

RECENT FEDERAL ACTIONS TO EXPAND BROADBAND: ARE WE MAKING PROGRESS?

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

MARCH 17, 2021

Printed for the use of the Committee on Commerce, Science, and Transportation



Available online: <http://www.govinfo.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

53-061 PDF

WASHINGTON : 2023

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

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RECENT FEDERAL ACTIONS TO EXPAND BROADBAND: ARE WE MAKING PROGRESS?

WEDNESDAY, MARCH 17, 2021

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:02 a.m., in room SR-253, Anteroom: SR-254, Russell Senate Office Building, Hon. Maria Cantwell, Chair of the Committee, presiding.

Present: Senators Cantwell [presiding], Klobuchar, Blumenthal, Markey, Tester, Sinema, Rosen, Lujan, Wicker, Thune, Cruz, Fischer, Moran, Sullivan, Blackburn, Young, Lee, Capito, and Lummis.

OPENING STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

The CHAIR. Good morning. The Senate Commerce Transportation Committee will come to order, and want to welcome our witnesses to today's hearing about "Recent Federal Actions to Expand Broadband: Are We Making Progress?" And we have a distinguished list of witnesses today to help us discuss what we have most recently done on a variety of broadband programs and access and increasing services, and also, ideas and frameworks for how we should move forward. So, we welcome the witnesses today to be here.

The last year has been a very stark reminder about how important broadband connectivity is to Americans. As we have faced a pandemic, the Internet has become the place to go to work, to attend school, to see friends, to help visit the doctors, and do many of the day-to-day things that we have all had to do in our lives. We have had to struggle throughout the pandemic, but imagine what life would have been like if we did not have the Internet during that time period. For millions of Americans, they do not have to imagine, because some of them really did not have access to the internet.

So, I know we are going to hear from our witnesses today, like Dr. Ali, who is saying that the diagnosis and understanding of our most recent spending, that still there is 37 percent of rural Americans who could be paying more for Internet connectivity than their counterparts in urban areas. That truly is unacceptable. We need our rural communities to be on a level playing field. And as our other witnesses, Mr. Forde, will be with us, I think virtually, will also point out that what we do next has to be done right, otherwise, we could be in a situation where those who are currently lacking

service could, after more spending, continue to lack service. We cannot allow that reality to happen.

If we are going to make investments, which I think we should, we need to make sure that we are really going to cut the digital divide. The stories that I hear from my home state in Washington are heartbreaking. A principal from the Columbia School District, near Spokane, recently described the impact to remote learning to her school, only to find that close to 70 percent of the students and their families lacked consistent access to broadband internet. Even those who did have access often lacked a strong enough signal for more than one of their children to attend virtual class, putting the parents in an impossible dilemma of who is going to go to school that day.

And that problem did not stop within the households, either. Neighborhoods and multiple children trying to attend their digital classrooms, the signal failed to hold up, leaving them with many challenges. The principal's conclusion reads like a wake-up call for those trying to make policy in this space. "The need for appropriate Internet and cellular coverage in Stevens County," the principal said, "is glaring at us like a neon light." Well, I could not agree more that it is glaring at us, and we need to get the next phase right.

Today, we are going to review some of the recent extensive programs the FCC developed and implemented. The Rural Digital Opportunity Fund and RDOF auction; Congress created the ReConnect Broadband grant and loan program for rural counties; the NTIA Administration is working on rules for Tribal and rural grant programs from the December COVID package; and the American Rescue Plan, just recently signed by President Biden, a new Treasury program targeted infrastructure.

I am pretty sure all four witnesses will remind us today that coordination, something that Senator Wicker has been resolute about, and helped us get some initial language into previous laws—that the lack of coordination between these programs and Federal agencies also needs to be strengthened, and I appreciate his previous legislation on that. So, I am sure all the witnesses are going to tell us that better coordination between these resources, also, is very important.

We will also hear how the FCC predicted that it might take as much as \$80 billion to close the digital divide. And I know that we are going to hear a lot of different inputs about that this morning. My hope is that the Committee can develop a strong bipartisan framework to look at this issue as we move forward because, as our witnesses say, we cannot afford to invest this money, and then, still have communities without access moving forward. I hope that today we will hear from the broad depth of experience that each of our witnesses have, and they will talk about the necessary things before us, on getting access to those underserved communities.

But I do think that affordability, resiliency, redundancy, and security are also part of our agenda here. These are important tools for an information age. This is how we live, and work, and socialize, and educate the next generation, so I hope we can get this right.

Thank you all for being with us today. And now, I will turn to my colleague, Senator Wicker, for his opening statement.

**STATEMENT OF HON. ROGER WICKER,
U.S. SENATOR FROM MISSISSIPPI**

Senator WICKER. Thank you, Senator Cantwell. Thank you for convening this important hearing and good morning to our distinguished panelists. I look forward to your testimonies.

Last year brought challenges on a scale few could have imagined. The COVID-19 crisis changed life dramatically for almost every American. Many of our normal activities, such as work, school, spending time with loved ones, moved online to prevent further spread of the Coronavirus, including hearings of this committee. This generated a significant increase in broadband traffic and upended the average Internet usage patterns. According to one estimate, broadband traffic increased 51 percent last year.

The good news is that broadband networks in the United States performed well, compared to other nations. Thanks in part to a light touch regulatory framework that promotes investment in broadband infrastructure, U.S. broadband networks have been able to accommodate the sustained surge in online traffic and bandwidth consumption during the pandemic.

For its part, the FCC, under the Trump Administration, also took meaningful action to respond to the Nation's urgent broadband needs. This included the launch of the Keep Americans Connected Pledge, where providers voluntarily committed not to terminate broadband services for any residential or small business consumers because they were unable to pay their bills. The FCC also adopted temporary modifications to existing Universal Service Fund programs to support rising demand for Internet services.

Along with these measures, the Commission completed the Rural Digital Opportunity Fund (RDOF) Phase 1 Auction, which awarded \$9.2 billion to providers, including over \$495 million to providers in Mississippi, to deliver high-speed Internet services to 5.2 million unserved homes and businesses across the country. Today's hearing is an opportunity for witnesses to discuss how the FCC and Congress can ensure that winning bidders of the RDOF auction are in fact able to meet their buildout obligations and deliver high-speed broadband services as promised.

The bipartisan CARES Act, enacted last March, and the bipartisan Consolidated Appropriations Act of 2021, enacted in December, also provided billions of dollars in Federal resources to broadband related programs. Together, these laws directed over \$400 million to the FCC to expand access to telehealth services, \$98 million to implement the Broadband DATA Act to improve the Nation's broadband maps, \$1.9 billion to help small rural providers remove equipment from their networks, that pose a national security threat, and \$285 million to implement my Connecting Minority Communities Act, which provides connectivity assistance to Historically Black Colleges and Universities, and minority communities, through the newly established Office of Minority Broadband Initiatives at NTIA.

These bipartisan laws also provided billions of dollars to the Department of Education in support of remote learning, billions to the

FCC to help low-income Americans remain connected, hundreds of millions of dollars to the Department of Agriculture to connect rural areas, and over a billion dollars to NTIA to expand broadband to unserved areas and Tribal lands. Each of these efforts marked a critical step toward connecting all Americans and closing the digital divide.

Importantly, these bipartisan laws include meaningful guardrails to ensure that broadband resources are spent prudently and avoid the mistakes of past stimulus efforts that ultimately led to significant waste, overbuilding, and millions of Americans still left unconnected.

Of course, prudent spending starts with accurate broadband maps. Next week will mark 1 year since the bipartisan Broadband DATA Act was signed into law. The Broadband DATA Act directs the FCC to collect more precise data about where broadband is available and where it is not, and at what speeds. I am disappointed that the FCC is now projecting that it will take at least another year to comply fully with this law. I hope witnesses will discuss how the delay in developing new maps will impact the efficacy of existing broadband programs, as well as those created through last year's COVID-19 stimulus, to target resources to unserved areas and communities in need.

Coordination and information sharing among Federal agencies responsible for administering broadband deployment programs are also essential to expanding availability. My Broadband Interagency Coordination Act was passed on a bipartisan basis and signed into law as part of last year's COVID-19 stimulus package. This will require the FCC, NTIA, and USDA to coordinate the distribution of Federal funds for broadband deployment, to prevent duplication and other mismanagement, and I thank the Chair for acknowledging our mutual interest in this subject matter.

I look forward to witnesses discussing how coordination among these agencies can reduce overbuilding of existing public and private broadband investments. I would also point out that recently enacted legislation tasks the Treasury Department, the FCC, states, and localities with administering billions in broadband resources, without any safeguards to ensure proper handling of funds. For example, there are no requirements that the Treasury Department coordinate with the FCC or NTIA to prevent subsidized overbuilding, duplication of broadband benefits, and other wasteful spending. I am sure witnesses will want to discuss how this might impact ongoing efforts to provide universal broadband access.

Finally, as most of the broadband resources Congress authorized over the past years remain unspent, I hope witnesses will discuss how we can fund future broadband initiatives most effectively, in order to address the remaining disparities in access to quality and reliable communications services throughout the United States.

So again, Madam Chair, a very important hearing with very informed witnesses and I look forward to participating. Thank you, ma'am.

The CHAIR. Thank you, Senator Wicker, and again, thank you for your leadership on the coordination issue and many other aspects of this debate and I, too, want to echo your concerns, you know, re-

garding the mapping. I think everyone of, probably, a hundred members of the U.S. Senate would do so. So, maybe after today's hearing we will discuss what else we need to do to get this information, because I have a feeling it is, pretty much, really available. Let us figure out the ways to get it sooner. I like your suggestion that time has passed.

OK, so now to the witnesses, and again, thank you all for being here, both in-person and virtually, and we really look forward to your testimonies, and we are going to start with you, Dr. Ali.

**STATEMENT OF CHRISTOPHER ALI, Ph.D., ASSOCIATE
PROFESSOR, DEPARTMENT OF MEDIA STUDIES, UNIVERSITY
OF VIRGINIA; KNIGHT NEWS INNOVATION FELLOW,
TOW CENTER FOR DIGITAL JOURNALISM,
COLUMBIA UNIVERSITY**

Dr. ALI. Great. Chair Cantwell, Ranking Member Wicker, distinguished members of the U.S. Senate Committee on Commerce, Science, and Transportation, thank you for the invitation to be here today to speak with you today, to speak about rural broadband policy and deployment. It is a great honor to be here.

Today, I will argue for a new national rural broadband plan, one that incorporates what I called in my written testimony, The 5 M's of Successful Rural Broadband Deployment: Meaning, Money, Mapping, Municipalities, and Management.

I applaud you for passing the Consolidated Appropriations Act which included \$3.2 billion for the Emergency Broadband to Benefit Program, and the American Rescue Plan Act, which allocates \$7.1 billion for broadband for schools and libraries, and \$10 billion for state infrastructure projects.

I am also excited about the reintroduction of the Accessible, Affordable Internet for All Act last week. We need to build on this momentum and develop a decisive and coherent plan for rural broadband deployment.

Some quick facts about broadband deployment in rural America. The FCC reports that 82.7 percent of rural Americans have access to broadband at speeds of 25/3. Current research, however, suggests that this number, the FCC has overestimated connectivity by upwards of 50 percent because of faulty data gathering methodology. Only 63 percent of rural Americans report having an Internet connection at home, but that number does not differentiate between technologies. For instance, 3 percent of farmers still use dial-up and far too many rural Americans depend on DSL and satellite.

Rural Americans pay upward of 37 percent more for their service than their urban counterparts, and that service is often sub-optimal. Only 30 percent of rural Americans have a choice in provider, for speeds over 25/3. 25/3 is hopelessly outdated as a baseline. It cannot meet the needs of contemporary households and its asymmetry privileges download over upload, consumption over production, which hurts students and businesses alike.

Last, rural Americans are frustrated, frustrated with the quality of their connectivity when they have it, and with the lack of connectivity when they do not.

So, why is broadband availability in rural America such a problem? Rural broadband is a market failure. Private providers are

unwilling, or unable, to provide basic service because of a lack of sufficient return on investment. It is important to note, however, that the same thing was said about electricity in the 1920s and telephone in the 1930s. But ambitious, forward-looking public policy solved these problems. Public policy has yet to solve the problem of rural broadband.

I have heard it said that rural Americans do not need what my friend Jonathan Sallet calls “high performance broadband”. That making this argument is trying to justify a Ferrari over a Toyota Corolla—luxury versus utility. Nothing could be further from the truth. We are not talking about a Ferrari and a Toyota when we talk about fiber versus DSL. We are talking about walking versus driving. High-performance broadband is not a luxury. It is not gold-plated. It is not a Ferrari. High-performance broadband is as essential today as electricity and water.

We need a new plan for rural broadband, one that will raise the definition to 100/100, so that rural Americans have meaningful connectivity, not just good enough connectivity. We need a plan that will allocate funding without privileging the loudest and largest providers and will hold companies accountable. It must fix mapping by relying on a combination of granular audited data and crowd-sourced information and provide a streamlined challenge process. A plan that recognizes the crucial role of states, municipalities, local providers and cooperatives, and celebrates local public investment. Last, a plan that cuts through the policy gridlock of the FCC, RUS, and NTIA by requiring meaningful and visible interagency cooperation.

The FCC has estimated it will cost \$80 billion to connect the country with high-performance broadband. This is what we must aim for. The exciting thing is, we have done this before with the Rural Electrification Administration in 1935. To connect the country with electricity, the REA championed the creation of local electric cooperatives. It also sent representatives on rural electrification tours, the REA Circus, it was called, to encourage local adoption.

In a little over a decade, rural electrification soared from 48 percent to 96 percent. It was so successful that REA was tasked with rural telephony in 1949 and it went back to the same model, trusting local communities and local cooperatives. Today, hundreds of electric and telephone cooperatives, along with small local and regional providers, are doing the vital work of connecting their communities. It must be said, local broadband is the best broadband.

Thank you for this opportunity to be part of this vital conversation, and I look forward to taking your questions.

[The prepared statement of Dr. Ali follows:]

PREPARED STATEMENT OF CHRISTOPHER ALI, PHD, ASSOCIATE PROFESSOR,
DEPARTMENT OF MEDIA STUDIES, UNIVERSITY OF VIRGINIA; KNIGHT NEWS
INNOVATION FELLOW, TOW CENTER FOR DIGITAL JOURNALISM, COLUMBIA UNIVERSITY

Chair Cantwell, ranking member Wicker, distinguished members of the United States Senate Committee on Commerce, Science and Transportation, thank you for the invitation to speak with you today about policy reform for broadband infrastructure deployment and investment in rural America. It is a great honor to be here. My name is Dr. Christopher Ali and I am an Associate Professor in the Department of Media Studies at the University of Virginia, and Knight News Innovation Fellow

at the Tow Center for Digital Journalism at Columbia University. Previously, I was the Faculty Research Fellow of the Benton Institute for Broadband & Society and Academic Fellow with the Global Futures Council of the World Economic Forum.¹

My testimony today is based on 5 years of research and writing about rural broadband policy and deployment in the United States, including in-depth policy analysis, field visits and interviews. This research will be featured in my book *Farm Fresh Broadband: The Politics of Rural Connectivity* that will be released in September from MIT Press. Today, I want to share with you all what I'm calling the "5 M's" of successful rural broadband deployment: Meaning, Money, Mapping, Municipalities, and Management. In doing so, I will also point out some of the flaws in previous policy attempts to close the rural-urban digital divide, and share my hope that history does not repeat itself.

I am excited to speak about the potentials and possibilities for policy reform to stimulate robust and meaningful broadband deployment in rural America, which represents a facet of what is known as the "digital divide." Other facets, as we know, include affordability, access to device, and digital literacy skills, which together are part of the larger concept of "digital inclusion."² Today though, I will talk about broadband infrastructure, which is a part of the digital divide specifically impacting rural America.

I applaud you for passing the Consolidated Appropriations Act in December which allocated \$7 billion for broadband access, including the \$3.2 billion Emergency Broadband Benefit Package³ and the recently passed American Rescue Plan Act, which allocates \$7.1 billion for broadband for schools and libraries and \$10 billion for state infrastructure projects.⁴ We must now build on this momentum and develop a decisive and coherent plan for "high-performance broadband"⁵ infrastructure investment.⁶

In 2017, Paul de Sa, Chief of the FCC's Office of Strategic Planning and Policy Analysis authored a report estimating that it will cost approximately \$80 billion to connect the entire country with fiber to the premise. This is what we should aim for: achieving universal, high-performance broadband.⁷

As we contemplate what policies are necessary to help this country recover from the COVID-19 pandemic, broadband must be one of our top priorities. We learned during the pandemic that access to high-performance broadband is a matter of life and death for many Americans, with a study from the National Bureau of Economic Research finding that access to high-speed broadband is a major predictor of the likelihood to social distance.⁸ Right now, those without broadband or those who are under-connected, are struggling to make vaccine appointments, do their homework, apply for benefits, look for work, or connect with loved ones. Public policy has a role to play in making these connections happen, but we must also ensure that the mistakes of the past are not repeated.

Rural broadband at a glance

Briefly, the FCC recently reported that 95.6 percent of Americans have access to broadband at a speed of 25Mbps download 3 Mbps upload (depicted as "25/3"). This

¹ "Christopher Ali," Department of Media Studies, 2021, <https://mediastudies.as.virginia.edu/people/profile/cfa2z>.

² NDIA, "Definitions," *National Digital Inclusion Alliance*, January 18, 2017, <https://www.digitalinclusion.org/definitions/>.

³ "The Consolidated Appropriations Act, 2021," Pub. L. No. 116-260. H.R. 133 (2021), <https://www.congress.gov/bills/116/congress/house-bill/133?q=%7B%22search%22%3A%22Consolidated+Appropriations+Act+2021%22%7D&s=4&r=12>.

⁴ "American Rescue Plan Act of 2021," Pub. L. No. 117-2. H.R. 1319 (2021), <https://www.govtrack.us/congress/bills/117/hr1319>.

⁵ Jonathan Sallet, "Bringing High-Performance Broadband to Rural America" (Chicago, IL: Benton Institute for Broadband & Society, 2019), <https://www.benton.org/blog/bringing-high-performance-broadband-rural-america>.

⁶ For example, the recently proposed Accessible, Affordable Internet for All Act proposes a \$94 billion investment in broadband deployment and access. Tony Romm, "House, Senate Democrats Unveil \$94 Billion Bill to Close Digital Divide—The Washington Post," *Washington Post*, March 11, 2021, <https://www.washingtonpost.com/technology/2021/03/11/house-senate-internet-broadband/>.

⁷ Paul de Sa, "Improving the Nation's Digital Infrastructure" (Washington, D.C.: Federal Communications Commission, 2017), <https://www.fcc.gov/document/improving-nations-digital-infrastructure>.

⁸ Lesley Chiou and Catherine Tucker, "Social Distancing, Internet Access and Inequality" (Cambridge, Mass: National Bureau of Economic Research, April 13, 2020), <https://doi.org/10.3386/w26982>.

includes 98.8 percent of those in Urban Areas, 82.7 percent of those in Rural Areas, and 79.1 percent of those on Tribal Lands (see Table 1).⁹

Table 1: Percentage of Americans with access to fixed terrestrial broadband (population in millions)

	2014		2015		2016		2017		2018		2019	
	Pop.	%	Pop.	%	Pop.	%	Pop.	%	Pop.	%	Pop.	%
United States	284.246	89.4%	287.853	89.9%	263.373	91.9%	304.405	93.5%	308.913	94.4%	313.749	95.6%
Rural Areas	37.174	60.3%	38.271	61.5%	42.677	67.8%	46.960	73.6%	50.99	77.7%	53.834	82.7%
Urban Areas	247.072	96.4%	249.582	96.7%	253.695	97.7%	257.446	98.3%	258.814	98.5%	259.915	98.8%
Tribal Lands	2.245	57.1%	2.290	57.8%	2.520	63.1%	2.727	67.9%	2.921	72.3%	3.203	79.1%
Pop. Evaluated	317.954	100%	320.289	100%	322.518	100%	325.716	100%	327.167	100%	328.210	100%

Source: Federal Communications Commission 2021, 2020¹⁰

As we all know, the FCC's has grossly overestimated the number of connected Americans because of faulty data gathering. Most researchers suggest the FCC is off by upwards of 50 percent.¹¹ So, we don't know the exact number of un-and under-connected rural Americans, but there are some things we do know.

We know that only 63 percent of rural Americans report having a broadband Internet connection at home but we don't know the types of connections this may mean. For instance, 3 percent of farmers still use dial-up according to recent assessments from USDA (see Table 2).¹²

Table 2: Farm Connectivity 2017 & 2019

	2017	2019
Dial-up	3%	3%
DSL	28%	22%
Cable	16%	16%
Fiber	9%	12%
Mobile	19%	18%
Satellite	23%	26%
Other/unknown	2%	3%

Source: USDA, 2019

⁹Federal Communications Commission, "2021 Broadband Deployment Report: In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion (GN Docket No. 20-269)" (Washington, D.C.: Federal Communications Commission, January 19, 2021), <https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf>.

¹⁰Federal Communications Commission, "2020 Broadband Deployment Report: In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion (GN Docket 19-285)" (Washington, D.C.: Federal Communications Commission, 2020), <https://docs.fcc.gov/public/attachments/FCC-20-50A1.pdf>; Federal Communications Commission, "2021 Broadband Deployment Report: In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion (GN Docket No. 20-269)."

¹¹Sascha D. Meinrath, "Broadband Availability and Access in Rural Pennsylvania" (The Center for Rural Pennsylvania, 2019), <https://www.rural.palegislatore.us/broadband/Broadband-Availability-and-Access-in-Rural-Pennsylvania-2019-Report.pdf>; John Busby and Julia Tanberk, "FCC Underestimates Americans Unserved by Broadband Internet by 50 percent" (BroadbandNow, 2020), <https://broadbandnow.com/research/fcc-underestimates-unserved-by-50-percent/>; Karl Bode, "How Bad Maps Are Ruining American Broadband," The Verge, September 24, 2018, <https://www.theverge.com/2018/9/24/17882842/us-internet-broadband-map-isp-fcc-wireless-competition>.

¹²United States Department of Agriculture, "Farm Computer Usage and Ownership" (Washington, D.C.: United States Department of Agriculture, August 2019), <https://downloads.usda.library.cornell.edu/usda-esmis/files/h128nd689/8910k592p/qz20t442b/fmpc0819.pdf>.

We also know that rural Americans are frustrated with their connectivity, when they have it. The predominate types of connection in rural America are digital subscriber line (DSL) and satellite.¹³ DSL is broadband provided through a twisted pair of copper wires, not unlike traditional landline telephone service. Indeed, those companies offering DSL are the legacy telephone companies like AT&T, CenturyLink, and Frontier.¹⁴ While praised a decade ago for its then-high-speed download capacity, DSL has proven not to be up to the task of serving a country living, working, and studying from home. The mean download speed of DSL, for instance, is 10 Mbps and the mean upload speed is 1 Mbps according to a study by Roberto Gallardo and Brian Whitacre (see Table 3).¹⁵ 10/1 is far below the FCC definition of broadband of 25/3, and even further below the national average of 179.06 Mbps download and 64.89 Mbps upload.¹⁶ More to the point, a household of four, be they a family or college housemates, could not be on different video calls simultaneously. As a currently stay-at-home nation, we all require access to what Jonathan Sallet of the Benton Institute calls “high-performance broadband.”¹⁷

Table 3: The footprint of fixed broadband technologies in rural America

	DSL	Fixed Wireless	Cable	Fiber-Optic
% of Rural Housing Units Passed	75.7	43.2	55.1	16.5
Median download Speed (Mbps)	10	12	300	1,000 (or 1 Gbps)
Median upload speed (Mbps)	1	3	20	150

Source: Gallardo and Whitacre, 2019

Rural Americans are also fed up with satellite internet, which the FCC categorizes as a viable fixed broadband technology,¹⁸ but as anyone who has spent time in rural America and tried sending an e-mail over satellite Internet knows, satellite is nowhere near a complement to fixed wireless, cable, or fiber. By “satellite” here I am referring to geosynchronous satellite, such as that provided by ViaSat or HughesNet, and not the low Earth orbital (LEO) satellite networks, like Starlink, which has received so much press as of late.¹⁹

In addition to suboptimal technologies of connectivity, rural Americans also pay more for broadband than their urban counterparts. According to BroadbandNow.com a trusted site for broadband deployment information, rural Americans pay upwards of 37 percent more for broadband than those living in cities.²⁰ 37 percent more, for broadband technologies that cannot measure up.

A colleague and I just finished a study in Surry County, Virginia—one of the least connected counties in the Commonwealth. We were interested in learning about life

¹³ Roberto Gallardo and Brian Whitacre, “A Look at Broadband Access, Providers and Technology” (Perdue University: Center for Regional Development, 2019), <https://pcrd.purdue.edu/files/media/008-A-Look-at-Broadband-Access-Providers-and-Technology.pdf>.

¹⁴ AT&T is actually phasing out its DSL product. Doug Dawson, “AT&T Stops DSL Sales,” *POTs and PANs* (blog), 2020, <https://potsandpansbyccg.com/2020/10/12/att-stops-dsl-sales/>.

¹⁵ Gallardo and Whitacre, “A Look at Broadband Access, Providers and Technology.”

¹⁶ “United States’s Mobile and Broadband Internet Speeds,” Speedtest Global Index, 2021, <https://www.speedtest.net/global-index/united-states>.

¹⁷ Sallet, “Bringing High-Performance Broadband to Rural America”; Jonathan Sallet, “Broadband for America’s Future: A Vision for the 2020s” (Chicago, IL: Benton Institute for Broadband & Society, 2019), <https://www.benton.org/publications/broadband-policy2020s>.

¹⁸ Federal Communications Commission, “Measuring Fixed Broadband—Tenth Report” (Washington, D.C.: Federal Communications Commission, January 4, 2021), <https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-tenth-report>.

¹⁹ Jon Brodtkin, “ISPs Step up Fight against SpaceX, Tell FCC That Starlink Will Be Too Slow,” *Ars Technica*, February 9, 2021, <https://arstechnica.com/tech-policy/2021/02/isps-step-up-fight-against-spacex-tell-fcc-that-starlink-will-be-too-slow/>; Jon Brodtkin, “SpaceX Gets \$886 Million from FCC to Subsidize Starlink in 35 States,” *Ars Technica*, December 7, 2020, <https://arstechnica.com/tech-policy/2020/12/spacex-gets-886-million-from-fcc-to-subsidize-starlink-in-35-states/>.

²⁰ BroadbandNow, “Digital Divide: Broadband Pricing by State, Zip Code, and Income 2019,” Broadband Now, 2019, <https://broadbandnow.com/research/digital-divide-broadband-pricing-state-zip-income-2019>.

in a broadband desert. We talked to people who were spending hundreds of dollars a month for internet, because they were forced to toggle between satellite, mobile phone, and a mobile hotspot for connectivity. Still, many told us that despite multiple devices and hundreds of dollars, they could not participate in work calls over Zoom, stream Netflix or have their children participate in remote learning. As one respondent said to us: “I’m spending about \$400 a month . . . I can’t stream anything. *This is rural America is what it is.*” Said another respondent in Surry County, “we desperately need the broadband.”²¹ It is for reasons such as these why the Pew Foundation found that nearly a quarter of rural Americans say broadband access is a major problem.²²

So, why is broadband *availability* in rural America such a problem? In the language of economists, broadband in rural America is a “market failure”—the private providers are unwilling or unable to provide service because of a lack of sufficient return on investment.²³ There are simply not enough potential customers and they live too far apart to be served. Importantly, the same thing was said about electricity in the 1920s and telephone in the 1930s, but decisive and ambitious public policy solved those problems.²⁴ Public policy has yet to solve the problem of rural broadband.

I identify five reasons why public policy has struggled to bring high-performance broadband to the majority of rural Americans, despite a decade of attempts and billions of dollars spent annually.

Meaning

To begin, the FCC’s definition of broadband is out of touch and out of date. As a reminder, the FCC currently defines broadband at 25Mbps download/3 Mbps upload.²⁵ This definition was set back in 2015 and has not been updated, despite a current national average of 179/64.²⁶

A particularly egregious component of this definition, is its asymmetry. The current definition of broadband privilege download over upload. Now, that may be great for binging Netflix but it is of no help to the business community, telehealth, or remote learning.²⁷ One of the respondents for my book put it this way: “Download is about consumption, upload is about production.”²⁸ Said differently, upload is about business and the business community is not served by a national definition of 3 Mbps upload.²⁹

What the 25/3 definition has done, however, is allow the previously mentioned dissatisfactory Internet access technologies—DSL and satellite—to count as broadband and therefore qualify for the tens-of-millions of dollars a year in grants and subsidies provided by the FCC through the Universal Service Fund and the USDA through its loans and grant programs. To the particular detriment of rural Americans, the 25/3 definition has become a ceiling to which too many of the largest providers aim to meet, rather than a floor to build upon.

