"Rural Broadband - Examining Internet Connectivity Needs and Opportunities in Rural America"

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Chairman Scott, Ranking Member Thompson, and Members of the Committee, thank you for the opportunity to share our perspectives on broadband, particularly efforts to address longstanding connectivity needs in rural America. My name is Vickie Robinson, and I am the General Manager for the Microsoft Airband Initiative, which is focused on efforts to close the digital divide in the United States and around the world. Prior to joining Microsoft, I served at the Federal Communications Commission (FCC) for nearly 15 years in multiple leadership roles and served as Acting CEO and General Counsel of the Universal Service Administrative Co., an independent not-for-profit organization designated by the FCC as the administrator of the federal Universal Service Fund. I'm here today to share our thoughts on broadband and closing the rural digital divide.

Broadband is critical to everything we do, and we deeply appreciate the importance of broadband in enabling everyone to do more. Access to broadband is essential to meaningful participation in society, providing the foundation for enormous social and economic opportunity. For many, high-speed internet access is as ubiquitous as electricity and running water. From the comfort of our own homes, those of us with connectivity can attend courses and earn degrees, shop for countless products from around the world, and collaborate seamlessly with colleagues in different time zones. Less than a generation ago, those things were impossible.

The challenge, however, as this Committee so rightly highlights, is that not everyone has access to a broadband connection and as a population, some haven't benefitted equally. This gap disproportionately affects communities that are traditionally marginalized, including but not limited to, people experiencing income and housing insecurity, racial and ethnic minorities, and people with disabilities. Rural areas are especially disadvantaged, as telecom infrastructure often fails to go as far as needed in low population density regions.

The COVID-19 crisis has laid bare the fact that many people in rural and other under-connected communities are without broadband and unable to access distance learning, telemedicine, e-commerce, and other tools necessary for modern life. This challenge is heightened in rural areas: according to the FCC, more than 11 million Americans in rural areas do not have access to a fixed broadband connection. Of the Americans who do not have broadband access, rural Americans constitute 78 percent. Microsoft's data analysis suggests that the numbers of unserved Americans in rural areas is even higher. Congressional passage and funding of the Broadband DATA Act should help to pave the way to accurately identify and address existing gaps in broadband coverage.

As I discuss further below, Microsoft believes we can—and we must—do our part in the private sector to help extend broadband coverage. There is also an important role for the federal government and Congress based upon our experience and insights with Microsoft's rural broadband initiative. With this in mind, we would recommend the committee consider the following issues:

- **Funding is critical.** Broadband is costly to deploy in rural areas and providers need funding to help to defray the cost of the capital investment and extend networks into unserved and underserved areas.
- **One size does not fit all.** Not all solutions are suitable for all areas and it is best to rely on internet service providers (ISPs) to determine what solution works best for the communities they are working to serve. Microsoft Airband ISP partners use a tool kit approach, and we rely on them to identify what solutions work best. This requires a technology-neutral approach to funding broadband, which affords providers the flexibility to tailor technology to the community providing broadband quickly and cost effectively and without sacrificing speed. The concept of technology neutral funding is not new or novel. The Agriculture Appropriations reports highlighted the concept when it appropriated funding for broadband for fiscal years 2019-21.
- **Pursue digital transformation.** Communities embrace broadband more quickly when doing so will help them to solve challenges. For example, enabling telehealth or precision agriculture is more likely to prompt further community use of broadband and deliver transformational value. As such, policies that help to unleash the power of connectivity and technology are critical.
- **Digital skilling, broadband service and broadband devices can drive adoption.** Having access to a broadband connection is essential to tackling the digital divide, but many Americans also need digital skills to take full advantage of broadband as well as a monthly broadband service and a broadband device in the home.

Microsoft's Airband Initiative: Partnering with Other Stakeholders to Close the Digital Divide

In July 2017, Microsoft launched the Airband U.S. Initiative as both a call to action and our programmatic effort to help close the rural broadband access gap in the United States. The Microsoft Airband Initiative is not an initiative that we do on our own, and Microsoft is not itself a direct connectivity provider. We address the digital divide by working with a network of people and organizations toward the same goal – connecting people and bringing with that connectivity the opportunity for a better life. We partner with internet access providers, telecom equipment makers, nonprofits, and local entrepreneurs to advance digital equity: access to affordable internet, affordable devices, and digital skills.

