that they have taken really comes through, and I think their long history in making business cases for putting money in low density parts of the country really speaks to their ability to kind of manage through where we go next on infrastructure.

Mr. CRAWFORD. Thank you. And real quick, Mr. Hurley, I want to talk about precision ag. I think that is relevant here in how broadband affects precision ag applications. What kind of policy changes do you think Congress should consider to help ag equipment manufacturers, for example, better meet the needs of rural America without leaving rural farming communities behind?

Mr. HURLEY. Yes. I think, in regards to a policy that needs to be implemented, programs, bills that need to be approved, we have really got three primary bipartisan pieces that we feel are critical to the further implementation of precision technologies across all of rural America, and that is the PAL Act (H.R. 1495), the PRECISE Act, and the Promoting Precision Agriculture Act of 2023 (H.R. 1697) as well.

Mr. CRAWFORD. Thank you, I appreciate it. Thank you all for being here today.

Mr. ROUZER. Mr. McGovern?

Mr. MCGOVERN. Well, thank you, and thank you all for being here today. This is an important topic. Access to high-speed internet is crucial for people to effectively do their jobs, participate in school, and access healthcare. And, unfortunately, far too many Americans still lack access, including 16 percent of Massachusetts residents, with a disproportionate number living in rural parts of my district. And I will say I am proud of the steps that we have taken over the last few years to close the digital divide, and we are only beginning to see the impact.

For example, the bipartisan infrastructure law included the largest Federal broadband investment in our nation's history and will bring over \$100 million to Massachusetts. The Commonwealth also received \$145 million in the American Rescue Plan Capital Project funds to expand rural broadband, which will connect nearly $\frac{1}{3}$ of the homes and businesses currently lacking broadband. I am just glad that these funds were obligated in time and weren't part of the \$27 billion clawed back during the debt ceiling debacle, but that is a whole other hearing.

But, we have seen the most significant broadband investments in our nation's history over the past few years, and it is imperative that we approach the broadband provisions in the farm bill with great care. And, quite frankly, I have concerns about what I have heard from some who want to lower the standards for those receiving Federal funding to build-out our rural networks. Mr. Assey, I know that one of your members, Charter, has a large presence in rural parts of my district, so I will direct this question to you. There has been a lot of talk about future-proofing networks. Can

you tell the Committee what you think that means, and if your members' networks are future-proof?

Mr. ASSEY. Thank you for the question. I think it is an important point, because when I think of future-proofing, I really think of—can networks grow with the society to meet their needs? Are they *scalable*? I think Mr. Matheson used the same word. So, the question is, are we going to be able to build networks that, without significant new capital investment, are going to be able to grow in the capabilities that they offer? And, without a doubt, the cable networks are.

As I mentioned, 99 percent of the homes passed in rural America by cable networks already have 100 megabit per second speed capabilities, and we are fast moving on to the next iteration of cable technology, so-called 10G technology, that is going to offer the capability of multi-gigabit connections in both directions. So we are always trying to skate to where the puck is going to be, and we feel very confident that cable networks are future-proof.

Mr. MCGOVERN. So do you have any recommendations for how we can make sure that we are future-proofing broadband networks to make sure the internet speeds are fast enough for future speeds and uses?

Mr. ASSEY. There is always going to be this balance between trying to pick a minimum level of performance that is forward-leaning, and that will meet both the immediate and near-term needs, and there is always going to be a desire to ensure that the technologies and the platforms we pick can scale up to meet future capabilities. I think what we would worry about, are we picking standards in order to manage specific types of platforms that will discourage other types of solutions that may be better suited to particular environments or particular areas? So it is really a balance.

Mr. MCGOVERN. Yes, no, and look, I believe it is crucial to make sure that we take advantage of the historic levels of funding and ensure that it means connectivity that meets the needs of the future. It is clear that rural America has diverse needs, and we can't take a one-size-fits-all approach. Could you, or anyone expand on how we can connect unserved areas, while also increasing access for underserved communities?

Mr. ASSEY. Yes. I think, when you are talking about unserved *versus* underserved, you are talking about the difference between communities that have no connectivity, or connectivity that is below 25 megabits per second, *versus* some that are above that. I think our concern is that the laws of economics always make the people most in need the last in line, and we need to orient our solutions so that we actually try to prioritize getting service to those who have been waiting for it for so long.

Mr. MCGOVERN. I just closed them out of time—I wanted to tell you—but I just want to add that we must not overlook the importance of affordability when expanding access. I mean, ensuring that people can afford broadband only services, once they become available. I think it is crucial if we are going to truly close the digital divide, but I am out of time. Thank you very much.

Mr. ROUZER. The gentleman yields back. I now recognize myself, in order of arrival. So a couple broad points here. Obviously, I am

very grateful to have each of you before us today, and I appreciate your testimony very much. This is a very important issue. Connectivity is everything, whether it is healthcare, business, education. You can't do without it, and if you are doing without it, you are severely behind the curve, in terms of whatever the question may be.

According to the National Telecommunications and Information Administration Database, there are 80 broadband programs currently at the Federal level, including, dependent on how you want to count them, nine housed at the Department of Agriculture. We have had a lot of money flowing through a lot of different programs in recent years, multiple agencies, not to mention what individual states are doing as well. I think it is crucial we keep track of the areas where service is being implemented and where it is not, and why it is not.

In North Carolina, for example, the North Carolina Broadband Infrastructure Office uses NC One Map, an open source, interactive, GIS mapping tool to visualize data collected by the state, as well as other resources, related to broadband availability and adoption, and other matters as well. So the question is—just gave you an example in North Carolina—how are Federal and state leaders overall keeping track of projects, both deployed and in the pipeline for deployment, to ensure underserved areas are addressed, and overbuilding doesn't occur? And I open that up for anybody.

Mrs. BLOOMFIELD. So—thank you very much. We actually have a number of NTCA members in the State of North Carolina who participate both in the state program, but have also been big recipients of RUS. So your point on the coordination is really key, and I think that is going to be critical, as each state not only notes where some of the deployment is supposed to be, but also that we are coming back afterwards to ensure that any provider who is the recipient of Federal or state funding actually is able to show that they have actually lived through their commitment, because, if we don't have some type of oversight, if we don't have some type of verification on that, what we are going to see is those constituents, those consumers who were in those areas, are actually—that don't get service are going to be at the bottom of the line.

So I think making sure that that coordination between state and Federal is going to be important, and I think that will be a focus of what NTIA is going to be doing with BEAD as well.

Mr. ROUZER. Any other comment there?

Mr. ZUMWALT. Yes. Thank you. I think it is really important to keep in mind that the intent of these programs is to serve the unserved, and, so far, we are not getting there fast enough. This has to be a whole of nation effort, and it has to be one that incorporates every available technology to meet the need, instead of setting up a standard where existing networks can be overbuilt because we changed the standard by which we are going to measure whether they are served, or underserved, or what.

And I think this is important because, as someone who has had experience actually running a wireless ISP, we delivered fiber and broad—and wireless services to roughly 10,000 customers, and less than five percent of those ever asked for or required symmetric speeds from us. And this included government agencies, enter-

prises, academic institutions, residential customers, small businesses, and—I think I already covered enterprise.

So when you actually look at download and upload speeds, if you are going to adopt that as the standards, you have to be careful because, generally speaking, the way that that is consumed is it is consumed much greater on the download than on the upload, and that is true across all of the WISPA membership as well. Thank you.

Mr. ROUZER. I only have about 48 seconds left. To follow up on that, my experience with government is you have a lot of stove-piping. When I read there are 80 different programs, I am certain that one agency is not necessarily talking to the other agency. We will get into that later. Here is my final question, though. Technology changes rapidly. You could lose your shirt in broadband. Elon Musk says he will have the whole world covered in 3 years. I think I read that somewhere. Maybe a little bravado in that, but hey, technology changes. How do you balance the equation of financing technology, where the ball is going to be in the future? That is a big question for all of you.

Mr. ZUMWALT. Well, what we are seeing is that the total cost of ownership of a network is going to define what a carrier is actually willing to be doing. Now, if you are willing to subsidize operations and say we are going to give you a bunch of money to buy something for 30 years, perhaps they would buy something differently. But the market actually is a very effective source for determining what the best technology is to use in a time. And if you look at what the broadband carriers are doing, they all upgrade as demands change over time.

Mr. ROUZER. Yes. My time has expired. I now recognize the gentlelady from North Carolina, and my friend, Ms. Alma.

Ms. ADAMS. Thank you very much, Mr. Chairman, the gentleman from North Carolina, and Ranking Member, for hosting this hearing on the digital divide, and for your opening remarks. I do want to thank the witnesses as well for offering your insights on this important topic. The digital divide and broadband equity are important to me because the constituents that I represent disproportionately shoulder the effects of this divide. The picture in Mecklenburg County in North Carolina's 12th District, where I represent, is a stark one.

A recent estimate from the Center for Digital Equity found that 21 percent of Mecklenburg County households had, at best, dial-up speeds for their home internet, and 14 percent of households, almost 55,000 in number, had no internet at all. So, looking at the entire state, more than one million Carolinians are, in the words of our governor, "On the wrong side of the digital divide."

It was especially revealing how disproportionately communities of color, especially African Americans, are suffering, especially at our HBCUs, our predominantly African American institutions, 1890s. There are 19 across the country, and we have one in North Carolina. The pandemic showed our communities how crucial dependable internet access is for education, for medicine, and for finding employment, so this hearing has been edifying in thinking about coordinated approaches to bring access to all.

I have several questions for the panel, and any of you can answer this. As broadband continues to be deployed to unserved and underserved communities, how can we ensure that those within each community are actually able to afford high-speed, high quality services post deployment?

Mrs. BLOOMFIELD. I will just take the first crack.

Ms. ADAMS. Yes, ma'am.

Mrs. BLOOMFIELD. There is—

Ms. ADAMS. Yes, you.

Mrs. BLOOMFIELD.—very important program called ACP (Affordable Connectivity Program), which is part of the Infrastructure Act that really ensures that those who are low-income have access to connectivity. So one of the things that my carriers, and I am sure carriers across this table, are doing is working with their communities to basically get the word out to say, if you can't afford internet access, there is a Federal program that is available. Now, I will say I worry that this program is going to run out of funding in a year or 2, but I think it has been really important, in terms of digital equity, and inclusion, and getting folks online. So there is a piece in place, it is already underway, and I think that most of the carriers probably represented here today are actively looking to get subscribers that you mentioned online.

Ms. ADAMS. Thank you. So could any of the others of you speak about how your associations, and the internet service providers within your associations, are focusing on addressing these disparities?

Mr. ASSEY. We would echo what Ms. Bloomfield said. Our companies are committed to trying to make sure that all their customers can get access through ACP. We are working with many trusted digital navigators, civic organizations, to get the word out about this program, show people the full benefits of broadband, and we are committed to this cause.

Ms. ADAMS. Okay. Does anybody else want to comment? Yes, sir?

Mr. ZUMWALT. I would just like to add that, in addition to hoping for the continuation of ACP, which may or may not happen, if you look at the individual service provider performance, they are looking for a way to keep their costs low so that they can pass those savings on to their customers regardless of what level of assistance they have. And I think that that is really important, because for internet service providers who are active in their community, they understand their communities, they understand what the community can afford, and they want to be able to deliver broadband that is going to meet the needs of their communities by making sure that they have their own cost structures in line.

Ms. ADAMS. Okay.

Let me—thank you very much. And let me ask anyone else, if you have—what, if anything, have you learned from the pandemic that Congress should focus on in this farm bill? If you give me just one thing, each of you? I have 40 seconds.

Mr. ZUMWALT. Serve the unserved first.

Ms. ADAMS. Thank you.

Mr. ASSEY. Agreed. Agree.

Ms. ADAMS. All right. Yes, sir?

Mr. MATHESON. I think we make—we have learned the—it is—broadband is so important to day to day life, we want to make sure we all have access, but it has got to be at the right speed, it has got to be scalable to the future it has got to be affordable.

Ms. ADAMS. Okay.

Great. Yes, sir? Got two more people down there.

Mrs. BLOOMFIELD. Agree.

Ms. ADAMS. Agree.

Mr. HURLEY. Yes.

Ms. ADAMS. Okay. So everybody is in agreement? Okay. I just certainly hope that we will take all these things into consideration, because these underserved communities are still not being served, and there is a lot we can do about it. Thank you very much. Mr. Chairman, I yield back.

Mr. ROUZER. The gentlelady yields back. Mr. Lucas?

Mr. LUCAS. Thank you, Mr. Chairman. And I would note to our participants on the panel today—and, of course, Mr. Matheson has been through this process many times on both sides of the room—many times the discussions we have seem to be reinforcing constantly certain points of view, so let us go down that trail.

As all of you know, the ReConnect Program was established through the Fiscal Year 2018 omnibus, and the legislation provided USDA with authority to make grants, as well as loans, for construction of retail broadband networks in rural America. Since then the ReConnect Program has become the most funded broadband program in USDA, receiving almost \$2½ billion. But because ReConnect was established with minimum program parameters, USDA has had broad discretion over how the rules should apply during each funding round. And this has caused each round of funding to consist of, sometimes, dramatically different standards and rules. So, as a sitting Member of the Committee, I note bringing this program under the 5 year farm bill gives this Committee to thoughtfully reform, and improve, and authorize this key broadband program.

So, with that, I turn to the Committee to discuss—to the panel, I should say, to discuss what you would consider to be important program parameters that need to be put in place to ensure a more effective and consistent ReConnect Program. And in addition, what flexibilities need to be maintained or included to ensure rural consumer and business needs are met?

And just before we start this, I punched the little test button, and I examined the access to broadband that I have at the teeny tiny efficient apartment I have here in D.C., 339 upload speed and 306 download speed, but I noted that, on the test of my program at the farm in Roger Mills County, it was 5 up and 5 down. It was a son of a gun trying to do Zoom calls during COVID on 5. Matter of fact, it didn't always work. So with that, I turn to the panel. You are getting the defined program coming in this farm bill. What should the parameters be, and what flexibility should be maintained? We are going to help you.

Mr. MATHESON. I will jump in. First of all, it ought to be in the farm bill. This was created through the appropriations process. It has created a lack of certainty and consistency in the program. I think bringing it into the farm bill—

Mr. LUCAS. And we are going to clean it up.

Mr. MATHESON. Yes. It—I think it'll be helpful for everyone involved to have more certainty and clarity going forward. You want to make sure that you are prioritizing minimum speeds and scalability for the future. You have heard *future-proof* used a lot in this discussion. Let us not forget, the last farm bill was only 5 years ago, 2018. Back then we were talking 25/3. So let us not continue to make a mistake of underestimating where the future is going, and that—it is hard to define it specifically, but scalability matters as well.

Let us make sure that we also invest in middle-mile, I mentioned that in my opening statement. Backbone middle-mile matters a lot, in terms of the—participation for anyone else for that last mile to the end-user. And electric cooperatives invest a lot in middle-mile technology in terms of their electric utility operations, so it can be a great access to leverage for rural broadband to the end-user.

Mr. ASSEY. I would say, first of all, with your experience with 5 down and 5 up, you are the paradigmatic case for the unserved, and one of the reasons why—

Mr. LUCAS. And, ironically, I am 1 mile from fiber, but it is a 1965 copper line between me and fiber.