I join many other researchers and lawmakers who argue that we need an ambitious and forward-looking definition of broadband such as 100Mbps download/100 Mbps upload.³⁰ One that compels providers to abandon technologies like DSL and replace these wires with fiber or fiber-backed fixed wireless if they want to continue to receive Federal and state support. I look to the State of Minnesota for inspiration

²¹ Nick Mathews and Christopher Ali, “Desert Work: Life and Labor in a News and Broadband Desert” (Annual Conference of the International Communications Association, Online: Unpublished, 2021).

²² Monica Anderson, “For 24 percent of Rural Americans, High-Speed Internet Is a Major Problem,” *FactTank: News in the Numbers* (blog), September 10, 2018, <https://www.pewresearch.org/fact-tank/2018/09/10/about-a-quarter-of-rural-americans-say-access-to-high-speed-internet-is-a-major-problem/>.

²³ F.M. Bator, “The Anatomy of Market Failure,” *Quarterly Journal of Economics* 72, no. 3 (1958): 351–79; Christopher Ali, “The Politics of Good Enough: Rural Broadband and Policy Failure in the United States,” *International Journal of Communication* 14 (2020): 5982–6004.

²⁴ Christopher Ali, *Farm Fresh Broadband: The Politics of Rural Connectivity* (Cambridge, Mass: MIT Press, Forthcoming, 2021), <https://mitpress.mit.edu/books/farm-fresh-broadband>.

²⁵ Federal Communications Commission, “2021 Broadband Deployment Report: In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion (GN Docket No. 20–269).”

²⁶ “United States’s Mobile and Broadband Internet Speeds.”

²⁷ Christopher Ali, “The Presumption of the Connected,” *Benton Digital Beat*, 2020, <https://www.benton.org/blog/presumption-connected>; Stuart Sweet, “How Much Bandwidth Do You Need for Distance Learning?,” *The Solid Signal Blog*, September 13, 2020, <https://blog.solid-signal.com/tutorials/how-much-bandwidth-do-you-need-for-distance-learning/>.

²⁸ Ali, *Farm Fresh Broadband: The Politics of Rural Connectivity*.

²⁹ Doug Dawson, “Upload Speeds,” *POTs and PANs*, October 30, 2020, <https://potsandpansbyccg.com/tag/upload-speeds/>.

³⁰ Sallet, “Broadband for America’s Future.”

here. Minnesota’s Border-to-Border grant program funds technologies that can reach and surpass 100/100.³¹ This allows the program to remain technologically neutral and also champion forward-looking deployment.

Money

The second “M” of rural broadband policy is money. Between the FCC’s High-Cost/Connect America Fund and USDA’s loan and grant programs, roughly \$6 billion annually is devoted to supporting rural broadband deployment.³² This has been the case since 2015. Yet, the rural-urban digital divide not only persists, but in many instances is growing, as rural Americans are stuck with outdated technologies like DSL and satellite, and urban Americans gain access to fiber. Why has this happened?

When the FCC’s Universal Service Fund, High-Cost Program was transitioned to the Connect America Fund (CAF) at the recommendation of the National Broadband Plan³³ funding was simply given to the 10 largest providers, known as “price cap” carriers, rather than distributed through a competitive auction. Funding amounted to \$1.5 billion a year for 6 years, with CenturyLink coming out as the largest awardee, netting \$505 million a year.³⁴ In exchange for over \$9 billion between 2015 and 2020, price cap providers only had to meet a speed threshold of 10/1, not the national definition of 25/3.³⁵ As a result, CAF I and CAF II monies were spent on enhancing DSL rather than deploying fiber.³⁶ In comparison, 175 small providers, known as “rate-of-return carriers” received their own pot of funding through the Alternate Connect America Model (A-CAM).³⁷ These providers shared \$1 billion a year, had a minimum speed threshold of 25/3, and by many reports are deploying fiber in rural areas at a faster pace than their price cap carrier counterparts.³⁸

As part of CAF II, price cap carriers were to meet various yearly benchmarks, but there was no discernable accountability when they failed to live up to their commitments. For instance, in 2019 both CenturyLink and Frontier missed targets in 23 and 13 states respectively.³⁹ Nevertheless, they remained eligible for future awards and the FCC even gave them, and all price cap carriers, an extra year of funding.⁴⁰

With funds left over from the CAF II program, a reverse auction was held in 2018, and eligibility expanded.⁴¹ Funding amounted to \$1.48 billion or \$148 million a year for ten years. This time, fixed wireless providers were the largest winners and a consortium of rural electric cooperatives pledging gigabit speeds through fiber optics came in third. ViaSat, a satellite provider, was the fourth largest recipient, winning

³¹ “Broadband Grant Program,” Minnesota Department of Employment and Economic Development, accessed March 14, 2021, <https://mn.gov/deed/programs-services/broadband/grant-program/>.

³² Ali, *Farm Fresh Broadband: The Politics of Rural Connectivity*.

³³ Federal Communications Commission, “Connecting America: The National Broadband Plan” (Washington, D.C.: Federal Communications Commission, March 17, 2010), <https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf>; Federal Communications Commission, “Report and Order and Further Notice of Proposed Rulemaking: In the Matter of Connect America Fund” (Washington, D.C.: Federal Communications Commission, November 18, 2011), <https://www.fcc.gov/general/connect-america-fund-caf>.

³⁴ Federal Communications Commission, “Connect America Fund Phase II Funding by Carrier, State, and County,” 2015, <https://www.fcc.gov/document/connect-america-fund-phase-ii-funding-carrier-state-and-county>.

³⁵ Federal Communications Commission, “Connect America Fund Phase II FAQs,” Federal Communications Commission, June 14, 2016, <https://www.fcc.gov/consumers/guides/connect-america-fund-phase-ii-faqs>.

³⁶ Doug Dawson, “Big Telcos and Rural Customers,” *POTs and PANs*, January 22, 2018, <https://potsandpansbyccg.com/2018/01/22/big-telcos-and-rural-customers/>.

³⁷ Federal Communications Commission, “In the Matter of Connect America Fund, ETC Annual Reports and Certifications, Developing a Unified Inter-carrier Compensation Regime (WC Docket No. 10–90; WC Docket No. 14–58; CC Docket No. 01–92). Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking” (Washington, D.C.: Federal Communications Commission, 2016), <https://www.fcc.gov/document/fcc-reforms-high-cost-program-rate-return-carriers>.

³⁸ Federal Communications Commission; Doug Dawson, “A-CAM—A Subsidy That Works,” *POTs and PANs*, January 31, 2018, <https://potsandpansbyccg.com/2018/01/31/a-cam-a-subsidy-that-works/>.

³⁹ Jon Brodtkin, “CenturyLink, Frontier Took FCC Cash, Failed to Deploy All Required Broadband,” *Ars Technica*, January 23, 2020, <https://arstechnica.com/tech-policy/2020/01/centurylink-frontier-took-fcc-cash-failed-to-deploy-all-required-broadband/>.

⁴⁰ Joan Engebretson, “Carriers to Receive Seventh Year of CAF Support, Worth \$1.5 Billion for Rural Broadband,” *Telecompetitor*, November 17, 2020, <https://www.telecompetitor.com/tag/connect-america-fund/>.

⁴¹ Federal Communications Commission, “Connect America Fund Phase II Auction (Auction 903),” Federal Communications Commission, May 17, 2017, <https://www.fcc.gov/auction/903>.

\$122 million (\$12 million a year) despite promising only baseline speeds, and continuing to be plagued by issues of low speed and high latency.⁴²

The following year, when the FCC announced the creation of the Rural Digital Opportunity Fund (RDOF) in 2019, pledging \$20.4 billion over ten years, spirits were high over the size of the fund.⁴³ Critics, including myself, however, worried that history would repeat itself.⁴⁴ As we know, upon completion of the first phase, the FCC has received harsh criticism. Specifically, the FCC was criticized for awarding SpaceX, through its subsidiary Starlink, \$885 million for its LEO satellite network that has yet to be proven at scale.⁴⁵ The FCC also received criticism for failing to adequately vet applicants, with some fixed wireless providers promising gigabit speeds when it is debatable whether the technology is up to the challenge.⁴⁶ This criticism included a bipartisan-bicameral letter signed by 159 members of Congress.⁴⁷

In summation, when it comes to money and funding, the FCC has all too often favored the largest and the loudest providers, over the hundreds of local, nimble, and dynamic providers, who combine fixed wireless and fiber to the home to connect their communities.

Mapping

The third “M” in my rural broadband pentalogy is mapping. We have all, no doubt, heard the substantial and frequent criticisms of the FCC’s broadband mapping methodology, but it is worth repeating here.⁴⁸ Mapping should be the first step in planning and funding of broadband deployment, but as it stands today, we do not know who is connected, unconnected, and under-connected. In fact, we have a better map of the milky way galaxy than we do of who is un and under-connected in rural America. As I noted above, research suggests the FCC has exaggerated broadband deployment in the United States by upwards of 50 percent.⁴⁹

The reason why we have found ourselves in such a state comes down to what information providers are required to report to the FCC on Form 477.⁵⁰ ISPs submit Form 477 twice a year and the information is used to create the FCC’s broadband maps and to determine which areas are eligible for funding, such as for the RDOF program. Form 477 has three structural flaws. The first is data granularity. ISPs have to report connectivity at the census block level, not the address level. As a result, a census block is considered “served” with broadband as long as one edifice has broadband or the census block can be served by the provider within 10 business days. “This lack of granularity” I wrote in a recent peer-reviewed journal article, “means the FCC has grossly overestimated how much of the country—rural or urban—has access to broadband.”⁵¹

⁴²Federal Communications Commission 2017.

⁴³Federal Communications Commission, “In the Matter of the Rural Digital Opportunity Fund (WC Docket No. 19–126) Report and Order” (Washington, D.C.: Federal Communications Commission, February 7, 2020), <https://www.fcc.gov/ecfs/filing/02070806418528>.

⁴⁴Christopher Ali, “Thoughts on Rural Broadband Subsidies for the New Decade,” *Benton Digital Beat*, December 18, 2019, <https://www.benton.org/blog/thoughts-rural-broadband-subsidies-new-decade>.

⁴⁵Brodkin, “SpaceX Gets \$886 Million from FCC to Subsidize Starlink in 35 States”; Brodkin, “ISPs Step up Fight against SpaceX, Tell FCC That Starlink Will Be Too Slow”; Cartesian, “Starlink RDOF Assessment Final Report” (Boston: Cartesian, 2021), https://ecfsapi.fcc.gov/file/10208168836021/FBA_LEO_RDOF_Assessment_Final_Report_20210208.pdf.

⁴⁶Mike Dano, “Some Big RDOF Winners Lean Away from Fixed Wireless,” *Light Reading* (blog), February 5, 2021, <https://www.lightreading.com/opticalip/some-big-rdof-winners-lean-away-from-fixed-wireless/d/d-id/767204>; Linda Hardesty, “WISPA Claps Back at Fixed-Wireless Critics in RDOF Dispute,” *FierceTelecom* (blog), February 23, 2021, <https://www.fierce telecom.com/telecom/wispa-claps-back-at-fixed-wireless-critics-rdof-dispute>.

⁴⁷James Clyburn et al., “Letter to Ajit Pai,” January 19, 2021, <https://walberg.house.gov/sites/walberg.house.gov/files/WalbergFCCRDOFLetter.pdf>.

⁴⁸Government Accountability Office, “Broadband Internet: FCC’s Data Overstate Access on Tribal Lands” (Washington, D.C.: Government Accountability Office, 2018), <https://www.gao.gov/products/gao-18-630>. Bode, “How Bad Maps Are Ruining American Broadband”; Karl Bode and Emanuel Maiberg, “The FCC’s New Broadband Map Paints an Irresponsibly Inaccurate Picture of American Broadband,” *Motherboard*, February 23, 2018, https://motherboard.vice.com/en_us/article/8xdk8x/new-fcc-broadband-map; Eric Null, “Why Can’t the U.S. Government Make a Decent Map of Broadband Access?,” *Slate Magazine*, March 28, 2018, <https://slate.com/technology/2018/03/why-cant-the-u-s-government-make-a-decent-map-of-broadband-access.html>.

⁴⁹Meinrath, “Broadband Availability and Access in Rural Pennsylvania”; Busby and Tanberk, “FCC Underestimates Americans Unserved by Broadband Internet by 50 percent.”

⁵⁰Federal Communications Commission, “Fixed Broadband Deployment Data from FCC Form 477,” Federal Communications Commission, 2020, <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>.

⁵¹Ali, “The Politics of Good Enough,” 2020, 5994.

The second flaw is data collection. The data is self-reported by providers, with little in the way of auditing. Worse, ISPs only have to report *advertised* speeds, rather than *actual* speeds, leading to an exaggeration of which areas have meaningful connectivity. This is particularly the case for providers using DSL and satellite networks, “where there is considerable discrepancy between the theoretical speed limit of a connection and the actual speeds received, based on factors such as distance from the network node and the age of the network.”⁵²

The third flaw returns us to the issue of *meaning*. The FCC treats DSL, satellite, fixed wireless, cable, and fiber, as interchangeable since they can all theoretically meet the 25/3 standard. But the difference between the technologies and the user experience are myriad and significant. Nevertheless, those connected on a rotting DSL network because of industry neglect, and barely seeing 1 Mbps download, are still considered “served.”⁵³ As a result, not only do we not know who is *unconnected*, we also do not know who is *under-connected*.

The implications for these bad maps are substantial. The most important implication being that if a census block is considered “served,” it is ineligible for future funding from the FCC. While, the FCC does not consider satellite in its calculation of eligible areas for funding (because satellite covers 99 percent of the country), hundreds of communities are living in broadband purgatory, un- and under-connected in practice, but marked as “served” on the broadband map. These communities have been described as being in “digital distress”⁵⁴ and “stranded in the dial-up age.”⁵⁵

An example from my current research illustrates the gravity of the situation. My research team at the University of Virginia is in the midst of a study regarding Virginia county broadband plans, policies and deployment. We asked counties to self-report their level of connectivity. Our findings to this request echo those of previous studies that found massive discrepancies between the FCC’s report of broadband deployment and the lived reality of rural Americans.⁵⁶ To use but one example, the FCC reports Bath County Virginia as being 100 percent served with broadband at speeds of 25/3. In addition the FCC reports that 100 percent of the county has access to at least two broadband providers. In comparison, Bath County reported to us in our Virginia County Broadband Survey that only 10 percent of the county is served with broadband at 25/3, and a full 90 percent is unserved. This amounts to a 90 percent difference in the FCC reporting and county reporting (see Figure 1).⁵⁷

⁵² Ali, 5995.

⁵³ Doug Dawson, “AT&T Stops DSL Sales,” *POTs and PANs*, 2020, <https://potsandpansbyccg.com/2020/10/12/att-stops-dsl-sales/>.

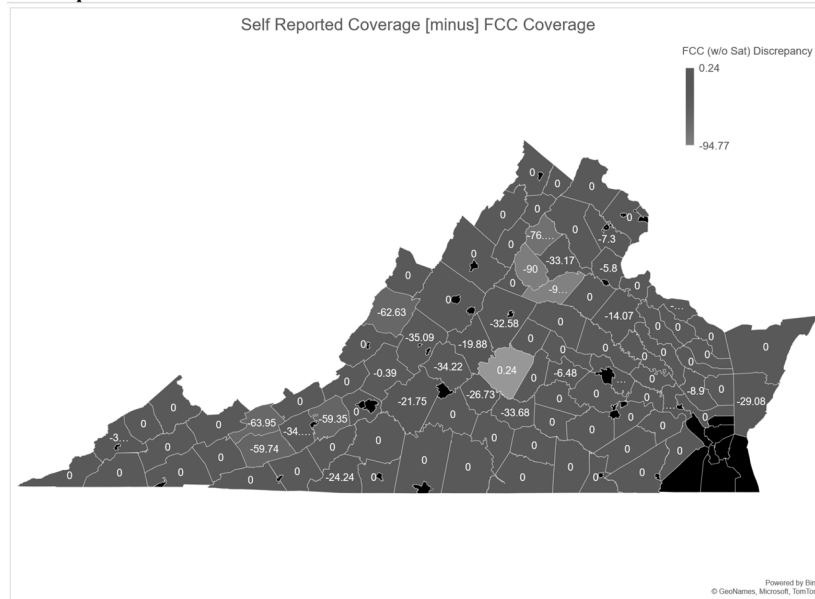
⁵⁴ Roberto Gallardo and Cheyanne Geideman, “Digital Distress: What Is It and Who Does It Affect? Part 1,” *Medium*, February 19, 2019, <https://medium.com/design-and-tech-co/digital-distress-what-is-it-and-who-does-it-affect-part-1-e1214f3f209b>.

⁵⁵ Jennifer Levitz and Valerie Bauerlein, “Rural America Is Stranded in the Dial-Up Age,” *Wall Street Journal*, June 15, 2017, <https://www.wsj.com/articles/rural-america-is-stranded-in-the-dial-up-age-1497535841>.

⁵⁶ Meinrath, “Broadband Availability and Access in Rural Pennsylvania”; Busby and Tanberk, “FCC Underestimates Americans Unserved by Broadband Internet by 50 percent.”

⁵⁷ Christopher Ali, Abby Simmerman, and Nicholas Lansing, “Connected Commonwealth: The Role of Counties in Virginia Broadband Deployment” (Media and Democracy Lab, Charlottesville, 2021).

Figure 1: Discrepancies between Virginia counties' self-reported broadband coverage and FCC reports



Source: Ali, Simmerman, & Lansing (2021)

Progress, however, has been made. I have been encouraged by the incredible crowd-sourcing efforts conducted by Measurement Lab, and the state-level mapping initiatives such as what is happening in Georgia.⁵⁸ Through the Georgia Broadband Deployment Initiative, Georgia worked with Lightbox, a commercial real estate data company, to create one of the most granular broadband deployment maps in the country. The public has access to aggregate data at the census block level, with the state has access to address-level data, demonstrating that better maps are possible.

We desperately need to fix the maps and data collection methodology, and I am glad to see that there is so much movement in this space, from localities, to states, to the FCC's new Broadband Data Task Force,⁵⁹ and congress's actions in the Consolidated Appropriations Act of 2021 to implement and fund the requirements of the Broadband DATA Act.⁶⁰

Municipalities

The fourth "M" is municipalities. What I have learned in my research and in my field visits across rural areas of the Midwest and Virginia, is that local broadband is the best broadband. By this, I mean that telephone and electric cooperatives and small local ISPs, are the ones best serving rural communities. Cooperatives, for instance understand that return on investment cannot be measured in quarters, but in years and even decades. They are prepared to wait this long because they also understand that they are making an investment in their community. For municipalities, return on investment is measured not in profits returned, but in people connected. Local provision also means local accountability. There's a big difference when you can meet the owner of your broadband provider in the grocery store or they happen to be your neighbor than when the owner is based hundreds of miles away in Dallas or Los Angeles.

"Municipalities" in this instance, can also be expanded to counties and states. Solving the rural broadband infrastructure gap will require an all-hands-on-deck ap-

⁵⁸ Shara Tibken, "States Couldn't Afford to Wait for the FCC's Broadband Maps to Improve. So They Didn't," *CNET*, February 23, 2021, <https://www.cnet.com/features/states-couldnt-afford-to-wait-for-the-fccs-broadband-maps-to-improve-so-they-didnt/>.

⁵⁹ Federal Communications Commission, "Rosenworcel Establishes Broadband Data Task Force," *Federal Communications Commission*, February 17, 2021, <https://www.fcc.gov/document/rosenworcel-establishes-broadband-data-task-force>.

⁶⁰ The Consolidated Appropriations Act, 2021.

proach, where no stakeholder should be left out or discounted. We know, for instance, that public funding from municipalities, counties and states is essential for network deployment, especially in rural areas. That 19 states currently prohibit or inhibit municipal broadband investment means they are forbidding municipalities from making an investment in the type of future they envision for their community.⁶¹

My favorite example of the power of local broadband, and an example to which I devote an entire chapter of my book, is from Rock County, Minnesota. Rock County is located in the southwest pocket on the state, bordering South Dakota and Iowa. With the support of the county Board of Supervisors in 2013, the County Administrator began to search for a provider to connect the county with fiber-to-the-home. Eventually, that provider partner was found in the form of Alliance Communications, a telephone cooperative from South Dakota. With a \$5 million grant from the state of Minnesota, a county bond of \$1 million, and the remainder covered by Alliance, Rock County has become one of the most connected counties in the state, with 99.93 percent availability for fiber to the home.⁶² An incredible story and testament to the power of local partnerships, local broadband, and state encouragement.

Management

The final “M” is that of management. And by management, I mean policymaking at the Federal level. Today, we have three agencies that share responsibility for broadband deployment and planning: the Federal Communications Commission, the Rural Utilities Service of USDA, and the National Telecommunications and Information Administration, or NTIA. Each has an agenda and a mandate. Unfortunately, with so many chefs in the kitchen, communities are being left out. Here’s an example, 99 percent of borrowers from USDA’s Telecommunications Loan Program also receive funding from the Universal Service Fund.⁶³ In fact, USF funding is crucial because it may be used as collateral to secure the USDA loan. Any changes in USF policy, therefore, requires USDA input. Despite a memorandum of agreement signed in 2014 between the USDA and the FCC, there is little interagency cooperation.

Successful broadband policy management requires interagency cooperation and coordination. It also requires an agency to lead. The call for interagency cooperation is nothing new. The 2019 American Broadband Initiative mentioned interagency coordination 45 times.⁶⁴ In addition, the Consolidated Appropriations Act of 2021 included the Broadband Interagency Coordination Act of 2020, which mandated cooperation between the FCC, NTIA and USDA.⁶⁵

Interagency cooperation is difficult to mandate and even harder to assess. What is more difficult than coordination, however, is determining which agency should be the coordinator.⁶⁶ In 2017, for instance, congress considered HR 800: The New Deal Rural Broadband Act, which would have appointed USDA as the point agency for rural broadband planning and policy.⁶⁷ In 2018, it took up HR 3994 the Access Broadband Act, which would have made NTIA the primary agency responsible,⁶⁸ this act was reintroduced in 2019.⁶⁹ Also in 2019, congress considered S.454: The

⁶¹ Becky Chao and Claire Park, “The Cost of Connectivity 2020” (Washington, D.C.: Open Technology Institute, 2020), <http://newamerica.org/oti/reports/cost-connectivity-2020/>; Baller Stokes & Lide, “State Restrictions on Community Broadband Services or Other Public Communications Initiatives” (Washington, D.C., 2019), <https://www.baller.com/wp-content/uploads/BallerStokesLideStateBarriers.pdf>.

⁶² Alliance Communications, “Rock County Fiber-to-the-Home Project,” https://mn.gov/deed/assets/rock-county_tcm1045-301887.pdf.

⁶³ Lennard Kruger, “Broadband Loan and Grant Programs in the USDA’s Rural Utilities Service” (Washington, D.C.: Congressional Research Service, 2018), https://www.everycrsreport.com/files/20181016_RL33816_76629ba2fb086f856e1d10a148ff0cf4aca53cbd.html.

⁶⁴ Sonny Perdue and Wilbur Ross, “American Broadband Initiative: Milestones Report” (Washington, D.C.: USDA, 2019), https://www.ntia.doc.gov/files/ntia/publications/american_broadband_initiative_milestones_report.pdf.

⁶⁵ The Consolidated Appropriations Act, 2021, sec. 904.

⁶⁶ Christopher Ali, “An Office of Rural Broadband: We’ve Heard This Before,” *Benton Digital Beat*, March 18, 2019, <https://www.benton.org/blog/office-rural-broadband-we%E2%80%99ve-heard>.

⁶⁷ Jared Huffman, “New Deal Rural Broadband Act of 2017,” HR 800 (2017), <https://www.congress.gov/bill/115th-congress/house-bill/800>.

⁶⁸ Paul Tonko, “ACCESS BROADBAND Act,” H.R. 3994 (2017), <https://www.congress.gov/bill/115th-congress/house-bill/3994?q=%7B%22search%22%3A%22HR+3994+the+Access+Broadband+Act%22%7D>.

⁶⁹ Paul Tonko, “ACCESS BROADBAND Act,” H.R. 1328 (2019), <https://www.congress.gov/bill/116th-congress/house-bill/1328?q=%7B%22search%22%3A%5B%22%5C%22Access+Broadband+Act%5C%22%22%5D%7D&s=7&r=1>.

Office of Rural Broadband Act, which would have made the FCC the point agency.⁷⁰ Three years, multiple acts, multiple proposals for who should coordinate the country's struggling rural broadband policies.

A National Rural Broadband Plan

When articulated poorly, the 5 M's of rural broadband policy replicate and extend what I have called in my writings "the politics of good enough."⁷¹ Said differently, our preference for rapidity has made us blind to issues of speed, latency, price, and deployment. The politics of good enough mean that anything is better than nothing in rural America and that if you want something better, you should move to the city. This logic has made us believe that 25/3 is good enough, satellite and DSL are good enough, high prices and low service are good enough. As I wrote elsewhere, "good enough" has become the enemy of great high-performance broadband."⁷² I've heard it said that rural Americans do not need high performance broadband. That making this argument is trying to justify a Ferrari over a Toyota Corolla: luxury versus utility.⁷³ Nothing could be further from the truth. We are not talking about a Ferrari and Toyota when we talk about fiber versus DSL, we are talking about walking versus driving. High performance broadband is not a luxury, it is not gold plated, it is not a Ferrari. High performance broadband is as essential today as electricity and water.

We need a new plan for rural broadband.⁷⁴ One that will raise the definition of broadband so that rural Americans have meaningful connectivity, not just "good enough" connectivity. A plan that will allocate funding without privileging the largest providers and that will hold companies to their promises with decisive sanctions. A plan that will fix mapping by relying on a combination of granular audited data and crowdsourced information and that provides a streamlined challenge process. A plan that recognizes the crucial role of states, municipalities, local providers and co-operatives, and celebrates local public investment in networks in addition to public private partnerships. And lastly, a plan that cuts through the regulatory gridlock by requiring meaningful and visible interagency cooperation.

The exciting thing is, we've done this before. The Rural Electrification Administration, created in 1935 and made permanent in 1936, had at its disposal \$100 million dollars (\$1.8 billion in today's money) in its first year. It did not, however, spend the money on what we could call "big power." Instead, it championed the creation of local electric cooperatives. It also sent its representatives on rural electrification tours—the "REA Circus" it was called—to encourage local adoption.⁷⁵ This program was incredibly successful. In a little over a decade, rural electrification soared from 48 percent to 96 percent.⁷⁶ Rural electrification was successful in fact that REA was tasked with connecting rural America with telephony in the 1940s and 1950s. Again, it went back to the same model, trusting local communities and local telephone cooperatives. Today, the hundreds of electric and telephone cooperatives that dot the country are the "unsung heroes of broadband,"⁷⁷ connecting their communities with state-of-the-art fiber optics and fixed wireless networks when the largest providers had written these areas off as a bad investment.

There is precedent for connecting rural and remote regions with the necessities of modern life. Today, broadband is that necessity; it is not an option, it is not a luxury. While we must make sure the mistakes of the past are not duplicated, the history of connecting the countryside is a history worth repeating.

Thank you.

The CHAIR. Thank you, Professor Ali. Again, thank you so much for being here and for your insights, and that research. We hope

⁷⁰ Kevin Cramer, "S.454: Office of Rural Broadband Act," webpage, Congress.Gov, February 12, 2019, <https://www.congress.gov/bills/116/congress/senate-bill/454/committees>.

⁷¹ Ali, "The Politics of Good Enough," 2020.

⁷² Christopher Ali, "The Politics of Good Enough," *Benton Digital Beat*, November 12, 2020, <https://www.benton.org/blog/politics-good-enough>.

⁷³ Bronwyn Howell, "The Rural Digital Opportunity Fund: Subsidizing Toyotas or Ferraris?," *AEIdeas*, January 21, 2020, <https://www.aei.org/technology-and-innovation/the-rural-digital-opportunity-fund-subsidizing-toyotas-or-ferraris/>.

⁷⁴ Christopher Ali, "We Need a National Rural Broadband Plan," *New York Times*, February 11, 2019, <https://www.nytimes.com/2019/02/06/opinion/rural-broadband-fcc.html>.

⁷⁵ Richard Pence, ed., *The Next Greatest Thing: 50 Years of Rural Electrification in America* (Washington, D.C.: National Rural Electric Cooperative Association, 1984).

⁷⁶ Ronald R Kline, *Consumers in the Country: Technology and Social Change in Rural America*, Revisiting Rural America (Baltimore: Johns Hopkins University Press, 2000), 219.

⁷⁷ Christopher Ali, "Cooperatives: The Unsung Heroes of Broadband," *Benton Digital Beat*, February 22, 2021, <https://www.benton.org/blog/cooperatives-unsung-heroes-broadband>.

you will share the details of that with the Committee. That is so helpful. Now, we will hear from the Honorable Mike O’Rielly, former Commissioner of the FCC. Mr. O’Rielly, welcome.

**STATEMENT OF HON. MICHAEL P. O’RIELLY, FORMER
COMMISSIONER, FEDERAL COMMUNICATIONS COMMISSION**

Mr. O’RIELLY. Thank you. Chair Cantwell, Ranking Member Wicker, and members of the Committee, Happy St. Patrick’s Day! Thank you for inviting me to share my views on the important subject of expanding high-speed broadband access in America. Thank you also for the Committee’s indulgence last year, considering my re-nomination to the FCC, which did not exactly play out as expected, but I am very pleased to be here in this new capacity.

