Responses to Questions for the Record of

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"Investing in America's Broadband Infrastructure: Exploring Ways to Reduce Barriers to Deployment"

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Hon. Roger Wicker

***Question 1*. An essential part of reducing barriers to broadband deployment and increasing investment in broadband infrastructure is having an accurate understanding of what areas across the United States remain underserved or unserved. As you mentioned in your testimony, previous efforts to provide service to underserved or unserved areas have resulted in wasteful spending and overbuilding.**

a) **What can Congress and the FCC do to ensure that Federal investments in broadband infrastructure are going to areas that are truly underserved or unserved?**

b) **How can we standardize data collection processes to ensure that we have an accurate understanding of what areas remain underserved or unserved by mobile broadband coverage?**

There are several gaps in the data available on broadband deployment. The National Broadband Map has not been updated since 2014, and the FCC has no current plans to update it.[1]

[1] *See* FCC, National Broadband Map, *available at* https://www.broadbandmap.gov/.

A second overarching problem is the misguided decision the agency made in 2015 to change the definition of broadband to a 25 Mbps download speed and a 3 Mbps upload speed.[2] Even today, these speeds, though admirable goals, are much greater than what is actually needed by consumers to enjoy nearly all Internet services, including the streaming of high-definition video.

As a result of these failings, data suggesting where and for whom broadband access in the U.S. is incomplete may be highly misleading. That in turns means that upcoming decisions both at the FCC and in Congress on how to deploy additional resources to close what remains of the digital divide may be driven by faulty analysis, leading to poor decisions and, ultimately, a failure to provide assistance where it is truly needed.

These problems need to be addressed before any future decisions on taxpayer resource deployments are made. The National Broadband Map should be updated and a sustainable process for keeping it current adopted. The FCC should also revisit--using technical rather than political criteria--its definition of what download and upload speeds constitute "broadband," or even whether speed should be sole basis for defining broadband service.

At a more nuts-and-bolts level, there are other well-known issues with how the FCC and other government agencies determine and report broadband availability and performance. As you noted last week at a hearing on the Universal Service Fund and Rural Broadband Investment:

> Inadequate data collection methods are also one of USF's challenges, leading to an inefficient distribution of funds to truly underserved and unserved areas. To address this issue, I recently joined Senator Manchin in introducing the "Rural Wireless Access Act," which has the support of several of my colleagues, including Senators Schatz, Fischer, Klobuchar, Moran, and Peters. This bill would require the FCC to standardize its data collection methods to ensure that USF support is directed to rural communities – in Mississippi and across the nation – that are actually in need.
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> Reliable data is a critical step toward eliminating inefficiencies within the USF program and fulfilling the statutory goal of universal service. I appreciate the efforts of all stakeholders involved to improve data collection at the FCC. As these efforts continue, it is important that this data be collected quickly so as not to

[2] *See* FCC, 2015 BROADBAND PROGRESS REPORT, GN Docket No. 14-126, January 29, 2015, *available at* https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2015-broadband-progress-report.

delay the delivery of essential communications services, through programs like Phase II of the Mobility Fund, to communities in need.[3]

(a) Setting these definition and measurement issues aside, we know there are only a small number of U.S. census tracks that currently have no broadband provider. As I noted in my testimony, I believe an economic case for deployment in these areas will remain difficult for private providers to make, and that therefore these should be the focus of any direct investments Congress includes in future infrastructure spending.

That, I believe, is the best hope for ensuring federally-supported investments in broadband infrastructure are going to areas that are truly underserved or unserved. As I noted:

> Any direct infrastructure spending Congress approves should be targeted exclusively to the few remaining census tracts, mostly rural and tribal, where there is currently no competitive broadband service. Congress should consider setting aside a modest portion of its proposed infrastructure fund, say $20 billion, for a one-time rural broadband acceleration program.
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> Network operators would be offered subsidies to build out in these extremely high-cost areas, with a requirement to use technologies with sufficient bandwidth to support substantial future growth, perhaps up to 100 Mbps speeds. Calculation of specific subsidies should be made on a per-location basis, determining as precisely as possible how much is needed to overcome otherwise prohibitive build-out costs.
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> Funds for the acceleration program, moreover, should come from general appropriations rather than raising the already-unsustainable fees consumers pay into the Universal Service Fund, which today represents a 17.4% cost added to voice services.[4]
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> To avoid problems that plagued the Recovery Act's scattered broadband initiatives, moreover, the acceleration program should be managed by one