Mr. ASSEY. Yes. Well, you should be high up on the list for the next round of provider subsidies. I do think, as we do this, there are a couple things that we ought to focus on as well. One is to really try to change and modernize some of the eligibility rules at RUS. I think there is a historic—whether it is a historic artifact or not, a lot of the rules and processes in place that RUS uses are just not suited to the multiplicity of types of companies, including large established companies that offer service. And we ought to make it easier for people who want to participate in this program than harder.

And, second, I think Congress really needs to give some guidance as far as what is a proper priority when we are scoring and evaluating projects. Things like experience of a provider, the performance of the network, the need of the area, that seems to be totally fine. But some of these priorities that have been adopted seem to be completely artificial, and designed more to steer a particular result rather than get performance to the areas of need.

Mr. LUCAS. I think the Chairman will probably tolerate one more answer on my behalf, if anyone else wishes to touch that.

Mr. ZUMWALT. I was just going to add that I think that it—that the program needs to be technology-neutral, in the spirit of what the infrastructure Act called for. I think it needs to focus on serving the unserved, rather than adopting a technology. Most of our members are deploying fiber, so even though we represent wireless ISPs, we are very familiar with fiber. And the measurements that we take of customers all around the country suggest that most residential subscribers are not even using more than 50 megabits per second of download, even if they have gigabit delivery. So the speed tests that you run are not indicative of what you are actually using. So when you put in place a requirement for something, recognize that the requirement may not be what you are using now, or even need to use in the future.

Mr. LUCAS. My time is—

Mr. STROUP. And if I may, very quickly, I can give you the names of at least three companies that can provide much faster service than you are receiving on your farm.

Mr. LUCAS. Thank you. I yield back, Mr. Chairman.

Mr. ROUZER. I was going to say, Mr. Lucas, maybe you should call your Congressman.

Mr. LUCAS. Well, actually, the guy that owns the company was a year ahead of me in high school.

Mr. ROUZER. Or better yet, call your two Senators. Ms. Spanberger?

Ms. SPANBERGER. Thank you, Mr. Chairman. Thank you to our witnesses for being here today. I love the topic of broadband. I have been passionate about this issue since I first arrived in Congress in 2019, because I represent communities that have really experienced the divide. Just a few years ago the idea of universal broadband accessibility in Virginia seemed really far off, but now I am really proud to say that our Commonwealth, because of investments from the Bipartisan Infrastructure Law, the American Rescue Plan, Virginia is really within reach of this goal.

And the district that I represent, it spans localities where we have suburban communities with easy access, and many rural communities that, over the years, have really known the hardships. It has been discussed, of course, that during COVID we saw what this divide was like, and even across superintendents, county to county, some were able to have Zoom classes for the students, and some were putting up mobile hotspots at the Food Lion parking lots because that is the way the kids were learning, and they were giving packets out, and that just shouldn't exist.

But I know that we are on this, like, trajectory towards making the strides that need to be made. And we, in Virginia, have expanded access to millions of Virginians. In fact, and I will say this again, as a proud Virginian, we have been heralded as really a nationwide example for broadband internet expansion through what we have done correctly, Federal, state, local coordination, often through building partnerships, many times with rural electric co-ops, with wireless providers, and in the localities, really driven by the localities. So I am proud of the progress that we have made. There is more to do, but we are on our way to connecting 100 percent of Virginia's families, small businesses, farms, and students.

And so, with that general frame—and you do not have to mention Virginia just to flatter me since I asked the question—are there examples of states that have done things right, from your vantage point, that while we are here looking at how to make sure that our Federal dollars are well utilized for the states and localities, are there examples that you would point us to as we are looking at how these programs are really, actually operationalized on the ground?

Mrs. BLOOMFIELD. I will jump in, because I think Dr. Holmes, who runs the Virginia Broadband Office, is exemplary. But I think that is a key component, right, and we are entering a new era, because for the first time—there used to be a few states that had a broadband office.

Ms. SPANBERGER. Yes.

Mrs. BLOOMFIELD. Virginia was early because you had some of the tobacco funding, and it has gotten very active.

Ms. SPANBERGER. That is right.

Mrs. BLOOMFIELD. And you had Minnesota, you had Wisconsin, you had some of those out there. Now that we are entering this world of BEAD with NTIA, every state has to establish a State Broadband Office. That is part of the deal. They have to submit a plan. They have to show a plan by—I think in the next month or so—of how they are actually going to take all that Federal funding from BEAD and utilizing it. They then coordinate with NTIA. So you have a state person on the ground, you have NTIA here, and an NTIA person in each state.

So I think utilizing the State Broadband Offices to help coordinate on the Federal front is going to be really important, because they are almost going to be the gatekeeper, as Federal funding comes from these different programs, and they are going to be looking at the Federal amounts that are released, in addition to their own state amounts, and really trying to very strategically fill in—where do you have those gaps, and where do you have those underserved gaps?

So not just flattery, but Dr. Holmes is key, but I think each state now has the opportunity to meet that level. Some are just going to be a little bit more challenged, some are going to get mired down in politics, and that is most unfortunate. But I think we have a real opportunity with the fact that there will be a State Broadband Office in every state.

Ms. SPANBERGER. Fantastic. Anyone else want to add to that? Mr. Assey?

Mr. ASSEY. I agree, and I think it really points to the value of coordination.

Ms. SPANBERGER. Yes.

Mr. ASSEY. What you have experienced in Virginia, really needs to be replicated at a much larger scale. It is going to be incredibly difficult; but, if we are looking at this as solving a problem, we need to all have a common understanding of what the problem is if we want to devote the resources to actually spending it. So I would say that coordination needs to happen at a much stronger level, not just at the Federal level, but also down into the state and the local level, and back up to the Federal level, so that we all are working to take whatever that number of unserved and underserved is and drive it down to zero.

Ms. SPANBERGER. And certainly one of the things that we have seen on the ground is that flexibility in how those Federal dollars can be spent is incredibly important in allowing our state—again, our state offices to do good things. I am running out of time, but I just want to say thank you all for being here. Thank you for bringing your voices to this discussion, because it is so vitally important that we get this right, and that, in this farm bill, we ensure the investments we are making really help our communities across the board and add to what we have already done with prior legislation. So thank you so much. Mr. Chairman, I yield back.

Mr. ROUZER. The gentlelady yields back. Ms. Miller, you are recognized for 5 minutes.

Mrs. MILLER of Illinois. Last Congress, I voted for bipartisan legislation to support rural broadband because it is a critical issue to our farmers and rural communities across the country. So several of my constituents had brought up that state mapping is better than Federal mapping, which is a little bit what you were talking about, but I just walked in here, so I don't know if I missed something. What suggestions, then, do you have to increase coordination among the Federal and state? Did you just answer that? Okay. Then—

Mrs. BLOOMFIELD. I would be more than happy to.

Mrs. MILLER of Illinois. Thank you.

Mrs. BLOOMFIELD. I think the challenge process is going to be really important, because some states have gone ahead—and states are closer to the ground. They know—they are working—one of the things each of these State Broadband Offices has to do is they have to do stakeholder meetings across the state, so they get a sense of what is going on there. But that is where I think challenges are going to be important. Whether it is a provider who says I have already got service here, and here is my speed, whether it is a consumer who says, this map shows I have broadband, and I actually don't. So I think there is going to be further refinement.

The problem with the map is it is an evolving thing. You are—it is never static. So as soon as you finish it, it is actually out of date already. So I think staying on top of it is going to be very critical.

Mrs. MILLER of Illinois. Yes. Does anybody have any other ideas on how to coordinate this between Federal and state and make it more efficient?

Mr. MATHESON. I think that is happening.

Mrs. MILLER of Illinois. Good.

Mr. MATHESON. Look, the FCC maps are not perfect, but they are better than they used to be through this first round.

Mrs. MILLER of Illinois. Yes.

Mr. MATHESON. The challenge process is going to continue to—it is—as Ms. Bloomfield said, this is an evolving process. You are never going to get perfection. But having state engagement on that process is going to be key to making the national maps better.

Mrs. MILLER of Illinois. Also, I have heard from several of my constituents that broadband providers in their area are having trouble signing up for the USDA broadband programs. We were talking about how complicated it is. And have any of your members faced the same issue, and how do you think we can improve on the application process?

Mr. ASSEY. We have experienced problems like that in the past. I mean, we have had issues where one company was organized as a partnership, and it wasn't eligible under the application rules that RUS was interpreting.

Mrs. MILLER of Illinois. Yes.

Mr. ASSEY. I think that got worked out, but there are a lot of—kind of these informal roadblocks that we face with a program that has traditionally been oriented to a very different profile of company than a large cable operator.

Mrs. MILLER of Illinois. Yes.

Mr. ASSEY. It is one of the reasons that—one of the things that we like in the—Representative Cammack’s bill is really an opportunity to use the notice and comment process to really try to come up with alternative ways of demonstrating financial viability as companies, and to provide security interests that are different from what may have traditionally been used. Because it—this is all about getting qualified companies to want to come participate and that is what we ought to be aiming towards.

Mrs. MILLER of Illinois. Right.

Ms. Bloomfield, do you have—and then—sorry.

Mrs. BLOOMFIELD. I think the programs are very competitive, which is great. The fact that you get four to five times the number of applications than you have funding for I think shows to the benefit of the program. I would say, USDA, and RUS in particular, have staffing needs. I think some of the biggest challenges are actually getting some of the permitting through, getting the process through USDA’s pretty antiquated portal. So I think some of those things that can make the process more efficient would definitely help get the funding out there faster.

Mrs. MILLER of Illinois. That is great. Mr. Stroup, did you have a—

Mr. STROUP. And my members would encourage that Congress specify that satellite and other service providers are eligible, and, despite the intention of legislation being technology-neutral, very often in the implementation phase, that is not how it plays out.

Mrs. MILLER of Illinois. Okay. Mr. Matheson, we have heard from several stakeholders about the concerns regarding permitting on Federal lands within existing rights of way, which can take up to 3 years to get an approval. Can you talk about the experiences of your members with these agencies, and what can Congress do to help expedite this process, and ensure our eligible rural communities are getting connected?

Mr. MATHESON. Yes, this is clearly an issue. We have a specific member in Colorado that was experiencing—where they got funding through RUS, but then they had to cross BLM land, Bureau of Land Management land, and ran into a significant permitting delay, and the—

Mrs. MILLER of Illinois. Yes.

Mr. MATHESON. This is not new, that any committee in Congress has heard this, that when you have multiple Federal agencies that don’t talk to each other, and you are the person trying to get the permit to get something done, it can be really frustrating.

Mrs. MILLER of Illinois. Yes.

Mr. MATHESON. And so some of the steps that we are taking—most recently, in the permitting reform for the debt ceiling Act (Pub. L. 118–5, Fiscal Responsibility Act of 2023), are a step in the right direction. We need to keep that momentum going, however, in terms of creating appropriate time limits on the permitting process, but also the coordination across Federal agencies has got to be better than it is. It is just a question where the left hand and the right hand aren’t talking to each other. And we have felt that specifically on Federal lands in the West.

Mrs. MILLER of Illinois. Okay. Did anybody else have a comment? Oops, I am out of time. Thank you, and I yield back.

Mr. ROUZER. The gentlelady yields back. Ms. Brown?

Ms. BROWN. Thank you, Mr. Chairman and Ranking Member Scott. Access to high-speed affordable internet is no longer a privilege. It is a necessity for everyday work and life in a modern 21st century society. The COVID-19 pandemic exposed how deep the digital divide cuts when everything from school, to business meetings, and doctor's appointments were moved online. This hit hard in communities like Cleveland, where almost $\frac{1}{3}$ of households lacked internet access. In fact, during the first weeks of the pandemic, Cleveland Metropolitan School District was unable to transition to remote learning since almost $\frac{1}{2}$ of its students didn't have internet service at home.

I know this is the same story that so many of our constituencies face, including those in rural districts. This is why accurate and detailed mapping of fixed and mobile broadband service is so important. If we are truly going to connect every American to the internet, we need to be able to target areas that have been left behind. So, Mrs. Bloomfield, to start, what should the Committee consider a minimum acceptable speed when evaluating if a household is serviced?

Mrs. BLOOMFIELD. So I am going to go back to—I think that USDA has done it right with 100 symmetrical speed because, again, I think—I—it—I may have a different experience, but my members actually track what their customers use, and how they utilize it, and I will say that we see a huge demand from consumers. I have companies that I asked prior to this hearing who are telling me that 100 symmetrical is entry-level service. When you have five or six devices at one time working in a household, you need that bandwidth. So, again, as I think about this moment in time historically that we are at, to not utilize and look for that type of speed, we are missing an opportunity.

I also think it is technology-neutral. For example, during the FCC's Rural Digital Opportunity Fund auction, there were a number of fixed wireless providers that also said they had the ability to do 100 symmetrical, so we are not talking just about prioritizing fiber. We are saying that is the right speed, and that is what we should be building to ensure that, again, the capacity is met not just today, which we are seeing that demand for right now, but for 3, 5, 10 years from now.

Ms. BROWN. So that is the speed you would recommend we should aim for it to be future—ready in the future as well?

Mrs. BLOOMFIELD. I would say 100 symmetrical is important right now, yes.

Ms. BROWN. Okay. And what additional improvements and investments can we make on the Committee to ensure accurate and reliable maps? I know this is a—maybe a redundant question, but if you could speak to that, Mrs. Bloomfield?

Mrs. BLOOMFIELD. Mapping is going to be really—that is going to be our—literally our roadmap, in terms of what we know about served and unserved. I actually have a map here that shows where 25/3 exists across the country. You see a lot of white spaces, particularly out West, and dotted throughout the country. But I think that the ability to make sure that we have a process in place—the FCC built the map. We are going to need to make sure that we

continue to invest in that map, that we are constantly updating it, that every program that touches building broadband allows us to track not just where there is connectivity, but what is the speed? What is the technology?

Ms. BROWN. Yes.

Mrs. BLOOMFIELD. Where are the providers? So I do think that is going to be an ongoing investment to ensure that future dollars go in the right places.

Mr. MATHESON. And if I could?

Ms. BROWN. Thank you.

Mr. MATHESON. We want the maps to be consistent over time. We have heard stories where people game it. Well, they may—when the test is happening the speed looks good in that area, but that speed isn't consistent over time for people in that service territory. So the integrity of the map has got to be one where that speed exists all the time, not just in certain moments.

Ms. BROWN. Thank you. The bipartisan infrastructure law established the Affordable Connectivity Program to provide targeted discounts for low-income households and Tribal communities. The most recent round of USDA ReConnect grants requires applicants to participate in the Affordable Connectivity Program to ensure that households are not only able to access internet but afford it as well. Now, for anyone on the panel, what additional measures can we take in this farm bill to improve the affordability and the reliability of high quality broadband?

Mr. ASSEY. I think whether it is in this farm bill or separate and apart, I think continuing to strengthen and extend ACP support is important. And I would say it is important not just to help low-income families purchase affordable broadband, but it is really going to be important for infrastructure as well. When companies are deciding how much private capital they are willing to marry up with public funds in order to build to unserved areas, they have to make assumptions about, well, how many people are going to take to this service, how quickly?

And being able to ensure that continuity of support I think is not only going to be important for people in downtown Cleveland, but it is going to be important for people in unserved areas as well.

Ms. BROWN. Anyone else?

Mrs. BLOOMFIELD. I would also jump in and say, ensuring that we have the resources to advertise about the program, and thinking about doing it in an unconventional way, as you can't, obviously, put it on the internet, because people don't have internet access.

Ms. BROWN. Right.