For clarification, I do not currently represent any party involved in the issues of this hearing. While that may make me the worst consultant ever, the truth is my business is just a handful of weeks old.

On topic, the availability of high-speed Internet allows users around the world to communicate, learn, work, conduct commerce, and so much more. And it has proven especially important during the COVID-19 pandemic, when American families have been isolated and quarantined.

America’s private broadband sector deserves enormous credit for the investment in upgrades it implemented, over the last many years, to handle the recent increase in Internet traffic. Our networks performed incredibly well, especially in contrast to other nations. The technology has proven immensely valuable for Americans with broadband access, and there should be little doubt that progress has been made to extend its reach, especially in bringing service to the most difficult corners of our nation, through many FCC programs that I had a hand in creating or reshaping. Simply put, the numbers of unserved households have shrunk precipitously.

For those without access, however, much work remains, and the Commission is working hard on this front, including addressing the lack of accurate mapping, although the pace of mapping improvements needs to be accelerated considerably.

Additionally, Congress recently has acted on many fronts to improve broadband deployment via new FCC programs. And a host of other Federal entities now administer broadband related programs, initiated through the Congressional funding, including the Department of Agriculture, NTIA, the Department of Education, and the Department of Treasury.

On point, it should be universally accepted that subsidized overbuilding Federal programs increase the likelihood of duplicative investment, which, when it occurs, is extremely counterproductive and harmful on many levels. While I do believe coordination efforts in law will be of added value, coordination can be difficult to mandate and practice, and can mean a host of different things when multiple agencies are not on the same page, when it comes to the problem that coordination is supposed to solve. Congressional efforts on this front may need to be much more expansive, in terms of scope and demanded outcome, especially for agencies with a poor track record, or none at all.

Like many, I am still analyzing the broadband related provisions in the latest COVID-19 law, but several provisions raise issues and concerns. Case in point, the new \$10 billion program created within the Treasury Department that can be used for many purposes, including broadband facilities, appears to have few, if any, limitations. That should raise a host of red flags.

In terms of broadband funding in a larger infrastructure bill, the draft efforts I have seen so far should raise multiple concerns. I humbly suggest that the massive funding levels, which will dwarf private sector and any current government investment, should be pared back to, perhaps, no larger than \$20 billion or, if it is to remain at this level, be done in tranches.

Beyond that, a number of troubling components should be fully explored and potentially amended by the members of the Committee, before any enactment. For instance, the asynchronous speed thresholds suggested by some, do not reflect expected usage of future growth, much less current levels. Ultimately, it means a great deal of the country will be deemed unserved. Funding will flow to the easier areas and the unserved areas will be, essentially, ignored again.

Some of the policy cuts are also very problematic, like the preemption of state municipal broadband limits. Moreover, I have further concerns that recent Federal investment efforts will undermine the Commission's efforts to promote efficient subsidies.

Aside from the broadband funding issue, many restrictions are preventing companies from deploying broadband to all those without access, specifically, some state and local governments and private company limitations, are acting as barriers to greater deployment. Providers can face fees to utilize existing communications infrastructure for poles, ducts, and conduits, or convoluted processes to gain rights away and zoning approvals. They also encounter limitations on the placement of expansion of wireless facilities. The Committee should clarify acceptable and prohibited practices and law, like was done in the bipartisan 2012 Spectrum Act.

I also suggest, humbly, that you eliminate or revamp the ETC designation process, which is hindering deployment.

In sum, broadband is a highly valuable service that can be life changing for many Americans. Exceptional progress has been made over the last few years, by the private sector and through various Federal programs, to extend existing networks and ensure service to those interested families. More work remains to be done in this area, but it needs to be accomplished through thoughtful and careful—thoughtfully and carefully, lest it causes more harm than good.

I thank the Chair.

[The prepared statement of Mr. O'Rielly follows:]

PREPARED STATEMENT OF MICHAEL P. O'RIELLY, PRINCIPAL,
MPORIELLY CONSULTING, LLC, AND VISITING FELLOW, HUDSON INSTITUTE

Thank you, Chairwoman Cantwell, Ranking Member Wicker, and Members of the Committee, for inviting me to share my views on the important subject of expanding high-speed broadband access in America. In a year that has presented many challenges—on many levels—it is a pleasure for me to return to familiar stomping grounds. May I also extend my appreciation for your continued public service to our nation, despite the unfair and inappropriate criticism often laid before this body.

Introduction

There should be little disagreement that broadband technology has altered—and, in most cases, improved—American society. The availability of high-speed Internet allows users around the world to communicate, learn, work, conduct commerce, and so much more. These benefits have never been more apparent than during the Covid-19 pandemic when American families have been isolated and quarantined. In fact, in some instances, including access to telemedicine/telehealth or testing and vaccine information, the technology has been a lifesaver.

America's private broadband sector deserves immense credit for the investment and upgrades it implemented over the last many years to handle the recent increase in Internet traffic. Reports and anecdotal evidence suggest that companies experienced increases of 30 to 50 percent in usage compared to the pre-Covid time period. Our networks performed incredibly well, especially in contrast to other nations, including countries in the European Union, which were forced to request that Internet content providers take measures to stymie Internet consumption and speeds in order to minimize challenges to overall network sustainability. It is because of our industry's foresight and network advances in prior years that U.S. broadband networks were generally able to sustain these capacity demands. And, the industry should be duly credited for forgoing revenue and fees during the Covid-19 crisis to ensure connectivity to subscribers in financial need, as part of voluntary pledges to the government.

Despite these positive experiences, many American families still have had to suffice with substandard broadband or are without the means to obtain service. In addition, a portion of the population has never sought to be connected at all. Addressing these issues was a high priority during my time in public service, especially at the FCC, and will remain so going forward.

Federal Broadband Investments and Challenges

One of the Commission's highest priorities over the last decade has been to increase the availability of high-speed broadband. Without availability or deployment, all other issues pertaining to broadband access do not exist. While critics can and do argue over the speed thresholds or measurements used, there should be no doubt that enormous progress has been made, especially in reaching the hardest to serve corners of our Nation. Most American families now have broadband or will have the option to connect, thanks, in no small part, to the efforts of the professionals at the Commission to distribute approximately \$4.5 billion annually in high-cost support from the Universal Service Fund (USF). From modernizing the Connect America Fund and removing obstacles to rate-of-return providers offering standalone service, to the approval of model-based support and the introduction of reverse auctions and the latest Rural Digital Opportunity Fund Phase I, the FCC has been at the forefront of solving the broadband availability problem. But more work remains, and I am not aware of a single person who has ever suggested that the mission was or is near complete. Instead, the private-public partnership that has proven productive will need to continue to solve remaining connectivity gaps. And, governments must continue providing the necessary incentives for the private sector to continue to extend their networks and deploy new ones.

Congress recently has acted on multiple fronts to improve broadband deployment. The added funding for broadband buildout to specific groups or targeted populations in various legislative efforts has the potential to serve important functions. Some of this money has been allocated to the FCC to operate or expand specific programs. Congress has also pushed for more precise broadband mapping, and deserves credit for these efforts.

Moreover, a host of Federal entities, outside of the FCC, are now administering broadband-related programs, including the Department of Agriculture, the National Telecommunications and Information Administration at the Department of Commerce, the Department of Education, and the Department of Treasury. While I sincerely hope that these programs will do immense good, I have concerns over how such funding mechanisms have been administered in the past and worry about their potential to undermine the Nation's progress in the future as well.

Coordination, Duplication, and Overbuilding

Overlapping Federal programs increase the likelihood of duplicative investment, which can be counterproductive to the efforts' success. I certainly applaud Congress and the Committee, led by Senators Wicker and Klobuchar, for promoting coordination efforts via the Broadband Interagency Coordination Act as part of the 2021 Consolidated Appropriations Act. While I do believe these provisions will be helpful, coordination can be difficult to mandate in practice, especially when the scope of relevant agencies keeps changing. Consider that I held discussions years ago with the

Department of Agriculture as it was establishing the “ReConnect” broadband loan and grant program. Sadly, its leadership had a weak grasp of what subsidized overbuilding is and why it is problematic. Coordination can mean a host of different things, and when two agencies aren’t on the same page when it comes to the problem that coordination is supposed to solve, measures to coordinate agency actions may be ineffective. As a result, to avoid impeding private sector broadband efforts and potentially threatening the viability of smaller or mid-sized companies, Congressional efforts to mandate to coordination may need to be more specific and robust.

Harm to FCC programs

I have additional concerns that recent Federal investments efforts could undermine Commission efforts to promote efficient subsidies. By distributing broadband subsidies through reverse auctions, for instance, and enabling mechanisms like price discovery and competition, the Commission reformed its programs to be more market-oriented and effective. At the same time, the administration of Federal grant programs by agencies with little broadband experience can undermine this progress. Since FCC subsidy recipients face the risk that another agency will subsidize a competitor, the value of their carefully targeted support may be insufficient, and recipients may be left unable to meet their obligations.

Obstacles to Buildout

Despite the great desire of policymakers, providers, and users to ensure broadband access to those without, many restrictions are preventing that from occurring. Specifically, some state and local governments and private company limitations are acting as barriers to greater deployment. Providers can face high fees to utilize existing communications infrastructure—e.g., poles, ducts, conduits—or convoluted processes to gain rights-of-way and zoning approvals. They also encounter limitations on the placement or expansion of wireless facilities. The Committee could advance deployment by clarifying acceptable and prohibited practices. While I may be willing to push these entities further than others, any clarifications in law would be extremely helpful and preempt the constant legal squabbles.

Affordability and Adoption

It is a simple fact that deploying broadband networks and offering services to consumers is an extremely costly and timely venture. Unfortunately, as companies set the proper price points to recoup such investments, the end consumer charges have proven to be more than some American families can spend. The precise populations at risk for being unable to afford broadband can be difficult to define, but we do know that communities of color and those economically challenged are more likely to be affected. There is also a certain portion of the population that sees no value or need to obtain broadband. Improving these situations are not a Republican or Democratic issue, but represent real problems that need to be properly addressed.

For many years, I sought improvements to the Commission’s Lifeline program. My views were not always accepted, and I believe that the program remains troubled. While a revised Lifeline could serve as the basis of a new effort to address the affordability and adoption issues, it is also possible that the recent Congressionally enacted Emergency Broadband Benefit Program could be a more appropriate model. Regardless, addressing these important concepts will require a more holistic and thoughtful approach than has been attempted in the past.

New Investments and Possible Additional Efforts

Like many, I am still analyzing the broadband-related provisions in the latest Covid-19 law, along with those just introduced to enact a huge infusion of Federal broadband funding. My initial reaction is that the added E-Rate funds will be difficult to stop once the pandemic ends. This means that providers, who invested heavily in those areas, potentially risk losing customers, which may affect their ability to maintain, upgrade, and expand service. I also have concerns with the new \$10 billion program created within the Treasury Department. There appears to be few, if any, limitations on how this funding can be used. That raises a host of red flags, and I’m hopeful that appropriate guardrails can be imposed later, with the recognition that they were not permitted under the reconciliation process.

In terms of new legislative efforts as part of a larger infrastructure bill, these efforts also raise concerns that hopefully will be explored as part of the legislative process. If this proceeds forward, there are a number of troubling components, beyond the funding levels, that should be fully explored and potentially amended before any enactment. For instance, the speed thresholds seem very ambitious and could contradict the goal of connecting the truly unconnected, as opposed to updating those areas with service.

* * *

Broadband is a highly-valuable service that can be life changing for many Americans. Exceptional progress has been made over the last few by the private sector and through various Federal programs to extend existing networks and ensure service to those interested families. More work remains to be done in this area, but it needs to be accomplished thoughtfully and carefully, lest it causes more harm than good.

The CHAIR. Thank you, Mr. O’Rielly, and thank you for mentioning St. Patrick’s Day. I am assuming, with a name like O’Rielly, that maybe that is a relevant day for you. So, it is for the Chair, myself, and for the Ranking Member. So, thank you.

We are now going to turn to Mr. Wilkins. Thank you, Mr. Wilkins for joining us virtually.

STATEMENT OF JON WILKINS, PARTNER, QUADRA PARTNERS

Mr. WILKINS. Good morning. Thank you, Chair Cantwell, Ranking Member Wicker, and I look forward to my testimony today.

Quick introduction, my name is Jon Wilkins. I am a co-founder of a firm called Quadra Partners. We work extensively in broadband. Prior to that, for 4 years, I was with the FCC, where I headed up two of the large bureaus and offices there. Most recently, for about the last year and a half, I actually have been working with a large group of participants in the RDOF process, and I will try to share some of the lessons learned from that experience today.

Let me just start first with one number, \$80 billion. Dr. Ali mentioned it. In early 2017, the FCC released a staff analysis that did try to answer the question, what is the investment required to, once and for all, close the deployment gap? And \$80 billion was the answer. There has been progress since then, but I think that a properly measured assessment of the problem today will show that the gap has also been growing and that we are still facing \$80 billion problem, and so, that is the right number to use.

The question then, of course, becomes if we are going to make an \$80 billion investment, do we have the right pieces in place to spend it well today? And I think that answer is also yes. With that said, I mean, just the RDOF process alone, I think, sheds a couple important lessons. I will just quickly touch on them, and then, certainly take any questions.

First and foremost, competitive award processes are absolutely critical. Reverse auctions are an excellent way to do it, and I will just say, the FCC is the leading agency, not just in the U.S. Government but, frankly, around the world, at running complex telecom auctions. I think there have been many concerns raised about RDOF. I, frankly, share some of those. I would be glad to take questions about it. But I just want to emphasize, I think the problems with RDOF request, frankly, design choices that were made by the Commission, with that auction specifically, but that the mechanism itself is a good one to use, going forward.

Second, I want to touch quickly on financing support, capital formation, if you will. RDOF was \$9.2 billion, but it was paid out over 10 years, and for all but the largest companies, that actually is not as helpful as it needs to be. A broadband project requires massive initial investment. The first 2 years of a project are almost all of

the capital to actually construct the network. Over time, it can have a pretty good financial profile, but bringing that initial amount of capital at the beginning is critical, and I will just say that it is expensive. To lever up a funding stream like RDOF is costly, and really what it means is that money that could be going to broadband today, is going to banks and financial intermediaries. And therefore, I think, specific proposals, such as the Broadband Infrastructure Financing Innovation Act, co-sponsored by Senators Luján and Peters, very good idea. As well, frankly, as proposals to have accelerated deployment, in exchange for accelerated funding, such as the Accelerating Broadband Connectivity Act, introduced last year by Senators Wicker, Blackburn, and Capito.

I also want to touch briefly on affordability programs. We tend to think about these in our policy world as, sort of, separate silos. You know, E-rate over here, Lifeline over there, I-cost over there. If you are building a broadband project, those are all the same thing, which is total financial support for my business case. Predictable affordability support is actually very important to deployment, as well. Those business cases, when the programs are synchronized, are reinforcing. They all pull in the same direction, and they should not be viewed in competition, frankly.

I do want to just briefly talk about the role of Federal coordination, not just within the Federal agency level, but with states and Tribal governments. The \$80 billion investment is actually just the sum total of the situation in each of the states and Tribal areas. Each one is actually different. The economics to complete deployment are different. The provider base is different. State policy preferences are different, and the states have a very big role to play. I think that last year was a rough year for that kind of coordination. There were a lot of different things going on. RDOF process was extremely rapid. CARES Act introduced all kinds of new funding. It was not a good year for coordination. Going forward, it is important, if we are going to make substantial Federal investments in the future, having states prepare now is very important. And I think funding to support that has been a very good idea, and there needs to be a lot of coordination with states going forward, especially on mapping.

So, just in summary, \$80 billion is a very good investment. I actually wanted to thank Senator Klobuchar for introducing the Accessible, Affordable Internet for All Act, along with a lot of co-sponsors on the Committee. That is doing justice to the size of the problem, and I do think, with implementation that learned some of the lessons of the recent past, it will do the job.

And I just wanted to finally say, these are investments. One dollar of public support—public investment, is going to be matched by 3, 4, 5 or more dollars of private investment. That brings economic benefits and, of course, having high-performance broadband in these rural areas brings economic benefits above and beyond anything else that we can do to help rural areas.

So, with that, thank you and I look forward to the questions.

[The prepared statement of Mr. Wilkins follows:]

PREPARED STATEMENT OF JON WILKINS, CO-FOUNDER, QUADRA PARTNERS

Introduction

Thank you for the opportunity to testify today. My name is Jon Wilkins, and I am a co-founder of Quadra Partners, an advisory firm focused on the broadband sector. Prior to that, from 2013–2017 I served as the Managing Director and then the Chief of the Wireless Telecommunications Bureau at the Federal Communications Commission (FCC). In those roles I was heavily involved in the Commission's work to promote broadband and close the digital divide. Prior to serving with the FCC, I was a management consultant for more than fifteen years, working mostly with companies on different aspects of the broadband market, dating back to the dawn of the broadband era at the end of the 1990s. In short, for my entire professional career I have been involved in the growth of broadband from both private and public sector perspectives.

Of recent and specific relevance to the topic of today's hearing, over the past eighteen months I worked with a multi-state group of private and public entities to prepare for, and participate in, the recent FCC Rural Digital Opportunity Fund (RDOF) reverse auction. I will provide in my testimony today some of the lessons learned from RDOF, both from the perspective of new types of providers seeking to offer broadband as well as with respect to potential improvements to funding award processes.

U.S. telecommunications policy has recognized the importance of closing the digital divide for many years. Federal, state, and local governments have pursued a range of policies to promote universal access to broadband, and some progress has been made. Over the last decade, the FCC's high-cost fund has invested approximately \$40 billion, bringing broadband to millions of locations, primarily in rural areas. Over the last five years, the FCC's E-Rate program has successfully connected over 99 percent of U.S. schools to the high-speed connections needed for modern digital learning. And over just the last few months, Congress has provided new support for broadband adoption and deployment that will help millions to afford broadband service now and have access in the future.

Despite this progress, however, the need for high-quality broadband is increasing and the demands on our broadband infrastructure are growing at an astonishing rate. What was good broadband, or at least good enough, just ten years ago is now evidently inadequate. And while in large parts of the country—such as middle- and high-income households in city and suburban neighborhoods—our private provider market is largely meeting this need, for a significant portion of the U.S. population the lack of access to affordable broadband infrastructure has become an increasingly dire problem. The last year of pandemic disruptions to work, school, commerce, and almost every other aspect of life have highlighted the stakes in the starkest possible terms.

What is very encouraging is the important shift now underway—as evidenced by today's hearing—to address the digital divide not simply as an issue of traditional telecom policy, but as a question of infrastructure investment and national economic development. This is an extremely important and welcome change, because both the national need to solve the broadband problem once-and-for-all, as well as the potential for successfully doing so, has never been higher. Each dollar of public investment in broadband can generate several times that amount in additional private investment, amplifying the economic benefits. In the remainder of my testimony, I will highlight several broadband-sector trends with policy implications and suggest some considerations for how best to build on the policy actions and investments of recent years.

Is \$80 Billion Enough?

In January 2017, an FCC staff whitepaper calculated that a total investment of \$80 billion would be sufficient to reach the U.S. residential and small-business locations then regarded by the Commission as “unserved” by robust broadband infrastructure capable of at least 25 Mbps downstream and 3 Mbps upstream (25/3 Mbps). The FCC staff went on to estimate that approximately 85 percent of the locations reached for this \$80 billion investment would be self-sustaining and require no ongoing subsidy; for the final 15 percent—equivalent to about 2 percent of all U.S. locations—the FCC whitepaper noted the need for an ongoing subsidy of approximately \$2 billion per year, or about half of current Commission annual support amounts. The \$80 billion investment and annual \$2 billion support figures were calculated using detailed economic information and modeling capabilities available to the FCC's expert staff and were based on reaching all such unserved locations with fiber-to-the-premise (FTTP) connections.

Some progress has been made in the interim, including ongoing deployments of projects funded by prior FCC awards, such as the 2018 Connect America Fund (CAF)-II auction, as well as ReConnect grants from USDA and various state efforts. The recent RDOF auction will also result in support for additional deployments after the FCC completes its ongoing review of long-form applications. It is important to note, however, that far from all CAF-II and RDOF awards were for the high-quality fiber networks modeled in 2017.

However, despite this progress, as of March 2021, the total investment required is likely still at least \$80 billion, and more likely somewhat higher. This may seem somewhat counterintuitive given investments over the recent years, but I believe it to be the case for the following reasons. First, the 2017 analysis used the FCC's best maps of broadband deployment available at the time, which are known to undercount the size of the unserved population. For example, as members of this Committee are acutely aware, the FCC's legacy approach treats all locations in a census block as served if a provider reports the ability to provide service to just a single location in the block; this alone leads to undercount by definition. In addition, location growth in some rural areas over the last decade is of course not captured by legacy FCC data. As a result of these basic data issues alone, when the FCC completes its current work to update broadband availability maps for the entire country as mandated by the 2020 Broadband DATA Act, it is widely expected that nearly as many unserved residential and small-business locations will be identified in the new total count as was the case in 2017, even accounting for new deployments funded by private or public investments in the intervening years. The persistence of this gap is felt as a daily reality in communities across the country.

Second, end-user performance requirements have clearly increased from the 25/3 Mbps level used for the FCC's 2017 analysis. Reliance on video-intensive, two-way applications—then viewed mostly as the province of niche gaming enthusiasts, now widely understood by most Americans in the form of video-conferencing services—has skyrocketed since 2017. Recent calls for higher minimum broadband performance definitions such as 100/100 Mbps and legislative proposals urging symmetrical upload and download speeds address this reality. Raising the bar on what it means to be adequately “served” would mean that some of the locations counted by the FCC in 2017 under the 25/3 Mbps standard would not meet updated performance requirements, increasing the magnitude of the problem.

The size of the accessibility gap is therefore likely at least as large as it was assessed to be in 2017, and the \$80 billion estimate remains a good, if perhaps low, one to use for policies looking forward to the rest of 2021 and beyond.

Policy Improvements To Get the Best Results from \$80 Billion

Like any financial projection, the FCC's 2017 whitepaper necessarily relies on certain assumptions in arriving at its \$80 billion figure. For example, the analysis assumes that the award process for such funds will be done efficiently, that is with dollars awarded that match the true subsidy need. The analysis also assumes that \$80 billion will be available to awardees immediately, because a broadband project requires a significant portion of the required investment to be spent within the first two years. Finally, the analysis assumes that the networks generate customer revenues for service once they are built; in other words, the \$80 billion figure is not the standalone total investment required (that amount is considerably higher), but rather reflects the difference between total customer revenues and total project costs.

The good news is that existing policy mechanisms, as well as certain proposed new policy actions, could provide a sound national strategy for addressing all of these areas. However, I believe there are also a number of improvements that could be made to significantly enhance the likelihood that a public investment of at least \$80 billion would truly close the deployment gap.

Economically Efficient Allocation: Auctions Are Not Self-Executing

Any government support for broadband deployment should ultimately flow to specific projects via a competitive award process. The policy goal should be to reveal the true economic need (subsidy) for different projects in a given area and then award the lowest possible subsidy sufficient to meet the desired performance of the network. In concept, some form of reverse auction is an excellent solution to the problem.

On the favorable side, what the RDOF-I (and earlier CAF-II) auction demonstrated was that there is interest in providing rural broadband from a wide range of entities, including traditional and nontraditional, large and small, private and public, incumbents and new entrants. More than four hundred bidding entities, representing an even greater number of underlying operating companies, participated in the RDOF-I auction, an astounding number. As one example, large numbers of

rural electric co-operatives demonstrated the increasing interest of that industry in offering broadband to their members. Various other new entrants also see opportunities to serve rural markets. This in and of itself is a very positive and relatively new development, but it is not surprising. Given the increasing economic importance of broadband, these projects are of significant interest to local providers, investors, and state and local governments. The RDOF-I outcome showed that a subsidy boost is enough to persuade many types of providers to pursue building new broadband networks to unserved communities.

However, a reverse auction is just a type of allocation mechanism; the results of an auction are greatly affected by the specific auction-design choices made. Unfortunately, a number of the design choices made for the RDOF-I auction led directly to an outcome that has raised many questions, and many members of this Committee have voiced direct concerns. From a policy perspective, I would highlight three issues.

First, the RDOF-I auction made distinctions among bidders on just two dimensions: network speed and latency. Though important, these are far from the only attributes of broadband infrastructure that matter to rural communities. Future auctions could consider factors such as more symmetric performance, scalability, long-term durability, resiliency, and reliability. For example, telecommunications industry veterans remember that “five-nines reliability”—99.999 percent availability, meaning the network is down for less than six minutes per year—was the gold standard for the last century’s networks. While promoting competition between different technologies is critical in many areas of telecom policy, the question in a reverse auction for subsidies is not “which technology is allowed to compete in the market?” but rather “what is the performance profile of a network deserving public investment?”

Second, an auction must reveal, at least approximately, the true economic needs of bidders. Simply put, some RDOF-I auction winners will receive support for networks that, by their own public statements, would have been deployed anyway. This is a fundamental flaw in auction design that must be fixed in future award processes.

Third, an auction is fundamentally the result of competitive bidding by the entities that are allowed to participate. Though it is important not to set the table stakes for entry so high as to deter new providers, many of the concerns about the RDOF-I auction results indicate that more stringent requirements should be placed on aspiring bidders in future auctions. As an example, requirements could include more rigorous pre-auction demonstrations of actual ability to operate at the promised quality of service in a given geography, or operating experience with a given type of broadband network. States and localities could also be engaged to provide input into the qualifications of bidders seeking support in a given state.

Time Equals Money: The Capital Formation Problem

RDOF also provides a useful illustration of a critical policy issue: the difference between upfront investment required versus the duration of time over which support amounts are paid. While the largest Federal programs such as RDOF win headlines for total award amounts (such as \$9.2 billion for RDOF-I), those amounts are in fact paid out over ten years. This creates a “capital formation problem” for all but the largest companies, and especially for new entrants to the broadband market seeking to build larger projects.

Simply put, it can be costly for a ten-year funding stream such as RDOF to be leveraged into the up-front capital needed for construction. Just because I may receive \$10 million per year for ten years (assuming I don’t run into any deployment problems), does not mean that an investor or lender will give me anywhere near \$100 million today. In a reverse auction, these financing costs must be incorporated into bidding strategies, potentially causing participants to drop out earlier than otherwise necessary because a material portion of the funds intended for broadband deployment must instead be spent on financing. In other words, some projects will not be built despite their inherent economic viability over the long term.

One initial improvement would be to shift to a shorter term for paying out support that better aligns with actual project needs. A ten-year period is too long. In reality, many cable and FTTP projects can be built within two-to-three years, assuming adequate up-front planning and preparation, such as ensuring access to needed materials and labor. As one immediate upside, such a change would bring broadband to unserved areas more quickly, an important benefit in and of itself; indeed, many local stakeholders in rural areas strongly support proposals to incentivize accelerated deployment. At the same time, however, the government does have an important interest in maintaining oversight and control of projects at

least until a viable network is up and running; handing over very large sums immediately is not good policy.

Current proposals to add financing support in the form of loan guarantees or other credit support mechanisms also could be very valuable in addressing this capital formation problem. The core question is one of project risk: How much will the public take on, and how much must private investors be paid to carry? By taking on some of the risk, government credit support could allow broadband projects to be financed more like traditional long-lived infrastructure.

Cash Is Cash: Synchronizing Support for Access and Adoption

While the \$80 billion analysis correctly assumes that currently unserved residents have a strong demand for high-performance broadband, in many communities even reasonable commercial rates for broadband service may not be affordable for significant portions of the population. In addition, unlike broadband networks in cities and towns, rural networks typically have less opportunity to generate revenues from businesses. The financial structure of broadband deployment—large up-front capital costs but relatively moderate ongoing operating and maintenance costs—means that the economic viability of a project can be highly sensitive to adoption levels. Prospective providers must closely analyze not just the cost to build the network, but also the potential revenues. In some cases, uncertainty about the ability of local customers to afford service over time deters the pursuit of otherwise viable projects. This creates an unfortunate vicious circle, with the communities most in need of the economic development benefits of broadband least able to attract the needed investment.

Fortunately, longstanding broadband programs such as E-Rate and Rural Health Care support for anchor institutions, as well as programs designed for low-income users, including new programs such as the Emergency Broadband Benefit, all are available to support the demand side of broadband projects. Indeed, it is often overlooked that even programs such as Lifeline could be important in both rural and urban areas, and proposed efforts to strengthen Lifeline's support for broadband data services would benefit communities across the country.

An additional area of improvement could be to better coordinate these “demand side” programs with “supply side” programs such as RDOF, the USDA's various programs, and other Federal deployment loans and grants. As a simple example, the FCC, NTIA, and USDA could implement streamlining initiatives to allow a grant recipient from one deployment-support program to more easily be deemed eligible to participate in existing, or new, demand-support programs.

