

# BROADBAND MAPPING: CHALLENGES AND SOLUTIONS

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## HEARING

BEFORE THE

COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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APRIL 10, 2019

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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## **BROADBAND MAPPING: CHALLENGES AND SOLUTIONS**

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**WEDNESDAY, APRIL 10, 2019**

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

The Committee met, pursuant to notice, at 10:09 a.m. in room SD-G50, Dirksen Senate Office Building, Hon. Roger Wicker, Chairman of the Committee, presiding.

Present: Senators Wicker [presiding], Thune, Blunt, Fischer, Capito, Blackburn, Cantwell, Blumenthal, Baldwin, Tester, Rosen, and Sinema.

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

Senator WICKER. All right. We'll go ahead and begin. Senator Cantwell will be here momentarily.

Today, the Committee gathers to discuss the state of the Nation's broadband maps.

I'm glad to convene this hearing with my colleague, Senator Cantwell, who, as I said, will be here in just a moment.

I welcome our witnesses today. Mr. Tim Donovan, Senior Vice President, the Competitive Carriers Association; Mr. Mike McCormick, President of the Mississippi Farm Bureau Federation; Mr. Jonathan Spalter, President and CEO of U.S. Telecom, the Broadband Association; Mr. Chip Strange, Vice President, Strategic Initiatives; and Mr. Mike Oblizalo, Vice President and General Manager of Hood Canal Communications.

In today's digital economy, access to broadband is essential. It is through broadband that Americans can gain access to jobs, education, and economic opportunities.

Broadband also powers new industries and enables core economic sectors, such as agriculture, manufacturing, and transportation, to be more efficient, productive, and competitive in the United States and around the globe.

In February, the Federal Communications Commission issued its Draft 2019 Broadband Deployment Report showing gains in broadband connectivity throughout the country. However, the Digital Divide persists for far too many families in Mississippi and across the Nation.

As I've said before, we are almost one-fifth of the way through the 21st Century, hard to believe, and we ought to be able to get all Americans connected soon. To close the Digital Divide, we need

to have accurate broadband maps that tell us where broadband is available and where it is not available at certain speeds.

This is critical because maps are used to inform Federal agencies about where to direct broadband support. Flawed and inaccurate maps ultimately waste resources and stifle opportunities for economic development in our rural and underserved communities.

I hope our witnesses today will speak to the costs, timing, and potential challenges to collecting more accurate and granular broadband coverage data, including whether the data will be too out-of-date to be useful once it is all gathered.

I would also like the witnesses to address how to improve existing broadband mapping approaches at the FCC and NTIA and whether the FCC is collecting the right data to determine the availability of fixed and reliable mobile broadband across the country.

Improving the Nation's broadband maps starts with better coordination and information sharing among Federal agencies responsible for administering broadband deployment programs.

I hope we'll soon have legislation in this regard. It is important that the FCC, the National Telecommunications and Information Administration, and the U.S. Department of Agriculture work cooperatively to coordinate and share information on broadband coverage data and broadband deployment programs.

Increased coordination and information sharing would enhance efforts to develop a more accurate broadband map and to assure Federal funds are targeted to unserved areas. Improving broadband maps also requires the collection of more granular and accurate data about existing broadband coverage.

To that end, I welcome the FCC's ongoing proceeding to address shortcomings in its Form 477, which is used to collect broadband deployment data from service providers twice a year. The data is used to develop a broadband map that helps the Commission determine areas that are eligible for universal service support.

An obvious concern with the form, among others, is that it asks providers to submit data about where they could provide service to a location within a service interval without an extraordinary commitment of resources. This service interval is approximately seven to 10 business days.

I hope the witnesses will comment on ideas being discussed to replace or supplement the Form 477 data, such as using location-based proposals or shape-file-based proposals.

In submitting information about where service could be provided, I'm concerned that this information is represented on the FCC's Broadband Availability Maps with little verification about whether the service provider could or would actually provide the service at the advertised speed.