Mrs. BLOOMFIELD. But, what are you doing with local libraries, and local leadership, and municipalities to get the word out? I have a cooperative up in Minnesota that literally goes to their Tribal communities with a traveling van with applications, and they sit down, and they share with the Tribal residents how do you get online, what is the value of being online, and actually literally do the signups. Because our community-based providers have every incentive to have every member of that community online. It really speaks to the economic health of the community in the long run. So I think we have to think about how do you educate those who

don't even know this program exists, and then we have to ensure there is funding for it going down the road.

Ms. BROWN. Thank you so much. Thank you for the courtesy, Mr. Chairman. I yield back.

The CHAIRMAN [presiding.] You are welcome. It is a pleasure to recognize the gentleman from South Dakota, Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Well, it won't surprise anybody that when I was outside in the rain talking to some South Dakota 4-H kids right now, we were talking about rural broadband, because listen, it matters to this whole country. We all know that a network gains in value the larger the network is. You wouldn't want an internet that only lets Manhattan access Manhattan websites, right? So this is not just about helping rural America, this is really about helping us be one connected nation in the same way that rural electrification did that, in the same way the Interstate Highway System did that, in the same way Universal Service did that so long ago.

And so I have a great friend on the panel today, Shirley Bloomfield, and so I thought we would just have a little bit of a colloquy here to tease out some of these issues surrounding speed. So, in your written testimony, Mrs. Bloomfield, you noted that Ookla—their study said that in 2021 the average broadband speeds in this country were 179/65. Am I remembering that right? And so your good friend and mine, Larry Thompson, a few years ago, when I was co-owner of a telecom engineering firm, had taught me about Nielsen's Law, which I think indicates that the user's broadband speed increases by 50 percent a year, all other things being held equal. My understanding of that is roughly right, right?

Mrs. BLOOMFIELD. That is correct.

Mr. JOHNSON. And then I think in your testimony you talked about—you didn't mention Nielsen's Law because you are not as dorky as I am, but you did—

Mrs. BLOOMFIELD. That is correct.

Mr. JOHNSON. That is right, exactly. You noted information that, consistent with Nielsen's Law, said that by 2030 broadband speeds in this country will be 1,500/599. That is right, isn't it?

Mrs. BLOOMFIELD. That is correct.

Mr. JOHNSON. The 1996 Telecom Act (Pub. L. 104-104, Telecommunications Act of 1996) had a provision we haven't talked about today, but to me it is fundamental to this whole conversation. And the provision in the Telecom Act, if I am remembering it right, Mrs. Bloomfield, is that service in rural areas, rates and service, must be "reasonably comparable to those found in urban America." I am not wrong about that, am I?

Mrs. BLOOMFIELD. You are correct again.

Mr. JOHNSON. And so in your testimony, in your close, I thought you really hit the nail on the head about making sure that we don't invest in networks delivering speeds that are not only antiquated today, but will be woefully antiquated in the years to come. And so—I mean, I have a couple more questions, but just—any finer points you want to put on that?

Mrs. BLOOMFIELD. I think we haven't even touched the applications that we can be providing in rural America. One of the things NTCA does is we actually also provide healthcare to tens of thou-

sands of rural Americans through a group health trust. What we are seeing in terms of telehealth, that—you can't do some of this diagnostic work. You can't—we have created virtual living rooms across the country for veteran care connecting VA, local, state to vets who live in rural America, which is a very high population of veteran community. You can't do the work that you need to do with telemedicine without utilizing some of those speeds, and we haven't even begun to see where the American demand will go.

Mr. JOHNSON. And I have tremendous respect for the members of each of these organizations, and I do think that there is a role for everybody to play in getting American—America connected. So I understand the value of us talking about technology and neutrality, and I believe in that, but I don't want us to use the guise of being technologically-neutral to water down the standards that we need to build to.

Now, the good thing is that doesn't need to cut anyone out, and I thought y'all's testimony did a good job of that. Mr. Matheson, you talked about the need for us to be building to at least 100 megabits per second. Of course, your members in this business are doing way more than that. Mr. Assey mentioned that—your members are routinely delivering over a gigabit per second. That is pretty robust. Mr. Stroup, you mentioned satellite can easily do 200 megabits per second. Mr. Zumwalt, with WISPS, you mentioned download speeds in excess of 1 gigabit per second are possible. And so, by all means, let us make sure that we are technology-neutral, because there is a role for everybody to play. This is a real big country. We have a lot of people who need help.

But Mr. Chairman, as we look toward this next farm bill, let us not water down the standards. If we are going to spend this nation's taxpayer dollars in continuing this unbelievable story of one America, connected, let us make sure that we are not investing in something that'll keep us connected for a year, or 2, or 5. These networks can be built to last a lot longer than that. Let us heed the words of Mrs. Bloomfield. Let us make sure we do it right. With that, I would yield back.

The CHAIRMAN. Well, I thank the gentleman for yielding back, and now I am pleased to recognize the gentlelady from Kansas, Congresswoman Davids, for 5 minutes.

Ms. DAVIDS of Kansas. Thank you, Mr. Chairman, and thank you to you and the Ranking Member for holding this hearing today. I mean, we have heard a lot about the need for high-speed broadband networks to bridge the digital divide, to allow families and communities to access the—particularly rural communities to access those unique broadband needs. Telemedicine, of course, is in there, education. Technologies to support small businesses, and that includes our agriculture community. A bunch of the family farms that I know are not just in my district in the Kansas Third, but in the State of Kansas. And we are definitely seeing the need for that accessible, reliable, and affordable broadband access.

And, I have a district with a good mixture of types of counties. I have three rural counties in the Kansas Third, and, similar to what we heard from Rep. Brown, in terms of metrics, up to 32 percent of the farms in those counties didn't have internet access, according to the 2017 Census of Agriculture that took place, and that

doesn't touch the upload/download speeds. That is just baseline access. I think that we have already heard quite a bit about the problems that can cause for our farmers and producers, much less for folks who are trying to utilize the vibrant ag technologies that are being developed.

I think that, as we continue to try to figure out the best practices for working in coordination with rural communities, whether it is state, local, Federal, communities trying to stay connected, I think that what we see and have heard a lot about already is the—that idea of unserved, and what that looks at, and making sure that programs like ReConnect, or BEAD, or other Federal funding mechanisms aren't overlapping in a way that might impede our goal of internet access for everybody with maybe some overly restrictive definitions?

I would love to hear from, like, the whole panel about whether you see there being a mechanism, or maybe a happy medium, I will call it, between this 50 percent or 90 percent definitions of *unserved*. How do we get to a place where that overbuilding, maybe, doesn't happen, but also that we aren't impeding our ability to stay on track to connect every community?

Mr. ZUMWALT. May I start with that?

Ms. DAVIDS of Kansas. Yes.

Mr. ZUMWALT. I think the first and most important thing is to make serving the unserved the number one priority. Every other definition of *underserved* is going to be based on some understanding of speed, and so, if the speed standard changes, then you are going to find a lot of existing networks are going to be subject of rebuilding with Federal funds. And many of those networks were already built with Federal funds, or certainly with private capital, and so you have taxpayer money chasing taxpayer money not serving the unserved.

Mr. MATHESON. I think we need to be real careful on this discussion, though. This overbuilding is a lot more nuanced than I think some people describe it. And—

Ms. DAVIDS of Kansas. Yes.

Mr. MATHESON. And let—let us be careful—if people have substandard technology and service, then that is substandard. And you are saying, too bad, you are stuck with what you got. I also think we have to be very careful about saying we only want to serve unserved, but underserved don't matter anymore. That is where I hear this it is good enough for rural America, and my members don't buy that. They expect to have the same service that people in urban areas have. So I understand there is a difference between unserved and underserved, but let us be careful about creating a false choice where we can only do the unserved, and all those folks with underserved are stuck with what they have, which are legacy investments that aren't meeting today's broadband needs in many cases, not in all cases.

Of course we don't want to duplicate Federal funding where it is not providing an increase in service, but I think we have to be really careful, though, when we talk about overbuilding and underserved and unserved. I think it becomes too much of a simplistic description, and I encourage the Committee to take a more nuanced approach.

Mr. ASSEY. I think we are just, though—I mean, I don't know that we are necessarily disagreeing. I think it is a matter of priority, as far as those that literally have broadband below 25/3 or nothing at all as being the people who have waited the longest for this technology to reach them. I think the problem that you touch on, which is when you are getting down to 50 percent of the homes have to be either unserved or unserved and underserved, is you are really saying that 50 percent of the homes could have 1 gigabit. And then you are starting to subsidize areas where private capital has already built out capabilities to this area.

So you are not only interfering with the private investment that is trying to reach out into rural America, but you are also using scarce resources that ought to be going to the place that have nothing, or not good enough, and spending it to overbuild.

Ms. DAVIDS of Kansas. Thank you. And I can see that I asked a question that warrants quite a bit of feedback. Please, I would encourage you to submit written answers if you didn't get a chance to speak. Thank you, Mr. Chairman, I yield back.

The CHAIRMAN. Very good. Thank you so much. I now recognize Mr. Baird for 5 minutes of questions.

Mr. BAIRD. Thank you, Mr. Chairman. And I want to thank all of our witnesses for being here. This is a very important concept for our farm community, as all of you well know. When we have machinery that utilizes precision ag techniques and technology in order to improve the efficiencies on the farm, as well as fertilizer placement and pesticide placement and so and so, it is increasingly important that we have access to high-speed internet, as you have talked—and I didn't hear all the discussion, but I am sure you went into that.

So my question starts with—Mr. Matheson, in your testimony you talk about FCC's National Broadband Map, and that continues to show discrepancies between what the map displays and the realities on the ground as it relates to broadband connectivity. As you know, USDA entered to a memorandum of understanding, an MOU, with the FCC and the NTIA to share data on how each agency implements its broadband program, which includes mapping information.

Mr. MATHESON. Yes.

Mr. BAIRD. So what can Congress do to strengthen this coordination so we can ensure our broadband maps protect rural communities, and prevent them from being further left behind?

Mr. MATHESON. Yes, that is a great question. Congress has already taken the steps to encourage improvement of these maps, and it is an evolving process. But, to the extent the FCC put out its first updated map last year, and the challenge process has continued, where people around the country say, whatever the map says, here in my place, that is not true, and they challenge the map, that is an effective process to finally have more of a bottom-up grassroots effort to get accurate information for these maps, coupled with the role of the states.

And I think that is really important, that—the FCC maps are important, and they are always going to be an important asset or vehicle for us to assess where we have unserved and underserved areas, but states are also an important part of how we look at

those maps. States are involved in that challenge process as well. So I think we are going down the right path, quite candidly. We are not where we want to be yet, but I think it is going in the right direction.

Mr. BAIRD. Thank you. Then my next question goes to Mr. Stroup. In your testimony you talk about how the precision GPS, which I just mentioned, technologies allow farmers to increase yield by utilizing use of fertilizer, pesticides, herbicides, and apply the site specific treatments to fields. You also mentioned how Earth imaging satellites provide farmers high resolution imagery to determine when to plant, water, or monitor their crops. So how do you feel satellite technology services fill in the gaps in remote areas, where other technologies may not be suitable?

Mr. STROUP. Thank you for the question. And, in addition to the satellite services that you noted, the ability to be able to provide broadband and IoT services, and one of the great advantages to the satellite systems is the ubiquitous coverage. And, as I had mentioned previously, the service that you receive in rural North Dakota, where I grew up, is comparable to the service that you would receive in Washington, D.C. So the ability to fill in the gaps because we provide coverage to all rural areas across the country is the key to our ability to be able to provide broadband connectivity.

Mr. BAIRD. Very good. Anyone else have any comments on either of those questions, about the maps or about the satellite technology?

Mr. ZUMWALT. I would just state, and concur with my colleagues, I think that the FCC is taking the right steps. It is going to take a while before they can achieve perfection on this, but I like what I see so far. We are in for another probably year or 2 of some pretty gnarly work ahead of us, but I think the FCC is going to get there.

Mr. BAIRD. Anyone else?

Mrs. BLOOMFIELD. I would just offer to the Committee that—those of you who are going back home to your rural districts in August, to take the time to connect with one of your community-based providers, whoever they may be on this Committee, and go out and see some of the ag applications. I think being able to watch some of the livestock monitoring, watching some of the ability to do remote work with your livestock, and monitor the health of your animals, and what they are doing in the field, in terms of tractor technology, is really exciting to see.

Congressman Feenstra from Iowa, his local provider has a new saying, which is—we call fiber-to-the-home, FTTH, and they call it fiber to the hog, because of the ability to connect these farms. So I would just say there is an open invitation to go out and do a tour.

Mr. BAIRD. Thank you for that comment, and especially bringing in the livestock. Got a livestock background. And, Mr. Feenstra, we have cattle and hogs in Indiana too, you know that?

Mr. FEENSTRA. I knew that.

Mr. BAIRD. Good to see you. I yield back, Mr. Chairman.

The CHAIRMAN. The gentleman yields back. I am now pleased to recognize the gentlelady from Colorado, Ms. Caraveo, for 5 minutes.

Ms. CARAVEO. Thank you, Chairman Thompson. Thank you to you, and Ranking Member Scott, for hosting today's hearing, and

to the panel for being here this morning to share your testimony. As a doctor, accessible health care remains one of my highest priorities. Unfortunately, over the past several decades, Colorado has seen more and more rural hospitals, excuse me, close, and care options remain extremely limited, or sometimes non-existent, unless you are able to travel very long distances to receive health care. As a result, residents of rural areas experience significant health care disparities.

We have several opportunities to improve health outcomes through USDA broadband programs, not only to provide the funding to build-out or improve the broadband infrastructure, but also to provide the equipment necessary to support telemedicine. So, to anyone on the panel, do any of you have insights into the specific speeds or other network characteristics necessary to support telemedicine specifically?

Mr. ZUMWALT. If I can start with that, I have some experience working with an urgent care center in a previous—a role that I had with a wireless ISP. They were generally using gigabit speeds for their urgent care facility, which included imaging, but I would want to emphasize that that was for that facility. That was not for interacting with people in their homes using telemedicine services, which tended to be more of a residential broadband service.

So, to the extent that you want to differentiate between those services, just make sure that you recognize that no matter who is providing that area, that they have the capacity to provide the unique support that is going to be required by facilities that have a need for greater broadband.

Mrs. BLOOMFIELD. And I would jump in and say that we work very closely with the National Rural Hospital Association, who also endorses 100 symmetrical speeds for that very reason, the ability to be able to do the work that they need to do to transfer the medical files. And I think that the applications out there really kind of demand a lot of bandwidth, the ability to—I have a telephone cooperative that actually put fiber into the ground because of the fact that the general manager's workman fell off the roof, broke his leg, and it was going to take 2 days to get all the files transmitted over to the Vanderbilt Hospital.

So it was kind of that real need on the ground to be like, "Hey, you know what, we can do this, and we can actually ensure that our people don't have to drive 2 hours over to Vanderbilt." They can actually do some of the care with cardiac care, here back in the rural community, before it becomes urgent to relocate some of these patients, which, as you know, can be very traumatic.

Ms. CARAVEO. Well, thank you very much for those answers. Switching gears, I have been meeting with farmers in my district over the past few months who have shown me some of the technologies, Mrs. Bloomfield, that have improved the way that they farm. I would like to touch on the promise of precision agriculture what we have talked about kind of more broadly, and how we build-out broadband networks that will support further adoption of these technologies.