Although in policy circles these programs are generally viewed as distinct, to providers of broadband service and their investors, all of these programs feed into a simple question: Are the risk-adjusted expected customer revenues and government support enough to justify the required investment? These programs therefore need not be viewed as competing with each other, nor as serving separate constituencies. Proper coordination combined with continued, sustainable funding would allow the sum to be far larger than the individual parts.

The Need for Federal Partnership with States and Tribes

Federal support is vital, but states and Tribal governments also have a critical role to play in closing the deployment gap. The overall U.S. figure of \$80 billion is of course simply the sum of the state and Tribal needs. Critically, the specific types of projects and providers best able to close the gap can vary significantly from state to state, as can state policy preferences. State and Tribal broadband programs can amplify and accelerate the impact of overall Federal efforts, and recent steps to include a significant level of funding and discretion in the American Rescue Plan for state broadband efforts are well designed to meet this opportunity. States also have a major contribution to make to the FCC's broadband mapping work. Many states have been rapidly moving forward with their own mapping efforts and they should be enabled to coordinate these efforts with the FCC's mapping work and participate as partners in that process.

States and Tribes also have an important role to play in providing early planning and advance preparations of locally tailored strategies that will take greatest advantage of new Federal support. For example, even before any additional action by Congress, the FCC has over \$11 billion in Universal Service Fund support that can be awarded via the RDOF II process. However, even with rapid progress on mapping, the length of the required administrative process to finalize rules and auction procedures likely means that the RDOF II auction will not start until 2022, at the earliest. However, in advance of this states and Tribes can make sure that providers in their jurisdictions are fully informed about broadband mapping and community needs, are aware of Federal funding opportunities and requirements, and are sup-

ported in their bidding plans by reinforcing state policies. If Congress does opt to provide additional broadband infrastructure investments, the impact of early planning and preparations by states and Tribes will be even higher.

It will be important going forward, however, that state, Tribal, and Federal efforts do not work at cross-purposes. For example, the FCC's unexpected and unfortunate decision late in the process to preclude from RDOF-I any areas receiving state funding, including for future deployment, caused significant uncertainty in many states, a problem that persists given doubts about the viability of RDOF winners in a number of states. Just as the various Federal agencies such as the FCC, USDA, and NTIA should work to better coordinate on the standards, timelines, and requirements for broadband funding awards, Federal entities should place greater emphasis on federal/state/Tribal coordination.

Spillover Effects, Including 5G

As the FCC's 2017 whitepaper addressed, the fundamental justification for public investment in broadband infrastructure is that high-quality broadband generates significant economic benefits not fully captured by the operators of broadband networks themselves. The widespread and growing reliance on broadband across sectors including healthcare, education, and retail clearly illustrates this issue. A final point in this context: the fiber networks deployed to serve retail customers with FTTP in rural areas would directly support the deployment of 5G mobile services as well. Just as fixed broadband has now become essential to economic activity, true high-performance mobile broadband—the essential promise of the 5G-deployment push now underway by the Nation's mobile carriers—is becoming similarly essential. Upcoming FCC efforts such as the \$9 billion 5G Fund reverse auction will be enhanced if participants know that essential fiber-based front-haul and back-haul connections will be available in rural areas. Investment in fiber now will pay future dividends in the 5G arena as well.

Conclusion

Broadband communications networks are the critical infrastructure for today. Over the last ten years since the original National Broadband Plan, the Federal government has put in place the policy building blocks that, with some improvements and greater financial support, could ensure access to high-performance, scalable, resilient broadband to the many millions of Americans who lack it today. I appreciate the opportunity to contribute to the Committee's consideration of this important topic, and look forward to your questions.

The CHAIR. Thank you, Mr. Wilkins. Thank you so much for your testimony and, you are right. We are going to ask you an RDOF question. We are going to ask the whole panel that. But first, we are going to ask Mr. Forde—is it Forde? Forde?

Mr. FORDE. Forde.

The CHAIR. Mr. Forde, thank you so much for joining us, and we look forward to hearing your testimony, and I also thank you for—I really want to learn more about what you are doing to provide access to regional sporting events as part of your business. We may not get to that in our hearing today, but I will follow up with you later. But I think, to me, that is one of the great aspects of having broadband in communities, you can start providing content that other people may not be able to access, but creates a broader community. So, thank you so much for what you are doing. We look forward to your testimony.

STATEMENT OF JUSTIN FORDE, SENIOR DIRECTOR, GOVERNMENT RELATIONS, MIDCONTINENT COMMUNICATIONS

Mr. FORDE. Chair Cantwell, thank you very much. Ranking Member Wicker, members of the Committee, thank you for inviting me here today to discuss Midco's experience with Federal broadband funding programs. My name is Justin Forde, and I am the Senior Director of Government Relations for Midco.

More than 440,000 residential and business customers count on Midco services across five states: South Dakota, North Dakota, Minnesota, Kansas, and Wisconsin. The majority of the 400 communities we serve are very rural. With most having populations closer to 500, then 5,000.

We also serve thousands of acres, as you will see behind me, of prime Red River Valley agricultural soil, where farms are often miles apart. To be clear, what we do every day is rural broadband.

The COVID-19 pandemic has put a spotlight on the importance of broadband connectivity for all Americans. At Midco, our private investment of over \$457 million the last 5 years, has positioned us to fully serve the needs of our customers, our friends, and our neighbors as they integrated their lives from work, school, and home. We connected 2,500 families to free Internet in just a few short days in March. We partnered with school districts to connect even more students and signed on to former Federal Communications Commission Chair Pai's "Keep Americans Connected" pledge.

The U.S. cable industry now offers 1 Gigabit service to 88 percent of American households, and over 95 percent of the country has access to broadband service of at least 25/3. But we need to solve the challenge of connecting those who do not yet have Internet available, primarily in the most rural and hard to reach areas. There have been significant improvements to Federal broadband funding programs, but there remain important ways to improve them further.

Our experience in Minnesota provides a powerful example of what is going right with these programs. We have invested over \$44 million in 2020 alone, to connect more than 20,000 new homes. But there are communities adjacent to these areas that were not economical to serve. With the help of Minnesota's Border-to-Border State Grant Program, we extended our network to the areas surrounding those towns and continued to build out Gigabit speed networks.

We have partnered with the FCC. With the help of a \$38.9 million award, through the FCC's CAF II program, we will reach more than 9,300 new locations. And with the help of a \$4.96 million award, through the FCC's RDOF program, we will reach 6,500 previously unserved locations, with a wireline broadband network capable of 5 Gbps speeds.

We are able to reach many of these rural communities because we edge out our Internet from our fiber network in our small rural towns to even more rural areas, as far as 50 miles away, using fixed wireless technology. I can personally speak to the benefits of fixed wireless. During the pandemic, my three kids went to school online, my wife used the Internet to run a small business, and I worked remotely for Midco, all via fixed wireless.

Midco believes in the power of fixed wireless to bridge the digital divide, so much so, that we recently spent \$8.8 million to acquire spectrum from the FCC's Citizens Broadband Service Radio auction. We know that fixed wireless is a viable solution for rural America.

This leads me to my first recommendation for broadband support programs. It is critical, critical that they be technology-neutral and encourage broad participation. When providers can experiment

with different ways of getting broadband service to very hard-to-reach places, more Americans get broadband service sooner.

Second, awards through competitive bidding. The auction process determines what speeds can be most efficiently given. Provided an area provides the flexibility, areas can also be served with higher speeds, they will. In the recent RDOF auction, over 85 percent of the locations will get gigabit-speed broadband.

Third, stay focused, like a laser, on unserved areas. Both the FCC and RUS have taken positive steps to direct new broadband funding to where it is most needed. But these efforts could be thwarted by proposals to redefine areas eligible for funding. Recent suggestions that the definition of unserved areas should be changed from areas lacking 25/3 service to 100/100, will have serious consequences in rural America. Many places that have high-speed broadband, including Gigabit service, will suddenly become unserved areas that are eligible for funding. Providers will seek to fund these areas, not because they are easiest to build and serve. Funds will be syphoned away from areas that do not yet have economic reach. Those lacking broadband service today, will still lack broadband service tomorrow, even after billions of dollars are spent.

Fourth, continue to improve agency coordination to ensure funds are spent wisely. We have been awarded CAF II funding to reach areas of Dakota County in Minnesota and are fully on track with our deployment schedule. But recently, we learned that two other providers have been awarded CARES Act funding to serve the same area. That is three providers awarded Federal funds, to serve the exact same area. This is a very poor use of Federal resource.

Fortunately, some progress is being made. The FCC is implementing mapping requirements, the Broadband DATA Act, the Access Broadband Act, and the Broadband Interagency Coordination Act should help boost coordination efforts. But it is critical that agencies distributing funding view this coordination as an essential part of the award process, not an afterthought when deploying funding.

Finally, we recommend continuing to remove barriers to deployment. Obligations and costs placed on providers like us, must be reasonable, lawful, competitively neutral, and not unduly burdensome.

I commend this committee for its focus on ensuring that the billions of dollars being spent on broadband benefit all Americans, including those in rural America.

Thank you again for inviting me here today, and I look forward to working with you on these important issues.

[The prepared statement of Mr. Forde follows:]

PREPARED STATEMENT OF JUSTIN FORDE, SENIOR DIRECTOR, GOVERNMENT
RELATIONS, MIDCONTINENT COMMUNICATIONS

Chair Cantwell, Ranking Member Wicker, and Members of the Committee, thank you for inviting me here to discuss Midco's experience with Federal broadband funding programs. My name is Justin Forde, and I am the Senior Director of Government Relations at Midcontinent Communications ("Midco"). Midco is the leading provider of Internet and connectivity, cable TV, phone, data center and advertising services in the Upper Midwest. We also operate a regional sports network, Midco Sports Network, which broadcasts live, local high school and regional college sports.

More than 440,000 residential and business customers count on Midco services across five states: South Dakota, North Dakota, Minnesota, Kansas, and Wisconsin. Midco communities range from just over 100 people in places like Dodge, North Dakota, to our largest community, Sioux Falls, South Dakota, which has a metro population of nearly 250,000. The majority of the 400 communities we serve are very rural. Many have less than 50,000 people, with most having populations between 500 and 5,000.

The COVID-19 pandemic put a spotlight on the importance of broadband connectivity for all Americans, and America's ISP networks delivered. At Midco, our investment of over \$457 million in the last five years positioned us to serve the needs of our customers as they fully integrated their work, school and home lives. We also connected 2,500 families to free Internet at home (including our rural, fixed wireless network), partnered with school districts to connect students needing service, and signed on to former Federal Communications Commission ("FCC") Chairman Pai's "Keep Americans Connected" pledge.

Collectively, ISPs have invested more than \$1.8 trillion in capital over the last twenty-three years to get America connected. Light-touch regulatory policy from the FCC and Congress has enabled this work. The U.S. cable industry now offers 1 Gigabit service to 88 percent of American households, in both urban and rural communities. Currently, over 95 percent of the country has access to broadband service that offers speeds of at least 25 Mbps download and 3 Mbps upload. But we need to solve the remaining broadband deployment challenge of connecting those who do not have Internet available—primarily in the most rural areas that are difficult to serve in a cost-effective manner.

Midco provides Gigabit services to more than 95 percent of the largely rural communities it serves. Many of our service areas are adjacent to areas that are not economical to serve without Federal assistance, and we have sought and obtained funding through Federal and state programs to assist with expanding to those areas.

I'm here today to share our experience with those programs, including those administered by the FCC—we participated in the FCC's Connect America Fund ("CAF") auction and the Rural Digital Opportunity Fund ("RDOF") auction—as well as the Department of Agriculture's Rural Utilities Service ("RUS"). I will say that there have been significant improvements to Federal broadband funding programs since I last appeared before this Committee in 2019, but there remain important ways to improve them further. With many billions of Federal funding dollars being focused on broadband expansion, it is more important than ever to get these programs right.

Midco's History of Innovation

Before discussing Midco's experience with funding programs, I want to explain how we have innovated to provide broadband to rural communities in various ways. Innovation and foresight have shaped Midco's course for more than 90 years. We have made it our mission to ensure that our most rural communities are at the leading edge of technology. Across our footprint, our goal is always to continue to find ways to meet and exceed the communications needs of our customers.

Founded in 1931, Midco began by operating movie theatres, and then entered the radio business. In 1954, our owners launched the first television station in South Dakota. From there, Midco evolved its service line to include cable television and phone service. On April 15, 1996, in Aberdeen, South Dakota, a town of about 25,000 people then, Midco launched our broadband Internet service.

Our commitment to innovation continues to motivate our business initiatives. We own and operate four data centers in North Dakota and South Dakota to give local businesses a cost-effective way to secure their critical data and IT infrastructure. We provide solutions for regional and national banking, healthcare, energy, and government customers, among many other industries. We combine our data center services with powerful network solutions through our wholly owned, operated and engineered Midco fiber network. Our data centers are directly connected to our fiber backbone, giving businesses access to some of the fastest Internet speeds in the country.

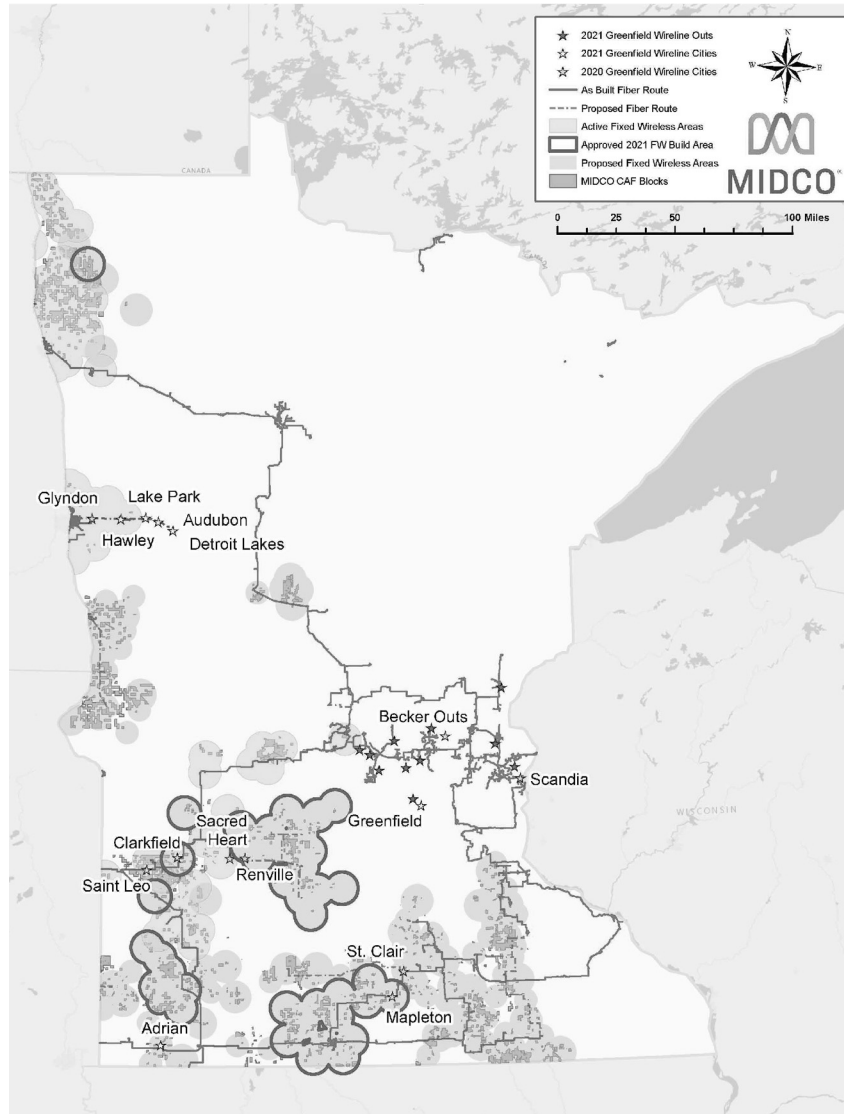
Midco's willingness to evolve stems from our desire to serve the communities where we live, work and educate the next generation. In 2017, we launched the Midco Gig Initiative—a commitment to bring Gigabit Internet speeds to our entire service area—from the region's smallest towns to its largest cities. In 2019, Midco Gig was available to more than 90 percent of our customers. That year, we announced our involvement in the 10G initiative, a commitment to invest \$500 million over 10 years on a global cable industry standard that will provide ultra-fast multi-gigabit speeds in both directions, combined with low latency, unmatched reliability, and rock-solid security for a broad range of customers. Today, more than 95 percent

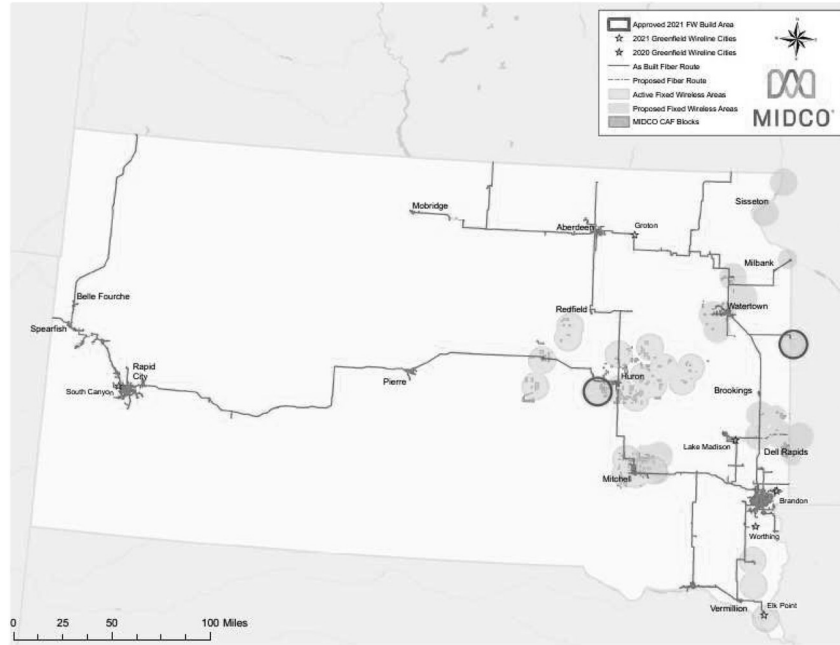
of Midco's customers across our footprint are receiving service that exceeds 1 Gig speeds. In the coming months, we will announce a major upgrade that will give even more customers greater speeds.

Our growth has included progress in reaching previously unserved areas, thanks in part to our partnership with the FCC through its CAF II and RDOF auctions and our partnership with the state of Minnesota and its Border-to-Border Program. Our experience in Minnesota provides a powerful example of what is going right with these programs and how well-designed programs can help companies like Midco expand their networks to new homes, including those that were previously unserved and difficult to reach.

Midco invested \$44 million in private capital in Minnesota in 2020 and connected more than 20,000 new homes, including 7,500 homes in new markets. But there were communities in adjacent areas that were not economical to serve. With the help of Minnesota's Border-to-Border State Grant Program, Midco extended its network to some of those areas. For example, in Scandia, Minnesota, a town of approximately 4,100 people, we built a Gigabit wired network that will improve access for the residents of Scandia for critical e-learning applications and health care resources, enable telecommuting options for residents, and make businesses and city institutions more efficient.

We have also partnered with the FCC to expand to other previously unserved areas in North Dakota, South Dakota and Minnesota. With the help of an award of \$38.9 million through the FCC's CAF II program, we are edging out our network to reach more than 9,300 new locations with 100/20 speeds to serve previously unserved remote, rural areas. And with the help of RDOF, through which we were awarded \$4.96 million in 2020 to deploy broadband, we will reach 6,506 previously unserved locations across North Dakota, South Dakota and Minnesota with a wireline broadband network that will initially support a 1,000/500 speeds offer, but is capable of 5 Gbps/5 Gbps speeds. The maps below show our planned 2021 expansion in Minnesota and South Dakota using a combination of wireline and fixed wireless service.





Midco's Innovative Approach To Getting Broadband To Remote Areas

We have been able to reach many rural communities with broadband by leveraging our extensive fiber backbone through our Midco Edge Out® strategy. We “edge out” our high-speed Internet from our fiber backbone in urban areas to rural areas using fixed wireless technology. We use the initial fixed wireless expansion from our wired plant to meet consumers’ immediate needs, and then leverage that expansion to justify a wired network buildout in the future. While some rural areas may support a wired build, other, more remote rural areas will continue to be served with a fixed wireless solution.

For example, the Midco Edge Out® strategy brought high-speed fixed wireless to the rural, “bedroom” communities surrounding Grand Forks, ND. The strong customer base and increased demand for broadband then allowed Midco to build out such communities with a wired, Gigabit network. We will then repurpose the fixed wireless equipment to serve other rural communities.

I can personally speak to the benefits of the fixed wireless approach, as I am a Midco fixed wireless customer. I have been a fixed wireless customer for more than 10 years and Midco recently updated my service to our LTE, 5G-ready platform. I get my Internet from the top of a commercial tower in Grandin, North Dakota to my small farmstead six miles west of Argusville. During the pandemic, my three kids went to school online, my wife used the Internet to run a small business, and I worked for Midco remotely. Midco’s fixed wireless allowed us to continue educating our children and working during the pandemic.

My neighbors are also Midco fixed wireless customers. One of my neighbors runs a cattle ranch. He uses our fixed wireless to sell his livestock by auction where speed and capacity matter, and where many individuals are participating in the auction at the same time. He is a happy Midco fixed wireless customer running a vital and thriving ranching business in rural North Dakota.

Midco believes in the power of fixed wireless to bridge the digital divide and enable our Midco Edge Out® strategy so much that we spent \$8.8 million to acquire spectrum in the FCC’s Citizens Broadband Radio Service auction in 2020. This spectrum not only allows us to offer speeds of more than 100/20 Mbps at distances up to eight miles from the vertical asset, but it also gives us access to crucial mid-band spectrum to continue innovating.

We know that fixed wireless technology is a viable solution for rural America. We know that we can reach remote, rural areas that are up to 50 miles away from our

fiber network. We can also implement this solution relatively quickly and without the effort or expense of constructing fiber networks. Fixed wireless technology can also be deployed during the winter months, when harsh weather makes fiber construction impossible. This leads me to my first recommendation for Federal broadband support programs: *it is critical that the programs be technology-neutral, encourage the broadest participation of qualified broadband providers, and be as flexible as possible.*

If broadband support programs are flexible, allowing providers to experiment and innovate with different ways of getting broadband service to hard-to-reach places, more Americans will get broadband service. It is not possible or practical to build a fiber network to every location in the country. Some are too difficult to reach, because they are geographically remote, and others are very hard to serve because of their topography—such as granite cliffs and protected national forests. People in those areas should not be constantly passed over for the opportunity to get broadband service because their area cannot support the kind of build that most Federal funding programs require. Setting high speed thresholds that can only be delivered by a fiber network build may sound helpful, but in practice will continue to leave many behind.

In addition to keeping an open mind on how companies deliver broadband, based on our experience with the ReConnect program and participating in the CAF and RDOF auctions, we would like to offer a few other recommendations to ensure that future funding is used efficiently and effectively to expand the reach of broadband networks in rural America.

Our second recommendation is to *award funds through open competitive bidding*. Using a “reverse auction” competitive bidding process, as the FCC has done with its CAF II and RDOF programs, will connect the most unserved homes, for the least per-home subsidy, at the highest speed possible in the area—given all of the variables. This gives the country the best bang for the buck. Letting the auction process determine what speed can be most efficiently provided in a given area—as the FCC did in the recent RDOF auction—also provides the necessary flexibility I mentioned while ensuring that areas that can be served at higher speeds will be. In the recent RDOF auction, which resulted in highly competitive bidding, more than 99 percent of funded locations will be receiving broadband with speeds of at least 100/20 Mbps, with an overwhelming majority (over 85 percent) getting gigabit-speed broadband.

Our third recommendation is to *stay focused on unserved areas*. Broadband programs should target funding to truly unserved areas, where private investment is not going to occur without government assistance but consumers need to be connected. In the past, some government broadband programs have allowed funding to be used in places that already have broadband service. Midco was overbuilt with our own tax dollars in Mitchell and Yankton, South Dakota. In Yankton, government dollars were used by a fiber company to overbuild two existing providers; and the new provider used those government funds to “cherry pick” a few business customers. We believe that scarce government resources should be targeted to those who will build out to consumers who do not yet have access to all the benefits broadband provides, for jobs, education and health care services.

Fortunately, both the FCC and RUS took steps aimed at directing new broadband funding where it is truly needed. The FCC requires areas receiving new funding to be unserved and the ReConnect program requires that areas are only eligible if at least 90 percent of households are unserved. These steps were meant to guard against using government subsidies to overbuild private investment or broadband deployment funded through other Federal or state government programs, ensuring that any such programs will make meaningful headway in closing the Digital Divide.

These efforts could be thwarted by proposals to redefine what it means to have broadband service available. 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 are defined as eligible for funding unless they have a higher level of service—such as recent proposals suggesting an increase to 100/100—this means that many areas where we and others have invested heavily, including through public/private partnership programs, are suddenly considered “unserved.”

Providers will naturally apply for funding to serve these newly eligible areas, because those are the places that are easiest to build and serve. This would mean that areas that already have robust broadband service would be newly eligible for funding to build even faster service, increasing the likelihood that funds would be siphoned away from areas that are not economical to reach, and have struggled for years to attract broadband deployment. The likely result would be that those lacking broadband service today will still lack broadband service tomorrow, even after

billions of dollars in funding are spent. We believe these proposals should be reconsidered.

Our fourth recommendation is to *continue to improve agency coordination and enact guardrails to ensure funds are wisely spent*. With several Federal agencies and a growing number of 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 buildout, are coordinating with each other. Close coordination is necessary to ensure that government support is being used to help solve the problem of the unserved and to help achieve the goal of universal connectivity. It is important that the FCC keep its broadband deployment map updated, including showing where and to whom funding has been awarded even if facilities are not yet constructed. Regularly sharing that map with all Federal and state agencies awarding broadband funding, so that everyone is working off a common data set in determining which areas are unserved, is also crucial.

As one example, we have been awarded CAF II funding to reach areas of Dakota County, Minnesota. We have not yet started construction, but are fully on track with the deployment schedule established in that auction. Despite the fact that we have an enforceable commitment to build a network in that area, and the census blocks we have agreed to serve are easily available through the FCC's website, we recently learned that two other providers have been awarded CARES Act funding to serve that same area. Further, because the CARES Act funding comes with very few guardrails or regulatory requirements, such as providing voice service or being an eligible telecommunications carrier (ETC), we will be competing on unequal footing. This is a bad result for everyone. It is a bad result for Midco and the providers winning CARES Act funds, because the area is not economical to serve for even one provider, and it is a poor use of taxpayer money, because scarce funds have been devoted to an area where multiple Federal funds were already committed. Had there been better coordination between the two funding sources, this result might have been avoided.

Fortunately, some progress is being made, both with respect to coordination and ensuring that grant money is being wisely spent. The FCC is implementing the mapping requirements of the Broadband DATA Act to ensure that areas without broadband are more precisely identified, and implementation of the ACCESS Broadband Act and the Broadband Interagency Coordination Act should boost coordination efforts so that Federal and state funds are complementing each other's efforts to reduce the number of unserved areas. It is critical that in implementing these directives, agencies distributing funding view coordination with each other as an integral part of the award process, not an afterthought.

RUS has also made improvements. During a recent round of ReConnect funding, the RUS not only did field tests to determine if existing service was present before making awards to certain areas of North and South Dakota prior to issuing grants, but also provided our company with specific information about why it was accepting or denying the submission we filed as part of the Reconnect challenge procedures showing that the proposed funded service areas already had access to broadband service. That is progress.

Finally, we recommend *removing barriers to entry and deployment*. In addition to improving the programs themselves, it is appropriate to examine the regulatory landscape at the federal, state, and local levels to ensure that obligations and costs placed on providers—whether they offer wireless or wireline service—are reasonable, lawful, competitively neutral, and not unduly burdensome. Eliminating regulatory barriers to deployment (such as permitting delays and the imposition of excessive pole attachment rates by municipalities and co-ops), and encouraging equitable “dig once” policies, will help accelerate and lower the cost of broadband infrastructure buildout. Every dollar paid in excessive fees and taxes is a dollar that cannot be invested in broadband, making the rollout and upgrade of rural broadband slower and less ubiquitous.

* * *

I commend the Committee for its focus on ensuring that the billions of dollars being spent on broadband deployment benefit all Americans—including those in rural America. Progress has been made with the existing 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 new programs, like those included in the American Rescue Plan, will be 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 CHAIR. Thank you. Again, thanks to all the witnesses. I am going to start, Mr. Wilkins, with you, but it is really a question for all the witnesses. You all talked about the RDOF auction. You all mentioned changes. Could each of the witnesses just tell me, you know, succinctly as you can, the two or three changes that you would make to the current system, as it relates to the next auction? Mr. Wilkins.

Mr. WILKINS. OK, certainly. I think that one category is there should be some adjustments to the standards required to participate in the auction, and probably more precisely, on the geographic scope with which you can participate. I think that there is a well-intended desire to have a relatively low bar to entry in auctions. You want lots of participation. But I think it is going to prove quite unreasonable to allow some bidders to bid, essentially in states they have never operated in. I think that just the nature of the up-front process should be made somewhat more stringent. There is a balancing test for sure there, but I think it needs to shift a little bit more into a higher showing of ability to serve an area.