Our goal is to extend broadband access to 3 million people in unserved rural areas by July 2022. This marks an increase from our initial commitment of 2 million. Our partners include 14 internet service providers with projects in 26 states and Puerto Rico. As of January 2021, the projects extended broadband access to over 9 million people, including more than 2 million people residing in previously unserved rural areas. As we bring communities online, we also are very focused on delivering technology solutions to expand access to virtual healthcare, help increase revenue and reduce costs in agriculture, facilitate online learning, and enable small businesses to reach more customers. These digital transformation efforts can help level the playing field for billions of people.

Our partnerships typically involve a four-part approach focused on connectivity, digital skilling, digital transformation, and policy advocacy. This work has provided insights into closing the broadband gap.

- **Connectivity.** First, we focus on connectivity through our ISP partners to accelerate access to broadband among unserved and underserved communities. These projects are designed to be commercially sustainable and are intended to scale.
- **Digital Skilling.** Second, digital skilling, from basic digital literacy to leveraging computer applications and job training, is a key component to broadband adoption. Therefore, we provide

digital skilling resources to support all our Airband communities. These opportunities are spearheaded through a collaboration with Microsoft Philanthropies, which partners with non-profit organizations that are focused on serving rural communities, such as the National 4H Council and Future Farmers of America.

- **Driving Solutions through Digital Transformation.** Next, we partner with private and public sector organizations, non-profits, and others to provide relevant solutions that are enabled by broadband networks. Our objective is to help improve productivity and livelihood within newly connected communities, while driving sustainable development. For example, connectivity enables healthcare facilities to deliver critical telehealth solutions throughout the community at a time when physical access to rural health facilities is diminishing.
- **Policy and Advocacy.** Last, our work is undergirded by policy and advocacy efforts designed to address the immediate and longer-term digital divide challenges, and in so doing, promote a more inclusive world, where everyone has an opportunity to participate in the digital economy.

Connectivity

We have learned a lot from our work on broadband issues over the years and our more recent efforts to help bridge the digital divide through our Airband Initiative. Rural communities are left behind without broadband service, often because it is too costly to deploy and operate broadband networks in sparsely populated communities. Recognizing this, policymakers have perennially appropriated funding or established mechanisms to fund broadband deployment. Without funding from the government to address the cost of extending the network into unserved areas, we will not be able to quickly close the rural digital divide. We have also come to understand that broadband deployment funding should be made available in a technology neutral manner empowering broadband providers to craft the solutions that work best for the community and balance factors such as speed of network deployment and speed of broadband service as well as the cost of network build out and service to the consumer.

The financial challenges of deploying broadband networks in rural underserved and underserved areas often demand that our Airband partners leverage government funding. Many of our partners are recipients of the FCC's Connect America Fund Phase II Auction and the Rural Digital Opportunity Fund, as well as other funding mechanisms from the U.S. Department of Agriculture and state broadband programs that are funded through the Coronavirus Aid, Relief, and Economic Security Act (CARES Act).

Choosing the best technology solution is key to quickly expanding connectivity in unserved rural communities. In constructing projects across 26 states and Puerto Rico, our Airband ISP partners make use of a multi-technology and multi-frequency portfolio to connect the unconnected and determine technology choices based on the requirements of the various locations as well as the relevant broadband and narrowband use cases. Airband ISP partners embrace a multitude of technologies from fiber to wireless technologies leveraging multiple frequency bands like TV Whites Spaces (TVWS), Citizens Broadband Radio Service (CBRS), Educational Broadband Service (EBS), a wide range of mid-band fixed wireless, Wi-Fi 6E on 6GHz, and millimeter waves. For example, Airband ISP partner Nextlink Internet uses a combination of fixed wireless and fiber optic technology to deliver high-speed broadband to rural customers across their growing footprint in the central region of the United States.

The Airband Initiative and its partners are continuing to be creative and flexible to meet short-term and long-term connectivity needs. In response to the COVID-19 pandemic, the Initiative launched a public

Wi-Fi hotspot grant program to provide immediate relief where in-home installation might not be possible in the short-term. Airband ISP partners and partner organizations like the Public Library Association and the University of Washington Extension campuses built over 300 public Wi-Fi hotspots across the United States. In the Central Valley of California, Airband partner Cal.net is working with school districts, community college systems, and other educational entities to provide affordable fixed wireless in-home broadband access to students who would not otherwise have access during the pandemic.