We have focused on delivering internet service to the home, but supporting agriculture—precision agriculture means we also have to expand to the fields. So once we deliver broadband to the home,

what equipment or technologies, more specifically, are necessary to expand that coverage to the field, and what are some of the common barriers that farmers are facing to incorporate precision agriculture into their operations? And we can start with Mr. Hurley, and then if anybody else has thoughts.

Mr. HURLEY. Yes, thank you for bringing that up, and it is absolutely one of the most essential pieces of our being able to further the adoption and reap the benefits of precision agriculture, whether that is through an increase in yield, or a reduction in the inputs, and the impact that that has on the environment. And, as we stated, and I stated in my testimony, we need to be neutral in regards to the technologies that we invest our dollars in as we go forward, because we look at the various different aspects of—whether it is satellite, whether it is wireless, or whether it is fiber, we need coverage across the fields, and into the barn, into the—whether it is the chicken house, the hog house. But we have also got to be able to follow, and interact, and communicate with the tractor, and the combine, and the sprayer as they move through the field.

Mr. ASSEY. I would just say that it—this may not be the correct analogy, but if you think about it, precision agriculture is just another type of business application. It is very similar to, if you were to bring broadband to a school, you wouldn't want to just bring it to the principal's office. You would want to make sure that it is campus-wide. And, essentially, the campus in a precision agriculture environment are the fields, and the barn, and the hogs.

I think what we are going to see is, as the power of technology extends to rural America, we are going to see those solutions develop. They are already being developed, and we just need to encourage their development through kind of hybrid solutions that rely on cable or fiber technology to a particular area, and then extending out into the fields using either unlicensed technology or 5G CBRS (Citizens Broadband Radio Service) technology to basically provide that campus-wide or field-wide connectivity. But it is a very exciting part of getting connectivity to rural America to help people not just in their home, but in their day to day business as well.

Ms. CARAVEO. Thank you all. I yield back, Mr. Chairman. Thank you for the courtesy of extra time.

The CHAIRMAN. I thank the gentlelady, and now recognize the gentleman from Iowa, Mr. Feenstra, for 5 minutes.

Mr. FEENSTRA. Thank you, Chairman Thompson and Ranking Member Scott, and I want to thank each of our witnesses for testifying. It has been very impressive. Mr. Hurley, you spoke at length in your written testimony about the benefits of precision technology. I am from Iowa, one of the largest farm districts in the country, and at a time when our farmers are feeling the real pinch on inflation in inputs, and all these other costs going up, it is advantageous for us to create precision farming. You mentioned that innovations that could be adopted at a 90 percent rate would reduce herbicide costs by 15 percent, fertilizer would be reduced by 14 percent, water would decrease by 21 percent, and our crop production would increase by six percent. Okay, this is very significant, but our problem here is the cost.

I was at the Farm Progress Show last year, and we saw all these incredible technologies. My larger farmers and my larger producers can probably afford some of these, but my smaller producers cannot. And you noted this, and I appreciate you highlighting my bill, Precision Ag Loan Act, which gives loans through the USDA. Can you talk, Mr. Hurley, about why this is so important, and what we can do as an Agriculture Committee to try to get this new technology in the hands of our smaller producers?

Mr. HURLEY. Yes, I would be glad to do that. And, as you so note, the technologies continue to advance, and the innovation continues to be developed as we go forward, and there are costs associated with that. Representative, I would more approach that as investment, and think there are some key aspects of that. One, if someone was to come in and try to convert 100 percent of an operation that had no previous investment in precision technologies, it would be a very steep cliff to climb.

But the great thing about precision technologies, number one, is it is scalable. And so, from that perspective, I think that it is prudent for each and every individual farmer, producer, rancher, whether they are in the poultry business—to really sit down and understand what is most important to their business, and prioritize where they want to invest, based on the return. But I think critically, and you mentioned your bill, as did I, the Precision Ag Lending Act is one of those, along with PRECISE, that, for us to expand beyond the 25 percent or so of farmers that actually utilizes technology today, we have to have supportive programs—loans with flexible terms that allow these other growers to be able to go, and be able to invest, and borrow the money—the capital to put these technologies in place.

Mr. FEENSTRA. Yes. Thank you, Mr. Hurley. And I fully agree with that, and you can see what it does. I mean, the cutting down of the input—inputs that are going into the crop, or whatever it might be, into milking and so forth. And I just think this farm bill that we have coming up has this great opportunity to do that, and I look forward to working with that.

I want to pivot just a little bit. Mrs. Bloomfield, thank you for your comments about Iowa. Obviously you probably know we have 120 locally-owned, community-based broadband providers, and they are all fighting like ever to get to every subscriber, to get to every community, and every rural producer. My big issue is that the Rural Broadband Modernization Act, which I am on, the ReConnect *underserved* definition is that 90 percent—and it notes that we need 100 percent megabit downstream, 120 percent—or 120 percent upstream, and recently that definition got lowered to 50 percent. Can you talk about why that is so concerning, and why we need to be at 90 percent? I mean, to me, especially in Iowa, this is a huge issue.

Mrs. BLOOMFIELD. Thank you for the question, and thank you for your leadership in the introduction of the Rural Broadband Modernization Act (H.R. 3964). It is a very important piece of legislation which also does kind of go to the 100 symmetrical speed. When you talk about 50 percent, and you set that standard, most of the Federal programs, ReConnect, BEAD, all of these programs, Treasury look at that 80 to 90 percent coverage as kind of the basis.

Problem with 50 percent is you are really encouraging overbuilding. And we have talked about when you have scarce resources, the ability, because we are all so focused on unserved Americans, to make sure that any money goes as far as possible, the ability to overbuild in using government resources, to overbuild government resources, really becomes duplicative efforts that are just wasteful. So that 50 percent is way too low, and I think leads to a lot of issues.

Mr. FEENSTRA. Yes. I agree 100 percent, Mrs. Bloomfield, and thank you for noting that. I mean, we have to be at 90 percent, and I agree 100 percent. Thank you so much for your comments. And I yield back.

The CHAIRMAN. I thank the gentleman for yielding back. I now recognize Congresswoman Salinas from Oregon for 5 minutes.

Ms. SALINAS. Thank you, Mr. Chairman, and thank you to the—you and the Ranking Member for holding this important hearing, and thank you to all the witnesses for staying with us for this long. So, as we have talked about, Congress has essentially allocated billions of dollars to build-out broadband capacity for our unserved and underserved areas across the country, including mine in Oregon. Where my concern lies is about the ability of our state and local governments and small providers to successfully navigate this huge rollout while keeping track of any ongoing opportunities that USDA might have.

And so one of my top priorities for the farm bill, especially as I am talking to my communities, is really ensuring that we are providing that robust technical assistance to ensure that our rural communities can easily access Federal programs. And I will start with Congressman Matheson. Does the existing Broadband Technical Assistance Program provide that adequate assistance to help our rural utilities, co-ops, and small businesses access that Federal funding?

Mr. MATHESON. Yes. Yes, I think you have raised a fair question. I do think the program's adequate, actually. I think that people have access to enough information to make these decisions. These are capital-intensive decisions people make to go into this business. They should not take it lightly. Many of my members, through electric cooperatives, are actually hiring some third party entities to help them do their feasibility analysis on the front-end to try to make the good decisions that go into this. I don't see where there is a huge gap right now, in terms of what you are asking.

Ms. SALINAS. Thank you. And then for—the follow-up, for anyone who might want to answer, how should we be thinking about removing any barriers to access for these smaller providers that don't necessarily have the same resources as some of the bigger players?

Mr. ASSEY. Well, I will take a shot. I think one of the things—and we represent large and small companies, but one of the things really goes to what we talked about earlier, and the fact that Agriculture has tremendous expertise in rural America. They have a very capable Administrator in Administrator Burke. But this really requires a whole of government type of approach to the problem, and we have to figure out a way to promote greater consistency and greater coordination in how we apply for these programs where we can. It makes little sense to me to have—to be able to have to

fill out a form one way for a grant in one agency and have to do it—completely different way in another agency.

Ms. SALINAS. Yes.

Mr. ASSEY. We ought to be trying to make it easy to get more providers into the system that are experienced and that can do the job.

Ms. SALINAS. Thank you. Does anybody else wish to comment?

Mrs. BLOOMFIELD. I will just say, one of the things that I think there can be a role somewhere in here is thinking about—when you think about those local municipalities, or those anchor institutions that really have that need, I think creating the opportunity for collaboration, and thinking about—and can USDA play that central point of—if you have an area that is really tough to serve, what can you do about bringing providers together? What can you do about connecting a municipality with a broadband provider who knows how to do the service. How about NTCA rural broadband provider along with an electric cooperative?

How do you think about, in some of those really tough to serve areas, where you just can't make a market case for doing so, what is the role of some of these agencies, like USDA, to actually support some collaboration?

Ms. SALINAS. Thank you. And my time has almost expired, but I really do want to get to this. Do we have the tools, through other USDA/NTIA programs to support—and we see a lot of wildfires in Oregon—to support resilient middle-mile infrastructure? And to anyone on the panel who wants to answer.

Mr. MATHESON. Look, I have advocated in my opening statement that I want to make sure that when you—the Committee considers—you look at the next farm bill about—important investment in middle-mile. I think that that is a key factor in creating a platform for last mile broadband service, and I think it is something that USDA has looked at and funded in the past. I think it should be continued in the next farm bill.

Ms. SALINAS. Thank you. I yield back.

The CHAIRMAN. I thank the gentlelady. I now recognize the gentlelady from Texas, Congresswoman De La Cruz, for 5 minutes.

Ms. DE LA CRUZ. Thank you so much, Mr. Chairman, and thank you to all of the witnesses for joining us today and sharing your valuable insight. As we all know, access to high-speed internet is no longer a luxury, but a necessity for economic growth, education, health care, and social connectivity. Unfortunately, many rural communities across our country still lack access to reliable broadband services. This digital divide has created significant disparities in economic opportunities, educational outcome, and healthcare access between urban and rural communities. It is important that Americans, regardless of where they live, have access to reliable and affordable broadband services.

My question is, first, for Mr. James Assey, Executive Vice President here for The Internet and Television Association, what improvements should we consider to USDA broadband programs to make broadband infrastructure grant programs more accessible, flexible, and locally-led?

Mr. ASSEY. Thank you for the question. As I stated in my testimony, I think one of the things that it is most important is for

there to be kind of a review of the processes by which we attract eligible providers to make sure that we are taking stock of the different corporate profile and organizations that we have in attracting applicants. I also think it is important that we review and put limits on the types of scoring priorities that our U.S. gives, and when those aren't related to an entity's experience, or the performance of the network, or the need of the particular area, we should get rid of those, because what we really want to do is find who can provide the best solution at the cheapest price for the area of need. So I think those are two important places to start.

The last thing I think is very important is that we get back, as has been stated earlier, to really focusing the distribution of dollars to the areas that are unserved so that we make sure we are getting the most bang for the buck that we can.

Ms. DE LA CRUZ. Thank you. And, Mrs. Bloomfield, we continue to hear from stakeholders about struggles with USDA's lengthy approval process for broadband loan applicants. In your testimony you highlight the delay of Federal funding to entities due to historical preservation requirements and environmental reviews. What specific improvements should Congress consider to streamline the application process?

Mrs. BLOOMFIELD. It is a wonderful question, because I think it is kind of the secret obstacle that nobody really knows about. So when I think of some of my companies who were actually awarded funding as far back as 2019 who have yet to see the money flowing into the field, I think that obstacle of not getting that process moving through quickly enough is really holding up a lot of infrastructure deployment.

So I would say there are a couple of things. I think some recent legislation, hopefully, is looking to streamline it. But I also think that if you have gone through a process where an area has been deemed previously disturbed, where you have already gone through the historicals, and now you are going back to deploy additional infrastructure, you have already gone through those steps. So doing it a second time I think really further holds it back. But it is a very important point, and something we need to ensure that, as you do the farm bill, that there is more streamlining available.

Ms. DE LA CRUZ. So what I am hearing is that if they have already done the research, or the analysis, for a prior application, perhaps?

Mrs. BLOOMFIELD. Exactly, and previous construction, but they still have to go back through it additionally for a new construction, whether you are building further out, you are upgrading existing infrastructure. So once you have already approved it, let us move on.

Ms. DE LA CRUZ. Right. Sounds like a waste of time, materials, and money, is what it sounds like.

Mrs. BLOOMFIELD. And it becomes expensive, because with inflation, honestly, the longer the delays go, you may have gotten a grant 3 years ago, but the cost, between labor supply and the supply of the actual infrastructure, has gone up significantly. So suddenly you are in a position where you actually got that award in 2019, and now your cost to build what you committed to build to has gone up exponentially.

Ms. DE LA CRUZ. Absolutely. That can pose a big problem. Thank you so much. Mr. Chairman, I yield back.

The CHAIRMAN. The gentlelady yields back. I am now pleased to recognize another gentlelady from Texas, Congresswoman Crockett, for 5 minutes.

Ms. CROCKETT. Thank you so much, Mr. Chairman, and to all the witnesses for your time. I am glad to hear that so many Members are talking about what we all know, which is that reliable access to the internet is a non-negotiable these days. Yet, sadly enough, there is a fringe group that believes we have done everything that we needed to do and should go no further. But tell me, how can we have accomplished our goal when over ten million Americans still don't have access to broadband?

For decades we let rural Americans fall farther and farther behind. Without reliable internet access, it is harder to find a job, harder to share special moments with your family, and ultimately people are robbed of opportunities. Finally we are lending folk a helping hand. But just as broadband is starting to be deployed, our colleagues on the Agriculture Appropriation Subcommittee want to cut broadband funding by almost \$100 million. It seems some of my colleagues believe we have done enough, and, after an initial investment, we need to just pack up and go home. So let me set the record straight.

Mrs. Bloomfield, you make an excellent point about healthcare in your testimony. Could you expand upon the importance of telehealth access in communities, and maybe talk a little bit more about other important use cases?

Mrs. BLOOMFIELD. I would be more than happy to. It is something near and dear to my heart because I think it is an application that we have only just scratched the surface of. And to your point about USDA, and all of these other programs, I will say, as we look at all this Federal funding coming down, I encourage my members to look at ReConnect, the USDA program, first because I do think it is that immediate opportunity with a very well run program.

So we partner a lot with the National Rural Health Association, and we have been working in collaboration to talk about what it takes to build smart rural communities. Healthcare is really a foundation. If you don't have access to healthcare in these communities, you find that people don't move there. It is one of those things people look for. So really thinking through what we could do more aggressively to not just build the right networks to ensure that you can do healthcare, but how do you get the devices in people's hands? How do you actually do digital literacy so you are educating techs and healthcare clinicians on how to actually manage some of this?

And the thing I will share, that—what we see from our own experience, running a teledoc and other programs as an association, mental health care in rural America is really critical. And there is also a stigma in rural America. People don't want to see their truck outside of a local mental health care clinic. The ability to do mental health care using telemedicine at home, in the comfort of your living room, is powerful. So I think as we look at some of these applications, and what we can do in terms of digital literacy to educate

more Americans, and get more Americans online to utilize these resources, I think we are going to have a healthier rural America.

Ms. CROCKETT. I think I will actually skip around on my questions, since you touched on something, which was the ReConnect Program. But I do want to highlight what you are saying. As it was mentioned, I am out of Texas, I am out of urban Texas, but we went through redistricting last cycle, when I was in the Texas House. And when we went through redistricting, what we saw is that rural Texas was bleeding population. And when we talked to people, and they talked about the next generation, they talked about the fact that there just weren't opportunities, and so their children were leaving rural Texas. So we have plenty of land in Texas, and we want to make sure that everyone feels like they have all the opportunities that they need, no matter where they want to live in the State of Texas, so thank you for that.