The CHAIR. Mr. O'Rielly?

Mr. O'RIELLY. Sure. There are a couple things and things I sought and did not exactly make it into the cuts. One, I think that we should impose broadband penalties at a much higher lever than exists today. You can receive the funding, you know, go a couple years, and then, fail and pay—you know, pay the penalty if need be, or try to extract it out of bankruptcy, and that should be done, you know—

Two is, it has to remain technology neutral and that was something that we fought for, and I think we maintained. But there is still a desire, and there was a desire in the structure, and people have said this publicly, to put the thumb on the scale, and that is problematic, in my opinion. It should not—there should not be a thumb on the scale of how you have a competitively neutral bidding process.

And I would refer to my friend's quote, you know, the Ferrari one. Actually, it was mine. It was Lamborghinis and Chevys, and we must remember that the Chevy is a very good vehicle. And we are trying to figure out how to get broadband to those that have nothing, and I have sat in those kitchens of people who have nothing. And we are trying to figure out how to solve those.

So, there are two ideas I would have—I did not win at the Commission, that I tried to.

The CHAIR. OK. Dr. Ali?

Dr. ALI. I echo a lot of what was already said. My concern was about making ineligible providers that received State or USDA support. I think what has happened is, it is forcing providers to make a very difficult decision. And it is also taking the legs out from under State programs, who have been quite aggressive. I look to Minnesota; I look to Illinois; I look to New York, who have been quite aggressive in funding broadband. Winners of RDOF, of course, cannot accept State funding.

I will remind everyone that 99 percent of borrowers to the USDA Telecom program also receive USF support. This program is for the

smallest providers, providing service for the smallest communities. All of these providers would be ineligible—are ineligible for RDOF support, as it stands right now.

The CHAIR. So, you are saying more coordination?

Dr. ALI. More coordination.

The CHAIR. Yes, thank you. And, Mr. Forde, did you want to weigh in on this, changes to the RDOF auction that you would like to see? You mentioned a few—

Mr. FORDE. We were very happy with the results of the RDOF auction, certainly for us, as a taxpaying company. Sure, we would have liked to have won more in RDOF, but it saved \$6 billion for the taxpayer and we are thoroughly planning and will be deploying broadband out to some of those RDOF areas, really, in a very short period of time. So, we view it as highly successful and this will help us reach another 6,000 addresses, shortly, here. So, very exciting to be getting that broadband out there to people who need it, quickly and efficiently.

The CHAIR. Well, one thing that you mentioned that you were concerned about, and we are certainly—I think this is now—I was asking for specificity, now I am asking for theory here a little bit. And that is just the, you know, the speed, the uplink and downlink speed. As, I think, Dr. Ali, you mentioned, one is about consumption, one is about production. And I do—I am concerned about what we are putting out there, as it relates to making sure that we have a full vision now. Yes, the kids are streaming, or someone is—you know, as Mr. Forde said, he is working on his business, someone else is doing—so, the complexity in a household, of what you are doing. What do we do about this issue about the rate?

And, obviously, many of my colleagues here, we are going to be discussing many things this year here about the economic development opportunities in rural America. We want to see more economic activity, which would mean that we would want to have service areas that could receive, you know, much more connectivity that would allow them on the uplink to provide more productive business activities. So, could—do you want to discuss that, starting with Dr. Ali?

Dr. ALI. Absolutely, thank you for that question. I am in favor of the 100/100 symmetric definition. I think, you know, as we have learned, it allows people to work from home. It allows students to study from home. I am thinking particularly of my students who might have multiple roommates who are sharing a connection and have to do multiple Zoom calls. You know, a definition of 25/3 is not suitable for those students, nor is it for a family of four who are two parents might be working and two kids also going to K to 12.

The other thing I will just add is that this symmetric definition is absolutely vital for business. I think particularly of precision agriculture. I spent a lot of time in rural Minnesota talking to precision agriculture companies and providers. They are uploading terabytes worth of data and doing an incredible amount of soil analysis, often times in real time, if possible. The technology is there. They need that ultra-fast symmetric upload speeds to enable them to make real-time decisions about planting.

The CHAIR. Yes. I see my time has expired, but Mr. O’Rielly, do you want to make a quick comment on that? And then, we will get the rest later, for the record.

Mr. O’REILLY. Well, at precision ag, most of the data can go—it does not have to go at once. It can go at different times and so, you do not have to have related speeds. And in terms of the 100/100, the 25/3—the 25 that we have to exist today has been incredibly functional and I have seen data that suggests that you can have six Zoom calls happening at upload speeds of 5, 3 to 5.

So, to go into 100 to fulfill a desire—and I know there is interest in expanding the speeds, but there has to be a limitation on how much we can afford to fund at one time.

The CHAIR. We will get more from our other witnesses on this. I think this is a very important point on the economics of auctions. And so, anyway, Senator Wicker.

Senator WICKER. Madam Chair, this is such important subject matter, and these are such excellent witnesses and we have so much to cover. I am almost tempted to move that we just have a weekend away from all the distractions and really get into this. Of course, our staff members are not able to do that. But this is such a crucial matter for us to talk about and so many great opportunities for us to move things along.

Mr. O’Rielly, you have a—you come to us with a unique perspective. Last year, then Commissioner Rosenworcel, now Acting Chair of the FCC, said the broadband maps could be updated within just a few months, and then, recently—and sometimes I have had to eat my words, but recently, she said no, it would not be completed until 2022. Given your extensive knowledge of the internal functioning of the FCC and its broadband maps, how quickly do you think the Commission should be able to complete the new broadband maps, now that it has proper funding?

Mr. O’REILLY. Well, I apologize in the sense that I have been removed to know what she based her new data point on, in terms of the year timeframe. But I think it comes down to priorities, and this committee has given the FCC new priorities in statute. But here is one where, you know, if the determination is made by this committee, it should be one of the highest priorities, if not one of the, you know, one or two or three, that would be taken heat at the Commission.

Senator WICKER. So, is it your testimony that, if the Commission makes it a priority, that it can be done within a matter of months?

Mr. O’REILLY. Well, I do not want to say that months, I cannot specify, since I am outside of the game, or outside of the conversation, to—but it does meet its deadlines. It had a past failure. It used to—when I worked in a different setting, they used to miss deadlines, and I found it very frustrating. But this Commission, the last couple Commissions, have met deadlines in an extraordinary staff time and effort. And so, if the demands are asked to award by this committee, they tend to meet them, and they could meet them if it was—and expedite the timeframe, which I think is absolutely critical and I support you.

Senator WICKER. It is absolutely critical, and it is because it is holding us up if we do not get that. And this is not a partisan

issue. We just need to dig into this and figure out what we can do, as members of the House and Senate, to move this along.

Dr. Ali, do you have some insight for us on this topic?

Dr. ALI. Thank you for the question. I would just say that I appreciate the need to bring in multiple stakeholders in this situation. I think that when the FCC initially considered mapping and remapping, we heard, you know, a big push from U.S. Telecom and that may have been it.

I think one thing that we are learning about, with mapping, is the crucial, crucial role that states are playing. I am really energized at what is going on in Georgia right now, and the innovated partnership with a real estate data company to get that granular address level data. I think we are seeing the development of some pretty important best practices that can hopefully be implemented and might be able to speed up the process.

Senator WICKER. Well, if we are not inside the FCC, and Mr. O'Rielly is not inside the FCC right now, how do we get the information? How do we know what is what?

Dr. ALI. My opinion is—

Senator WICKER. An outsider and an academic like you, help us to know what is attainable and how quickly?

Dr. ALI. I confess, I do not know how quickly what could happen and what I am about to propose. But I do think we need to start thinking about data inputs from multiple stakeholders. This cannot just be about providers, but we need to have a crowdsourcing option, as well, and I know that the FCC is investigating that. But that is not an easy process. It is not easy to make all of these different layers on a map. As for speed, you know, I am going to trust FCC Acting Chair Rosenworcel that she knows best on how quickly this can be deployed. But I would, you know, encourage everyone to look at the importance of crowdsourced data, the work that Measurement Lab is doing. And again, I think it was quite innovative that Georgia partnered with a real estate data provider, to be able to get address level data.

Senator WICKER. Well, you know, I am sure the Acting Chair is listening right now, and I think Senator Cantwell and I want to know what we can do—what we can put on paper to have the President sign, that will help the FCC get this down quicker?

I am not going to ask Mr. Forde, I am going to ask both of you to comment about his concerns, it is on page 10. But you listened to his testimony, but what areas that I find is eligible for funding, unless they have a high level of service, such as recent proposals suggesting an increase to 100/100, this means that many areas where investments have already been made, including through public and private programs, are suddenly considered unserved, therefore, will have duplication. Mr. O'Rielly, what do you think about that? Does that make sense?

Mr. O'RIELLY. I agree with his point. It does not make sense to do that, in terms in of policy. It will wipe out almost all of the work that the Commission has done.

Senator WICKER. So, his conclusion is correct?

Mr. O'RIELLY. I believe so, yes.

Senator WICKER. And Dr. Ali, what do you think?

Dr. ALI. I am not entirely sure. I was—I am disappointed when a provider uses the 25/3 as a ceiling to meet, rather than a floor to build upon, and I think too often we have seen providers use 25/3 as just meeting that ceiling and then, checking that box. I think that 100/100 definition would force providers to reconsider deployment strategies, and would start to phase out, as we are already seeing, some of these technologies that we know cannot meet the needs and uses of contemporary Americans, especially a country of living, working, studying, communicating online.

Senator WICKER. Think that through and take that for the record, whether we are going to start duplicating because now we have something that is a little easier to do, the 100/100. So, take that for the record. All right, and we will try to formulate that, so it is clear what we are trying to get to.

Thank you both. I think these are all four terrific witnesses, Madam Chair.

The CHAIR. I agree, and thank you, Senator Wicker. And we will—I just want to point out, I did have a conversation with Acting Chair Rosenworcel, who intimated she thought this was a 4-month answer, to get on the mapping. But I remain committed with you. I think we should look at every avenue we have to get this data and information, including whatever the FCC is doing, or other ways. And proud that we have been able to do some crowdsourcing in the Northwest, but—

Senator WICKER. I hope that that is correct. Four months sounds doable, and I think it is something the Senate expects.

The CHAIR. That would be great.

Senator WICKER. If it is indeed possible.

The CHAIR. Yes.

Senator WICKER. Thank you, ma'am.

The CHAIR. So, thank you. Thank you, Ranking Member. Senator Klobuchar, you have been—your state has been mentioned. You have been mentioned. Thank you for your—

STATEMENT OF HON. AMY KLOBUCHAR, U.S. SENATOR FROM MINNESOTA

Senator KLOBUCHAR. It is a very exciting day for me.

The CHAIR. You have been—

Senator KLOBUCHAR. And it is St. Patrick's Day, so we are feeling good.

The CHAIR. Good. Well—

Senator KLOBUCHAR. All right. Well, thank you very much, Chairwoman, and thank you, Senator Wicker, as well, for both of your leadership on this. I think we all know the pandemic has put one big magnifying glass on this problem that we all know existed. And having been to Iceland, I just do not understand why they have better Internet than we have in America, but you can reach corners of Iceland over volcanoes and you still cannot reach, with high-speed internet, parts of Southern Minnesota or Northern Minnesota. So, that is how I go into this.

I think it is so important, when we have got kids that are having to learn the mute button to learn to read, and parents with their toddlers on their knees and their laptops on their desk. And we know that this pandemic, as we see this lighthouse in front of us,

that we are going to get through this, we still know that it has forever changed the way our people are going to communicate, and we cannot have haves and have nots.

So, I will start with the bill that I am leading with Representative Clyburn. I am so proud we have six members of this committee on the bill. I will start with you, Dr. Ali. Could you talk about the need for forward-looking with broadband? You mentioned precision agriculture and the need to help small businesses, and why we need this kind of funding, for once and for all, to get through this.

Dr. ALI. Absolutely. Thank you very much for the question. I like to think about—when we think about high-performance broadband, particularly in rural America, we have five pillars. We have got pillars for telehealth, education—we know that there is a grade point, one grade point between separating those students who have broadband and who do not. We know that folk are struggling to sign up for vaccines without a broadband connection.

We also know that high-performance broadband attracts businesses. I was doing some work in Rock County, Minnesota and, for a brief point, they had attracted a shrimp company to come—

Senator KLOBUCHAR. Yes, I am well aware of this issue.

Dr. ALI. And they were attracted there because they had fiber. They had fiber in the ground. In fact, Rock County is the most connected county in Minnesota.

So, I think that, you know, for all of these reasons—small businesses, working from home, studying from home, the 100/100 definition, but then, also the \$80 billion for deployment is absolutely crucial.

Senator KLOBUCHAR. Right, and you mentioned how giving to underserved areas is so important. And, Chair Cantwell, I have a letter from the Leadership Conference on Civil and Human Rights, which represents over 200 national organizations expressing support for a broadband infrastructure with Majority Whip Clyburn, The Accessible, Affordable Internet for All Act, which I would like to submit for the record.

The CHAIR. Without objection.

[The information referred to follow:]

**The Leadership Conference
on Civil and Human Rights**

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March 16, 2021

Senator Maria Cantwell
Chair
Committee on Commerce, Science, and Transportation
U.S. Senate
Washington, DC 20510

Senator Roger Wicker
Ranking Member
Committee on Commerce, Science, and Transportation
U. S. Senate
Washington, DC 20510

Support Affordable Broadband Service

Dear Chair Cantwell and Ranking Member Wicker,

On behalf of The Leadership Conference on Civil and Human Rights (The Leadership Conference), a coalition charged by its diverse membership of more than 220 national organizations to promote and protect the rights of all persons in the United States, we thank you for the opportunity to submit our views regarding the importance of affordable broadband and ask that this statement be entered into the record of the committee hearing entitled "Recent Federal Action to Expand Broadband: Are We Making Progress?" on March 17, 2021.

Affordable broadband service is a racial equity and public health priority. Broadband connectivity is now more crucial than ever and can be the difference in getting a vaccine appointment, a job opportunity, or keeping up with schoolwork. We support the Accessible, Affordable Internet for All Act (AAIAA), introduced by Senator Amy Klobuchar on March 11, 2021, which would meaningfully address broadband infrastructure, deployment, and affordability at a time where broadband access means access to health care, employment, education, housing, and other critical services and opportunities.

The AAIAA is a major step toward connecting more people in the United States and closing the deployment and affordability gaps that so many marginalized communities face. This bill would help provide much needed investments for families, workers, and communities across the country, particularly Black, Brown, and other marginalized communities, to help address the digital divide that still persists in this nation.

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Asian Americans Advancing Justice |
AAJC

Interim President & CEO
Vivian Henderson

March 16, 2021
Page 2 of 2



The AIAA expands broadband access, appropriates significant funding for digital equity programs, and allocates an additional \$6 billion for the Emergency Broadband program currently being implemented at the Federal Communications Commission. Moreover, the AIAA would require the FCC to coordinate with the Department of Agriculture to set up an automatic verification system between the National Lifeline Eligibility Verifier and the National Accuracy Clearinghouse for the Supplemental Nutrition Assistance Program, thus easing the eligibility verification for participants in the Lifeline program, which provides targeted assistance to low-income households for the cost of broadband and telephone service.

Additionally, the AIAA provides strong protections for workers' rights and union organizing. The AIAA prevents recipients of the deployment funding from interfering with labor organizing by requiring recipients to remain neutral in workers' organizing efforts, requires first-contract bargaining and binding arbitration, and prohibits subcontracting for the purposes of circumventing a collective bargaining agreement. In addition, the bill requires funding recipients to pay their workers prevailing wages.

Our health, our economy, and our educational competitiveness will not fully recover without affordable broadband. The AIAA is critical to addressing the systemic inequities that the current public health and economic crisis has laid bare. If you have any questions about the issues raised in this letter, please feel free to contact Leadership Conference Media/Telecommunications Task Force Co-Chairs Cheryl Leanza, United Church of Christ, Office of Communication, Inc., at cleanza@alhamail.com, Kate Ruane, American Civil Liberties Union, at kruane@aclu.org, or Bertram Lee, at lee@civilrights.org.

Sincerely,

Wade Henderson
Interim President and CEO

LaShawn Warren
Executive Vice President for Government Affairs

Senator KLOBUCHAR. Thank you very much. Briefly on that, because I have questions of other witnesses, Dr. Ali, what this divide is, when it comes to race, when it comes to smaller towns, and the like.

Dr. ALI. Well, we know—I think all too often we think about the digital divide as being one divide, as the divide between rural America and urban America. But as we have learned in the last year is, the real divide is intersectional. It is about race. It is about income. It is about geography. It is about affordability. It is about students.

So, there are multiple digital divides. One of the ones plaguing rural communities the most is, of course, the divide of infrastructure. But that does not mean that there are not problems with affordability. That does not mean there is not a problem with availability and computer use and digital literacy. So, this needs to be—this is an opportunity for us to really attack all of these issues. The digital divide is not a zero-sum game—

Senator KLOBUCHAR. Exactly.

Dr. ALI.—where we fund one and not fund the other. It has to happen at the same time.

Senator KLOBUCHAR. OK, thank you. Mr. Wilkins, one of the bills we have out there that is bipartisan, 15 Democrats, 13 Republicans, Senator Kramer and I have introduced, which focuses on Internet services to students, rural and low-income families, and that is a \$2 billion fund. Could you just very, like in the 30 seconds here, mention the importance of that bill?

Mr. WILKINS. Absolutely, and in my mind, that is especially important because it actually gets at the deployment challenge, as well. If you are building a broadband network in a rural area, you actually are very, very interested in the ability of families in that area to afford service on your network. And having that kind of funding to support that kind of distance learning in a very important part of the, frankly, the revenue side of a business case for deploying in rural areas.

Senator KLOBUCHAR. Exactly, because some area, some providers are doing this, some are not. As you have pointed out, Mr. Forde, which I appreciate, and I appreciate your work in Minnesota. Last question is along the lines of what my friend, Senator Wicker, was talking about. This is our bill, and we are proud to have several others on it, as well. The Broadband Data Act, as he has mentioned, it has been passed. Just talk about how this would help us, despite everything good you have done in Minnesota, we still have areas that are not covered, and we have got to make the case for where we need the money and where we do not. Mr. Forde.

Mr. FORDE. Yes, thank you very much, Senator. Pleasure to do a lot of great work across the state of Minnesota. You know we are—I have an excellent GIS department. We stand ready to provide that data and we love working closely with the State of Minnesota and the Broadband Office. If there is ever a data discrepancy, right down to the address level, they call us. We certainly get that worked out, and make sure that we know the exact areas that lack access to broadband and really like the way that their office is very surgical, in attacking areas.

They pulled out all of the RDOF areas from their latest grant round, to ensure that Federal funding would not be duplicated with their state funding. You have an excellent challenge process with their grants, as well. There was a grant that we applied for and the provider agreed to upgrade their service, and we did not get. There was another instance where we applied—or another provider applied for a grant for an area that Midco was going to build with capital in 2022, and they pulled that grant. So, that would just be using private capital.

So, really like the way that they are really focused, right down to the address level, and work very, very closely with companies who have this data from excellent GIS departments, to ensure that the funding is targeted.

Senator KLOBUCHAR. Exactly.

Mr. FORDE. And I think, if we can implement some of those things at the Federal level, that will help.

Senator KLOBUCHAR. And I think Senator Wicker sees this. We have got to do both things at once because, once we get the money we want to target it. And good to see you, Former Commissioner, thank you.

The CHAIR. Thank you for your leadership again, Senator Klobuchar. Very much appreciate. Senator Thune.

**STATEMENT OF HON. JOHN THUNE,
U.S. SENATOR FROM SOUTH DAKOTA**

Senator THUNE. Thank you, Madam Chair, and I would say to my colleague from Minnesota, if she needs a St. Patrick's Day mask, I have an extra one of these around.

Senator KLOBUCHAR. That would be a Packers mask. Very nice, Senator Thune, and I noticed you have kept it on through the hearing. I really appreciate that. I will wear a Vikings—

Senator WICKER. It is all he could find at the last minute.

Senator THUNE. Just for you. I want to thank you for holding the hearing and also like to welcome Mr. Justin Forde, from Midco Communications, which is based out of Sioux Falls, South Dakota, to today's hearing. And I noticed his backdrop, he looks like he is on top of a cable tower there, although, I think the background would be white, if it were current.

But anyway, I want to thank all of the witnesses for their participation today and just indicate that, as has already been mentioned throughout the Coronavirus pandemic, reliable broadband services have been vital to many Americans' lives. And in recognition of this Congress acting in a bipartisan manner, provided USDA's ReConnect program, \$100 million through the CARES Act, and an additional \$635 million under the year-end bipartisan Coronavirus relief package, which also gave NTIA over \$1 billion to support broadband deployments in Tribal and rural areas. And at the same time, the FCC, under then Chairman Pai's leadership, awarded \$9 billion through the RDOF Phase I program and will be making an additional \$11 billion available for Phase II.

It is my hope that this committee and Congress will take a pragmatic approach when considering additional measures to spur broadband deployment. And as we continue to work to close the digital divide, we need to work, I believe, in a bipartisan fashion,

to ensure a proper oversight of the agencies responsible for distributing billions of taxpayer dollars to support broadband services. Really important, I think, that we get lead on the target.

So, Mr. Forde, let me ask you, if Congress considers additional funding for broadband services, do you believe that funding should be additionally targeted to truly underserved areas?

Mr. FORDE. Absolutely. We have got to focus like a laser on those truly unserved areas and get service out to those folks as soon as possible. And we know where those areas are and we know how to reach them, quickly and in an efficient manner.

You know, just to go back and talk about a few of the other things that some of our panelists have done here—you know, I have a family of five and they were all learning during the pandemic with speeds of 25/3. So, that is certainly sufficient for our family through this. That speed is not a—it is not a—it is not the floor—the ceiling. I can get much more speed through that connection that I wanted to, should I choose to purchase it.

In regard to the symmetrical speeds, you know, in our—regardless of the technology we offer, whether it is fiber to the home, that hybrid fiber cable mix, or fixed wireless, it is about 14 to 16 times higher in the download speeds than the upload speeds. So, we are actually doing broadband on the ground. Our customers are not taking those symmetrical speeds that they need.

Particularly, when we choose technology, we want to choose the connectivity that the farmer wants. A lot of farmers in these days do not want a fiber line to the farm. They want connectivity to the entire farm. In fact, we have a farmer that has two farms, 75 miles apart. He can use fixed wireless technology and get connections to both of those, for less than \$100. The cost of running fiber to those would not be economical to us, or for the Federal Government to serve both of those farms, so he can see what is going on in each of those, each and every day.

So, a lot of things going on out there. This in the back, as you mentioned, this is actually an elevator, 190 feet up behind me. I would also mention that the town below, about 350 people, all of whom have Gigabit service. The farms, hundreds of them in the vast agriculture area out, could all get—also get 100/20 service out in those farms shortly, from Midco. All those areas, if the speed changes, would now become eligible for Federal funding.

So, it is important to remember that the speed is here. It is available and ready to go, and we do not need to make these areas behind me, that already have broadband service in agricultural areas, delivered in the best way to serve those residents and customers that they want, is not implemented or changed by a Federal rule made in Washington, DC.

Senator THUNE. Well, and there are so many good—a lot of applications in agriculture, and so many other areas, that benefit from that technology as it is delivered into those rural areas in, hopefully, as you pointed out, the most affordable form.

Mr. O'Rielly, just a comment, too, on the question, do you believe that funding should be efficiently targeted to truly underserved areas?

Mr. O'RIELLY. Absolutely. To the point I made earlier, and it has been made by Mr. Forde, is that if you do not target the funding,

you will have exactly the situation he just described. Dollars will go to those areas that already have broadband, versus those that are unserved today. And they will be pushed on for another day, another day, another day, as they have been before. That is what happens when you raise the speeds. And I have mentioned this a number of times, when I was at the Commission, and I do now. If you raise the speeds to the levels we are talking about, almost everything gets wiped away. All the Commission programs, all the—most of those at USDA, all of those are going to be wiped away and we are at a new structure.

Senator THUNE. And just very quickly, I have introduced a bill last year that would capture revenue generated by spectrum auctions at the FCC to support broadband deployments in rural areas like those in South Dakota. Do you support proposals like this that take a more targeted approach to fund broadband services?

Mr. O'RIELLY. I do. The only thing I would mention they did last year is that sometimes the auctions can be cyclical or have different pluses and minuses. So, not every year is a balance. So, there is some concern there, but otherwise, absolutely.

Senator THUNE. OK, all right, good. My time is expired. Thank you, Madam Chair.

The CHAIR. Thank you—thank you, Senator Thune. Senator Markey. If not—Senator Blumenthal, you are actually next, but we thought you were on your way. Are you ready, or should we defer to someone else?

**STATEMENT OF HON. RICHARD BLUMENTHAL,
U.S. SENATOR FROM CONNECTICUT**

Senator BLUMENTHAL. I could go, yes.

The CHAIR. OK, you are up. Thank you so much. We wish you a happy St. Patrick's Day! OK, Senator Blumenthal, thank you so much for your questions.

Senator BLUMENTHAL. Thank you, Madam Chair and really appreciate your holding this hearing. I know we share a very urgent interest in this topic and really am grateful for the opportunity to have excellent witnesses before us today. Thank you both, and all of our witnesses, for being here.

I think that the fact of this hearing reflects our commitment to families desperately in need of broadband, and they need it right now. I also appreciate the leadership of my colleague, Senator Klobuchar, on the Accessible, Affordable Internet for All Act. I am proud to co-sponsor this bill, which would provide grants to expand broadband and promote real competition.

In Connecticut, our Governor has set an ambitious but necessary goal of connecting every home to broadband in less than 6 years. I say necessary because, as this pandemic has shown, broadband is an essential need, not a luxury, not a convenience. We need to take broadband as seriously as we do access to electricity or water or any of the utilities that, sometimes, we take for granted, until we do not have them, as the people of Texas recently saw.

The Accessible, Affordable Internet for All Act would be the fuel that states need to achieve the common sense goal of universal broadband access. And I want to offer Connecticut as a model for

state leadership and public-private cooperation to close the homework gap.

Professor Ali, Mr. Wilkins, the digital divide affects far too many households and far too many people in the heart of urban and suburban communities. It really cuts across all of our communities. The FCC's mapping and funding programs have long neglected their needs. Can you tell me more about how broadband grants would help states, specifically like Connecticut, to ensure that all households, including those in cities and suburbs, have access to high-speed broadband?

Dr. ALI. Perhaps I will jump in first, Senator, thank you. I think it is a great question. And I think what you are pointing at, too, is the vital importance of state broadband offices as a fundamental middle point between Federal funding and their communities. States know their communities better and best. And I think this is some of the amazing research coming out of the PEW Foundation, what the best practice is for highly regarded state broadband offices that can really target those fundings. Not just toward rural, as he mentioned, but toward urban and suburban areas, as well.

Mr. WILKINS. Yes, Senator, thank you. And I would just add, again, I strongly believe that affordability and accessibility to an individual person out there, is just the same thing. It is I do not have the broadband that I need. And I do think that the role of states to more carefully tailor certain funding to what is actually true in their states is critical.

I will just give you one example. In a more urban area, you might have apartment buildings that have a lot of folks that need affordability support, and that is the reason they have not been served with a good broadband. It is because the provider said, well, there is not enough, essentially, revenue demand there in that building. A state-tailored program, that specifically helps support those customers to be able to afford broadband, and ideally structures the program in a way that is predictable for a provider, but actually get a provider much more willing to serve that location. And I have heard there are many versions of that in different states of the country.

Senator BLUMNTHAL. I think, the point that both of you are making, and others have made today, but it really needs to be repeated, this issue affects suburban, urban, as well as rural communities, and overlooking the City of Hartford or Waterbury, Stamford, New Haven, big cities or their suburbs, is to ignore seniors and communities of color, which often lack access to broadband. It also ignores the digital divide that separates those communities from others, in our state. Even a small state like Connecticut can suffer from this kind of homework gap or digital divide. And I think the testimony today has a powerful exclamation point to that very urgent fact about the need for this kind of legislation.

So, thank you all. Thank you for being here and adding to the immense resource this hearing will be for us. Thank you. I yield and now call on Senator Fischer.

**STATEMENT OF HON. DEB FISCHER,
U.S. SENATOR FROM NEBRASKA**

Senator FISCHER. Thank you, Senator Blumenthal. The Federal Government has a crucial role in promoting the availability of broadband services for all Americans, especially those in hard-to-reach areas that lack that connectivity. Right now, 27,000 households in Nebraska, they do not receive the broadband service that meets the FCC's current definition. Meanwhile, Congress has provided over \$20 billion in broadband funding this past year.

We must have clear organization and accountability measures in place to ensure we maximize the reach of Federal dollars and support these sustainable networks. For years, I have heard about the increased need for coordination between the broadband deployment programs at the FCC and RUS. And now, NTIA has a new grant program for state and localities to also build up broadband. Mr. Forde, if I wanted to track where all this funding is going, is there a single map that I can look at today? And if not, would it make sense for the FCC to be tasked with mapping that, as well?