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[3] *Statement of Chairman Roger Wicker*, Senate Subcommittee on Communications, Technology, Innovation, and the Internet, hearing on June 20, 2017, *available at* https://www.commerce.senate.gov/public/index.cfm/hearings?ID=628B02EB-3D8D-4356-B0E9-5F4BC4B5A312. *See also*

[4] *See* FCC, *Contribution Factor and Quarterly Filings – Universal Service Fund Management Support*, *available at* https://www.fcc.gov/general/contribution-factor-quarterly-filings-universal-service-fund-usf-management-support.

agency, with strict controls to help ensure troubled projects get attention (or cut off) sooner rather than later. Between the National Telecommunications and Information Administration, Rural Utilities Service, and the FCC, there is consensus that the FCC does the best job at maximizing its deployment-related funds, and should be the sole agency responsible for the acceleration fund, albeit with added controls to reduce waste and abuse.

(b) Solving the more specific measurement and consistency issues is entirely within the technical capability of the FCC, but the agency has in recent years had a strong disincentive to do so. Eager to activate authority the Commission incorrectly believed was inchoate in the Communications Act and in particular in Section 706(a) and (b), the FCC has in recent years adjusted definitions and manipulated measurement data to emphasize failures in broadband deployment, both wired and mobile. For years, the agency refused even to consider mobile broadband as a source of broadband at all, arguing weakly that it had inadequate data to measure it.[5]

Why has the FCC engaged in such counter-productive behavior? By failing to answer or answering negatively Congressional mandates to determine whether markets are competitive, and by torturing the data to find that broadband was not being deployed "in a reasonable and timely manner" overall, the FCC justified many of its recent interventions into the broadband market.

While the interventions skewed private broadband investment decisions, the misreporting has made it impossible for Congress, the agency or others to develop an accurate understanding of the true state of the broadband market and in particular where problems in coverage remain.

Given the considerable resources the FCC devotes today to its data collection and reporting requirements, this is truly a lose-lose state of affairs. As I noted in earlier testimony:

> As Ronald Coase famously wrote, "If you torture the data long enough, nature will always confess."

[5] *See, e.g.,* Larry Downes, *How the FCC See's Broadband's 95% Success as 100% Failure*, FORBES, Aug. 13, 2012, *available at* https://www.forbes.com/sites/larrydownes/2012/08/23/how-the-fcc-sees-broadbands-95-success-as-100-failure/#6e324b6dbe55. Even in the most recent Broadband Progress Report, the FCC still refuses to adopt measurement and reporting tools that show intermodal competition between wired and mobile broadband services. *See* FCC, *2016 Broadband Progress Report*, GN Docket 15-191, Jan. 29, 2016, *available at* https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report.

That, in a nutshell, has become the FCC's unintended modus operandi. The agency collects the data it needs to make wise and efficient decisions, but in the absence of clear guidelines and the most basic economic analysis, the Commission cannot resist the temptation to abandon the logical conclusions compelled by that data in the service of vague, idiosyncratic, transient and, often, unarticulated policy goals. The lack of structure wastes both government and private resources. Worse, it vastly under emphasizes the likelihood that imminent technology disruptors will better and more efficiently advance the communications needs of American consumers with far fewer unintended consequences.

These problems devalue much of the good work of the agency's staff and subvert the often-admirable goals of the FCC's Chairmen and Commissioners. They have created an epidemic of negative side-effects, including:

- Many of the agency's reports fail to reach obvious conclusions supported by the thorough data collection the agency performs, limiting their usefulness as policy tools to advance the FCC's longstanding charter to promote communications to all Americans.