Incorporating data about where service could be provided may ultimately lead to overstated broadband coverage and availability on maps.

So I'd like the witnesses to comment on the value of maintaining a challenge process after data is collected to verify the accuracy of the data provided to the FCC.

Developing accurate broadband maps is a priority for this committee. With so much at stake, it is dependent upon us to find

ways to ensure that we have sound understanding of existing broadband availability across the country.

The Committee welcomes input from the witnesses on the appropriate role for Congress in developing accurate maps. I look forward to a thoughtful discussion on these issues and I want to welcome all of our witnesses.

And we will hear from Senator Cantwell when she is able to arrive from the meeting where her services are currently being requested.

But we welcome our witnesses and we will begin. Your entire statements will be included in the record. We ask each of you to summarize your testimony in five minutes.

We will begin with Mr. Tim Donovan. Sir, you are welcome.

**STATEMENT OF TIM DONOVAN,  
SENIOR VICE PRESIDENT, LEGISLATIVE AFFAIRS,  
COMPETITIVE CARRIERS ASSOCIATION**

Mr. DONOVAN. Thank you, Mr. Chairman.

Garbage in, garbage out. Utterly worthless. They stink. These are just some of the bipartisan statements expressed by members of this committee regarding the current mobile broadband coverage maps.

Chairman Wicker, Members of the Committee, thank you for the opportunity to testify about this problem and solutions to produce more reliable maps.

CCA is the Nation's leading association for competitive wireless providers, representing nearly 100 carrier members as well as vendors and suppliers. Through the recent FCC Mobility Fund Challenge Process, CCA members have firsthand experience and motivation to fix the mapping process and continue deploying mobile broadband services.

It is an exciting time in our industry, as mobile connections power new technologies and improve the quality of life across the United States. 5G will super-charge these services and enable new services, some not yet even imagined.

Current and future technologies depend on robust wireless networks and without the right policies, Rural America will be left behind.

Today's hearing is both important and timely. We cannot close the Digital Divide if we do not know the country's existing coverage gaps. CCA commends this committee for its steadfast, bipartisan work to create reliable mobile broadband coverage maps, including statements, hearings, letters, and enacting laws to take steps to improve data, including the Rural Wireless Access Act and the Precision Agriculture Connectivity Act.

You know that the representation of coverage in your states is overstated and, in some cases, substantially so. The FCC and agencies across the government must work in coordination with industry to produce the most reliable coverage maps possible. The stakes are too high for anything less than our best efforts.

I'd like to take a minute to talk about how we got here as well as offer solutions for a path forward.

Historically, the FCC's Form 477 has served as its tool to determine the availability of services and to guide policymaking. However, current policies are not adequate to allocate USF support.

As recently as December, the FCC used this data to report that approximately 100 percent of the American population lives in geographical areas covered by mobile LTE. If this were the case, we would not be having this hearing today.

Mobility Fund Phase II has proposed to provide \$4.53 billion over 10 years to preserve and expand 4G services. Acknowledging that using Form 477 to determine eligible areas would prolong any challenge process, the FCC decided to undertake a new one-time data collection to determine areas initially eligible for support.

To the FCC's credit, this data collection included specific parameters; namely, requiring carriers to report where they provide 4G services with download speeds of five megabytes per second with 80 percent cell edge probability and a 30 percent loading factor.

While taking steps to standardize the data should be commended, we now know that the parameters selected did not sufficiently improve the accuracy or credibility of the resulting coverage maps, which continue to dramatically overstate coverage, especially in rural areas.

This is a significant problem as the challenge process proved to be overly burdensome, yet insufficient to correct flaws. A challenger was required to download mapping data from the portal and research areas where coverage may be overstated, demonstrate the absence of coverage in each one square kilometer block throughout an area with Speedtests no further than 800 meters apart from one another, done between 6 a.m. and midnight local time, and if these and other burdens are met, a challenger was required to submit data across at least eight parameters for each carrier claiming unsubsidized coverage in an area.