Mr. FORDE. Absolutely. You would have to visit multiple different websites, which we do on a regular basis, with, you know, all the different Federal resources, cities, counties, and compile that data. Takes a tremendous amount of work to put that together into our GIS department, so we know where folks are. We are constantly playing offense and defense, right? We may have grants that are from one agency that are trying to overbuild areas that we serve. Another area where finding an unserved area and sometimes it is a competition between whether we are going to go there with private capital, other Federal or state grants trying to reach there.

Not an efficient process at all and, yes, the FCC can be a great help of making sure that all these agencies know where broadband is going, with government help, but also, where private sector funding is going, right? We have build up plans for up through 2025. That is areas, that we are going to deliver broadband to with private capital. We need to make sure that the government entities are aware of that, and do not award government funding to areas that we would already be going to with private capital anyway.

So, certainly there is a lot of things that we can do, and the FCC can do, to work with providers to make sure that we have got those maps right and there is coordination between all of those agencies. And I will also add the new CARES funding to that, as well. You know that money seems to be going out to state and local areas. No guardrails, no rules with that, and is being spent on broadband, and a lot of duplicative efforts going on there with that funding, as well.

Senator FISCHER. OK, thank you. Mr. O'Rielly, as the FCC updates its broadband coverage maps, what are your thoughts on whether the agency should create a map that tracks broadband funding, including what is available, where it has been awarded, and when it would be built out? Do you think that is a good idea?

Mr. O'RIELLY. Well, I want to be careful awarding new jobs to my old—former colleagues, but I will say, yes, absolutely. We need to have better handle on how the funding is going out and going to these different programs. And I would say also, to compliment that, we ought not to be creating new, different pots of money for

different agencies. It is one thing to say let us coordinate. It is another to maybe not stop just doing so. I think creating five or six different sources that are competing against each other, like Mr. Forde said.

Senator FISCHER. I agree and areas that already have that broadband available, to have more money put in there, I think it is misuse of taxpayer dollars. You know, if our goal is to make sure that broadband is available across this country and meet the needs of people no matter where they live, we need to know where it is and where it needs to be.

Mr. Wilkins, in your testimony you stressed the importance of focusing on performance profile of a network, beyond just promoting competition among different technologies. What are the main elements of this performance profile that you think would make communication networks deserving of Federal funding?

Mr. WILKINS. Thank you, Senator, for the question. I think there are two that are most important. I think, first and foremost, is scalability and then, second is reliability. But on scalability, you know, I think it is worth just pointing out that the debate over speeds and who is overbuilding who at a given moment, really just reflects the debate we have been having for 20 years, right? What speed is the next step that needs to be better? I think a performance metric that says scalability is what matters, so that we can stop having the debate every 5 years about, well, what is the next increment we need to get to, is actually probably the wisest choice.

The analogy, I would say is, you know, when we built the interstate highway system, did we overbuild the old, you know, local routes? Well, no, what we did was, Congress said that was the performance standard we needed, and that is what we did.

Reliability, also, I would emphasize. You know, those of use that have been in telecom for a while remember back when the old Bell system said five nines reliability. You know, only down 6 minutes a year, is what was critical. I think that is a performance dimension of a network, that could get more emphasis in this sort of funding process.

Senator FISCHER. Do you think that the FCC and other agencies should be considering that when they are awarding this kind of funding?

Mr. WILKINS. Yes, I mean—so, that is a very good example—

Senator FISCHER. And the amount of money we are talking about.

Mr. WILKINS. Yes, yes, I am sorry for interrupting. I think that is a great example of the kind of implementation change that can be made in future award processes, right? I mean, RDOF only rewarded speed and latency, and those are important, but they are not the only dimensions that matter, if we are talking about this size of an investment.

Senator FISCHER. Thank you very much. Thank you, Senator Blumenthal.

Senator BLUMENTHAL. If I could recognize Senator Markey next.

**STATEMENT OF HON. EDWARD MARKEY,
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Mr. Chairman, very much, and I am going to direct my first question to Mr. Wilkins.

Mr. Wilkins, we clearly have a huge problem in our country, right now, where upwards of 12 million American children still do not have the Internet at home and we know who they are. They are largely black and brown. They are poor, immigrant children. And obviously, that is leading to a huge learning gap that is going to lead to an opportunity gap because this homework gap sits there and needs to be addressed.

So, in the American Rescue Plan, my amendment—my program was adopted, that adds \$7 billion for this year, in order to make sure that we have the funding for these young people at home. So, my question to you is, how important is that program, the \$7 billion for kids, right now, given the fact that we are probably going to stay with the hybrid model for learning, for some extended period of time, and we know the kind of kids who are most negatively impacted? So, from my perspective, should the program be made permanent, and do you think it is going to make a big difference in helping kids to get access to the educational opportunities, which they need?

Mr. WILKINS. Thank you, Senator. You are right, it is a hugely important program. I mean, first, I will just say, helping those children learn, very important. But I think, more in my specific realm of expertise, I would just emphasize how important that is for the deployment gap as well, and especially the idea of making it permanent.

If you are looking to deploy a new broadband network, there might be one high school in the rural area or, you know, a set of families that, if they could afford your network, they would be more than happy to help you sustain it. But if you do not know that is going to be available for the long term, you cannot factor that into your deployment. So, very important, obviously, but the permanent status is very important, to support the deployment side, as well, I would say.

Senator MARKEY. No, thank you. And again, kids can get it on their school desk for free. They can get it in the library for free. But for a lot of these kids, it is public education. They need it at home, as well. And that is why I think it is so important that the program was included in this package. And I think that students are not the only ones without connectivity. We have larger problems in our society, as well. I have introduced the National Broadband Plan for the FUTURE Act. It is legislation to update the National Broadband—the FCC had to construct 10 years ago, pursuant to my amendment that was made a part—law in the 2009 Recovery Act.

Professor Ali, how important do you think it is that we update the National Broadband Plan, so we have a plan for the next 10 years, or 20 years, in our country?

Dr. ALI. I think it is absolutely important that we do this. I will also add that, in 2008, under the Farm Bill, we were actually ordered to have a National Rural Broadband Plan, and that was authored by then Acting FCC Chair Michael Copps in 2009, and then,

6 months later, we had the National Broadband Plan. This speaks to the importance of having different strategies for approaching and correcting the different types of digital divide. And maybe, then, also anticipating new divides that are going to come up along the way.

Senator MARKEY. Thank you. And if I may, Professor Ali, just follow up on one other question, which is, the resiliency of our telecommunications networks. There is more than 4,000 miles of fiber optic cables within the next 15 years that could be submerged. Senator Wyden and I are drafting legislation that will fund projects to strengthen our networks against climate change, while simultaneously reducing the carbon footprint of our telecommunications infrastructure. Could you talk about the importance of hardening our communications infrastructure in the country, against climate change?

Dr. ALI. I am absolutely happy to, Senator. This is of vital importance. It is of vital importance for first responders, and it is of vital importance for those who may need help during this time. I think particularly of what recently happened in Texas and Hurricane Irma and Maria in Puerto Rico, of the vital need to have a robust and resilient telecommunications system, again, for first responders and for those impacted.

Senator MARKEY. I could not agree with you more. That is just a preview of coming attractions, what has happened in Texas and in Puerto Rico. So, we just have to understand that our communications system is going to become more and more vulnerable if we do not harden it.

So, thank you, Professor, and thank you, Mr. Chairman, for the recognition.

The CHAIR. Thank you. Senator Moran? I do not know if he is joining us online? If not, Senator Sullivan.

**STATEMENT OF HON. DAN SULLIVAN,
U.S. SENATOR FROM ALASKA**

Senator SULLIVAN. Thank you, Madam Chair, and I want to thank the witnesses here. You know, I just came from an EPW Committee hearing on the issue of drinking water in America, now we are talking about broadband. And what I want to do, I want to focus on this issue of the truly unserved communities. Because when we talk about speeds and overbuilding and resiliency, and it is all important, but there are communities in America, in my state in particular, that, for example, in the previous hearing, do not have any running water. No flush toilets. American citizens, thousands of them. So, when we talk about infrastructure for upgrading water and sewer infrastructure, my view is you have got to start with the people who have nothing. Similarly, with broadband. I think the truly unserved, in my state people just do not have it. It is not about upgrading speeds. It is not about resiliency. They have nothing.

So, the discussion here is really important. I know there is a lot of bipartisan focus on this. But I think, before we talk about upgrading speeds, and everything else, we have to get to the people who have nothing. And unfortunately, a lot of my constituents do not have anything.

So, Mr. Forde, Mr. O'Rielly—by the way, Happy St. Patrick's Day—how do we get to that spot where we have all this money, but where we can focus our efforts on just making sure the most basic needs—anything, we hit that, because we have been doing broadband for a long time, but there are still communities, whether in Alaska or, I am certain other states, that have zero, and I think we have to prioritize these Americans first.

Mr. O'Rielly, you want to tackle that one?

Mr. O'RIELLY. I would absolutely agree with your statement and it is what I spent my time at the Commission focused on. How do you deal with those that have absolutely nothing? And I have sat in the kitchens of the families who had to lose their—you know, their job was moving away, and they were allowed to telework, if possible, and they had no broadband to be served. So, they were basically unemployed because of it. And so, I have done that, and I absolutely agree with you.

What happens when you increase the speeds—and we have done it a couple times? When I first got to the Commission, we were at 4/1 and then, when everyone wanted to go to 10/1, and then, Tom Wheeler, the former Chair, said we needed to go 25/3, because only that is table stakes. In doing so, we ignored everybody who had nothing, and that is how the debate is going right now. How do we go to 100/100, or things that people do not necessarily need in most instances, when people have—a good portion of people—and we can debate how many people, whether it is 12 million, 20 million, whatever. We can debate that, but we know they have nothing, and a lot of people in Alaska have fallen in that situation. That is what I cared about, and I would say, hold off on the speeds and focus on those—I go to Mr. Forde's point. Stay focused on the unserved.

Senator SULLIVAN. So, thank you, and by the way, I thought you did a great job as Commissioner, so wish you were still there.

Mr. Forde, do you have a view on this? I know you care about it. But again, this should not be a controversial topic. It should be, let us start with the people, who have nothing. It is the same with drinking water, right? Like, I cannot believe that I have to go to hearings and pound the table and say, I have thousands of constituents—by the way, some of the most patriotic Americans in the country, because they all serve in the military—and they do not have flush toilets or drinking water. Broadband is kind of similar, becoming similar.

Mr. Forde, what do you think? What can we do here? I do not think it is terribly controversial, what I am talking about. But as Mr. O'Rielly said, the conversation quickly goes to bumping up the speeds versus focused on the people who have nothing.

Mr. FORDE. Absolutely. We could not agree more. We have seen, in some of the Federal programs, even when they have come out with at bidding round, there have been areas that have gone, in our footprint, that have really gone unbid, right? And those areas are the ones that still lack broadband. Billions and billions of dollars are awarded to other areas, and we go to work, you know, building those areas, while other areas remain largely unbid in some of these auctions. Nobody has even bid on them.

Another in particular instance, which was very disheartening, in one of the states we served, they upped the speed limits from 25/

3 to 100/20. One hundred percent of the applications went to areas that already had 25/3. So, \$11 million was awarded in Federal funding to those areas. They did not get one house closer to closing the digital divide in the entire state, because of the upping of the speed threshold from 25/3 to 100/20.

So, that is just what happens when you change those thresholds. Providers will build in the areas that it is easier to build to, closer to the areas that they serve. They do not stretch out to reach those areas that truly do not have it, and that is what we are seeing and why the digital divide is not being closed, and still leaving that small gap that is out there.

Senator SULLIVAN. Well, Madam Chair, I think this is an area for bipartisan cooperation. I am sure Senator Tester would agree. But if we can work on this, because I do not think it is controversial and maybe the witnesses—and I am sorry I did not get to ask Professor Ali and Mr. Wilkins questions. But if you have ideas or language that can help us with this, I think it is really important and I do not think it is controversial. I think it is imperative.

The CHAIR. Thank you. Thank you, Senator Sullivan. I definitely believe in an Alaska plan. I think Alaska is so unique it requires, you know, specificity to how we are going to achieve what we need to achieve. I know the FCC had something. I do not know how successful it was but look forward to working and talking to you about that.

Senator SULLIVAN. Thank you very much.

The CHAIR. Senator Tester.

STATEMENT OF HON. JON TESTER, U.S. SENATOR FROM MONTANA

Senator TESTER. Thank you, Madam Chair, and I want to thank all the witnesses. I want to especially thank former Commissioner O'Rielly for being here today. Look, there were times that you and I disagreed in the past, but I am going to tell you, right up front, I appreciate your backbone, and this place needs more of that. So, thank you very, very much.

Look, I come from an area—Senator Sullivan talked about it—where I have watched population decline year after year after year. I have watched small towns dry up and continue to dry up. And I am asked many, many times what can be the solution for rural America, as far as getting some people to live there again, and I think it is broadband. I do not think there is any doubt about it. And it goes back to what Senator Sullivan said, if you do not have the service, you are not going to get the economic value from that service. You are not going to get the population growth that I think, potentially, is out there in places like Montana, and many, many others.

It distresses me greatly to hear Mr. Forde talk about the fact that there are three different Federal pots of money going to one area that may already be served, in his region. And I think that if we do nothing—if nothing else comes out of this committee, it is the fact that we need to get this money targeted because, quite frankly, that is a waste. And there has been hundreds of billions of Federal dollars go into broadband and yet, it does not seem like we are getting the bang for the buck out there, that we need to get.

I do not want to pick on the legacy carriers, but I am going to tell you, in my office, that is where we get most of the complaints. It is from the legacy carriers. And I would just ask, and this is going to be like putting the ball on the tee for Mr. Forde, which is fine by me, but how do we make sure that the small providers get a cut? And I want to start with you, Mr. O'Rielly, with that question. How do we ensure the small providers get a fair cut? And then, I am going to go over to you, Mr. Forde.

Mr. O'RIELLY. Well, when I was at the Commission, I pushed very hard that we open up the universe. When I got to the Commission, we had a program that was only for legacy providers. I thought that was bad then. We moved away from that and we opened up the door for anyone who could provide technology neutral—whatever the solution may be for an area, to be able to serve the consumer that needs the broadband services.

So, it is having broad acceptance. And that is where you see policies shifting, where people want to protect their own—you know, their own needs. And that is problematic, from my viewpoint. But for the small providers, there can be things we have done in other universes, whether it be plus ups in terms of—you know, but it is more in terms of the area itself that needs more support, than it is in terms of the company themselves.

You know, the big provider, as you say, you know, are they eligible? Should they remain eligible? Are they able to meet the obligations? And that is where the Commission has done fairly good work, in my opinion, first on the short form, and now, they are doing the long form on things like the RDOF program, to try to get to those issues.

Senator TESTER. Mr. Forde, do you want to respond to that question?

Mr. FORDE. Oh, I—you know, to piggyback on Commissioner O'Rielly, you know, our first foray, we have been long building broadband since 1996, all using 100 percent private capital. Our first funding that we accepted was actually in the CAF II auction. So, that—when that was opened up to all providers, that really gives us the chance to go out there and compete for funding in those areas that some of those other folks were in, when those became available. And really, you know, opens it up to as many people as possible to participate in these programs. So, we really liked that change. It led to our first, you know, time in accepting Federal funding for some projects.

Senator TESTER. OK. This is a question, I think, best for Professor Ali and Mr. Wilkins, and it deals with low Earth orbit broadband which, by the way, in rural areas is pretty damn appealing if it works. If it works is the question. And so, Mr. Ali, can you talk about low Earth orbit broadband and tell me if it is the panacea that I think it may be?

Dr. ALI. Thank you very much for the question. I think that there is a lot of hype, right now, around low Earth orbit broadband, LEO broadband. We do not know what we do not know. We do not know if it works at scale, yet, for instance. We do not know what kind of speeds it will deliver once the network is at capacity. These are some issues that have been in doubt. So, there is some criticism toward the Commission to have funded at such a large degree,

\$886 million for a technology that has yet to be proven at scale and at capacity.

Senator TESTER. OK. Do you want to add on to that, Mr. Wilkins, at all?

Mr. WILKINS. Yes, I will just add one thing, which is, I think it is interesting that, in some ways, it goes back to this deployment versus access question, which is, you know, a LEO network is actually, kind of, different from a deployment standpoint than we are used to thinking about it. It is not about building assets on the ground in a local area. Their assets are in space. However, the, you know, the economics, I understand it. There is sort of a somewhat high upfront cost to afford the terminal, and such. And that is where a demand subsidy, such as EBB, if that was permanent, for example, could actually, probably, go a long way.

Senator TESTER. OK. Thank you all. Thank you, Madam Chair. The CHAIR. Thank you. Senator Cruz.

**STATEMENT OF HON. TED CRUZ,
U.S. SENATOR FROM TEXAS**

Senator CRUZ. Thank you, Madam Chair. Welcome to each of the witnesses. Thank you for being here. Each of you, in your witness testimony, has touched on the importance of broadband mapping and understanding exactly what parts of the country are still unconnected. And I whole-heartedly agree with importance of having the whole picture, so that we can make smart and targeted investments.

To that point, when one tries to look at the facts and figures, as to just how much money the Federal Government has spent on expanding broadband infrastructure and increasing connectivity, it can be maddening. It is almost impossible to get a full and complete picture. There are so many different programs, so many pots of money at so many different agencies, all making different grants, providing different subsidies, and it does not seem like there is one central authority keeping track of, or even coordinating, everything.

Two questions, for each of the witnesses on the panel. First of all, what is your best assessment of what we have spent in the last decade focused on expanding broadband? And second, would you agree that this disparate system of programs is inefficient, and should there be one authority in charge of tracking and coordinating all the Federal efforts? And, Commissioner O'Rielly, why don't we start with you?

Mr. O'RIELLY. I will start with your second question, and the answer is, absolutely. I would argue the FCC is in the best position to do so, but you have the right to pick somebody else.

In terms of the amount of money, I would have—there is so much money that has been added in the last 9 months, that if I think that—you know, \$5 billion, about average from the FCC per year, \$4.5 to \$5 billion. There is money at USDA under the ReConnect of \$600 million, and that has been about a three-or 4-year program.

So, I would have to add everything up and try to figure out how much money we are talking about. But to go to your earlier point, I do not want to use your time, but we—I asked, requested, a JAO

study on the similar type of scenario for the amount of money going to broadband for E-rate or schools and libraries, at the time, many years ago. And JAO came back and said, "We cannot really do it. It is too complex a question." And that is what we are facing right now, with all of the money coming in from different sources, and allowing the money to be very flexible for, like, Department of Treasury. It can be for so many different purposes including broadband. It is hard to track where the money is going.

Senator CRUZ. Professor Ali?

Dr. ALI. Thank you very much for your question. I am doing some quick math here. Between then, let us say, \$5 billion from USF, and then, USDA offers \$1.4 billion in grants and loans, that has been over, let us say, since 2015, 2014. Plus, \$7.2 billion in the Recovery Act money, you know, cannot even add that quickly, but those are the numbers that I have come up with, plus all of these other pockets. So, we have spent billions of dollars and we are continuing to spend billions of dollars to make these connections.

Senator CRUZ. And is this the most efficient way to do this?

Dr. ALI. I think that we know that this is a market failure. We know that public money has to be spent in order to connect the unconnected, as this is a policy priority. I do not—I think, early attempts at funding did not go well. I think handing money to the 10 largest telecommunications companies in CAF and CAF II, for low requirements—low buildout requirements, actually has put us in a position where a number of communities are, kind of, living in a digital purgatory where they have low-speed, but still high enough speed that they are considered served. And now, they are stuck while the rest of the country moves toward fast, high-speed fiber and 5G.

Senator CRUZ. Mr. Wilkins, Mr. Forde?

Mr. WILKINS. Yes, Senator, thank you. I would just—I agree with Commissioner O’Rielly and Dr. Ali’s math on the current numbers. I would just emphasize, this in some ways is the whole idea behind that FCC analysis that came up with \$80 billion in the current proposal in the Accessible Internet Act.

You know, \$80 billion is—if we invested in robust, scalable networks, we could actually be done with this sort of, ongoing, every year we spend more, and do not quite get closer. The specific analysis was \$80 billion would build out everywhere, and then, you would have a very small remaining number of homes, probably in places like Senator Sullivan’s Alaska, where you would need ongoing subsidy, but it would be a lot lower than what it has been. So, that would just be point 1.

And second, quickly, on the map, Senator. I think it is just important, just as your question indicates, the map should not be thought of as a static, an atlas, right? It is not that the Commission is going to say, "OK, we are done. Here are the maps." It is really a dynamic database of what is happening with deployment. That is going to, by definition, need to be a living, breathing, dynamic event and would hopefully help get at some of the issues that you are raising.

Senator CRUZ. Mr. Forde?

Mr. FORDE. Could not agree more. As a smaller company, one of the things that all these different Federal programs have is they

have different rules and qualifications. It takes a tremendous amount of time and effort to even analyze whether or not we can participate in them because of the regulatory burdens that go along with that.

Having that all housed in one agency, such as the FCC, would make it easier for us to get our data. They know us. They know who we are. They know our capabilities and technical stuff. We do not have to share all that, spend all that time and effort analyzing these programs and figuring out whether or not they can work for us and participate, and would make more of them usable for us.

Obviously, an unbelievable amount of money spent on broadband. Do not disagree with that. There is also a tremendous amount of money going to operating expenses for folks, who have a tough time running their network. We do not need any money to operate our network and we could—you know, so certainly, there are billions and billions of dollars out there in USF funding, too, that is added to this, going to people that need to operate their networks. So, I think companies that have the ability to operate it, should also be given some preference over those that do not, and do not need any more ongoing funding to operate their network.

Senator CRUZ. Thank you.

The CHAIR. Thank you, Senator. We now have Senator Sinema.

**STATEMENT OF HON. KYRSTEN SINEMA,
U.S. SENATOR FROM ARIZONA**

Senator SINEMA. Thank you, Madam Chair, and thank you to our witnesses for joining us today. My top priority in the last year has been working with local, state, and Federal partners to keep Arizonans healthy and safe from the pandemic. The pandemic has put a spotlight on the digital divide in this country, and I have supported efforts to expand broadband access in rural and Tribal areas, where the digital divide is widest, and ensure that Americans struggling economically can remain connected as the recovery continues.

But broadband connectivity lets kids participate in distance learning, allows veterans to have telehealth appointments with their medical providers, and allows Arizonans across the state schedule their vaccine appointments online. And I am looking forward to working with my colleagues on this committee, to develop bipartisan solutions to get Arizonans connected, and to keep them connected. As we do that, we must ensure that we have accurate data about broadband, that Federal agencies are coordinating their efforts, and that Federal resources are being used appropriately.

So, my first question is for Mr. Wilkins. Tribal lands and rural areas have some of the lowest rates of broadband connectivity in the country. And the most recent FCC Broadband Development report stated that more than 20 percent of Native Americans in rural Tribal lands, lack access to sufficient broadband capabilities. I supported the FCC's Tribal prioritized filing window for the 2.5 gigahertz band. And this window provided tribes an opportunity to access spectrum resources, to connect Tribal members. Many tribes in Arizona received licenses, including the Gila River, Hopi, Tohono O'odham, Havasupai, San Carlos Apache, and White Mountain Apache.

But what are your thoughts on last year's Tribal priority window and going forward, what approaches should Federal agencies use, to help connect Tribal communities?

Mr. WILKINS. Yes, thank you, Senator. I strongly support, essentially, programs to help Tribal communities make progress. I mean, the equity issues are very big, and I would just say that the economic issues around broadband are particularly pronounced. Just to give you a specific example, in the context of the RDOF auction, frankly, many of the geographic definitions for how money was awarded, made it very hard to actually pursue support in Tribal areas, essentially, because the population can be so spread out, relative to the way the funding is awarded. And that does make a wireless priority window, like what you are describing. I actually have an import, at least, you know, to go back to the previous discussion, make sure there is some ability to get broadband there.

So, the problems are very real in Tribal areas, and especially around the economics of bringing in broadband. So, I think they are very well designed.

Senator SINEMA. Thank you. My next question is for Professor Ali. In your written testimony, you discussed the persistent problems with the maps the FCC uses to determine which areas of the country have insufficient broadband. And, as you know, inaccurate maps complicate efforts to send Federal resources to the parts of rural Arizona that are not connected.

Along with bipartisan members of the Committee, I supported the Broadband Data Act, which passed last year. And that law now requires better, more accurate maps, but it has not been fully implemented. So, what more needs to be done to ensure that we have maps that we can rely on when making decisions about billions of dollars of Federal investment?

Dr. ALI. Thank you very much for the question, Senator. I absolutely agree that we need to fix the mapping before we start spending even more money, because these maps need to reflect those who actually do not have, who are un- and underconnected.

I think we can look at some best practices from what some states are doing. I am buoyed by what I am reading about in Georgia, with this innovative partnership and I think these are, kind of, the out of the box examples that we can take to heart and learn from. But this also means bringing more stakeholders to the table, not just providers but bringing communities and counties and states to the table, as well, to have that serious conversation.

Senator SINEMA. Thank you. You know, my last question is both for Professor Ali and for Mr. Wilkins. Many Federal agencies put a role in expanding broadband access for Americans, including the FCC and the Departments of Commerce, Agriculture, and Treasury. And this, of course, we have heard has caused confusion for applicants, especially when the programs are inconsistent, or they occur concurrently.

So, I have supported better coordination between Federal actors and the December Omnibus Bill that we passed required increased coordination and a one-stop shop for applicants. So, what are your thoughts on increased Federal coordination, between the FCC and other Federal partners, to help get Americans connected?

Mr. WILKINS. Senator, maybe, I will start, because I know Dr. Ali knows a lot about the USDA side of this, as well. I would just say, in a way, the problem you are describing it is a critical one, but it actually comes from a good reason, which is there are so many new kinds of providers interested in bringing broadband to rural communities. And so, what you actually see is, traditionally a telecom operator, a small one or a big one, knows how to work the FCC, understands FCC programs, maybe not the USDA so much. A local, rural provider, an electric coop, was mentioned. They know all about working with the USDA and the FCC can be very hard. And then, in contrast, you know, a large company actually says to the USDA, "Boy a lot of your requirements are things that do not quite work for us, because we have all kinds of, you know, public disclosures we do as a big company".

So, it is different providers are used to working with different agencies and, coordination that actually just addresses that, making it much more of a smooth process for all the different kinds of providers that want to bring broadband to rural communities, that alone is a big reason to do, you know, what you are describing. And it will make a difference, going forward, if it is done well.

The CHAIR. Thank—go ahead, Dr.

Dr. ALI. I would just add, just really quickly, I absolutely agree on the need for coordination and the idea for one portal for all applicants. I also think that, in partner with coordination, we need to actually have a designated leader in this who should do the coordinating. I think we speak a lot about that. But the next level should be who should organize the coordination.

The CHAIR. Thank you. Thank you, Senator Sinema. Thank you. Senator Moran.

**STATEMENT OF HON. JERRY MORAN,
U.S. SENATOR FROM KANSAS**

Senator MORAN. Chairman Cantwell, thank you very much. Let me begin with Commissioner O'Rielly. Commissioner O'Rielly, thank you for your public service. My only complaint—perhaps my only complaint, at least public one, during your service is that you were not Kansan. Could not overcome that.

Let me start with you and asking you, the maps have always been a topic of conversation that I have had with the FCC, you and others. We passed, President Trump signed the Broadband Data Act. The FCC is now required to collect granular shaped files and propagation maps that depict provider service and coverage areas. The concern then raised, or the explanation for why that might not happen is lack of resources, dollars. We have appropriated \$98 million in the Consolidated Appropriation Act. Are there any excuses left to get us to the point in which we know what areas are underserved?

Mr. O'RIELLY. Well, I do not think there are any legitimate reasons, but I would only say that—and I said this to Ranking Member Wicker, is that you have added new burdens on the Commission. Two new programs, one, you know, basically new E-rate program, and the EBB. That is really time—that takes an awful lot of effort. And so, you are diverting resources, not because you cannot have people working on two different projects, but they all have

to go through, you know, common reviewers, and there are only so many people at the top that have to look at everything. So, that was my point—

Senator MORAN. So, it is volume of work.

Mr. O'RIELLY. It is volume, but it is also a factor, to Senator Wicker's point, you know, was that—my point to him was, make this very clear. This is one of your top two, three priorities, and it has been. I have been very aware and in support of your point for when I was there.

Senator MORAN. No, you have, and I appreciate that. I mean, it is—it needs to be a priority because it determines what we do next.

Mr. O'RIELLY. Yes.

Senator MORAN. It would be irresponsible for us to authorize the spending of more money, the FCC to create more programs, and put it in the wrong place. The maps, then, in my view, determine the direction we go, and we should not go there until we have a map.

Mr. O'RIELLY. Which is somewhat troubling, I would think, to compliment. We have these other Federal programs that—what are they using? They are not using maps. If our maps—or, if the FCC's maps are flawed, they do not even use any. That is a problem.