So I am going to skip to a different question now. As we are considering how to bring the ReConnect Program into the farm bill, I would like to know, specifically from Mr. Matheson, good to see you again, about—I know that you are big on the co-ops, but talk to me about the things—and anyone can feel free to kind of jump in—about opportunities that we see to improve the ReConnect Program.

Mr. MATHESON. Well, I am big on the co-ops, I appreciate you noticing. Look, I think that this program that has had success, but there are opportunities for improvement, and that—it is not a program that has been around too long, so it is good to assess where we can go. Number one, let's get it in the farm bill. It is subject to the annual appropriations process. It ought to be authorized by this Committee and by the Congress. So that would be an important step to create consistency and clarity for the program.

The program should include minimum speeds, 100 up, 100 down, symmetrical, we think, as a criteria. We think that the middle-mile investment matters a lot. It is not the top of mind issue for a lot of folks, but if you don't have robust middle-mile, it is difficult to provide broadband service to rural America in an adequate, so that ought to be important, probably look at. Look, I think that this Committee's got great opportunity with this farm bill to really make some important steps to establish, ReConnect, and build on the success it has already had.

Ms. CROCKETT. Thank you so much. With that, I will yield back.

The CHAIRMAN. I thank the gentlelady. I now recognize the gentleman from Tennessee, Mr. Rose, for 5 minutes.

Mr. ROSE. Thank you, Chairman Thompson, and thanks to Ranking Member Scott for holding this hearing, and thank you to all of our witnesses for your time and thoughtful attention to today's hearing. I want to talk a bit about the future of telemedicine, and how important it is that we ensure that USDA broadband programs keep up with new technologies. In an article in *FORBES* entitled, *An Exciting, Surprisingly Imaginative, Techy Vision Of Telemedicine's Future*,* author Michelle Greenwald, who is the CEO of Catalyzing Innovation, described some potentially game-changing advances in telemedicine.

* **Editor's note:** the article referred to is located on p. 89.

Ms. Greenwald describes the possibility of remote monitoring devices for use at home, such as a stethoscope, or a device for looking in the ear, nose, and throat. These readings could be digitally transmitted to the doctor to interpret. Additionally, Ms. Greenwald's article brings up the possibility of using artificial intelligence, machine learning, and pattern recognition to potentially flag serious illnesses, all from an image of a patient.

In the not too distant future we could be living in a world where AI flags a potentially serious illness during a telemedicine visit that otherwise may not have been diagnosed. What really scares me is the possibility that many Americans will not be able to utilize these life-saving technologies because they don't have access to broadband that is strong enough, fast enough, to support these emerging telehealth technologies. Mrs. Bloomfield, as the CEO of NTCA—The Rural Broadband Association, can you talk about the ways in which USDA rural broadband programs help to support access to telehealth technologies?

Mrs. BLOOMFIELD. Absolutely, and thank you for the question. So, as we look at the statistics about the number of rural hospitals that are closing on a regular basis, I think the ability to look at the evolution of telemedicine is going to be really important. So you hit on a few of them. We also see in rural America the ability to monitor your diabetes, your cardiac care, some of those things that are really pretty prevalent in rural populations is going to be important.

And I think another application to be thinking about, and that will need some of this capacity and bandwidth, are things like how do we allow seniors to age in place in their homes? The ability to monitor has our mother taken her pills, because you have the sensor that actually reads some of these things. I don't even think we have scratched the surface on the different things that we can do.

So USDA, with their program, has some additional support on the telehealth side. I think it is getting folks comfortable with some of the technology, but you absolutely need the bandwidth. And the other thing that we find with rural communities, where I think the bandwidth, and the ability to transport whatever type of medical technology you are transporting, is the expert care that you get in some more urban hospitals. If you have something that's complex that you can't deal with in a rural clinic, that you actually need to go into Mayo, or you need to have that access.

The other thing that I will say is we think a lot about privacy when we think about healthcare. And it is another reason why, again, remaining technology-neutral, I think fiber optics is a really important technology to look at because, when you think about cybersecurity, the pulses of light that move through fiber are actually harder to intercept. So when we think about security of networks, and, again, when I think about healthcare, and all of that private data, that's another thing that I think is really important, and I think that's where USDA has a role as they fund some of these programs like ReConnect.

Mr. ROSE. Thank you. And, I am going to use the remaining time to prompt each of you on this question. We are here today talking about the farm bill USDA programs as it relates to rural broadband, but I have been of the opinion for a long time, living

in a rural area, that we simply have to think about this in an ongoing, holistic manner, and that the money that we are sending through USDA, and even the COVID-era money, doesn't really address the fundamental challenge that we face as a country of building-out broadband infrastructure that reaches all Americans, and then maintaining it over time so that we know we are always going to be on the cutting edge.

And my own view is that we found a solution to that decades ago, but we haven't made the changes to keep it up to date, and that is the Universal Service Fund. And I am curious—probably not time for it—all of you to respond, but would anyone like to dive onto that question and tell me, am I wrong or am I right that we need to address the Universal Service Fund to make sure that it is providing the resources to keep America wired with broadband access?

Mrs. BLOOMFIELD. I hate to be a microphone hog, but I will tell you, hit on a really important—it is not just building these networks, it is making them sustainable and affordable, and Universal Service is key. Yes, we need to reform contribution reform.

Mr. ROSE. And, I know my time has expired, but I would appreciate for the record comments from the rest of you about that question. Thank you.**

Mr. MATHESON. I agree with Ms. Bloomfield as well.

Mr. ROSE. I—

Mr. BAIRD [presiding.] Next we have Mr. Gluesenkamp Perez from Washington.

Ms. PEREZ. Thank you, Mr. Chairman. We know that access to high-speed internet is essential to participating in the economy, including telehealth and telework. That's why it is so important that the bipartisan infrastructure law provided almost \$2 billion for the ReConnect Program. In fact, last week—in one of my counties, Lewis County, was awarded—\$24.2 million ReConnect grant. And this money will be used to deploy a fiber network and make high-speed internet available to 2,863 people, 119 businesses, 487 farms, and four educational facilities. And this will serve an area in which 91 percent of residents do not currently have access to adequate broadband. And right—this all hit really close to home during the pandemic. You can't attend online school if you don't have internet. So I am thrilled that these dollars are getting to where they need to be.

Mrs. Bloomfield, you state in your testimony that what matters most to rural America is not the mere deployment of network, but the quality of the service they receive. And I am agreeing with you, but I also wonder, how do we balance that pursuit of quality, pursuing quality, when we still have so many places that don't have access at all?

Mrs. BLOOMFIELD. Well, first, congratulations to Whidbey, who received that USDA grant, which I think is going to go really far. I think some of these Federal programs can also be looked at as complimentary, right? Because we have BEAD coming out in 2024, and they are really focusing primarily on getting the unserved done

**Editor's note: the responses to the information referred to are located: for Mr. Assey, on p. 93; Mr. Zumwalt, on p. 93; Mr. Stroup, on p. 94; and Mr. Hurley, on p. 95.

first. So I think that all of these programs kind of fit together, and I think about—it is one of the reasons why I am pretty adamant about, like, let's not dumb down what we have with ReConnect at the 100/100, because I think complimentarily we are going to have NTIA's program coming in—really filling in those unserved pockets as well. I think the two programs should work very well together.

Ms. PEREZ. And following up on that, in many rural communities like mine there will only be one internet provider. So what are we going to ensure that these resources remain affordable, and we haven't created an untenable situation?

Mrs. BLOOMFIELD. Trying to spur competition in markets where you can't even have one provider without getting Federal support really makes it tough to actually subsidize competition in these areas, so I think that there are going to be a lot of checks and balances along the way. Washington State, for example, has a pretty robust State Broadband Office. In thinking through the affordability programs, thinking through the digital education programs, I think all of those things packaged together are really going to be an important part of ensuring that you get unserved served, but then you are also able to kind of ensure that you are utilizing the networks to the best capability.

Ms. PEREZ. Yes. Thank you. Mr. Assey, in your testimony you talk about some of the potential fixes that could be made to better ensure that the ReConnect Program is able to serve the most rural and unserved or underserved areas. I am wondering if you could elaborate on some of the current challenges, on some of the potential changes you would like to see made?

Mr. ASSEY. Sure, and thank you for your leadership on the Rural Internet Improvement Act as well. I think chief among them is to ensure that the funding goes to the projects just like the one you mentioned, where we have 90 percent of the households that are going to be reached are those that actually are the most in need of being reached. So making sure that the dollars are used efficiently is probably chief among them. I do think we need to modernize the eligibility screens, and the way in which the agencies attract eligible and experienced participants so that we get qualified applicants who are willing to provide service.

I think we need to, again, refocus the way in which a lot of these applications are scored to make sure that we are not giving priority just to companies based on who they are, but we are actually focused on what they can perform and execute on in building these networks. And last, we just need to really promote coordination with the FCC, with NTIA, with state governments, because this really is going to be a case in which the holistic approach and working together is going to be better than the sum of the parts.

Ms. PEREZ. Thank you all so much. And—yes?

Mr. STROUP. I would like to respond to the question that you raised about competition.

Ms. PEREZ. Yes?

Mr. STROUP. There are at least three companies in the satellite industry providing direct to consumer broadband services in competition with all of the other industries that are represented here. Another one will be launching within the next couple years, and

others that are providing partnership with rural telco companies. So there are a variety of means of providing that competition.

Ms. PEREZ. Thank you so much for that additional point. And, Mr. Chairman, I yield back. Thank you.

Mr. BAIRD. Yes. Mr. Nunn, from Iowa, please.

Mr. NUNN. Thank you, Mr. Chairman, and thank you very much for the panel being here today, specifically for the help that we need in rural Iowa. I was just in Des Moines, Iowa yesterday, at Mercy One Hospital talking with a nurse as she was talking to me—or—conversation with a patient who was getting their update as they went. We can see, even during that quick conversation, from a metropolitan area to a very rural area, how challenging it was based on latency *versus* the amount of times we dropped and were interrupted, *versus* trying to keep that patient engaged.

Now, if that patient had a critical issue, it had been one of our veterans who needed assistance, if it had been somebody who had a life-saving recommendation coming from their physician unable to have that communication, think we—put us all in a very dangerous spot. The alternative was that patient could have driven 2½ hours to Des Moines to try and get the assistance they needed. A single mother, leaving their job, coming to Des Moines, when at the same time somebody in a community right next door had unparalleled access to it.

Which gets me to my concern that my home state right now is 45th in the nation for broadband access and is the second lowest speeds. So at a topical level, yes, are we covered? But is it an effective use of the internet? Absolutely not. To fix this, I have introduced a bipartisan ReConnecting Rural America Act of 2023 (H.R. 4227), alongside many of my colleagues in this room. We think it is very important to become part of the farm bill conversation. Our bill would make permanent the ReConnect Program and expand broadband access to increase speeds in rural America.

Now, Mr. Assey, I know that you feel differently than I do on this, and I think that we can get to a point where we can help a lot of these folks. But my concern here is that if you have ever tried to plant precision agriculture with a delayed speed, you are losing crop. If you are a person in immediate medical need, and you have a delayed speed, it is almost like having no internet at all. Or if you are just an individual who's trying to improve their education and you have latency here, whether it is an urban area or a rural area, you are being left behind. And I think we all agree that's unacceptable.

So I would like to speak specifically here to Mrs. Bloomfield on your comments, as well as Mr. Matheson, the 100 up, 100 down and the robust middle-mile. Now, how would you respond to the difference between no access, or delayed access, or diminished access? Because, in my mind, they are all not enough access for what's necessary. Mrs. Bloomfield, I will start with you.

Mrs. BLOOMFIELD. So you—first of all, thank you for your leadership, and thank you for the legislation that you have introduced. It is very important, I think sets the future stage on the right course. So when you reference latency, I will just share that when you talk about the livestock, we have a lot of folks who actually run

livestock sales. You have just lost the ability to either purchase or sell something if you are not being able to do it in real time.

I think all of that—and when you look at the symmetrical speeds that you set in your legislation, it is really to ensure that rural Americans aren't second class citizens, that they are able to receive the same robust services that those in urban areas of the country receive, and I think that is a critical reset for this country.

Mr. NUNN. I would like to turn further—thank you. Mr. Matheson, on the ReConnect side, for our broadband networks, *versus* just keeping what I would call low grade infrastructure, everything in the future, from our combines, to our refrigerator, to our medical devices are going to be connected to this. Talk to me about the long-term needs of rural communities and how broadband high-speed is going to be essential for this.

Mr. MATHESON. Yes. Appreciate—again, I will echo—I appreciate your leadership on this legislation that you have introduced. Look, we all know that the internet and use of broadband is only increasing, in terms of—it affects every aspect of our lives in rural America. There have been challenges. The pandemic helped highlight some of those challenges when it came to work at home, when it came to school at home, when it came to access to healthcare. And so I don't think we need to make that case. I think that is settled, that we all agree there is value in having access to real broadband.

And I appreciate your comment about the difference between the fully served or underserved or not served. And I made some comments earlier about the fact that—let's be careful about simplistic description of unserved *versus* underserved.

Mr. NUNN. Right.

Mr. MATHESON. It is not that simple.

Mr. NUNN. Right.

Mr. MATHESON. And that—while unserved clearly deserve service, the underserved do too, if it is not adequate.

Mr. NUNN. And let's not leave them behind on that. I appreciate that.

Mr. MATHESON. Absolutely.

Mr. NUNN. I know that's where we all want to get to ultimately.

Mr. MATHESON. Yes.

Mr. NUNN. Mr. Hurley, I am going to change topics, very quickly ask you, as a guy who served in cybersecurity for quite a while, as we roll out this new infrastructure, talk to us specifically about the vital equipment that's essential so that we can maintain good hygiene throughout the network.

Mr. HURLEY. Yes. I think, as you look at the technology that's coming on, and the connectedness of it, I would encourage this Committee, when you think about cybersecurity, think about food security and ag security, because—and I would equate that to national security. Because today, and all these gentlemen and ladies do their job, we become more connected. We have—it is not just a single tractor, it is not a planter, it is a sprayer, or a hog house, or a poultry farm. They are all connected, and can all be vulnerable, and we need to give that the focus that it deserves.

Mr. NUNN. Thank you, Mr. Chairman. My time has expired. I yield back, and I appreciate all the ag references in today's hearing as well. Thank you.

Mr. BAIRD. Thank you. The gentleman yields back. And now we go to Illinois with Representative Budzinski.

Ms. BUDZINSKI. Thank you, Mr. Chairman, and thank you Ranking Member, and thank you to the panelists. I appreciated your testimony and the discussion that's happened so far. I am really building on that. I wanted to make a note, I am the former Chairwoman of the Illinois Broadband Advisory Council. This is a topic that is very near and dear to my heart, as it is, I know, to many of us on this Committee. And very important—more importantly to my constituents that I represent in central and southern Illinois.

I really believe we are on the precipice of true generational change in this space, where we can finally capture underserved areas, and rural communities will no longer have to settle, which I think we all want to see. This is why it is important to set our sights high, and ensure that all residents have access to quality, affordable, high performance internet and cell phone access at home.