Digital Skilling Efforts in Newly Connected Communities

Connectivity alone is not enough. There is a whole host of skills that many of us take for granted that are needed to navigate the digital world. These range from how to connect a device to the internet, basic skills in navigating the internet (conducting searches, using a mouse, setting up passwords and logins), to cyber safety. Yet as many as 1 in 3 Americans have few to no digital skills. Moreover, rural schools are less likely to have advanced computer science classes. That is why it is critical for broadband access to go hand-in-hand with useful digital skills that meet people where they are.

To foster digital skilling in rural communities, Airband ISP partners are working with the National 4-H Council, the Public Library Association and Future Farmers of America to provide digital skilling resources to the community. Many partners host Microsoft digital skilling content on their website to provide access to content and online training that provides digital literacy, computing, and AI skills. For example, a collaborative effort between 4-H staff, after-school mentors, and Airband partner Declaration Networks Group led to providing internet access and the tools needed for students to engage in virtual learning. As a result of the partnership, half of these students received internet service within one week. Now, they can connect with their after-school peers and mentors, while still accessing their schoolwork at home.

Our partnership with PCs for People expands the breadth and depth of our digital skilling program and creates a hotline that will be available in English and Spanish to the customers of all our Airband partners. The hotline will answer basic digital literacy requests, as well as help partners navigate Microsoft online digital skilling training and LinkedIn employability training. This training can lead to remote job opportunities in ten career paths. On April 8th, Microsoft and LinkedIn announced that we are extending our global skills initiative through the end of 2021, providing free LinkedIn Learning and Microsoft Learn courses and low-cost certifications that align to in-demand jobs. Areas of focus include customer service, project management, data analysis, software development and more.

Our work with the U.S. Department of Veterans Affairs (VA) to improve broadband access for our nation's Veterans and expand digital skilling opportunities to Veterans living in rural areas highlights the opportunity that skilling can offer. Last Fall, we held our first joint workshop with the VA for Veterans living in Decatur and Dubois Counties, Indiana, as an extension of new broadband connectivity made available in these counties by Airband ISP partner Watch Communications. The workshop included an introduction to Microsoft and LinkedIn's digital skilling and employability training as part of our cooperative effort to leverage new connectivity as a vehicle for training and workforce development.

Driving Digital Solutions in Rural Communities

As we focus on the challenges of broadband deployment, we must not lose sight of the fundamental promise of connectivity—the benefits that come with digitally transforming our communities. As Airband partners bring communities online, we work to provide solutions that improve outcomes in education, healthcare, agriculture, and small businesses.

For example, in rural Washington state, we have supported an Airband partner's efforts to help one of its customers, a local lumber company, increase its operational efficiency by leveraging connectivity and technology to make data driven decisions. Now, the company's operations are more efficient, and it is saving money due to the improved use of resources. In Texas, another Airband partner has connected dozens of schools to their respective Education Service Centers that offer distance learning courses such as English as a Second Language (ESL) and teacher instructional resources as well as access to Microsoft, Google Classroom, and filtering services.

TechSpark is a Microsoft civic program designed to foster greater economic opportunity and job creation in rural and smaller metropolitan communities. In TechSpark regions, our Airband partners work to address the broadband needs of local businesses and the related needs of the surrounding community. For example, in North Dakota, we are collaborating with the Dakota Carrier Network on a pilot project to deploy a narrowband, Internet of Things (IoT) network that uses TV White Space and other wireless technologies to support precision agriculture solutions in the state, including supporting the North Dakota State University Agronomy Seed Farm.

We're also excited to partner with Land O'Lakes, Inc. as part of our shared commitment to drive economic development and innovation for farmers and within rural communities. As part of our partnership, we are connecting member agriculture owners and Land O'Lakes facilities with Airband ISP partners to increase broadband speeds at these facilities, while providing broadband to the surrounding communities. To date, we've launched projects in Scircleville, Indiana and Uniopolis, Ohio; these pilot projects use fixed wireless broadband technology at speeds up to 100 Mbps, demonstrating the power of fixed wireless to close the rural digital divide. We will deepen our engagement in these projects by using the Microsoft FarmBeats platform for precision agriculture, and IoT applications for propane tank monitoring as part of these deployments.

Extending Access to Underrepresented Communities Often Involves More than Building the Network

Even when a community can obtain broadband connectivity, impediments remain for some populations to adopt and realize the benefits of broadband. These impediments could include an inability to afford monthly broadband service or the cost of a broadband device (and as noted earlier it could be a lack of digital skills). Our Airband partners encounter these challenges in the populations they serve and have sought to creatively address them. Their actions though, in most instances, offer only short-term solutions and these needs will ultimately go unmet if a permanent solution is not implemented.