Senator MORAN. Now you have stuck something else in my brain to worry about, which we will. Mr. Forde, Midco was named as one of the winning RDOF bidders in the reverse auction. That program is funded by the Universal Service Fund. Tell me about what concerns you have about the Universal Service Fund and its future?

Mr. FORDE. Well, I think, obviously, the Universal Service Fund, you know, again, if that funding is going out to provide broadband, then it should be going out to, as I just touched on, you know, to truly folks that are unserved. In our footprint, in the area that we serve, about \$1.3 billion of that just went out to other providers for operating expenses. Again, we do not need that operating expenses and many of those providers are overbuilding areas that already have Gig service. So, certainly to make sure that that funding does not continue to go to folks that need it to operate, would be helpful, as we look at USF reform, and again, only goes to targeted folks that are truly unserved.

Also, just wanted to note, it is a pleasure to work with you and be in Kansas. Thanks to your efforts, in addition to Senator Hoven and Senator Thune, working with the USDA's ReConnect Program, for the first time.—we usually found out about ReConnect grants, when they were awarded, but for the first time, this year, thanks to your work, we got a response and actually, some of our—and they held a challenge process to make sure that our areas, where we had been awarded CAF II funding, was not overbuilt by ReConnect. So, I just wanted to thank you for your work with USDA to make sure that we actually got a response to our challenges, for the first time ever, and that they were upheld. So, really appreciate your work to make sure that USDA's programs are working better and truly targeting unserved areas.

Senator MORAN. Thank you very much. Maybe I should ask you about what Commissioner O'Rielly said. Where does the map come from for the USDA to utilize? What information are they using to make that determination? And I also was going to give you—I

thought I might get you to respond about the concern about the declining amount of dollars within the fund—within USF?

Mr. FORDE. Yes, again, I think that you know, the USDA, some of the information that they have had has been a couple years behind, as the ones actually out there and been deployed, and that has been problematic, from that effort. A lot of those grants need to, again, truly be focused on unserved areas. They also—that process has been very difficult to apply for. Companies have been limited, based on their structure. So, like us, it has not worked well for us, based upon our company's structure. It is targeted to more old, rural cooperatives and companies like that, which makes it problematic for us to apply for. So, appreciate your continued efforts to work on that issue, so—

And in regard to the—go ahead. Sorry, Senator.

Senator MORAN. I am running out of time. I would conclude. I always want Chairman Cantwell to like me, so I am going to try to conclude in 2 seconds.

Mr. FORDE. Go ahead.

Senator MORAN. I would say thank you for your presence in Kansas. I also would highlight, and I do not have a chance to ask—time to ask the question, but we really need to have oversight on those RDOF winning bidders, and whether they are actually providing the service that they have committed to providing. Oversight seems hugely important to me and, again, maps are one thing, if we provide it the wrong place, but if we give money to somebody and they do not actually fulfill their commitment, that is another very damning circumstance. Thank you.

The CHAIR. Thank you, Senator Moran. Very important point in this whole debate. I am going to run and vote and ask Senator Luján to take over. I think he has already voted. So, I know that we have several other members who would like to ask questions. I know the Ranking Member was hoping to get in a second round of questioning. So, we are going to try to keep this going. We hope our witnesses can stick with us for a little bit longer. But, Senator Luján, thank you for taking over. It is your turn to ask questions, and thank you for chairing while I am over running to vote.

**STATEMENT OF HON. BEN RAY LUJÁN,
U.S. SENATOR FROM NEW MEXICO**

Senator LUJÁN. Thank you so much, Chair Cantwell. To the witnesses, thank you so much for being here today. To our Chair and Ranking Member, thank you for calling this important hearing, and the full committee. An important conversation that we have to have across America, as we talk about expanding broadband infrastructure and, what I hope is a goal for all of us, to get to 100 percent connectivity of fast, affordable Internet in America.

Recently, Kimble Sekaquaptewa, who is the Chief Technology Officer at Santa Fe Indian School, and a member of the New Mexico Homework Gap Team, shared a story with me. Back in August in New Mexico, when it is still very hot, in one particular Pueblo community, the school was delivering 100 percent distance learning, as in most parts of America. And we know that a lot of homes still lack access to fast internet, or any Internet at all. And there was a student that was in middle school, in junior high, trying to do

his best. He was trying to get the homework done, which meant sitting out in the sun all day to connect to Wi-Fi. He was there so long he got heatstroke, trying to complete his assignments.

The American Rescue Plan's temporary E-rate support for Wi-Fi hotspots and connected devices is an important stopgap, however, I believe that Congress must mobilize to advance long-term solutions that bring resilient, redundant, and secure broadband into every home. And over the past year, the Federal Government has provided \$16.7 billion for broadband buildout. Dr. Ali, is \$16.7 billion enough to connect every American to resilient, reliable, and secure high-speed internet, yes or no?

Dr. ALI. No.

Senator LUJÁN. Last Congress I worked with Whip Clyburn to author and pass the Accessible, Affordable Internet for All Act in the House, and was excited to co-sponsor this legislation when Senator Klobuchar reintroduced it here in the Senate. The bill would commit more than \$80 billion to build high-speed broadband infrastructure in unserved and underserved communities, to close the digital divide and connect America.

This question is for Mr. Wilkins and for Dr. Ali. Mr. Wilkins, do you agree that \$80 billion is the right ballpark to connect all Americans, yes or no?

Mr. WILKINS. Yes.

Senator LUJÁN. Dr. Ali?

Dr. ALI. Yes.

Senator LUJÁN. Now, with that being said, it is my understanding that that is based on a per capita formula, as opposed to looking at people in an area. Is that correct?

Mr. WILKINS. Senator, that is essentially just the overall national number and local conditions can be very different, depending on what is happening there.

Senator LUJÁN. Should local conditions be looked at when we are making plans to build out?

Mr. WILKINS. Absolutely, and states and Tribal governments have a huge contribution to make.

Senator LUJÁN. The Accessible, Affordable Internet for All Act also includes legislation I authored, which is the Broadband Infrastructure Finance and Innovation Act, to provide \$5 billion in Federal funding to make low interest financing available to communities, to support broadband development. Mr. Wilkins, how can financing help leverage Federal dollars to go further, to provide more Americans and New Mexicans with access to resilient, affordable high-speed internet?

Mr. WILKINS. Senator, it is critically important. I think, as Dr. Ali mentioned, one of the important trends is smaller, local providers actually looking to bring broadband. Those companies need help with financing. If you are a big, public company, you can raise the necessary capital. Smaller ones, if they can, it is very expensive, and it means they spend more in financing than they do on building broadband.

So, I think that it is a very real problem. I think that the simple math of a Federal loan guarantee, such as you are proposing in the BIFIA proposal, would do huge good for a lot of those capital raising efforts.

Senator LUJÁN. Every year Congress hears promises about next generation technology and the ability to connect to everyone. First, it was 3G, then, 4G LTE, now 5G and low Earth orbit satellites. Now, do not get me wrong. These are amazing and important technologies. I have always believed that there should be canopies and layers associated with how we can achieve 100 percent connectivity in America, to power increased speeds and to connect the unconnected. Whether we are talking about geographical challenges, topography, where we have mountain ranges that we need to address, and especially in rural and Tribal communities, where easement constraints need to be addressed.

Now, the problems arise when these services are the only option available in a community. I believe we have to plan for a future where broadband is redundant, resilient, and secure. You are going to keep hearing me say that. I think that is what we need to get to in America.

So, I want to ask each of you a yes or no question. The FCC currently defines broadband as 25 megabits per second download, which is what the measure of speed is where people get all the incoming, if you will. If you are pulling content into you, that is the speed the FCC prescribes. And 3 megabits per second upload. So, if you are interfacing with the outside world, and now, with the use of Zoom, people are talking to more people using video and things of that nature. So, now we are talking about 3 up. There is a lot more use of connecting with people outside, as opposed to just getting the incoming. So, my question is, does the FCC's current definition of broadband meet current needs for a single household. Mr. O'Rielly, yes or no?

Mr. O'RIELLY. My apologies for—I would say it does a very good job. Is it complete? Probably not, but in terms of your point in the Zoom, 3 does an—you know, you can have multiple Zoom conversations. And I have seen that the most they have gotten is 5 megabits going up. The idea that it needs to go to 100, I disagree with.

Senator LUJÁN. Is 25/3 enough to meet the current needs for a single household?

Mr. O'RIELLY. You know, that is something for policymakers to consider changing. There are multiple reasons not to do so. Could it be improved? Yes. Yes, I think it is sufficient compared to those that have nothing, yes.

Senator LUJÁN. Mr. O'Rielly, do you have Internet at home?

Mr. O'RIELLY. I do.

Senator LUJÁN. What speeds do you have?

Mr. O'RIELLY. I have Verizon Fios and we probably have 150.

Senator LUJÁN. 150?

Mr. O'RIELLY. Megs for download.

Senator LUJÁN. And up?

Mr. O'RIELLY. It changes depending on, you know, how my Wi-Fi system is working.

Senator LUJÁN. Is it higher than 3?

Mr. O'RIELLY. It probably is higher than 3, but I have not done a test in quite a while.

Senator LUJÁN. My point is, those speeds that you are talking about, are the speeds that are being prescribed with 100 down and 100 up. I want everyone to have what you have.

Mr. O'RIELLY. But I am saying 100 up is—we have had this conversation most of this day. It blows through every program that has been out there, and it is to a point that we—that is far beyond usage expected in the decade.

Senator LUJÁN. Far beyond usage. So, why would you pay for that?

Mr. O'RIELLY. Well, I do not pay—I do not pay—I said——

Senator LUJÁN. You subscribe to get—you do not get it for free, do you?

Mr. O'RIELLY. No, I subscribe to it.

Senator LUJÁN. Yes.

Mr. O'RIELLY. My wife pays for it. But——

Senator LUJÁN. Yes, you get what I am saying.

Mr. O'RIELLY. Yes, I do.

Senator LUJÁN. You went for that package because those are speeds that you believe, you need to be able to connect. And all that I am asking here is, you know, what is acceptable. I would love to chat with you more. Like, Mr. Tester, I respect your work very much. I did not always agree, as you know, but I definitely respect the work that you have done. So, I look forward to chatting more with you there.

Mr. O'RIELLY. Sure.

Senator LUJÁN. Mr. Forde?

Mr. FORDE. Absolutely. I get 25/3 at my house. Three kids doing online distance learning, my wife is running a very large small business, I have been working from remotely. I receive my Internet from a high-speed fixed 5G fixed wireless connection from a tower 8.8 miles away from my house. Looks very similar to the screen behind me. Had absolutely no issues through the pandemic, through blizzards, all of those things. It has been a great connection. And I would like to remind, with that connection, that is not the ceiling. I can certainly purchase more if I want to, to receive higher speeds and higher internet.

So, certainly more than sufficient for our family and it is also very, very affordable price of less than \$50 a month. So, been a great tool for us to have throughout the pandemic, as well as my friends and neighbors who are all ranchers. A guy just ran a bull auction nationwide, people buying cattle from all over the country with the same speed and connectivity, so——

Senator LUJÁN. So, Mr. Forde——

Mr. FORDE. Very much so. It works in rural America.

Senator LUJÁN. I will assume your answer is yes.

Mr. FORDE. Yes.

Senator LUJÁN. Dr. Ali, yes or no?

Dr. ALI. No, I do not believe that it is satisfactory.

Senator LUJÁN. Mr. Wilkins?

Mr. WILKINS. No.

Senator LUJÁN. Very much, appreciate that. The last question I have, as I am going to go to Senator Blackburn, is, Mr. Wilkins, how might have the overbuilding provisions and RDOF raised the cost of broadband in the long-term, or otherwise hinder the goal of closing the digital divide?

Mr. WILKINS. Well, as I sort of commented in my testimony, I think overbuilding, in some ways, is the wrong way to think about

the question of bringing broadband to an area that does not meet the standard that Congress says is necessary. And I think that a lot of the approaches used in RDOF, that really did—and many of the implementation details, frankly, made it pretty hard for a true new provider that was going to offer a much better service, to be able to bid effectively. And again, the question is not overbuilding, not overbuilding. The question is what is the performance level that we think is necessary in these rural areas?

Senator LUJÁN. Appreciate that, sir. I would now like to recognize Senator Blackburn for her questions.

**STATEMENT OF HON. MARSHA BLACKBURN,
U.S. SENATOR FROM TENNESSEE**

Senator BLACKBURN. Thank you so much, Mr. Chairman. And I am trying to get to the floor to vote. I do have a couple of questions that I wanted to bring up and let us start right there.

Mr. O'Rielly, let me come to you, and it is good to see you again. Talking about this 100/100, the symmetrical networks, talk about the impact that would have at the Commission. If we keep moving the goalpost, and say we are not going to deem an area as served, unless it meets this standard. So, just a couple of comments on that.

Mr. O'RIELLY. Sure, so it terms of 100/100 speed that has been talked about, the demand for the upload is far beyond where the current Commission standards are and would wipe out almost all of the areas in the United States. The majority of the United States would be deemed unserved and, therefore, you have recalibrate all the different programs. They would pretty much be wiped out and all those dollars would be gone, and that is why people talked about new spending.

I say there is a second purpose, though, because it triggers the section 706, which I know you are familiar with, in terms of the regulatory burdens the Commission can impose to remedy that situation. That is one of the other problems with the speed threshold here.

Senator BLACKBURN. OK, let me ask you, just a point of clarification there, would it deem it unserved or underserved, for all these other areas?

Mr. O'RIELLY. Right. It would depend on what the structure of the bill or law turned out to be.

Senator BLACKBURN. OK.

Mr. O'RIELLY. But would likely be unserved, under that definition.

Senator BLACKBURN. OK. All right. Thank you, thank you for that. Mr. Forde, you have talked some about what you have and how you have run businesses. Your neighbors that are ranchers. What percentage of your network usage, that you have talked about today, does downstream and upstream usage represent? Would you just ballpark that for us?

Mr. FORDE. Certainly. Again, we use, you know, three forms of technology to deliver broadband—the direct fiber connections, the hybrid fiber-cable mix, and the fixed wireless network. Throughout the pandemic, it has always been about 14 to 16 percent higher download speeds than uploads, so—and that has not, you know,

varied regardless of the technology used to deploy. So, you know, we will continue to use whatever tool is best for those folks, and we will provide whatever connectivity they need regarding all three of those.

Senator BLACKBURN. OK, so an asymmetrical network works for you, correct?

Mr. FORDE. Correct, and that is what our customers are using and that is what our customers are asking for, and all three of those technologies are scalable. We would not deliver those to our friends and neighbors if we would not be able to scale those, both upload and download, based upon customers' needs and usage, so—

Senator BLACKBURN. OK.

Mr. FORDE. Keeping in mind that they are all scalable to more, should our customers like them.

Senator BLACKBURN. All right. And that is helpful to get. I think that is important. Meeting the needs, so that we get more people into served areas and out of unserved areas, and with the pandemic, whether it is access to healthcare, economic development, law enforcement, or education, the Internet has become an imperative for these communities.

Let us see. Mr. Wilkins, I wanted to ask you about maximizing the use of Federal dollars to reach these unserved areas, that really have been overlooked, because of the significant expenditures of getting into those areas where you have so few customers on a mile, and they are with the fiber. So, how would you maximize those dollars? Would you approach it, as Mr. Forde has done, with a combination of delivery systems?

Mr. WILKINS. Yes, well—so, I think it is first just to start with what is the investment Congress wants to make and what are the standards to set. I think it is, obviously, true that the less density you have in an area, for example, the harder it is to bring a certain quality of service.

So, I think the first question is, what is the size of the investment? If there are areas where fiber actually does not work within the budget that is available, certainly other technologies, you know, are very viable. And I think, actually, Senator Cantwell mentioned, you know, the idea that you might have separate portions of a program focus specifically at extremely unserved areas. I mean, Senator Sullivan talks about Alaska. Those are very good ideas. They have existed in the past. They could be done better, I am sure. But to me, that is an implementation detail, after the question of what is—

Senator BLACKBURN. Well, and yes, I think finding something that works in the area, and not necessarily fiber to the premise, which was the old way of approach, is something that is an imperative for us to consider.

I will—I am at the end of my time. I will just say, you know, Mr. O'Rielly, I cannot believe we are still discussing maps. When I was in the House and we were working on this issue, cleaning up those 477 maps was a priority, and we could not get the Senate to work with us on that as a priority. So, hopefully now, we are going to actually see something done about the mapping and, also, closer at-

tention paid to oversight of expended dollars to fight waste, fraud, and abuse. Be sure this money is being used to get people online.

Thank you, Mr. Chairman.

The CHAIR. Thank you, Senator Blackburn. And definitely we are going to get somewhere on mapping. Trust me.

OK, I think we may have Senator Rosen on our side. If not—is Senator Rosen—OK. If not, Senator Capito.

**STATEMENT OF HON. SHELLEY MOORE CAPITO,
U.S. SENATOR FROM WEST VIRGINIA**

Senator CAPITO. Thank you, Madam Chair, and thank all the witnesses and this is an extremely important, obviously, issue to all of us, particularly in a state like West Virginia, which I know you all are aware of.

Let me ask you, something that Senator Klobuchar and I are working on a bill that I formulated as an idea that I saw from one of my very small Doddridge County, who decided that they were going to deploy, as a county, deploy broadband to everybody in the county. We are talking very rural here, and small. And I thought it was brilliant the way they decided who they were going to go to first. They are going to go to the students. Every student in that county will be connected through the efforts of the Board of the Re-Connect Program of Internet service provider, City Net, and as the County Commission. And so, it is an all-hands-on-deck proposition.

So, help me—in the bill, we do incorporate some suggestions for E-rate. In other words, reclassifying the home as a classroom. So, I would like to ask Mr. Wilkins what you think of that idea, and how do we achieve that? Because it is a classroom now, for so, so many of our students and families.

Mr. WILKINS. Yes, so, Senator, that is a great question. I literally worked on a business plan like that for an RDOF participant, actually a municipal sort of entity, that wanted to do exactly what you are describing, in a different state. And that question of, we are not sure that all the families in this rural area actually can afford the service, at the level we want to provide it, and we actually talked a lot about E-rate, what might be available. And this was last year, and so, the discussion of, well, you know, classroom does not include the homes. Very real issue and, absolutely, if that was done, would actually improve the deployment cases in a lot of areas.

Senator CAPITO. Because of the affordability issue that E-rate would bring to those families? Is that the correct assumption?

Mr. WILKINS. Yes, so, I mean, in other words, if you are going to build a very high-performance broadband, you know, you might need to charge \$75–80 a month. I mean, that is a very reasonable rate for high-speed broadband. And you know, there are many families, including in rural areas, where that actually might be too expensive. And so, as sort of a partial support, in the form of E-rate, it is sort of done through the school process for students, can be a great demand support, I guess is how a project finance person would think about it. But would have a very big impact in many areas.

Senator CAPITO. Thank you. Yes, that is something that we are pursuing, and we are going to move forward on that. Mr. O'Rielly, let me ask you a question on the RDOF procedure. We were able

to get some local providers to add—I think we got a pretty robust response. The FCC came back with a fairly decent, large award that is going to be able to serve our state in that auction.

Here is my deal. There are people—and I have written—I wrote to the FCC and you know what I am talking about. There are people who were awarded census blocks in that—there are entities that were awarded census blocks in that auction, that have not performed in the past. And I want to know from you what kind of teeth do we have in that RDOF? What kind of teeth should we put into that, in terms of claw back, or whatever, where we can make sure that we are actually getting what the proposed delivery is supposed to be?

Mr. O'RIELLY. Well, the FCC is, my understanding, is going through long form process right now, which means they are scrubbing the winning bidders for all of the detail, and requiring, you know, filing of numerous documents. And Mr. Forde can probably comment about how much material that they seek. So, they are going through that process to make sure that those can—you know, and probably will, you know, do a really good job, especially given the added pressure and focus by members and else wise. So, I expect that they will do a very good job.

What I have suggested earlier, and something I did not—was not successful in adding to the program and it should have been something that we can do going forward, is to really bump up the penalties for missing the deadlines. Right now, I think it is, you know, \$3,000 per violation and 15 percent of your funds. Well, some companies may be willing to do that for a couple years, and then, take the penalty. That is not acceptable in my mind, and we really could have—I did not win that argument, at the time, and I did not win a bunch of things. But that would be something that could improve the situation.

Senator CAPITO. Well, I agree with you. It is totally unacceptable. It is unacceptable that anybody could take the dollars, move forward, in less than judicious fashion, and make a decision four or 5 years later, when the service has not been delivered, well, I will just go ahead and pay the fine.

I mean, we have got to be better than this. I mean, we have seen this in the last—in some of these other programs where, at the end of the day, here we are still talking about the same thing, three and 4 years later.

So, I really want to see some teeth in this. I am hoping, in the second—as they are looking at the long form, that they really are looking at past behavior, looking at people who do not deliver the service they say they are going to deliver right now, today, and that they do not allow those contracts to go forward. Because, in the end, they are not going to do it. I mean, you know, what is it? Past performance indicates, you know, future behavior. And I do not know why that is good enough in every other rule but not in this case. It is very—you can tell, it is very frustrating for me.

I do not know, Madam Chair, am I over my time?

The CHAIR. Well, just by 11 seconds. That is OK.

Senator CAPITO. Well, that is good. Thank you very much.

The CHAIR. Thank you. Thank you, Senator Capito. You raise some very important issues. Senator Young.

**STATEMENT OF HON. TODD YOUNG,
U.S. SENATOR FROM INDIANA**

Senator YOUNG. Thank you, Madam Chair. Commissioner O'Rielly, last year, when you testified before this committee, we discussed your support for removing unnecessary barriers and maximizing competition in the Universal Service Fund auctions. So, as we sit here, almost a year later, one of the lessons learned from the first round of the FCC's Rural Digital Opportunity Fund auction, is that broad participation by providers means more consumers will be served with far less funding.

As the FCC plans for the second round, and other programs, what steps can the Commission take to expand bidding by qualified providers, in order to extend broadband in rural Indiana and across other states and narrow the digital divide across the country.

Mr. O'RIELLY. Well, one thing we can do, and I talked about it in my testimony is, remove the ETC designation, or certainly revamp it, because that is a barrier that companies are running up against, in terms of the requirement to obtain it. And you saw this in RDOF round one, where a number of providers that people thought may bid, decided not to for that very reason. Where they were going edge out into a new state, and therefore, require new designation. They just were not willing to do so, and so, that is a problem.

And you see where the Committee, and others, have done, you know, have fixed this. In the Emergency Broadband Benefits Program, there is basically an exemption for this purpose. So, it cannot be something that held the test of time if it is something that the Committee is willing to waive. So, I think that is something enormously helpful that can be fixed immediately.

Senator YOUNG. Very good. I may have some follow-up questions, but I will submit those in written form, that you can provide to me later.

I am going to turn to 5G, we will call it, nationalization. The topic of this hearing is the deployment of broadband, and there are a lot of ingredients that go into making broadband available beyond Federal funding, including spectrum. Mr. Wilkins, as former Chief of the Wireless Bureau at the FCC, I think it is fair to say you have a good level of familiarity with spectrum policy. Are you familiar with proposals to allow DOD to either build out a national network for 5G, or let a private third-party network operator do the same? And I will say, I am curious if you have any thoughts about this kind of model being pushed by some companies, seeing that it has never been done here in the United States.

Mr. WILKINS. Yes, yes, Senator, I am very familiar with it. I honestly find it a very perplexing proposal. Just a couple observations. The general idea of sort of government facilitated, government sponsored or run wholesale networks, has actually not worked anywhere in the world that I am familiar with. Going back 20 years to Australia for the fixed side, recently Mexico on the wireless side, I have not seen it work.

The specific proposal, as I understand it, involves up to 350 megahertz of DOD spectrum. That is actually more spectrum than any of the wireless carriers have today. You know, you have AT&T, Verizon, and T-Mobile with, frankly, less spectrum than that in

total, supporting 100 million or more customers in all kinds of uses. And I just had not understood, actually, what the use is supposed to be for DOD to need that much spectrum, in that much of the country. And I think there are other details that also do not make sense, but I think at that simple, logical level, I just find it very perplexing.

Senator YOUNG. OK. Commissioner O'Rielly, I really want to ask you a question on an unrelated topic, but I would like to get your thoughts on that, if you can give me 30 seconds or less. In agreement, in disagreement, what reflections do you have on that topic?

Mr. O'RIELLY. I agree, actually, with Mr. Wilkins and I completely oppose the idea of a wholesale network where we would lease off spectrum to DOD or use DOD spectrum that they themselves would build the network or allow someone else to use. I think it is awful policy and it would contradict decisions that have been made by this committee, and the FCC, over the last many years. It should not be done, in my opinion.

Senator YOUNG. OK. So, if I can reinterpret what all of you said, you think it is a really bad idea.

Mr. O'RIELLY. Yes, sir.

Senator YOUNG. OK. Commission O'Rielly, with so many Federal agencies and states in the process of awarding broadband funding, it seems like there is a high risk of duplicating efforts, and also, overbuilding private investment. So, I would love to be disabused of this, but with these constellations of funding programs and so forth, I am curious. Do you agree that using a challenge process to get the most up-to-date information on broadband availability can help reduce this risk of overbuilding?

Mr. O'RIELLY. Oh, absolutely, and it is not just a risk. It actually exists. Mr. Forde, talked about the situation he faced, I think, in Minnesota. I have seen the situation in Wyoming, that I wrote about when I was still at the Commission. So, the dollars are going to places that are already being served. So, you are having a subsidized competitor entering and competing against a private sector provider. It is really problematic, and we are going to see more of it as we have all these different pots of money competing against each other.

Senator YOUNG. I thank our panelists. Madam Chair.

The CHAIR. Thank you. Senator Lummis.

**STATEMENT OF HON. CYNTHIA LUMMIS,
U.S. SENATOR FROM WYOMING**

Senator LUMMIS. Well, thank you, Madam Chairman, and thank you, Commissioner O'Rielly for teeing me up. That is exactly the problem. Sixty-five percent of rural households do not have access to high-speed internet, and I am talking about the kind needed to work or learn from home. So, the share of rural households without access to high-speed Internet is 20 times that of urban households.

And talk about identifying a barrier, our past Governor, Governor Mead, engaged in a process called Endow, where he identified barriers to economic growth and diversification in Wyoming, and rural broadband, air service, and healthcare were the top three and rural broadband was number one. And then, it became even more exacerbated during the COVID crisis, because you had all of

these people trying to become educated and working at home, in a state that has inadequate broadband services.

So, thank you, Commissioner O'Rielly for teeing up my question. You worked extensively to coordinate investment in broadband during your time at the FCC, so you are familiar with the problems overbuild poses to rural and hard to reach areas. What do you envision is the best way to counter overbuild? And excuse me if you have already addressed that.

Mr. O'RIELLY. Well, I have a little bit, but I mean, there are many things that need to be done, but one is, you know, we need to know all the dollars that are going out and we need to have coordination. But it is more than coordination, because I have sat down with USDA in the past, and we talked about the different—they did not, at the time, understand what I was even talking about, in terms of subsidized overbuilding. That is a problem. When two agencies do not have the same commonality of a concept, and we never got that far.

So, we never got any resolution to that. It was punted to somebody else and dealt with it and it has not been resolved. Ninety percent of the funds from USDA can go to a non-overbuilding purpose, but 10 percent can be overbuilding. That is problematic in my viewpoint. But it is separate from the decision the CARES money went to, in Tongue River's situation, who, you know, was facing, you know, multiple providers. They had a challenge process that did not work effectively, and they did not have one in the state process, and the State's argument was, we had to get the dollars out, as soon as possible, to make sure we, you know, could receive funding.

So, there are a lot of things that could be done just to rectify that situation going forward.

Senator LUMMIS. Thank you very much, and Madam Chair, thanks for doing this hearing. This is really a critical issue in my state. Now, I know this question has come up several times during the hearing, but I have to point out that in Wyoming many communities, many communities—many do not even have 25/3 service. So, I am concerned when I hear about proposals to open up Federal funding for areas that do not have 100/100.

So, my question for Mr. Forde, do you think we should prioritize communities that still do not have even basic broadband, before upgrading speeds?

Mr. FORDE. Absolutely 100 percent agree. We have got to focus on those truly unserved areas left. We serve many of the neighboring states to you. So, we have got to get focused like a laser on those and get them broadband once and for all.

Senator LUMMIS. Thanks. Commissioner O'Rielly, do you want to weigh in on that?

Mr. O'RIELLY. Absolutely agree with Mr. Forde, it should be the priority of the Commission, and it certainly should be reflected in the different programs that are created, that we address and have a laser focus on the unserved population. Whatever that number is, it could be—you know, we could dispute on how big it is, on different measurements, but that should be the priority of those, that have nothing. Those that Senator Sullivan talked about, and others have talked about, that have substandard broadband today, we

should address and that should be the primary focus, in my opinion.

Senator LUMMIS. Well, thank you both. That is music to my ears. Now, I can tell you, one of the major sources of red tape, holding telecom companies back from providing service in rural America, is the Federal permitting process. It holds both service in rural areas and Tribal governments.