The 2018 Farm Bill amended the Rural Broadband Program to require 90 percent of residents in proposed service areas be without—in a proposed service area be without sufficient access to broadband or unserved to be eligible for grant funding, and a 50 percent unserved requirement to be eligible for loans. Prior to the 2018 Farm Bill, the Rural Broadband Program required just 15 percent of households in a proposed service area be unserved. I agree that our first priority should be to deliver services to areas most in need, but I also strongly believe that the introduction of unnecessary and unprecedented program rigidity does not serve rural Americans, or our goal of closing the digital divide.

Furthermore, as we get closer to 100 percent nationwide connectivity, it is critical, I believe, that USDA have the necessary flexibility to reach those final communities. So my first question, actually, is for Mr. Matheson. With the historic broadband infrastructure investments made over these last several years, wouldn't it make more sense to add more program flexibility in order to reach every part of rural America? What are your thoughts on the flexibilities that will be necessary for the USDA's broadband programs to address as we get closer to 100 percent nationwide connectivity? And maybe you could connect this to under—the underserved donut hole issue as well.

Mr. MATHESON. Yes. Look, one thing that is often said in the electric co-op world is when you met one electric co-op, you met one electric co-op.

Ms. BUDZINSKI. Thanks.

Mr. MATHESON. They pride themselves on—they are in a unique circumstance. Everyone is different.

Ms. BUDZINSKI. Yes.

Mr. MATHESON. And so adding that flexibility you mentioned to accommodate specific areas—

Ms. BUDZINSKI. Right.

Mr. MATHESON.—in terms of what the needs are and the circumstances, of course that makes sense, particularly as we are trying to fill in these gaps, which are the hardest ones to fill.

Ms. BUDZINSKI. Yes.

Mr. MATHESON. That's why they are still unserved today.

Ms. BUDZINSKI. Yes.

Mr. MATHESON. And so I think that flexibility is all the more important now than perhaps it was previously, because of the nature of the task at hand. That being said, I also think it is important that we—that the flexibility—to not allow specific parameters to shut people out. If you are in an area where 50 percent have access to broadband and 50 percent don't, you say, well, too bad for that 50 who don't we are defining that as one block of area.

Ms. BUDZINSKI. Right.

Mr. MATHESON. When what happens is the economics go—the 50 percent who have it are probably in the high population density areas, where there is money to be made and the folks out in the low population density areas are left out. And if they are coupled into one category, and we just looked at it through that frame, they are never going to get service, right?

Ms. BUDZINSKI. Right.

Mr. MATHESON. So that's the argument—that's an example where that flexibility matters.

Ms. BUDZINSKI. Okay. Thank you very much. And just to add onto that—so building out broadband infrastructure in rural America must account for the needs of every facet of rural areas. I believe households, farms, businesses, and anchor institutions—though adequate for many households, a recent GAO report found that 25/3 is likely just to be too slow to meet the speed needs of many small businesses. Many small businesses and farms reported wanting download speeds of up to at least 100, and as—as did the Connect Illinois—excuse me, the Connect Illinois Broadband Grant Program that we helped to launch.

So one quick question in my last less than 60 seconds, Mrs. Bloomfield, do you think that 25/3 is sufficient broadband access? What factors should we take into consideration when determining the speed minimum?

Mrs. BLOOMFIELD. I would just note, for example, this hearing room itself is 126/113, I believe. So, if you look at 25/3, you are saying you are willing to give rural Americans a standard that is lower than you have in this hearing room to transmit this hearing. So I think we have just grown beyond. I think, as—everybody on this Committee has been talking about applications with healthcare, and, having served on the Illinois Advisory Board, you know all of the different applications, whether it is agriculture, economic development, I think that speed is something that—it—we are beyond that.

And, again, when I think about the fact that I have companies, Country Fiber in South Carolina just shared that 1/3 of their customers take their gig service. We are there. We are not just looking at it, we are there. So—

Ms. BUDZINSKI. Thank you very much, and I yield back the rest of my time.

Mr. BAIRD. Thank you. The gentlelady yields back. And next we have Representative Molinaro from New York.

Mr. MOLINARO. Thank you, Mr. Chairman. I appreciate the witnesses, and I come from a part of New York where this continues to be a significant challenge. And, despite the influx of significant Federal, and even state funding, we continue to experience not only

deep challenges, but a shortage in workforce and the challenge of expanding job opportunities. So workforce availability is one of the items that we have been focusing on.

Last year the GAO published a report indicating that over 30,000 additional telecom workers are needed to deploy high-speed internet infrastructure on a scale that matches the recent funding levels. And, Mr. Matheson, although—do we call you Congressman still?

Mr. MATHESON. Call me whatever you want.

Mr. MOLINARO. Jim, I know that you and your organization have had a long history of trained skill workers out into rural communities.

Mr. MATHESON. Yes.

Mr. MOLINARO. Could you speak to what you observe are the causes of the workforce shortage, and what tools maybe we might consider to open up those job opportunities?

Mr. MATHESON. Yes. It is a timely question. And while it is not unique to the telecom fiber space, or even the electric utility space, I think we have seen workforce shortages hitting a lot of segments of the economy. But in this place, where we are talking about the significant infusion of Federal money to make these investments, this is one of the potential trip hazards, if you will for being effective, and we are feeling that.

Mr. MOLINARO. Yes.

Mr. MATHESON. We are feeling that in terms of finding qualified technicians, qualified people to do the construction, the operations. Again, not unique to the telecom sector, but it is important. I know, for our local electric cooperatives, they are trying to partner with local community colleges, trying to find other partnerships to develop and train people, and create the workforce of the future. But I can tell you, we haven't found the secret sauce that fixes this yet, and I do think that it is an issue that merits some consideration at the Federal level about what we can do to encourage folks to go into these fields to meet these workforce needs.

Mr. MOLINARO. Yes. I think we have undervalued this kind of work. We certainly have diminished its presence in public education, and, frankly, have encouraged people to only learn in a particular way when we should be expanding those opportunities.

Mr. MATHESON. Right.

Mr. MOLINARO. Mrs. Bloomfield, I just wanted to turn to some of the obstacles we—I know that we are facing in New York in particular. We held a roundtable recently with some of our service providers. We are not even—in New York, in my part of the state, it is not the last mile, it is not the donut hole. I mean, it is truly, like, 50'. I mean, we are talking about making the last connection in very small numbers.

The challenges that many of them face, the providers in particular, are costs related to redundancy and bureaucracy, both state and Federal, but also, then, the make-ready costs for pole access, working with public utilities. These are real challenges that I don't think we look at with great detail because they are fine—they are sort of granular, but I hear more and more that that's the last challenge. Can you speak to how those impediments have kept access—

or expanding access, and then what have others done to overcome them? And what might we do to streamline that process?

Mrs. BLOOMFIELD. They are very real. When I think about pole attachments, I think about railroad crossings, I think about local barriers, local permitting, everybody kind of—you kind of go through your different pounds of flesh, you go through the process. So I do think there is something to be said for—from a Federal perspective, looking at some streamlining. I also think that a lot of things that can be done when you think about, like there is, going through Forest Service land, and working with municipalities in these State Broadband Offices to say what can they do? How do you trickle down from the Federal Government to minimize some of those barriers that folks are seeing on the local ground?

And if I could just jump in one last point, because I do think it ties to broadband, we think a lot about workforce development, particularly in rural communities, because, again, you have fewer folks to actually choose from. We have actually been working with our companies on—we produced a guide for—K through 12 guides to careers in broadband, getting kids to understand this is a great career, this is a great path forward.

And, frankly, if you look at your gamers—we may talk about different applications here today, your gamers—my companies that sponsor their e-sport teams, that is their future—those are their future technicians. Those are their future IT folks.

Mr. MOLINARO. Yes.

Mrs. BLOOMFIELD. So watching that evolution, using broadband networks to do something kids love to actually groom that workforce is something we are really very focused on.

Mr. MOLINARO. I thank you for saying that. And I will say perhaps establishing timelines, and sort of specific expectations for states to move or remove some of those access obstacles, if you will, tied to Federal dollars might incentivize them. I have 10 seconds. I just would say you bring up one point, there is a labor force, those with disabilities, who rarely have access to jobs. Eighty percent are unemployed. The gaming space is a space that creates a level playing field for those individuals to learn and access your workforce, and it would be something that we should pay attention to. Thank you, Mr. Chairman.

Mr. BAIRD. And the gentleman yields back, and next we go to Mr. Sorensen from Illinois.

Mr. SORENSEN. I would like to begin by thanking the Chairman and Ranking Member for convening this important hearing, and our witnesses for your testimony. I know it is getting into the afternoon. I really appreciate you sticking through this. I am proud to represent northwestern and central Illinois, where we have farming, urban, and rural constituents. Many of our constituents face the challenge of per—poor quality broadband. They have service that meets the definition of *broadband* set by the FCC, but the service is not sufficient to meet their needs.

Yesterday, I introduced the bipartisan ReConnecting Rural America Act, along with my colleagues in this Committee, Representative Nunn from Iowa, Representative Craig from Minnesota, along with Representative LaHood. This bill sets standards to target broadband investment to unserved and underserved commu-

nities. The approach my bill takes will ensure that underserved constituents can benefit from ReConnect grants and loans, just like unserved constituents.

Currently broadband providers can access ReConnect funds to service areas that are 50 percent unserved. Now, my bill increases the standard to 75 percent, with minimum service speeds of 100 up—or 100 down and 20 up, with a preference for service areas with 90 percent unserved. And, finally, the bill sets mandatory build-out speeds, what we have been talking about here today, 100 by 100 symmetrical. I am thankful, Mrs. Bloomfield, you mentioned that in your opening statement today, so I will begin with you. Could you speak to why this standard needs to be met?

Mrs. BLOOMFIELD. There are so many reasons the standard needs to be met, but I would also—I think I would start off with the fact that, again, it is looking at current usage, current network capacity, and really thinking about—making sure that we build for what we need right now, but also what we need in a few years from now. And so I think the ability to say, we are not going to get this type of funding again, so let's make sure that what we are not doing is turning around in 3 years, and digging back up, and looking to upload the speeds, and increase the speeds. Let's go ahead and ensure that we are putting what is probably the most logical target in place as a start. So, again, we commend you for your leadership, and think that there are so many things in your piece of legislation that are actually very commendable.

Mr. SORENSEN. Thank you for that. I plan to introduce the House version of the Access to Capital Creates Economic Strength and Supports Rural America Act, or the ACCESS Rural America Act (H.R. 4360), alongside Representative Tiffany, and Senators Baldwin and Ernst. The bicameral and bipartisan bill will provide regulatory relief to small rural broadband providers, allowing them to focus on delivering broadband to the most remote areas of our country.

So, if I could continue, Mrs. Bloomfield, could you share with the Committee some of the potential impact of this, and also maybe some of the stresses that we see in the rollout of rural broadband?

Mrs. BLOOMFIELD. So this is an area where your leadership is really important, because I will say that when we think about Sarbanes-Oxley, it was put in place because of large corporate interests, large publicly traded companies.

Mr. SORENSEN. Right.

Mrs. BLOOMFIELD. My members are community-based providers, but if you have a commercial company that is locally held, they maybe have 490 shareholders, and somebody in the family decides to gift to somebody else in the family some of their shares, suddenly you hit 500, and all of these requirements from the SEC kick in. That is hundreds of thousands of dollars a year annually in terms of things that you need to file that are compliance oriented. Then you need to get auditors, and then you need to get lawyers.

And, again, what is—the regs are understandable, but they are really meant for publicly traded companies, and what they are doing in some of these small towns is they are really having people focus spending money and dealing with these regulations, rather—

and reporting, and reporting, and reporting, rather than actually being able to build the broadband.

Mr. SORENSEN. Yes.

Mrs. BLOOMFIELD. So, we greatly appreciate your introduction of the legislation.

Mr. SORENSEN. Thank you for that. Mr. Stroup, you mentioned in your testimony the need to incentivize satellite internet providers. In the past there have been concerns for providing Federal funds for satellite internet, given the limitations to the technology. With technological advancements, and the introduction of low-Earth orbit satellite networks, have those concerns for satellite network capacity changed?

Mr. STROUP. Thank you for the question, and I think that they certainly have. Given the advances in satellite technology, the ever-increasing speeds, the ever-increasing capacity—as I had mentioned in my testimony, companies are providing speeds up to 200 megabits per second. They continue to launch additional satellites just to—and in—10 years ago there were 1,000 satellites. Today there are approximately 8,000 satellites, just to give you a sense of the expansion in the numbers of satellites in the same capability. Ten years ago the speeds were much different than they are today. So I think that that's an argument—a relic of the past, quite frankly.

Mr. SORENSEN. As the Ranking Member on the Space Subcommittee, I appreciate you here, and there, and I yield back the balance of my time.

Mr. BAIRD. Thank you. And then we go to the very patient Representative Van Orden from Wisconsin.

Mr. VAN ORDEN. Thank you, Mr. Chairman. I would like to acknowledge some of my constituents in the back from Grant County. I appreciate you showing up, very much. Mr. Zumwalt, are you related to Admiral Zumwalt?

Mr. ZUMWALT. Yes, I am, distantly.

Mr. VAN ORDEN. All right. He is a good dude. Politicians have been running on providing rural broadband since Al Gore invented the internet, and I want to share with you how broken this system is. And it is not on your side, it is on this side. I want to give you an example here. We have spent, over the last 5 years, \$166.6 billion. The private-sector has spent \$185 billion. That's \$351 billion. This is a penny. See the penny? Look at it sideways. If you were to stack up 351 billion pennies, it would reach almost 1½ times to the Moon, and 13.3 times around the Earth.

Speaking of the Moon, in 1961 John F. Kennedy said, "We are going to go to the Moon." Eight years later, a man stepped on the Moon, Neil Armstrong. I met him. Another good dude. That cost \$257 billion. So for two—that's inflation adjusted dollars. It cost \$257 billion to put a man on the Moon, 8 years after John F. Kennedy said we are going to do it. We have spent \$351 billion in the last 5 years, and I can't do precision agriculture, going from Crawford to Grant County, where those people are from. This is a stent—a systemic failure of this system. I work with all my rural co-ops. I am good with all you cats. I want to ask you one question. When is the last time you all sat together in a room? When?

Mr. MATHESON. Well, some of us sit—

Mr. VAN ORDEN. No.

Mr. MATHESON. All of—

Mr. VAN ORDEN. When's the last time all of you sat in a room?

Mr. MATHESON. Well, all six of us have never done that.

Mr. VAN ORDEN. Yes.

Okay. Guess what? I am planting a flag this morning. I am appointing myself in charge of this. I am formally inviting all of you to sit in my office and talk about things, regardless of how you provide services. So right now you can Netflix and chill, and smoke check a Russian check in Bakhmut, Ukraine, right? And my combine, it can't do precision agriculture in Grant County. That's wrong, okay? So I am formally inviting all of you to my office. Leave your jerseys at the door, and let's fix this problem. Because it ain't about you, it ain't about me, it is about those people in the back of the room. With that, I yield back.

Mr. BAIRD. Thank you. The gentleman yields back. Next we go to Mr. Langworthy. You have 5 minutes.

Mr. LANGWORTHY. Thank you, Mr. Chairman, Mr. Ranking Member. Whether it is managing a vineyard, operating a dairy, broadband access plays a crucial role in supporting our farming operations and initiatives. The nature of running a farm, much like operating a small- to medium-size business, requires reliable and fast internet connectivity to ensure efficient and effective management.