Believe it or not, this description dramatically oversimplifies the effort a challenger must undertake.

The takeaways from the process for challengers are (1) the process was so complicated and expensive that challengers large and small were never able to challenge all the areas they wanted to and (2) absent a successful challenge, too many areas will remain ineligible for support.

Despite these problems, entities last year provided the FCC with over 20 million Speedtests to challenge claimed coverage. After a preliminary review, the FCC launched an investigation into the data while suspending the next step of the challenge process.

The investigation's findings can help improve future data collections but we already know that more robust standardization is a problem that should be addressed.

Any model will have shortcomings, but to produce maps that are more reliable, the FCC must ask carriers to provide a detailed radiofrequency link budget submission that includes the most relevant data, including at a minimum: signal strength standardization, increased cell edge probability, increased cell loading to more accurately reflect how mobile networks are used in rural areas, and additional clutter factors.

Further standardizing these bottom line factors will produce substantially more reliable maps and reduce the need to expend additional resources to correct data collection flaws.

In conclusion, connectivity for millions of Americans living in rural areas depends on policy decisions that are based on reliable real-world coverage data.

Thank you for your ongoing leadership on this critical issue and for holding today's important hearing.

I welcome any questions you may have.

[The prepared statement of Mr. Donovan follows:]

PREPARED STATEMENT OF TIM DONOVAN, SENIOR VICE PRESIDENT, LEGISLATIVE  
AFFAIRS, COMPETITIVE CARRIERS ASSOCIATION

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, thank you for the opportunity to testify about how to base policy decisions to close the digital divide on reliable broadband mapping data.

I am testifying on behalf of Competitive Carriers Association ("CCA"), the Nation's leading association for competitive wireless providers. CCA is composed of nearly 100 carrier members ranging from small, rural providers serving fewer than 5,000 customers to regional and nationwide providers serving millions of customers, as well as vendors and suppliers that provide products and services throughout the wireless communications ecosystem.

It is an exciting time in the wireless industry, as mobile connections are powering new technologies to revolutionize entire industries and improve consumers' quality of life across the United States. Specifically, wireless technologies enable telemedicine services and remote patient monitoring, which increases patients' access to medical care, particularly in rural areas. Precision agriculture enables farmers to increase yields while conserving resources. Distance learning brings the latest lessons and training programs to students, allowing them to access educational opportunities previously unimaginable. Today's wireless services also enhance public safety, economic growth, and opportunities for all Americans.

As impressive as existing wireless networks can be, 5G will supercharge existing services like telehealth and precision agriculture and enable new services, such as augmented and virtual reality, autonomous vehicles, and other innovations not yet invented. As these technologies develop, it is imperative to provide access and expand wireless services, or rural areas will be left behind, on the wrong side of the digital divide.

Today's hearing is both important and timely: we cannot close the digital divide if we do not know the size and location of our country's existing coverage gaps. Reliable data is necessary to determine where mobile broadband coverage does and does not exist. It also is important to understand that measuring fixed wireline broadband availability is a separate and distinct challenge from reliably measuring mobile coverage.

CCA commends this Committee for its steadfast, bipartisan work to create reliable mobile broadband coverage maps. These efforts include not only statements and hearings, but also a steady flow of letters expressing concern to the Federal Communications Commission ("FCC") and enacting laws to take steps to improve data, including the Rural Wireless Access Act and the Precision Agriculture Connectivity Act.

Members of Congress know from hearing from your constituents and travelling across your states that the representation of coverage in your states is overstated—and, in some cases, substantially so. While significant efforts to update coverage maps will take place at the FCC, agencies across the government should work in coordination to produce the most reliable coverage maps possible. For example, the Department of Commerce's National Telecommunications and Information Administration should continue its ongoing efforts to refresh the national broadband map and the Department of Agriculture should base rural broadband funding programs on improved data.

CCA and our members stand ready to work with Congress, the FCC, the Administration, and all stakeholders to create reliable coverage maps to appropriately guide policymakers as work continues to preserve and expand mobile broadband coverage. With our Nation on the precipice of a major technological change, the stakes are too high for anything less than our best efforts.