- Rulemakings torture their analysis and data to justify what appear to be ex ante conclusions to regulate—regardless of the need or cost….[6]

To overcome these problems, Congress must realign the agency's incentives and require the agency to collect and report accurate information, allowing its technical experts to define and collect neutral and useful standardized data.

Your proposed legislation, S. 1104, "The Rural Wireless Act of 2017,"[7] would go far toward resetting the balance, requiring the FCC to make its measurements based on good science rather than bad politics. I would recommend extending those common-sense principles beyond measurement of mobile broadband to wired services as well. I also continue to support consolidation of FCC reporting, both to reduce duplication and to remove unhelpful data silos between different bureaus within the agency.

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[6] *See* Written Testimony of Larry Downes, *Hearing on FCC Process Improvement*, Before the Subcommittee on Communications and Technology, Committee on Energy and Commerce, U.S. House of Representatives, July 11, 2013, *available at* http://docs.house.gov/meetings/IF/IF16/20130711/101107/HHRG-113-IF16-Wstate-DownesL-20130711.pdf.

[7] *See* https://www.congress.gov/bill/115th-congress/senate-bill/1104/text?r=2436.

More broadly, however, Congress should remove any lingering temptation for the FCC to perform incomplete, inaccurate, or artificially pessimistic data collection and analysis of broadband market conditions. That could be accomplished by legislation making clear that Congress never intended Section 706 as an independent grant of agency authority, let alone one that triggered special powers based on particular negative findings about the state of broadband competition or availability.[8]

[8] That clarification was proposed, for example, in draft legislation circulated in 2015 by Chairman Thune along with Chairmen Walden and Upton in the House. *See* Larry Downes, *Eight Reasons to Support Congress's Net Neutrality Bill*, THE WASHINGTON POST, Jan. 20, 2015, *available at* https://www.washingtonpost.com/news/innovations/wp/2015/01/20/eight-reasons-to-support-congresss-net-neutrality-bill/?utm_term=.874a52ca1c05.

Hon. Jerry Moran

***Question 1*. According to the recommendations included in your written testimony, you support the idea of a single federal agency "with strict controls to help ensure troubled projects get attention (or cut off) sooner rather than later" in rural broadband acceleration considerations for future comprehensive infrastructure legislation.**

a. Given the existing expertise at the FCC, would you agree that the FCC is the best place for the broadband infrastructure conversation to take place?

b. What criteria do you suggest we consider in evaluating choices for the creation of any broadband infrastructure investment plan?

(a) I have not made a comprehensive evaluation of either the corporate finance or project management expertise within the FCC, or its strengths in those areas relative to other federal agencies and departments, notably the NTIA and the USAC. A careful and neutral evaluation of those capabilities and recommended improvements, however, would be essential before Congress authorizes any additional taxpayer funding to ensure both professional and efficient disbursement of grants, loans, and other resources.

However, as I noted in my testimony, it is clear from both private investigations as well as those of the GAO that funding provided through the 2009 Recovery Act was not as effective as it could have been, and in many examples resulted in broadband project spending that was either unnecessary or, worse, which was never completed.[9]

These reports singled out the performance of the Rural Utilities Service as being especially poor. I am unaware, however, of reforms that may or may not have taken place at RUS following the recommendations of GAO or others.

I do believe, however, that any future federal investment would be best coordinated by a single agency. The FCC, if nothing else, has the most experience and the most appropriate Congressional mandates to advance broadband deployment and adoption goals within the federal government. The FCC also has the benefit of being the author of the visionary 2010

[9] *See, e.g.,* Testimony of Ann C. Eilers, Principal Assistant Inspector General, DOC OIG before the House Energy & Commerce Committee's Subcommittee on Communications and Technology, *Is the broadband stimulus working?*, Feb. 27, 2013, *available at* https://www.oig.doc.gov/OIGPublications/OIG-13-017-T.pdf; Government Accountability Office, *Recovery Act: USDA Should Include Broadband Programs Impact in Annual Performance Reports*, June, 2014 at page 22; Tony Romm, *Wired to Fail*, POLITICO, July 28, 2015, *available at* http://www.politico.com/story/2015/07/broadband-coverage-rural-area-fund-mishandled-120601.