Now, everything from ordering supplies, to monitoring farm data, to managing pesticide use, it is all done using the internet. We can't imagine a local convenience store or a gas station operating without full broadband. Yet, today our farming operations are really no different. Like too many parts of our country, only 75 percent of my district is considered to be *served* by fast, reliable broadband. So while billions of dollars has been made available through new and existing programs to deploy broadband infrastructure, I share the goal of many of my colleagues here today to focus these abundant resources first and foremost on the areas that are unserved.

And, with that, Mr. Assey, last month I sent a letter, with several of my colleagues here today, to Secretary Vilsack regarding the Rural eConnectivity Pilot Program. We expressed to the Secretary that he prioritizes the pressing issue of connecting unserved rural Americans in bridging the digital divide by keeping the ReConnect Program of the Rural Utilities Service focused on this objective. Unserved households are unserved for a reason. They are often not economically viable for private entities to provide networks there, so those unserved areas require the help of Federal dollars.

And for this reason, we need to ensure that the mission of ReConnect is to serve unserved areas first. This makes certain that the government is overbuilding, and developing competing networks where networks already exist. Like the cafeteria line, we need to make sure everyone is served first, and then, if there is still food left, others can get back in line for seconds, to build their networks to even higher speeds and higher capacities.

I am a little concerned with how new or additional funding for ReConnect and other programs will be adequately and appropriately targeted towards areas that are genuinely unserved. So

can you talk a little bit about the importance of prioritizing unserved *versus* underserved areas?

Mr. ASSEY. Sure. And thank you for the question and for the letter. I think what it expresses is consistent with what was the original intent of the program, to really focus on our hardest problems first, because if we don't, things have a way of always trying to get places that may have a larger economic return. And what we have seen in the past is the people that don't have even standard broadband at 25/3 are continually left behind. So I think it is a good reminder, it is a good way to kind of refresh people's focus on the areas that we need to focus on first that are the hardest problems to solve. But, with resources and resolve, I believe they can be solved.

Mr. LANGWORTHY. Well, we certainly have enough resources. Mr. Assey, for the past 2 decades we have seen significant Federal investment in broadband development. And given the influx of all of these funds to build-out internet connectivity, how can we prevent overbuilding and duplication of Federal efforts in funding for the broadband systems?

Mr. ASSEY. I think we have to have consistent standards for the areas that we are trying to serve with Federal dollars. We have to recognize that, no matter how much money that we put into the system to provide support, and I would say necessary support in areas where it is otherwise uneconomic to serve, there is a substantial capital investment that's being made by private companies, and we need to harvest the benefits of competition in order to solve the problem.

Mr. LANGWORTHY. Mr. Matheson, is there anything you would like to add on that topic?

Mr. MATHESON. I am sorry, can you—I couldn't—the door—what did you say again?

Mr. LANGWORTHY. Okay. Is there anything you would like to add on that topic of overbuilding?

Mr. MATHESON. I think that comment I made—it is easy to oversimplify the term *overbuilding*, and *unserved* and *underserved*. I think there is a more nuanced approach we ought to be talking about here. I am concerned about folks that are underserved that are going to be left behind, and it is good enough for them. And in—for rural—it is good enough for rural. I don't buy that. So I understand that unserved are an important priority. I don't think I would summarily reject all unserved as being secondary to that. There is a more nuanced approach that I think this Committee needs to think about as they write the next farm bill.

Mr. LANGWORTHY. Very good. Thank you very much, and I yield back, Mr. Chairman.

Mr. DAVID SCOTT of Georgia [presiding.] Thank you. And now the gentleman from North Carolina, Mr. Davis.

Mr. DAVIS of North Carolina. Thank you so much—

Mr. DAVID SCOTT of Georgia. You are recognized for 5 minutes.

Mr. DAVIS of North Carolina. Thank you so much, Mr. Ranking Member, and to all the witnesses who are here today. In eastern North Carolina, which I represent in the First Congressional District, broadband accessibility is one of the largest roadblocks people face to advance: 42 percent of people in the First Congressional

District do not have broadband access. Whether it be in their education, small business, or applying for grants and loans, USDA often tells people in my district that they can go online and apply for the grant. But how can they do that when there is not internet connectivity? That's a big hurdle. That's a comment. I would like to move into a more technical question here and would love to hear from any of the witnesses.

There are a lot of different ways, then, to bring broadband connectivity to rural households. Fiber may work best in one place, but then—increasingly noticed fixed wireless in certain locations. How should USDA consider place-based policies when constructing broadband networks? And I would love to hear from any of the witnesses on this.

Mrs. BLOOMFIELD. I will just jump in and say that I think that you can be technology-neutral, because I do think it is going to take every—you may be serving—you may have a mountain that is tougher to lay fiber to. You may have an area that has line of sight obstruction, which makes fixed wireless a little bit more challenging. But that is where I think there is a real value to USDA setting that speed of 100 symmetrical, because what you are saying is it is about this capacity, it is not about how you actually—what technology you are using to actually bring the technology to the consumer.

Mr. ZUMWALT. I think we can stipulate that Shirley likes 100/100, because we have heard this a lot today, and I am certainly not trying to argue against the best that we can do for every American. But when you look at actual streams of data, a Zoom call or a Teams call is about 5 megabits per second. A 4K stream from a streaming service like Netflix is about 5 megabits per second. Gaming is about 5 megabits per second each way. It takes a lot of those to get up to 100/100 in every single location. And if we insist on 100/100 service everywhere, we will have people who are unserved because we will overbuild existing networks that do have service today.

And I think that when we talk about future-proofing, we need to be talking about future-proofing the people of the United States of America, including the people who are unserved today. And that's why we are passionate about making sure that the unserved get served first, and then we can solve for how we get connectivity enhancements along the way.

Mr. STROUP. And, Representative Davis, from the equipment manufacturer's perspective, specifically focused on how do we continue to deploy, and utilize, and reap the benefits of precision ag, our position is strongly that we have to be neutral on the technology because it is going to take all of the different types of technology for us truly to be able to utilize and reap the benefits, whether that is from increasing yields, whether that is reducing fuel usage, all of the advantages that precision technology brings, because it has to be in the middle of the field, it has to be in the barn, and it has to be at—wherever the analytics are being done.

Mr. DAVIS of North Carolina. Yes. Well, let me just ask this question, then. Do we believe we have been neutral so far in the technology?

Mr. ASSEY. Have we been neutral?

Mr. DAVIS of North Carolina. Yes.

Mr. ASSEY. I look to a program like the FCC RDOF Program, where we set a baseline. We obviously don't want to invest in yesterday's technology, but we want to incent the best technology platform we have. Cable is a connectivity company. We offer hybrid fiber/coax solutions, we build fiber networks, we offer wireless solutions. We want to provide whatever the connectivity is that the consumer's going to need in the future.

And what's important is that the technology platforms we build can meet not only the needs of today and tomorrow, but that they are scalable. And we believe that, in the very near future, cable technology is going to make this entire debate moot because we are going to be able to provide multi-gigabit speeds in both directions.

Mr. DAVIS of North Carolina. Well, I greatly appreciate the responses today, and, Mr. Chairman, I do yield back.

Mr. LANGWORTHY [presiding.] Thank you very much. And before we adjourn today, I invite—thank you. And before we adjourn today, I invite Ranking Member Scott to share any closing comments he may have.

Mr. DAVID SCOTT of Georgia. Thank you very much. Lady and gentlemen, this has been an extraordinary hearing at an extraordinary and historic time. We are recognized around the world as having the best, foremost, number one agriculture system in the world. But a lot of that is at stake if we don't connect with ourselves and the rest of the world where we produce our food supply. And that is making what we have to do now a national security issue. No more pussyfooting around. It has got to end. Your testimony here today has opened our eyes up on this Committee to much of what we were only dimly aware.

And thank you for this, but don't stop here. We have just 12 weeks to complete this task of making sure that we don't cut any corners in connecting rural America full speed ahead on the same basis that we have connected urban America. That's where our food supply is. It is—and our food supply is becoming more and more an issue. Precision agriculture, all of the technological benefits that we need to make sure is in our communities where we produce our food. There are worlds and nations who are envious of us. We look at the European Union, who looks at us, and says that they are more interconnected with the internet than the United States. We have to put that to an end.

And so I want to thank Mrs. Shirley Bloomfield, Chief Executive Officer of NTCA—The Rural Broadband Association. Your testimony was most helpful. Thank you. Mr. James Assey, Executive Vice President of NCTA—The Internet and Television Association, you did a masterful job. David Zumwalt, President and CEO of WISPA—The Wireless Internet Service Providers Association. Mr. Tom Stroup, President of the Satellite Industry Association, thank you. Jim Matheson, Chief Executive Officer of National Rural Electric Cooperatives Association, and my friend, and former Member of Congress. We have traveled together, we have worked together. Keep up the good work. And Mr. Bill Hurley, Chair of the Agriculture Sector Board, Association of Equipment Manufacturers, AEM.

You all did a fantastic job, and you saw and heard, from the participation of our Members on both sides of the aisle. We are Republicans and Democrats working in a bipartisan way to make sure we finally cross the Rubicon and establish rural broadband in rural America. God bless you, and thank you for your wisdom, your advice, and please continue to work with us over next 12 weeks. We must get this farm bill done by the end of September, and that's just 3 months away. So our work is ahead for us, and we want you to continue to be involved. And, most importantly, make sure we got the right amount of money so that we don't short circuit our rural communities from having the financial resources to do this job the right way. Thank you.

Mr. LANGWORTHY. Thank you, Ranking Member Scott, and thank you to all our witnesses for their expert testimony here today, and all of your cooperation and time. Under the Rules of this Committee, the record of today's hearing will remain open for 10 calendar days to receive additional material and supplementary written responses from the witnesses to any of the questions posed by a Member. This hearing of the Committee on Agriculture is adjourned.

[Whereupon, at 1:19 p.m., the Committee was adjourned.]

[Material submitted for inclusion in the record follows:]

SUBMITTED ARTICLE BY HON. JOHN W. ROSE, A REPRESENTATIVE IN CONGRESS FROM
TENNESSEE



[<https://www.forbes.com/sites/michellegreenwald/2021/04/06/an-exciting-surprisingly-imaginative-techy-vision-of-telemedicines-future/?sh=6fbb57647a03>]

An Exciting, Surprisingly Imaginative, Techy Vision Of Telemedicine's Future

MICHELLE GREENWALD,¹ Contributor, *Corporate Innovation Expert, Systematic, Creative, Product Development*

Apr. 6, 2021, 08:51 a.m. EDT



**Avatar of
Dr. Yaa
Kumah-Crystal
MD MPH
Assistant
Professor of
Biomedical
Informatics at
Vanderbilt
University
Medical Center**

Avatar of Dr. Yaa Kumah-Crystal at Vanderbilt University Medical Center to potentially use in future patient interactions. Dr. Yaa Kumah-Crystal.

Avatars, virtual waiting rooms, virtual scribes, in-home testing devices, “syndromatic” facial analysis using AI and machine learning, screen-sharing, and sentiment analysis . . . There are many exciting innovation possibilities on the horizon that will make telemedicine even more productive, informative, helpful and dare I say fun and personable, than current, in-person doctor visits. Several weeks ago I heard Dr. Yaa Kumah-Crystal, MD MPH, Assistant Professor of Biomedical Informatics at Vanderbilt University Medical Center, speak at the Disruption Lab’s excellent series on the Future of Health Care. Dr. Kumah-Crystal defined telehealth as “care unbound by distance, physical location or setting.”

While many of the ideas Dr. Kumah-Crystal shared have a long way to go, they paint a picture that’s exciting to imagine, and can be instructive and inspiring to a range of industries outside of healthcare. The guiding objective for these ideas is how to make telemedicine even better than current in-person care, in certain instances. While telemedicine visits have been reimbursed by most insurance companies at the same rate as in-person visits since the onset of [COVID] due to restrictions and the need to encourage care, going forward telemedicine may have to prove its comparable worth for insurers to maintain parity payments. What follows are some of the more exciting, creative, effective possibilities Dr. Kumah-Crystal shared.

Screen-sharing

It can be hard for patients to understand verbal explanations by physicians of their conditions, or through wall-charts or plastic models of body parts in their offices. With screen-sharing, it’s easier for doctors to show more still visuals that can be easier for patients to understand, or even short, explanatory videos.

Chart Photos

It can be difficult for physicians to match patient names with what they look like between or before visits. While not a common occurrence, there can be errors in

¹<https://www.forbes.com/sites/michellegreenwald/>.

writing prescriptions for the wrong person. What if each person's photo always appeared in their telehealth chart?

Syndromatic Facial Detection Using AI, Machine Learning & Pattern Recognition

One way physicians diagnose is looking at the patient's eyes, face and tongue. AI and Machine Learning benefit from millions of observations, correlations with diseases, and pattern recognition. Using image recognition of the patient, computers have more data points to draw upon than any one physician, and therefore the conclusions can be even more accurate.

Virtual Waiting Rooms

Waiting rooms can be boring and not a great use of a patient's time. What if once a patient was logged in for their appointment, while they were waiting for the doctor online, there was content tailored either to their interests, or even better, relating to the issue they came to see the doctor about.

Remote Monitoring Devices & Virtual House Calls

What if patients had in their homes, simplified yet effective versions of routine monitoring devices normally found in a doctor's office, such as a stethoscope or a device for looking in the ear, nose and throat. These readings could be digitally transmitted to the doctor to interpret.

Sentiment Analysis Based On Facial Expression

The patient experience, while historically not given enough attention, can become easier to assess by analyzing facial expressions in response to each step of their care journey, from filling out forms (even digital ones), to speaking with the doctor, to understanding new terminology, to understanding a bill. Anonymized facial expression analysis could help interested doctors' offices realize what areas of the end-to-end patience experience they most need to improve.

Better Understanding How Patients' Everyday Life Affects Their Health

Imagine how effective it would be for a patient to show their doctor how they organize their medications, the foods they eat, or how they exercise, right from their home. The patient could take the doctor or physical therapist for a virtual tour of their medicine cabinet, their refrigerator or pantry, or their exercise routine.

Avatars

It's been shown that people can feel more comfortable sharing personal things with through avatars of themselves and people they're interacting with. Avatars of doctors can seem more approachable and easier to talk to about difficult subjects. Advances in avatar creation has enabled them to be even more realistic, with movements like raising eyebrows, smiling, and other facial expressions.

Virtual Scribes

Since the advent of electronic medical records, physicians have found themselves spending more and more time, both during and after patient visits, typing notes about the patients' symptoms and condition. It's hard to make eye contact with the patient while doing it. Virtual scribes that use voice recognition to hear and transcribe/diarize the entire conversation, free doctors to make eye contact with patients so they feel they're being paid better attention and getting better care. Patients can then receive a copy of the notes with a patient dictionary or glossary of terms, so they can more easily understand unfamiliar terminology used by the doctor.

Improved Accessibility and Speech Captions

Due to [COVID] concerns and patients and physicians wearing masks in-person or online, the sound can be muffled and patients can't read lips to help decipher the speech. With virtual visits, there could be captions to what was being said to be sure nothing was missed. For hearing impaired patients this is even more essential.

Text Check-Ins Between Visits

While there will always be circumstances that require in-person visits, some can be replaced by text check-ins, including photos. Telemedicine is envisioned as only a partial replacement for in-person care. For seniors, the disabled, and individuals without good transportation options, the ability to not have to physically come into an office is not only easier, it can increase medical provider/patient communication, and therefore improve outcomes. This could correlate with a different compensation mechanism that rewards how well the patient does, rather than basing compensation solely on office visit and procedure fees.