### **From Form 477 to the Mobility Fund Phase II Data Collection**

Historically, the FCC's Form 477 has served as the principal tool to determine the availability of communications services and to guide the FCC's policymaking, and is intended to represent where consumers should expect to receive mobile broadband services at the minimum speeds advertised by providers. The FCC has an ongoing proceeding to update the Form 477 to improve the data and to eliminate unnecessary filing requirements. As recently as last December, the FCC used Form 477 data to report that "approximately 100 percent of the American population lives in geographical areas covered by mobile LTE with a minimum advertised speed of 5Mbps/1Mbps." This figure does not match Congress' or consumers' on-the-ground experience. Once work is complete to develop reliable maps to determine eligible areas for Mobility Fund Phase II ("MF II"), lessons learned from the MF II experience can guide ongoing updates to Form 477.

MF II is proposed to disburse \$4.53 billion over ten years to preserve and expand 4G LTE service in areas without an unsubsidized LTE provider. Acknowledging that using Form 477 to determine eligible areas for MF II would prolong any challenge process, the FCC decided to undertake a new, one-time data collection to determine areas initially eligible for MF II support. To the FCC's credit, this one-time data collection included specific parameters, namely requiring carriers to report where they provide 4G LTE service with download speeds of 5 Mbps with 80 percent cell edge probability and a 30 percent loading factor. But evidence supporting final determinations for areas eligible to receive MF II support must be clear, rigorous, and above all, reliable. While any steps to standardize the data should be commended, we now know that the parameters selected did not sufficiently improve the accuracy or credibility of the resulting coverage maps, which continue to dramatically overstate coverage in several states—especially in rural states. Areas where coverage was overstated, absent a successful challenge, would be ineligible for support to preserve and expand mobile broadband for a decade.

### **The MF II Challenge Process Is Overly Burdensome and Insufficient to Correct Flaws**

On February 27, 2018, the FCC released a 53-page public notice explaining how the MF II challenge map would be generated, the procedures for filing a challenge, and how the FCC would process challenges. With the benefit of hindsight, it is now apparent that the complicated process prevented the FCC from substantially improving its initial map of eligible areas. As a bipartisan group of eleven Senators wrote to the FCC last month, "The Challenge Process for MF-II was aptly named because collecting and submitting information for the FCC maps was, indeed, a challenge." Here are the basic steps a challenger was expected to undertake:

- Download mapping data from the FCC's portal;
- Compare the FCC's data to all available information about every carrier offering service in an area. If that research leads a challenger to conclude that the FCC's map is inaccurate because of other evidence, then it must conduct drive tests and submit the results to the FCC for consideration;
- A challenger may challenge the FCC's map, one square kilometer at a time. In other words, a challenger must demonstrate the absence of coverage in each one square kilometer block throughout an area. To provide some perspective, many rural areas that could be challenged have thousands of square kilometer blocks that must be separately analyzed to determine whether any carrier is providing service;
- For each individual square kilometer block, speed tests must be conducted no further than 800 meters apart from one another, and done between 6:00 AM and 12:00 AM local time;
- The tests must include all unsubsidized wireless companies claiming coverage inside that block;
- Only certain handsets, specified by and purchased from each operator claiming coverage in the area, may be used;
- A challenger must subscribe to rate plans and constantly monitor usage to ensure service is not throttled or subject to data caps, which could bias the tests and collect unusable test results;
- A challenger must purchase, mount and calibrate test equipment on one or more test vehicles, or hire a testing company to perform the tests;
- If a challenger does the testing, it must train up testing teams and take them away from their work building and maintaining a network for two or more months;