To encourage all community members to get onto the network, our Airband ISP partners are leaning into the new federal broadband programs, like the Emergency Broadband Benefit Program, that offer support for those lacking the ability to pay for broadband service and devices. Our partners participating in the federal Universal Service Fund's School and Libraries Support Mechanism (commonly referred to

as the "E-Rate program") are gearing up their operations in anticipation of fulfilling the needs of schools and libraries from the upcoming changes to the E-Rate program. In response to the pandemic, Airband ISP partners took action to ensure that customers experiencing financial difficulties due to the pandemic remained connected, signing on to the FCC's Keep Americans Connected pledge, while at the same time working feverishly to meet increased demand for service in the face of supply chain challenges. However, these are temporary programs to bridge the gap. A permanent solution is needed to address these issues.

Tribal lands and Native American communities also face specific challenges when it comes to broadband access and use: remote locations, challenging terrain, and historical lack of service providers compound existing challenges. In addition, many of the residents on Tribal lands are income insecure and particularly sensitive to the affordability challenge and therefore are reliant upon programs like the federal Lifeline Universal Service Support Mechanism to secure broadband service. To drive adoption in these communities, access to affordable connectivity and devices, paired with digital skilling will be critical. Two of our Airband partners, Sacred Wind Communications and Native Networks, are squarely focused on serving Tribal communities. They have rapidly deployed broadband using a mix of technologies (2.5 GHz, 5.8 GHz, CBRS, FTTH, etc.) to unserved and underserved Indigenous communities in Arizona, Washington, and New Mexico in response to the dire need due to the pandemic. Funding to address affordability challenges in Indigenous communities is critical.

Building upon a recent partnership between Microsoft Philanthropies and the 1890 Universities Foundation, a 501c3 organization created in 2016 by the nineteen 1890 Land Grant Historically Black Colleges and Universities (HBCUs), we are partnering with the University of Arkansas Pine Bluff (UAPB) to use connectivity in support of precision agriculture and digital skilling. Through our Airband partner Aristotle Unified Communications, we will bring connectivity to UAPB's demonstration farms to showcase precision agriculture for local growers and support research opportunities and members who do not have stable internet access once they leave the UAPB campus. In so doing, we will help unlock the power of connectivity for historically marginalized communities, but affordability will remain a challenge in the absence of permanent solutions.

Recommendations for the Committee

The work of our partners highlights the importance of:

- providing funding for broadband deployment;
- taking a technology neutral approach to funding deployment;
- imparting digital skills;
- partnering to drive digital solutions; and
- ensuring that low-income consumers have access to a broadband service and a broadband device at home.

As we work together to design creative solutions to make broadband more accessible and affordable for all Americans, I'd like to put forth a few additional recommendations for consideration by this Committee.

- First, as permanent broadband funding mechanisms are designed, we must ensure they are targeted to address a known market need; for example, the need to deliver broadband access to unserved rural areas and connect students without broadband access for remote learning.

Funding should be prioritized to reach unserved or underserved communities. This will require comprehensive and accurate broadband availability data and mapping as we cannot solve a problem we do not understand.

- Second, funding amounts should be cost-effectively allocated to technologies and deployments that provide the maximum value through efficient use of funds. Through our learnings, we know that there is no-one-size-fits-all solution to network deployments and therefore encourage a technology-neutral approach where a mix of technologies can be leveraged to deliver broadband speeds.
- Third, broadband funding should provide a long-term meaningful benefit to make in-home broadband service affordable for income insecure households.
- Lastly, given the urgency of the issue, preference should be given to broadband solutions that will provide rapid deployment of broadband networks and services. History has taught us that technologies are deployed at different speeds, with wireless technologies (e.g., mobile phones) being deployed much faster than wireline technologies (e.g., electricity). We cannot leave another generation behind. Speed of deployment must be a part of the policy calculation.

The term digital divide was coined over two decades ago. So, we have long known that communities are being left behind without access to broadband and unable to benefit from the multitude of services offered through the internet. The pandemic has made clear the value of broadband and the internet in our new digital world where, in many cases as we live our lives socially distant, there is no access to school, healthcare, commerce and jobs without broadband. At this moment in time, there is a unique opportunity to permanently fix the broadband deployment gap through leadership and smart investments maximizing the opportunity for all Americans.

Thank you for the opportunity to participate in this broadband discussion. I look forward to your questions and welcome the opportunity to discuss how Microsoft can assist in advancing broadband access and adoption in rural America.