National Broadband Plan, which retains considerable value as a planning and evangelizing document.

Finally, as noted in my testimony, the FCC has in recent months initiated proceedings specifically aimed at improving deployment opportunities for broadband in rural areas. Absent any findings of structural problems internal to the FCC that would make it unable to effectively manage future federal broadband initiatives, I do believe the Commission is the best place to coordinate the on-going broadband infrastructure conversation.

(b) Without knowing specific legislative goals and proposed funding levels, it's difficult for me to advise the Committee on criteria for choosing between competing investment options and proposals.

However, as I noted in my testimony, I share the non-partisan view of many analysts that our remaining digital divide is driven by both availability and adoption problems that disproportionately affect rural, older and less-educated Americans. Any broadband infrastructure plan adopted by Congress should focus on identifying the specific reasons for these gaps, and target spending and resources accordingly.

I recommended limited and carefully controlled direct investment, targeted exclusively to the few remaining census tracts, mostly rural and tribal, where there is currently no competitive broadband service.

These should take the form of subsidies to build out in these extremely high-cost areas, with a requirement to use technologies with sufficient bandwidth to support substantial future growth, perhaps up to 100 Mbps speeds. Calculation of specific subsidies should be made on a per-location basis, determining as precisely as possible how much is needed to overcome otherwise prohibitive build-out costs.

I also recommend severely limiting ongoing support. To date, the FCC provides payments in the form of small ongoing annual subsidies, even in areas when all that was needed to overcome high infrastructure costs was an initial capital investment. Because of this approach, it can take years for providers to recoup their own capital investments, unintentionally encouraging operators to build piecemeal in rural areas, and to make decisions based on what providers believe the government will fund rather than on what consumers want.

Future investments should avoid this error by offering instead carefully-calculated one-time subsidies. This will save billions in ongoing costs. While some truly high-cost areas will continue to need both start-up capital and operating support, the emphasis for any new rural broadband infrastructure spending should be on those locations for which capital alone can overcome the need for further government subsidy. This will deliver the most bang for scarce taxpayer bucks.

After determining the optimal per-location subsidy needed, the government may find there are more providers willing to build in underserved rural and tribal areas than there are funds to support them. If so, the FCC should be authorized to run a reverse auction among competing providers to bid down the per-location cost.[10]

To address equally entrenched adoption problems, I also recommended addressing causes of the digital divide unrelated to either availability or price**.**

As the most recent data from the Pew Research Project shows, we are winning the battle to reduce broadband cost for those least able to afford it. In addition to expanded Universal Service programs and the shift from voice to broadband for Lifeline and other programs, leading Internet providers, including Comcast, AT&T and, recently, Sprint, have expanded programs aimed at low-income families, signing up millions of new Internet users for roughly $10 a month.[11]

As the adoption gap narrows, however, we need new strategies that target different problems. Availability and price are no longer the most significant factors holding back the 13% of Americans who remain offline. Consistent with finding over the last decade, the Pew Research Center noted recently that only 19% of offline adults cite the expense of internet service of owning a computer as a barrier.

Instead, "[a] third of non-internet users (34%) did not go online because they had no interest in doing so or did not think the internet was relevant to their lives." Researchers reported.

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[10] *See* Blair Levin and Carol Mattey *In Infrastructure Plan, a Big Opening for Rural Broadband*, Brookings Institution, Feb. 13, 2017, *available at*, https://www.brookings.edu/blog/the-avenue/2017/02/13/in-infrastructure-plan-a-big-opening-for-rural-broadband/.

[11] Larry Downes, *The Digital Revolution Has Not Reached All of Us,* THE WASHINGTON POST, August 31, 2016, *available* at https://www.washingtonpost.com/news/innovations/wp/2016/08/31/the-internet-revolution-has-not-reached-all-of-us/.