Doctor/Patient Portals

With digitized remote monitoring devices like glucose monitors, heart monitors, and scales, doctors can check-in periodically to monitor the data for aberrations that might warrant attention. The software can be programmed to alert the doctor when aberrations occur and is therefore a 24/7 kind of monitoring that's more effective than waiting for a scheduled visit to discover an issue.

Conclusion

We live in a very exciting time for medicine because of the combination of advances in science, technology, creativity, and increased focus on customer experience, speed and efficiency. What's key is bringing together individuals with different expertise to jointly problem solve and imagine more effective processes, independent of legacy procedures and systems.

I've heard Scott Friedman, another speaker at the Disruption Lab series on the Future of Health Care, who is a Professor and Chief of the Division of Liver Diseases at Mount Sinai Hospital in New York (considered by many to be the most innovative medical center in New York), speak about Mount Sinai's new BioMedical Engineering and Imaging Institute. Launched in September 2019, its goal is to develop novel medical inventions in the fields of imaging, nanomedicine, artificial intelligence, robotics, sensors, medical devices, and computer vision technologies that include virtual, augmented, and extended reality. Mount Sinai's pioneering FlexMed medical school program allows applicants to apply who don't have traditional science majors and they're not required to take the MCAT for admission. It encourages a student body with broader set of interests and skills such as engineering, computer science, software engineering, or robotics, that will help graduates create the healthcare of the future.

There's much to be learned by other industries in the way healthcare, due to necessity, is adapting to a post-[COVID], more contactless, more visual, virtual, and data driven world. [COVID] was the accelerant for changes that were long needed, causing us to think sooner, more intensely, broadly, and imaginatively about what the future can hold.

Follow me on Twitter² or LinkedIn.³ Check out my website⁴ or some of my other work here.⁵

SUBMITTED LETTER BY HON. NICHOLAS A. LANGWORTHY, A REPRESENTATIVE IN
CONGRESS FROM NEW YORK

May 18, 2023

Hon. THOMAS J. "TOM" VILSACK,
Secretary,
U.S. Department of Agriculture
Washington, D.C.

Dear Secretary Vilsack,

We write to you today to request that you prioritize the pressing issue of connecting unserved rural Americans and bridging the digital divide by keeping the Rural eConnectivity (ReConnect) Pilot Program of the Rural Utilities Service (RUS) focused on this objective.

For years, rural communities have long been neglected due to their remote location and lack of economic viability, making it difficult to provide them with broadband service without the aid of targeted subsidies.

The Rural eConnectivity (ReConnect) Pilot Program has provided funding for broadband deployment in rural communities without access to broadband service since its establishment in 2018 and has two main strategies to effectively distribute its funding.

First, it prioritizes rural areas where at least 90 percent of households lack access to broadband, ensuring that the most unserved regions receive support. Second, it avoids duplicative efforts by not providing funding to areas that are already receiving broadband service through other programs, thus making the most efficient use of its resources. These measures, in addition to other improvements like refining broadband coverage data and expanding program access to more qualified providers,

² <https://www.twitter.com/CatalyzingInnov>.

³ <https://www.linkedin.com/in/catalyzinginnovation>.

⁴ <http://www.catalyzinginnovation.com/>.

⁵ <https://books.apple.com/us/book/catalyzing-innovation/id794016507>.

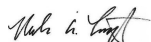
are meant to allow ReConnect to accurately allocate funding and provide services to the most unserved rural areas.

However, as RUS begins to award a fourth round of funding, we are deeply concerned that the program may not be focused on this objective, and that these funds for the next round of ReConnect could go to places that already have strong broadband service. In the Infrastructure Investment and Jobs Act (IIJA), Congress directed RUS to focus funding on rural areas “without sufficient access to broadband defined . . . as having speeds of not less than 25 megabits per second downloads and 3 megabits per second uploads.” In addition, Congress directed RUS to set aside a portion of the appropriated funding specifically to prioritize areas where at least 90 percent of households to be served lack 25/3 megabits per second (Mbps). And yet, in its most recent funding opportunity announcement, RUS increased the threshold for “sufficient access to broadband” to 100/20 Mbps. Coupled with IIJA’s lowering the percentage of households within a project that are unserved, RUS could be allocating a significant portion of its resources to subsidize additional broadband deployment in areas where more than half of households can already subscribe to 100/20 Mbps or better from an existing provider, diverting funding away from rural areas that require broadband the most.

The concerns regarding the duplication of Federal resources are amplified due to the significant amount of broadband funding that has been allocated to NTIA through the IIJA. As you know, to ensure the maximum impact of Federal and state broadband programs, it is crucial for ReConnect to collaborate with other initiatives such as the FCC’s Rural Digital Opportunity Fund (RDOF) program, NTIA, Treasury, and state broadband programs. This collaboration will prevent any duplication of services in project areas that are already funded by other government agencies. Duplicating services will not only hinder the efforts to bridge the digital divide but also deprive numerous rural communities of reliable, affordable, and high-speed internet services.

Therefore, through the next farm bill, Congress should have proper oversight and authority for ReConnect and other programs that directly impact rural Americans, as the lack of checks and balances in the ReConnect funding program have been a cause for concern. In addition, we strongly urge the agency to make every effort to give priority to communities with the highest percentage of unserved households and those not being served by other broadband funding programs, as meeting our shared goal of connecting all Americans is dependent on these crucial actions.

Sincerely,



Hon. NICHOLAS A. LANGWORTHY,
Member of Congress



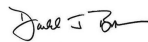
Hon. TRENT KELLY,
Member of Congress



Hon. ZACHARY NUNN,
Member of Congress



Hon. MARCUS J. MOLINARO,
Member of Congress



Hon. DON BACON,
Member of Congress



Hon. LORI CHAVEZ-DEREMER,
Member of Congress



Hon. JOHN S. DUARTE,
Member of Congress

SUPPLEMENTARY MATERIAL SUBMITTED BY JAMES M. ASSEY, JR., J.D., EXECUTIVE VICE PRESIDENT, NCTA—THE INTERNET AND TELEVISION ASSOCIATION

Insert

Mr. ROSE. Thank you. And, I am going to use the remaining time to prompt each of you on this question. We are here today talking about the farm bill USDA programs as it relates to rural broadband, but I have been of the opinion for a long time, living in a rural area, that we simply have to think about this in an ongoing, holistic manner, and that the money that we are sending through USDA, and even the COVID-era money, doesn't really address the fundamental challenge that we face as a country of building-out broadband infrastructure that reaches all Americans, and then maintaining it over time so that we know we are always going to be on the cutting edge.

And my own view is that we found a solution to that decades ago, but we haven't made the changes to keep it up to date, and that is the Universal Service Fund. And I am curious—probably not time for it—all of you to respond, but would anyone like to dive onto that question and tell me, am I wrong or am I right that we need to address the Universal Service Fund to make sure that it is providing the resources to keep America wired with broadband access?

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Mr. ROSE. And, I know my time has expired, but I would appreciate for the record comments from the rest of you about that question. Thank you.

With the passage of the Infrastructure Investment and Jobs Act, there is a rare opportunity for policymakers to reassess the scope and scale of the Universal Service Fund's (USF) programs to ensure optimal use of USF's resources in achieving the goal of universal service. The Infrastructure Act's programs, such as the \$42.5 billion Broadband Equity, Access, and Deployment (BEAD) program, will fund new broadband infrastructure in many of the same unserved and underserved areas that are supported by USF's high-cost program.

NCTA recognizes that broadband providers that deploy broadband networks with government funding will continue to incur operational and maintenance costs in high-cost areas; however, there is no basis for a blanket assumption that providers will be unable to cover these costs in the future because modern, fiber-rich networks tend to have lower operating costs than the legacy copper networks they are supplanting. In the event a provider does seek USF support for operational and maintenance expenses in an extremely rural, high-cost area, NCTA believes the provider should be required to demonstrate such support is necessary and not duplicative of other government support. All stakeholders will soon have the opportunity to address these issues in response to the Notice of Inquiry that recently was commenced by the FCC.

The extensive and overlapping funding provided by the new programs recently created by Congress should reduce the fiscal demands on USF. NCTA believes this is an opportune time to focus on stabilizing USF through increased efficiency and better targeted spending.

SUPPLEMENTARY MATERIAL SUBMITTED BY DAVID M. ZUMWALT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION

Insert

Mr. ROSE. Thank you. And, I am going to use the remaining time to prompt each of you on this question. We are here today talking about the farm bill USDA programs as it relates to rural broadband, but I have been of the opinion for a long time, living in a rural area, that we simply have to think about this in an ongoing, holistic manner, and that the money that we are sending through USDA, and even the COVID-era money, doesn't really address the fundamental challenge that we face as a country of building-out broadband infrastructure that reaches all Americans, and then maintaining it over time so that we know we are always going to be on the cutting edge.

And my own view is that we found a solution to that decades ago, but we haven't made the changes to keep it up to date, and that is the Universal Service Fund. And I am curious—probably not time for it—all of you to respond, but would anyone like to dive onto that question and tell me, am I wrong or am I right that we need to address the Universal Service Fund to make sure that it is providing the resources to keep America wired with broadband access?

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Mr. ROSE. And, I know my time has expired, but I would appreciate for the record comments from the rest of you about that question. Thank you.

Thank you for this important question. Many rural communities across America do not have the same access to broadband as their urban and suburban counterparts. This disparity has long-term adverse economic and social consequences for those left behind. These challenges are particularly acute for our nation's farmers. Connectivity, real-time data, and opportunities to sell their commodities in an expedient and efficient manner are more critical than ever. And many applications used by farmers, such as precision agriculture, require wireless broadband to blanket vast acres of farmland. WISPA is committed to addressing this disparity.

The Universal Service Fund (USF) has played a major role in connecting communities and remains important today. However, for it to be most effective in today's technological environment, USF should be updated to better accommodate small, broadband-only providers who deliver needed internet access to millions of Americans in high-cost areas that are on the wrong side of the digital divide.

More specifically, WISPA recommends the following:

- Congress should update the FCC's USF programs from Title II telecommunications programs to allow support for broadband programs; an important step will be to decouple or eliminate the hurdle that requires recipients of high-cost support to first be designated as Eligible Telecommunications Carriers ("ETCs").
- Federal and state broadband funding programs should be carefully crafted and implemented to avoid duplicating government support to providers in the same area.
- USF programs should focus on functionality, consumer demand, deployment costs and speed of deployment to encourage timely and efficient distribution of ratepayer and taxpayer contributions.
- The E-rate program should fund support of off-campus use of broadband services for library patrons/students who would otherwise lack access; and allow schools/libraries to use funds for broadband access for K-12 students within the footprint of a school or school district, with such support available for all technologies, including fixed wireless networks using unlicensed spectrum.
- The FCC should permit high-cost support recipients that are not the only Lifeline provider in their Census block to fulfill their obligations by either offering Lifeline discounts or participating in the Affordable Connectivity Program.
- And, if the Commission requires entities that do not provide voice services to contribute to USF, it should raise the *de minimis* contribution threshold to prevent unfair burdens on small providers.

Every American—regardless of where they live—should have access to the very best internet and reliability that they need. Americans in rural areas have no less a need for broadband than those in urban and suburban centers. Modernizing USF is an important step to ensuring that all communities benefit from connectivity.

SUPPLEMENTARY MATERIAL SUBMITTED BY THOMAS A. "TOM" STROUP, J.D.,
PRESIDENT, SATELLITE INDUSTRY ASSOCIATION

Insert

Mr. ROSE. Thank you. And, I am going to use the remaining time to prompt each of you on this question. We are here today talking about the farm bill USDA programs as it relates to rural broadband, but I have been of the opinion for a long time, living in a rural area, that we simply have to think about this in an ongoing, holistic manner, and that the money that we are sending through USDA, and even the COVID-era money, doesn't really address the fundamental challenge that we face as a country of building-out broadband infrastructure that reaches all Americans, and then maintaining it over time so that we know we are always going to be on the cutting edge.

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Mr. ROSE. And, I know my time has expired, but I would appreciate for the record comments from the rest of you about that question. Thank you.

The Satellite Industry Association (SIA) submits this in response to the request for formal reply to the question raised during the House Agriculture Committee Hearing on June 21, 2023, concerning whether “we need to address the Universal Service Fund to make sure that it is providing the resources to keep America wired with broadband access?”

The USF is one of many current Federal funding programs seeking to support the deployment of broadband in rural and other unserved areas of the United States. For example, the FCC, NTIA, Department of Agriculture, Department of Health and Human Services, Department of Housing and Urban Development, Department of the Treasury, and the Institute of Museum and Library Services all provide funding to build-out rural broadband infrastructure.¹*

SIA believes these programs should be technology inclusive and that satellite operators should be eligible for funding through them. As noted in SIA’s written testimony, no single broadband technology holds all the advantages. With finite resources and widely varying topography, we need a flexible combination of all available access technologies to bridge the digital divide and satellites are a key part of that ecosystem. Fortunately, multiple satellite providers currently provide broadband access to consumers nationwide, including in rural and remote areas. They provide connection to all 50 states with speeds of up to 200 megabits per second (Mbps) without the need for additional build-out.² Satellite companies continue to launch new capacity and plan to deploy tens of thousands of new satellites adding to the approximately 8,000 satellites on orbit today. The satellite industry is currently increasing production of satellites capable of providing connections to rural America while reducing costs. For example, the cost of manufacturing satellites as measured by cost per throughput has decreased approximately 90% resulting in lower costs to consumers, including those in rural areas.³

SUPPLEMENTARY MATERIAL SUBMITTED BY BILL T. HURLEY, VICE PRESIDENT, DISTRIBUTION, AMERICAS, AGCO CORPORATION; CHAIR, AG SECTOR BOARD, ASSOCIATION OF EQUIPMENT MANUFACTURERS

Insert

Mr. ROSE. Thank you. And, I am going to use the remaining time to prompt each of you on this question. We are here today talking about the farm bill USDA programs as it relates to rural broadband, but I have been of the opinion for a long time, living in a rural area, that we simply have to think about this in an ongoing, holistic manner, and that the money that we are sending through USDA, and even the COVID-era money, doesn’t really address the fundamental challenge that we face as a country of building-out broadband infrastructure that reaches all Americans, and then maintaining it over time so that we know we are always going to be on the cutting edge.

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Mr. ROSE. And, I know my time has expired, but I would appreciate for the record comments from the rest of you about that question. Thank you.

The Association of Equipment Manufacturers (AEM) supports updates to the Universal Service Fund that take into consideration advancements in precision agriculture and the connectivity needs that they require. We believe that the spirit of the Communications Act of 1934 called for universal services to be administered as an evolving level of service. Precision agriculture wasn’t initially theorized until the

¹U.S. Congressional Research Service, *Overview of the Universal Service Fund and Selected Federal Broadband Programs* (updated June 25, 2021), at <https://crsreports.congress.gov/product/pdf/R/R46780>.

* **Editor’s note:** the referenced report is retained in Committee file.

²<https://docs.house.gov/meetings/AG/AG00/20230621/116129/HHRG-118-AG00-Wstate-StroupT-20230621.pdf>.

³BryceTech, *Satellite Industry Association: State of the Satellite Industry Report 2023*, at 10, 16 (2023).

1980s and policymakers then could not possibly have foreseen what innovations would be developed 50 years into the future.

As such, as policymakers approach updating any Federal broadband deployment program, AEM would encourage a multifaceted strategy that includes fiber optic, low earth orbit (LEO) satellites, and 5G. It is imperative that the system supports connectivity between all aspects of rural America, from the hospital to the school and from the farmhouse to the field.