So, Mr. Forde, could you talk a little about the impact of Federal permitting processes, such as NEPA, in building out your network?

Mr. FORDE. Yes, we have a—obviously, in western North Dakota, very, you know, close to Wyoming there, we have had several issues. Took us almost a year to cross the Missouri River, due to needing multiple permits from the Army Corps and others, to deliver a new fiber pipe to some areas. Oh, and a booming energy economy we have in western North Dakota, where a lot of folks needed better connectivity out there, as we grew to be one of the top oil producing states, delayed broadband getting out there over a year. Similarly, crossing some Federal lands in that area also delayed that process.

In the Black Hills, when Senator Thune was here with us earlier, again, next to Wyoming, numerous issues in getting service out there because of some of the Federal designations. Not being able to—for example, there was a road going up a canyon. There was no right of way for the road because the road was built on Federal lands. So, there was really no place for us to run the broadband, and hence, people up the canyon, no broadband.

Senator LUMMIS. You are identifying the issues that are holding Wyoming back, and I am very grateful for your testimony today. And thank you again, Madam Chairman, for holding this hearing. It is just critical to my State of Wyoming. Madam Chair, I yield back.

The CHAIR. Thank you, thank you. It is so critical to lots of aspects of the United States. I think we are going to have Senator Rosen online in a few minutes, but while we are waiting for her, I think I will just jump in here on a few points from earlier.

Mr. O'Reilly, one of the issues that was brought up was just satellite services, and obviously, you were an advocate for that, at the FCC, I think.

Mr. O'RIELLY. Well, I did not want it excluded from the front part. I thought they had the right to be able to prove that their technology should be considered. And what our draft rules at the time would say, "No, we are not even going to consider it. They are excluded." And I thought it was only right that they be able to prove—they, supposedly, and I was not part of the—I was not brought into the process. They, supposedly, were able to prove that to the staff and then, were able to—on particular proprietor was able to bid in the RDOF and receive funding.

The CHAIR. What do you think about that as an application for whatever you want to call it—the 2 percent, the some percent of America? I loved hearing from Mr. Forde today because, you know, in a lot of ways, the central part of Washington might be a little bit like that, but certainly not the far east into Palouse, and certainly not out on the Olympic Peninsula. We have mountains, we

have forests, we have all sorts of problems. But, so what do you think about satellite—

Mr. O'RIELLY. Well, I have been in—

The CHAIR.—for a solution to very hard to serve areas?

Mr. O'RIELLY. I have been impressed with what the plans have been by a number of the lower satellite offerings. I have experienced Starlink. I went—it took 3 minutes to set up, in a rooftop in DC, and the service is 150 meg, instantly. So, I was impressed by that.

Now, to the point Mr. Ali—or, Dr. Ali has made, we do not know about the scalability. We also do not know if the business model will work, and then, you have costs in terms of the equipment. But in terms of, you know, filling a need of those that have absolutely nothing, and they call it, you know, basically, best of what you can get, kind of thing. I think that is very impressive and it will only increase over time.

Who is going to succeed? I do not know. There are three or four or five different satellite providers. Everyone thinks there is room for probably two, but they will always say it is me and this other guy, and they will all disagree on who that is.

The CHAIR. Right, I hear you on that one. So, to me, this issue about competition is an important one, because we obviously want to have competition, because competition does drive down cost. I mean, a lot of people would say, even within the urban environment, we do not have enough competition. That is one of the reasons why we have such high prices for broadband, overall. And then, there is the issue of where the market just is not working at all—market failure, as Dr. Ali has mentioned. And so, Dr. Ali, I wondered if you could focus a little bit on that, on the market failure side. I mean, to me, when you put in the Universal Service Fund, when you put in spectrum that was given previously, not the most recent ones, but you know, you have a lot that we have invested in already. So, how do we get efficiencies here? How do we get efficiencies?

Dr. ALI. That is a great question, Senator, and Madam Chair, thank you. How do we get efficiencies when it comes to serving, or getting service to, the most unconnected? You know, one of the things I am thinking about, is in my home State of Virginia I have talked to a number of counties and they are excited. They actually won—they have a little bit of money. They are struggling to find a provider—a dance partner, as it were, and even though they have got these incentives in place.

Something that is near and dear to my own heart is, you know, opening up opportunities for municipalities and counties to fund networks and organize networks themselves, in the form of municipal broadband. I think that that has proven to be a really interesting component, if we think about layering the different types of providers. So, I would love to see the regulatory barriers, in so many states, toward municipal broadband and county broadband be eliminated to allow counties and municipalities to drive their own future.

The CHAIR. And how would that help with the other aspect of the dilemma where we have, you know, basically given green lights, or we have had broadband deployment, only to have it reach a com-

munity, but basically have the cost—you know, you have no takers because the cost is so high? What do we do in that case?

Dr. ALI. Another great question. I would love to see a mandate where all providers have to have a low-cost option. I believe that Jon Sallett had said that \$10 a month is what the, you know, lowest earning household can afford. Especially if we are thinking about making the Emergency Broadband Benefit Package permanent, maybe, at \$50 a month, we need to make sure that there are plans, that there are tiers available that that can cover. So, I think that next step will be about pricing and making sure that those who are using these programs can actually afford services.

The CHAIR. Well, I think this becomes even more complex with the world of, you had called it, you know 5 years ago, “cord cutting”. Now, I call it just, you know, more efficient adjustments to homes of getting what Internet service they want. So, I mean, we have a lot of transformation going on at the same time. That is why this is, I believe, challenging, just because you have so much transformation.

And you also do not want to leave anybody behind to new applications. You do not want to preclude somebody from being the next center of focus. You know, we have an area of our State in the Columbia Gorge, which is a very challenged geographic area. Most beautiful area, it has got a national designation. But they were able to pull off very significant drone development, that ended up playing major roles for us in the United States. Very rural, hard to serve area, but they had, like, nine T1s back in the 90s and were able to pull off the kind of infrastructure that needed, for that rural community, to basically, you know, really produce quite, a very important aspect of technology development.

So, we do not want to preclude that from happening. Yes, Mr. O’Rielly?

Mr. O’RIELLY. I was only going to say, I am not—I do not agree on terms of the mandate of the basic tier, was his suggestion, or in terms of rate regulation. What I do think is, maybe, is looking at the program that this committee set up, in terms of EBB, in terms of—it is almost a voucher program. And that being the supplement to, or, maybe, replacing the current LifeLine program.

So, how do you directly get the benefit to consumers that may need the affordability issue? I think it is critical to address the affordability issue, but I think there are ways to go about it versus some of the government structure that my colleague may have—

The CHAIR. Well, I hope we can—you know, I think Dr. Ali has mentioned some other—you know, he has mentioned rural electrification. There was a point at which we just said, we are going to get there, and we are going to get there the cheapest possible way we can get there, for the hardest-to-serve population. So, I think we will have to look at that.

I think Senator Rosen is available?

**STATEMENT OF HON. JACKY ROSEN,
U.S. SENATOR FROM NEVADA**

Senator ROSEN. I am. Thank you, Madam Chair, for waiting for me to vote, I surely appreciate it. And thank you to all the witnesses, of course, for being here today and for what you do, what

you are working on. And it is really important to this discussion to make sure that everybody has what they need to really thrive in the coming century and overcome all the challenges and obstacles that we have to face.

And so, we need to be sure that we have proper definitions and good Federal investment. And we see that because, over the course of the pandemic, broadband has played a role in almost every aspect of our lives, from education to healthcare to work. Congress has responded. We have increased our focus on expanding broadband access efforts, of course, I have strongly supported.

But how we define—how we characterize broadband access also has a significant impact on policy development and resource allocation. As we discussed a little during Ranking Member Wicker's question, defining terms like, unserved and underserved, those can have real significant implications on where we invest our Federal dollars and how we do bring broadband to everyone.

So, in 2009, Congress defined under—unserved, excuse me, as any home or business that has broadband speed of less than 10 megabits down, 1 megabit up, and underserved as, any home having speeds between 10/1 and 25/3. Twelve years and one global pandemic later, current FCC and USDA programs continue to use those same definitions to target critical dollars to deploy our broadband infrastructure. Despite the demands on connectivity, like, telemedicine, and just ever—the needs for ever increasing speed in everything that we do.

So, for everyone on the panel, the pandemic has changed, for sure, what it means to be unserved, or certainly underserved, in terms of broadband access. So, should we revisit the definitions and update them on a regular basis, as no community gets behind? But of course, technology is constantly changing. What are more appropriate benchmarks, do you think, for us to use to define a community as it is served by its broadband network? So, Dr. Ali, I guess you could start us off and then, we could go down the line.

Dr. ALI. Absolutely. Thank you very much for the question, Senator. As I have said, I am a big proponent of the 100/100 symmetric definition. I think what they allows is that we are looking—we are connecting our communities with forward-looking technologies. We are connecting our communities with forward-looking speeds, rather than wiring our communities to something that is just good enough for the time being, and then, leaving them to fend for themselves. So, I think 100/100 as a definition.

Senator ROSEN. Mr. O'Rielly?

Mr. O'RIELLY. To your answer, and I respect and agree with a lot of things you said, but I would not change the speed threshold, at this time.

Senator ROSEN. Thank you. Mr. Wilkins?

Mr. WILKINS. I think if the history of broadband shows us one thing is that we always tend to underestimate what is going to be needed a few years from now. I, therefore, think about it more as a question of what infrastructure can scale to meet future needs efficiently versus can we just pick a point today and say, this is now the right number? And so, I think the performance criteria we think about for these investments might want to consider

scalability almost as a separate metric versus a given speed target on a given day.

Senator ROSEN. Thank you. And Mr. Forde?

Mr. FORDE. We should keep them where they are at, until those folks, that are truly unserved get broadband. Those speeds are more than sufficient. Again, as we have mentioned before, the consumer, even during this pandemic, the number one, you know, driver of traffic is still, you know, downloading streaming services, such as Netflix. If downloads are still 14 to 16 times higher, regardless of the technology, it is just not something that the consumers are asking for, and not something we need to go by 100 symmetrical speeds for, at this time.

Senator ROSEN. Thank you. I would like to just follow up with one last question. And I want to talk about supporting our State's efforts. You know, I am proud to represent Nevada. It is a state with a mix of vibrant urban centers and vast rural areas. More than 80 percent of our land in Nevada is federally owned or managed. Deploying broadband, therefore requires substantial Federal and state coordination, cooperation between the numerous state and Federal stakeholders. So, for this reason, Nevada's Office of Science, Innovation, and Technology, their broadband office is on the ground advising communities, coordinating with Federal, state, and private industry.

So, through both the COVID relief bill we passed in December, and the American Rescue Plan that President Biden signed into law last week, Congress has made significant investments to expand broadband across the country. So, I want to ask Dr. Ali and Mr. Wilkins, as we continue to build on those investments, how important is it to give states the flexibility they need, states like mine who have to deal with DOD and BLM and DOE, Department of Interior, you name it? We have unique challenges in every state to expand our broadband access and how can we help facilitate, better coordinate, across all areas of government and broadband deployment?

Dr. ALI. That is a great question, Senator, thank you for asking it. I am a big proponent of the importance of state broadband offices, exactly like you just said in your home State of Nevada. I think that they can perform incredible roles as being, kind of, information wholesalers, and bringing different stakeholders together, and even identifying stakeholders who may not realize that they are stakeholders, at the time. So, I really think, you know, I would encourage every state to have a robust and well-funded state broadband office, to really diagnose the needs of their communities and counties.

Senator ROSEN. Thank you, and Mr. Wilkins.

Mr. WILKINS. Senator, in the RDOF process, I worked with states ranging from California to Alabama and in between. And I would just say first, the current Federal environment, it is hard for states and their local stakeholders to navigate, just as you said. The opportunity is so important, though, if there are going to be substantial Federal investments, I mean, first point, those are not going to be probably until next year. Separate from the mapping, I mean, we are just at a point where Congress has not decided if new funds

will be made available. Even things like RDOF II or 5G Fund I think are on track for, probably, next year, not this year.

Having states have funds now, to start those plans, to amplify the impact of Federal investments somewhat down the road, is just a huge opportunity because challenges, state by state, are different.

Senator ROSEN. Well, thank you. I appreciate it and, Madam Chair, I see my time is over. Thank you so much.

**STATEMENT OF HON. MIKE LEE,
U.S. SENATOR FROM UTAH**

Senator LEE. The recent American Rescue Plan, the same legislation just mentioned a moment ago, appropriated \$350 billion to state and local governments. The statutory texts at issue permitted this funding to be used to “make necessary investments in water, sewer, or broadband infrastructure”. To my knowledge, there were no limits placed in the statutory texts around the vague broad phrase, investments in broadband infrastructure.

Mr. O’Rielly, is overbuilding of broadband networks a possibility from this language? And how does overbuilding affect the overall broadband market, that is, how does it affect market competition?

Mr. O’RIELLY. Subsidized overbuilding, which this would be, absolutely is likely to come from this. We have already seen a number of entities raise their hand and say, I want that money to go for broadband purposes, in areas that they already have networks. So, it will depress the existing provider, potentially—in small instances or with smaller providers, potentially threaten their viability to serve. It could certainly steal the major businesses in the area, that they rely on to be the funding source for going forward.

So, subsidized overbuilding is incredibly problematic for areas—these are areas that we—you know, we generally say that we are trying to target the unserved population, where you cannot have one, you know, one provider does not exist without subsidies. But here, you are talking about money going to wherever they want, within a state—incredibly problematic. There are no limitations. I am hopeful that they will appear and, maybe because of reconciliation they could not be added but it is incredibly problematic.

Senator LEE. There are private sector business interests at companies that spend billions of dollars, in the form of investments, in their own broadband networks. Is that safe to say?

Mr. O’RIELLY. Oh, absolutely.

Senator LEE. So, what is the effect of Federal spending on private sector investment in this area? Is there a disincentive that is created by that?

Mr. O’RIELLY. Oh, absolutely, and it also targets which markets they may go into, based on what the activity of the state is. So, if a state has been, you know, given carte blanche and, therefore, they are going to use these dollars for broadband, to overbuild, then you are going to see dollars go elsewhere and the consumers trying to compete with these two systems down.

Senator LEE. Separate and apart from what it might choke out, is this increased Federal spending something that has the capacity to artificially divert resources toward inefficient purposes?

Mr. O’RIELLY. Oh, absolutely, in some instances you would see the providers react and try to, you know, compete against this gov-

ernment network, in some instances, if it is—or whoever has been picked to be the winner, build out this new provider. And you may see them dedicate resources, and lower the cost in some instances, to try and compete against it and that would be an inefficient mechanism that the government is causing.

Senator LEE. Let us talk about the video marketplace for a minute. Our current video marketplace is governed by Title 6 of the Communications Act, and it dates mostly back to a law that Congress passed back in 1992. But technology has, of course, changed rather considerably since 1992, and now, the same wire that used to just bring video into American homes, is also bringing a whole host of other services, as well. Would you agree that Congress really ought to be taking up reforms to Title 6, and that doing so could help in our efforts to bring more effective broadband deployment?

Mr. O'RIELLY. Yes, absolutely, I support—if I were to spend—you know, if I were still at the Commission, that was something I was going to spend more time on. I think it is absolutely critical that we recognize the vast number of competitors that are, you know, that are not regulated by Title 6, competing against those that are, and the relief that should be provided to existing providers—legacy providers, existing. Those that have the network, you know, versus this streaming company's, and otherwise in other technologies, whether it be wireless, or else wise.

So, I absolutely agree that Title 6 should be reformed and should be high on the priority list.

Senator LEE. Do you have anything, within your priority list, of things that we ought to try to tackle first, in that area?

Mr. O'RIELLY. Oh, in that area? Yes, I would happy to be follow up with you, in terms of different ideas that we should look at, in terms of reform. There are a bunch of things that, you know, first priority would be, like, scrape away any existing regulation, or statutory obligation that makes, no longer, any sense.

Senator LEE. Right.

Mr. O'RIELLY. Two, would be to completely revamp that title to reflect the current marketplace. And those decisions have to be reflected in other decisions the Commission makes, whether it be media ownership, whether it be how DOD—DOJ, excuse me, treats the marketplace, so those things can flow through in other instances.

Senator LEE. And, Mr. O'Rielly, what are the top spectrum policy changes that you think Congress ought to undertake now, if we are to have an hope in being able to compete with the rest of the world in deploying next generation technologies?

Mr. O'RIELLY. Well, I do believe that the Congress and certainly the FCC, will have these fights going forward, but we are going to need to reallocate additional Federal spectrum, that is used by agencies, to commercial purposes. That has been a long going fight. You and I have talked about the valuation bill that you have been so leading the charge on, and so appreciative. But those fights are going to continue because the demand for wireless services is going to continue to increase. And the benefits from those networks, not only just in terms of consumer benefit, but also, the emergency communications and everything that goes from that, and the de-

creased need on the federally—the more efficiency needed from the Federal agencies is absolutely critical. And we are going to have that fight. And so, I would be decreasing the amount of spectrum allocated for Federal purposes.

Senator LEE. Would it be an overstatement to suggest that our biggest single impediment there might well be the government's own misuse, mismanagement of its own spectrum allocations?

Mr. O'RIELLY. I think you worded it very well.

Senator LEE. Thank you. Thank you, Madam Chair.

The CHAIR. Thank you, Senator Lee. Well, that is all the members, I believe that are scheduled to ask questions. So, unless somebody is going to pop up here on one of the remotes, that we do not know about. But certainly, want to thank you all for your testimony.

We did not get to really a good debate round on shared use issues, but I am sure this last question, kind of, primes the pump for that. A lot to talk about there, including, how do we all get comfortable, when we talk about coordination of those agencies. And we also have to talk about the coordination of use agencies, which has not seemed to go so well in the last few rounds. And I do not really think we want to be the arbiter of last resort, the Congress. I do not think that serves us well. But, at the same time, I think we need to figure out how we are going to have engineers at various multiple agencies get on the same page.

So, but we will leave that one for the record. We will get some comments on shared use and efficiencies in shared use and engineering—whatever we want to call it, “engineering agreement”, something of that nature. How we get people on the same page, at least with the scientific data, so that we can all feel comfortable in moving forward.

But this has been a very illuminating hearing. I thank the witnesses. We will keep the record open for two weeks, until March 31, 2021. Any Senators wanting to submit questions for the record, for the witnesses, should do so by that date. And we ask that you respond to us, to the Committee, by April 14, 2021.

With that, that concludes our hearing, and again, thank you.

[Whereupon, at 12:45 p.m., the Committee was adjourned.]

A P P E N D I X

USTELECOM
March 17, 2021

Hon. MARIA CANTWELL,
Chair,
U.S. Senate Committee on Commerce, Science, and Transportation,
Washington, DC.

Hon. ROGER WICKER,
Ranking Member,
U.S. Senate Committee on Commerce, Science, and Transportation,
Washington, DC.

Dear Chair Cantwell and Ranking Member Wicker:

Thank you for holding today's hearing to examine recent Federal actions to expand broadband coverage and for your continued leadership to increase opportunity and economic activity through 21st century connectivity.

USTelecom proudly represents broadband providers, suppliers and technology innovators in every corner of the country. Our broadband networks have been resilient and fully capable of carrying the surge in high bandwidth traffic during the last year, but this means little to the millions who lack broadband access or simply cannot afford service in the first place. We recognize the digital divide is not solely an issue of access, but of affordability and adoption as well.

The Committee has made meaningful progress in tackling a range of connectivity policy issues, and I commend you for holding your first hearing not related to nominations this Congress on broadband deployment and Federal efforts to incentivize the closing of the digital divide.

USTelecom and our members are staunch advocates for this critical direct spending on broadband infrastructure. The important Federal investments in broadband over the past few months can help achieve our shared goal, but only if this funding is spent with precision and coordination among all Federal and state government agencies.

Additionally, thank you for including an analysis of actions taken to enhance Federal coordination among various programs as a priority in the notice for this hearing. As Congress considers additional resources in high cost and otherwise unserved parts of our country, we respectfully believe more can be done to avoid waste and prevent overbuilding existing support programs so that every new dollar reaches truly unserved communities as efficiently and quickly as possible.

Two areas where I encourage the Committee to continue to focus include:

Updated and data driven, 21st century broadband maps

Thanks to the Broadband DATA Act, updating and modernizing our Nation's broadband coverage maps is currently underway and incremental results should be available from the FCC later this year. These maps must guide the distribution of the historic and essential funding Congress has approved to reach the unconnected.

We should also learn from past attempts to fund these areas that resulted in better broadband for a few, but no broadband for many. These investments must be made based on data to ensure this will be game-changing and connect the communities most in need.

Stringent interagency coordination

The USDA, the Department of Commerce and the FCC, along with various stimulus grants over the years, have prioritized serving the highest number of eligible locations possible through their broadband programs. While this goal seems like a good one, the reality is it results in funding the same locations over and over again while leaving unconnected locations without connectivity.

To "avoid" overbuilding, each program continually raises the definition of unserved, based on a minimum speed requirement. By doing so, new programs can

essentially overbuild the same locations covered by previous programs by simply upgrading speeds to the locations that are less expensive and easier to serve. The fast get faster and the unconnected stay unconnected.

Truly closing the digital divide means first connecting the unconnected, before increasing speeds for those who already have service. To accomplish this goal, we must ensure that all government broadband programs, both Federal and state, are using the same sets of data and minimum speed requirements when identifying unconnected locations. Explicit and binding interagency coordination will close the digital divide while ensuring the efficient allocation of funds by avoiding funding duplication.

As Congress moves forward with this critical work, we should identify and modify whatever inefficiencies exist. We are glad today's hearing will focus on those issues most in need of improvement.

We also hope the Committee will focus on what we know is the most efficient way to allocate finite resources: public private partnerships. Working together, government and industry innovators have shown how these partnerships are the most proven and efficient way to competitively distribute government funds to connect American communities.

Broadband plays an essential role in any plan to lift Americans up and move our Nation forward. USTelecom members are committed to continuing to work side-by-side with government partners to build and invest in these networks, and bring high-speed broadband deeper into all corners of America. We look forward to working with you to ensure all in America are connected to world-class communications infrastructure.

Sincerely,

JONATHAN SPALTER,
President and Chief Executive Officer.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. ROGER WICKER TO
HON. MICHAEL P. O'RIELLY

Question 1. AT&T recently announced it would cancel its free wireless data services for all of its subscribers nationwide because of California's net neutrality law. In your view, has the performance of broadband networks in the U.S. during the COVID-19 pandemic demonstrated a need for reclassifying Internet Service Providers as common carriers under Title II of the Communications Act? Why or why not?

Answer. Absolutely not. It should be commonly accepted that, for the most part, America's broadband networks as a whole were able to withstand extensive pressure and increased use during the pandemic. This all occurred without the constraints of Net Neutrality rules and mandates. Indeed, America's broadband providers had years of market certainty combined with the absence of unnecessary and burdensome restrictions, which are the hallmark of Net Neutrality, to invest and build out their networks to meet and exceed consumer demand during the pandemic.

Question 2. How does the cancellation of free wireless data services due to California's net neutrality law benefit consumers?

Answer. I don't believe that it does. The elimination of zero rating services by AT&T in response to California's Net Neutrality restrictions highlights a disconnect between the supposed virtues of Net Neutrality and the practical market realities that service providers must face in trying to comply with such statutory or regulatory obligations. Zero rating services can bring enormous benefits to consumers and should not be rejected by consumer advocates or punished as anti-competitive or unfair to other providers.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. SHELLEY MOORE CAPITO TO
HON. MICHAEL P. O'RIELLY

Question 1. In March 2020, Congress unanimously passed and President Trump signed into law the Broadband DATA Act. The FCC began implementing some of the required changes through the FCC's Digital Opportunity Data Collection. I applaud the recent actions of Acting Chairwoman Rosenworcel to implement the Broadband DATA Act and forming the Broadband Data Task Force at the Commission. Once the FCC completes their new broadband availability maps, would it be beneficial to have other Federal agencies—that administer broadband-related programs—work off the same maps? Would this benefit coordination between the agencies?

Answer. Absolutely. As currently provided by Congress, multiple Federal Departments and Agencies are allocating funding for broadband networks—and yet are all operating under different structures and procedures. This increases the likelihood that funding is being used for the extremely harmful practice of subsidized overbuilding of existing broadband networks rather than focusing on those Americans without access. Despite the well noted problems with the FCC maps, the awarding of other funding streams is less justifiable or defensible. Requiring every Federal Department or Agency allocating broadband funding to use a common set of maps would be a major improvement over current mechanisms.

Question 2. In December, Congress created the \$3.2 billion Emergency Broadband Benefit Program (EBBP). This program will provide temporary relief to eligible households with a \$50 monthly discount to help them afford their broadband service. I am happy to see that the FCC finalized the rules for this program in February and is expected to open the program to eligible households soon. Depending on how the EBBP is implemented, do you see this program improving broadband adoption? Do you believe this complements efforts by ISPs in providing low-cost service to underserved communities? In your testimony, you mention that the EBBP could be a more appropriate model to address affordability and adoption issues. What would be your recommendations on how the program should be implemented to address those two issues?

Answer. Certainly the Lifeline program has faced considerable problem in structure and implementation and moving away from it as the sole affordability solution for technology cost makes a great deal of sense. Depending on how the EBB is implemented and received by recipients, I believe that the EBB could be looked at as the start of a more permanent program to deal with Internet affordability and adoption issues. Such a program could nicely complement or possibly supplant programs operated by the private sector. If the EBB does gain necessary traction, it may need to be finely tuned with respect different Internet costs throughout our Nation to offer service. Additionally, a more seamless integration into other social welfare programs would make it more effective. And, its funding source, from my opinion, should remain with the Federal government rather than being usurped into the Commission's contribution mess. As an aside, Internet adoption levels will always remain challenging, as cost is only one reason why some Americans do not subscribe for service.

Question 3. In December, the FCC announced the winning bidders in the Rural Digital Opportunity Fund (RDOF) Phase I which built upon the lessons learned from both phases of the Connect America Fund (CAF). Thankfully, through the reverse auction, nine separate providers received support in West Virginia and my state is set to receive \$362 million in total support. As one of the Commissioners approving the RDOF auction, what are some of lessons learned from previous the high cost programs? What would be your recommendations to the current Commission to avoid the pitfalls of the past?

Answer. While RDOF winning bidder long forms are still being reviewed, it is certainly appropriate to examine the lessons learned from the auction and its overall structure. In my mind, the key that made RDOF so significant is its focus on those areas without any Internet access—i.e., the unserved. Much of the prior Commission work centered on upgrading service for those that had access. RDOF showed that there is great interest by the private sector in competing and bringing service to hard to serve areas—often at speeds much higher than anticipated. In addition, the program, like CAF II, rightfully allowed any technology meeting the Commission standards to participate rather than relying on incumbent providers, promoting competition among technologies and lowering overall program costs. This feature will continue to be debated going forward as there appears to be a fixation among some policy makers for fiber technology at any cost. My recommendation for future Commissions is to do the hard work, embrace reverse auctions, promote technology neutrality, and avoid the political race for higher speeds.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. SHELLEY MOORE CAPITO TO JUSTIN FORDE

Question. The Rural eConnectivity Pilot Program (ReConnect) is the USDA's latest program to deploy broadband in rural communities and focuses on areas with the most need. As a member of the Senate Appropriations Committee, I have been able to secure funding for this program during the appropriations process because of the need I continue to see in my state. In your testimony, you mention that the efforts taken to close the digital divide could be thwarted by redefining what it means to be "unserved." Could you expand on that? Why is it important to narrowly focus funding to areas that currently do not receive a basic level of service? If the

“unserved” was redefined to a higher standard, is it more likely that precious Federal funding would be directed towards new broadband projects or would it go to upgrading existing networks?

Answer. Efforts to close the digital divide could be thwarted by proposals to redefine what it means to have broadband service available. When eligibility is targeted to areas that do not yet even receive a basic level of broadband service, such as 25/3 Mbps, we know that funding will be used to bring broadband where it did not previously exist. To communities and households who truly have nothing. But when areas are defined as eligible for funding unless they have a higher level of service—such as recent proposals suggesting an increase to an arbitrary speed threshold like 100/100 Mbps—this means that many areas where we and others have invested heavily, including through public/private partnership programs, are suddenly considered “unserved.” Providers will naturally apply for funding to serve these newly eligible areas, because those are the places that are easiest to build and serve. This would mean that areas that already have robust broadband service, *including gigabit service*, would be newly eligible for funding, increasing the likelihood that funds would be siphoned away from areas that are not economical to reach, and have struggled for years to attract broadband deployment. The result would be that those lacking broadband service today will still lack broadband service tomorrow, even after billions of dollars in funding are spent. We believe these proposals should be reconsidered. For example, in my home rural state of North Dakota, which shares some similarities with West Virginia on the difficulties and cost to deploy broadband in rural and remote areas, here is what happened with the USDA ReConnect program: ReConnect applications to USDA are flowing in for highly populated area’s that already have broadband at speeds of up to 25/3 Mbps. Applications are not coming in for the area’s that have 0/0. Thus redefining “unserved” will not close the digital divide and only lead to more applications from providers for customers for those who already have high-speed broadband.