"Another 32% of non-internet users said the internet was too difficult to use, including 8% of this group who said they were 'too old to learn.'"[12]

While income undoubtedly continues to play a significant role in non-adoption, in other words, many who remain offline wouldn't use the Internet even if it were free. This conclusion was also reached by a recent NTIA survey, which found that over half of those who don't have Internet service at home—again, largely rural and older Americans, and those with less education-- say they just don't want or need it.[13]

Part of this resistance comes from the fact that unconnected Americans don't know how to use a computer or even a smartphone, let alone how to install and maintain networking equipment inside or outside their home. So whatever funding the infrastructure law provides for broadband will be wasted if some of that support isn't directed to providing hands-on education and on-going support.

Public education about why the infrastructure bill is spending money on broadband will also be critical to getting maximum value from any new investment. That effort should include, at a minimum, the White House and related Departments including those dealing with commerce, housing, health, energy and education.

The FCC should be tasked with coordinating the public outreach, and for working with stat-ups and established companies developing the most exciting and relevant applications and their respective trade groups in public-private partnerships.

***Question 2*. Are there specific tools such as commonly-mandated forms or commonly-mandated resolution timeframes (e.g. "shot clocks") that can be standardized across all federal agencies to improve the permitting process? What are the benefits and challenges to such efficiencies?**

The more any proposed legislation includes and mandates already-understood permitting "best practices" across federal--and, where possible, tribal, state and local governments--the more effective and efficient future deployments will be.

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[12] Monica Anderson and Andrew Perrin, *13% of Americans Don't Use the Internet—Who are They?,* Pew Research Report, Sept. 7, 2016, *available at* http://www.pewresearch.org/fact-tank/2016/09/07/some-americans-dont-use-the-internet-who-are-they/

[13] National Telecommunications and Information Administration, *Digitally Unconnected in the U.S. Who's Not Online and Why?,* Sept. 28, 2016, *available at* www.ntia.doc.gov/blog/2016/digitally-unconnected-us-who-s-not-online-and-why.

Many of these practices have been developed by innovative federal agencies and local authorities experimenting with ways to accelerate the deployment of fast-changing broadband technologies in specific geographies and communities, taking into account geological challenges and local preferences.

They include the "dig once" and "climb once" policies advocated by the White House and Congress, "shot clocks" that result in applications being deemed granted if a decision is not reached in a reasonable timeframe, and master contractor agreements for new infrastructure deployments piloted by Google Fiber and other broadband providers for both wired and mobile deployments that streamline the process of permitting, rights of way, and gaining access to local facilities including buildings, roads, utility poles and other property.

Much has been learned over the last few decades of infrastructure deployment, and there is consensus on what constitutes the best and most effective permitting and other processes. I note several specific examples of these practices in my testimony, and there is a wealth of literature available from trade groups, academics, and think tanks that describe these practices in detail.

The difficulty, as your questions suggests, is not that we do not know how best to manage broadband deployment, but that we lack both uniform and enforceable standards that apply to all government actors, retaining local values and choice where appropriate.

The FCC, for example, has long-maintained shot clocks for mobile equipment construction application, but lacks the resources to adequately monitor compliance, let alone enforce its rules.

The federal government, likewise, has adopted a "dig once" policy for fiber conduit by way of several Executive Orders, but needs to extend that policy to public rights of way adjoining roads, and to state roads as well as federal.

Given the limits of executive authority to extend and enforce these best practices, particularly regarding state government, Congress should embrace permitting reform as part of any broadband infrastructure legislation it develops. That would be the most effective and efficient way to propagate these practices throughout the government.

***Question 3*. Can you explain the importance of taking a "technology-neutral approach" in any comprehensive infrastructure or tax legislative package considerations by this Congress and federal regulating agencies?**

There are many myths about broadband technologies that have infected policy decisions over the years, particularly at the FCC. These include, for example, a belief promoted by some legal academics with minimal technical or business knowledge that the only way to achieve universal and competitive broadband deployment is to lay fiber optic cable to every home in America, regardless of location or cost, and preferably as part of a federally owned and operated Internet infrastructure.

Similarly, the FCC has long emphasized directly and indirectly that only wired broadband is truly broadband, leaving other delivery technologies either de-emphasized or excluded from various programs.

These myths are both technologically inaccurate and counter-productive. Often, their proponents intentionally misread data about deployment in other countries to feed a demonstrably false narrative that without a nationalized, all-fiber network, the U.S. both is and will remain uncompetitive in the Internet economy.[14]

More to the point, these broadband myths explicitly and implicitly deter both public and private investment in alternative broadband technologies and investment models that would actually close the remaining U.S. digital divide quickly and efficiently. By insisting on a deployment model that is neither cost-effective nor politically viable, those who encourage these myths condemn some consumers, particularly rural and tribal residents, to being left out of the digital conversation longer than necessary, if not permanently.

As I noted in my testimony, there have long been multiple broadband technologies, including cable, cellular and in particular next-generation DSL, fixed mobile and satellite, that are better suited to deliver broadband to geographically remote and/or sparsely populated areas of the country. They provide increasingly fast speeds and high reliability, as well as more cost-effective capital and operating features.

Sadly, if these technologies were not treated as second-class options by self-styled consumer advocates and their colleagues inside the FCC, they would have been deployed even more aggressively in the last decades. That would not only have eliminated remaining broadband

[14] *See* Larry Downes, *How to Understand the EU-U.S. Digital Divide,* HARVARD BUSINESS REVIEW, Oct. 19, 2015, *available at* https://hbr.org/2015/10/how-to-understand-the-eu-u-s-digital-divide.

availability gaps sooner but would have led to accelerated development of these technologies. Their success would also have stimulated competition for more innovation in other potential broadband technologies, including broadband over power lines.

Fiber optics will continue to play an expanded role in Internet infrastructure, but for the foreseeable future, as the National Broadband Plan made clear, it is unlikely to become the sole last mile connection technology for a country as vast and sparsely populated as the U.S.

New cellular and cable technologies, including 5G and Docsis 3.1, will offer wider coverage and greatly accelerated speeds. But in many rural areas, as I noted in my testimony, fixed wireless technologies have proven themselves capable of providing high-speed last-mile connections to homes and businesses, with the promise of even better performance going forward.

Satellite-based solutions have likewise matured, as have hybrid fiber/copper technologies using existing telephone lines.[15] Just this week, the FCC unanimously approved OneWeb's application to launch a constellation of low-orbiting satellites that will, when operational, provide global Internet access.[16] Many other satellite providers, including SpaceX, Ligado, Boeing, and Telesat, have pending applications.

The problem is that up until now Universal Service programs have either explicitly or implicitly favored wired technologies, for example by defining minimum broadband speeds above what is reasonably necessary or by setting latency standards in a way that intentionally if implicitly excludes satellite-based solutions.[17] That means that neither network operators nor consumers can make use of Universal Service Funds that would otherwise be available to overcome cost issues.

Removing technologically-unsound prejudices from USF and elsewhere as part of any broadband infrastructure legislation will be crucial in achieving the goal of that legislation to close the digital divide, particularly for rural Americans. It will also stimulate even faster innovation in these and other broadband technologies—including those we can't even imagine today.

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[15] Richard Bennett, *Wireless First: A Winning Strategy for Rural Broadband*, High-Tech Forum, April 11, 2017, *available at* http://hightechforum.org/wireless-first-a-winning-strategy-for-rural-broadband/.

[16] *See* Caleb Henry, *FCC Approves OneWeb for US Market as it Considers other Constellations,* SPACE NEWS, June 23, 2017, *available at* http://spacenews.com/fcc-approves-oneweb-for-us-market-as-it-considers-other-constellations/. *See also* Larry Downes, *Ligado is Ready to Launch a New Mobile Network. Will the FCC Let Them?* FORBES, June 12, 2017, *available at* https://www.forbes.com/sites/larrydownes/2017/06/12/ligado-is-ready-to-launch-a-new-mobile-network-will-the-fcc-let-them/#7d455e3b3831.

[17] *See* Doug Brake, *A Policymaker's Guide to Rural Broadband Infrastructure*, Information Technology and Innovation Foundation (April 2017), *available at* http://www2.itif.org/2017-rural-broadband-infrastructure.pdf?mc_cid=4fb4705a17&mc_eid=98756dc702.