- GPS tracking equipment must be purchased so that the testers understand where the vehicle is in relation to the one square kilometer blocks eligible to be challenged, and so tests get conducted at the required locations inside the blocks, that is, at the minimum distance separation of 800 meters;
- Since the FCC's rules require a challenger to demonstrate lack of coverage in 75 percent of the grid being challenged, only grids with accessible roads that can be driven by a normal vehicle can be challenged. Vehicle-based drive testing must be done on drivable roads, which in rural areas can be far apart or otherwise inaccessible due to private or public restrictions, seasonal closures, or other factors. This is a significant limitation; indeed, some CCA members report that up to half of the rural blocks do not have enough drivable roads to meet the FCC's 75 percent benchmark. So, if a carrier claims coverage, there can be no challenge;
- For each test, a challenger was required to submit: (i) all speed test measurements collected during the relevant time frame, (ii) signal strength and latency, (iii) the service provider's identity, (iv) the make and model of the device used (which must be from that provider's list of pre-approved handsets), (v) the international mobile equipment identity (IMEI) of the tested device, (vi) the method of the test (*i.e.*, hardware-or software-based drive test or non-drive test app-based test), (vii) if an app was used to conduct the measurement, the identity and version of the app, (viii) the identity and location of the server used for speed and latency testing;
- While challengers bear the burden of proof, challenged carriers do not need to provide drive tests to rebut. In lieu of drive testing, challenged carriers may submit data from transmitter monitoring software that could show geolocated, device-specific throughput measurements and other device-specific information, along with certifications from an engineer. Producing this level of rebuttal evidence is easier to do than drive testing.

To provide some perspective on how daunting this challenge process was, one of CCA's small carrier members undertook to analyze 165,000 separate square kilometer blocks within its service area that it believed could possibly be incorrectly labeled as "covered." That company tested several thousand blocks, but had nowhere near the resources needed to test a substantial portion of the blocks that appeared to be worth a challenge. One of our larger members spent over \$2 million to hire a testing firm that completed tests in 20 states and challenged 37,000 one square kilometer blocks. Even with this resource allocation, the member completed testing in less than 5 percent of the carrier's overall rural footprint.

The takeaways from this process for challengers are: (i) the process was so complicated and expensive that challengers large and small were never able to challenge all of the areas they wanted to, and (ii) in any area where the FCC *incorrectly* showed unsubsidized coverage; absent a successful challenge, there could be no investment of universal service support. Without eligibility for support, unserved people living in those areas could wait over a decade or more before having another opportunity to access mobile broadband services that are reasonably equivalent to services found in the Nation's more densely-populated regions.

#### **FCC Investigation**

Despite these problems, entities provided the FCC with 20,809,503 speed tests to challenge claimed coverage. In December 2018, FCC Chairman Pai announced that a preliminary review of the data filed through the challenge process suggested that the preliminary maps were an inadequate basis to distribute MF II support, and launched an investigation into the data while suspending the next step of the challenge process. CCA appreciates the FCC's continued focus on ensuring that it has reliable data before allocating limited support resources. The FCC should use the investigation to understand and rectify overstated coverage figures, and take steps to improve the next mobile coverage data collection. While the investigation may uncover additional concerns, various stakeholders confirm that the lack of a more robust standardization of parameters for the one-time data collection was a critical error that should be addressed.

#### **Improved Standards Produce More Reliable Data**

Policymakers should apply a specific set of factors to standardize data collection, better understand carriers' broadband coverage, and produce more reliable maps. It is important to keep in mind that no model will 100 percent reflect on-the-ground coverage. That said, steps should be taken to further standardize modeled coverage. At a minimum, a detailed Radio Frequency Link Budget submission should include the following:

- *Signal Strength.* Standardizing the Reference Signal Received Power (“RSRP”) will base measurements on the same real-world measurements that wireless networks use to determine cell selection and handover, among other network functions. As current Form 477 filings show, these results can be subjective and vary by equipment vendor and network design. A weaker RSRP means that the coverage area is larger but that the actual coverage is less reliable at the cell edge. Also, a weaker RSRP threshold translates to more path loss allowed between the base station and the mobile. It is therefore imperative that all carriers report a standard RSRP level. In rural areas where sites are isolated, the coverage area doubles with a 5 dB increase in the Maximum Allowed Path Loss for a single site. For 4G LTE specifically, a -85 dBm RSRP level per 5 MHz channel would reflect excellent coverage, while a signal strength of no lower than -105 dBm per 5 MHz channel would reflect the type of reliable signal strength that consumers expect. In contrast, a -120 dBm level per 5 MHz channel could register that a consumers’ device is connected to LTE service, but in reality, provide for a poor connection that fails to support many applications or functions.
- *Cell Edge Probability.* Cell edge probability determines the likelihood that the minimum speed will be possible at the furthest point from the base station. From data collected during the ongoing MF II process, it is evident that an 80 percent cell edge probability drastically overstates coverage capabilities. The FCC should revisit this parameter and adopt a cell edge probability of 90 percent or higher, as proposed by several industry stakeholders, including those representing the largest nationwide wireless carriers as well as those providing service across rural and regional areas of the United States. It is worth noting that the industry standard for commercial operators is to design their networks for at least 90 percent cell edge probability, and public safety typically designs to 95 percent. In a rural site, using 80 percent extends the cell radius by about 27 percent and increases the “covered” area by about 60 percent. This additional 60 percent could represent hundreds of square kilometers of additional “coverage” per site that is mostly insufficient to support reliable service.
- *Cell Loading.* Cell loading determines the extent to which available resources from a given base station may be used by consumers while providing minimum coverage speeds. In the MF II proceeding, the FCC directed reporting providers to evidence a 30 percent load factor, which failed to accurately reflect network use in rural areas. As Verizon has previously highlighted, network loading in at least one rural region in Oklahoma often exceeds 30 percent. In fact, because rural Americans are often more dependent on mobile broadband service for Internet access than their urban counterparts, one CCA carrier member reports that its rural sites utilizing high-quality, low-band spectrum routinely experience average cell loading well in excess of 50 percent in the evening hours. In rural areas, coverage is typically provided by low-band spectrum, which has limited capacity compared to higher frequencies, and as a result, these sites are often prone to being heavily loaded. The FCC should revisit this parameter and adopt a cell loading factor of at least 50 percent on the downlink, or higher, to reflect the reality that consumers in rural areas are more likely to rely on their mobile connection for their primary or only Internet connection.
- *Clutter Factors.* Clutter factors include environmental features such as structures, trees, vegetation, topography, or other objects that affect propagation of a signal from a base station. With varied geographic features across the country, clutter factors should match local environments but also must be appropriately standardized across reported coverage areas. Submissions for clutter factors also should include clear indications of the precise loss values assigned to the clutter and feeder type.

A variety of other factors also form the foundation upon which a robust Link Budget is based; however, standardizing the bottom-line factors listed above will produce substantially more reliable maps and reduce the need to expend additional resources to correct data collection flaws.

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Connectivity for millions of Americans living in rural areas depends on policy decisions that are based on reliable, real-world coverage data. Armed with improved and more reliable broadband mapping, policymakers can connect all Americans and lay the groundwork for the expansive impact that the latest broadband technologies promise for all consumers. And if designed correctly, a robust data collection will promote the inclusion of rural and Tribal communities in today’s digital economy.

Thank you for your ongoing leadership on this critical issue and for holding today's important hearing. I welcome any questions you may have.

Senator WICKER. Thank you very much.  
Mr. McCormick, you're recognized.

**STATEMENT OF MIKE McCORMICK, PRESIDENT,  
MISSISSIPPI FARM BUREAU FEDERATION**

Mr. McCORMICK. Thank you, Mr. Chairman.

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, my name is Mike McCormick, and I'm President of the Mississippi Farm Bureau Federation.

I'm pleased to be here today and I commend you for your leadership in addressing the critical issues of rural broadband development and the needs for agriculture in this conversation and the challenges with current broadband mapping.

I would like to devote my time today to primarily discussing agricultural needs and challenges and access to broadband, our experience with the Federal Communications Commission's Mobility Fund Phase II Challenge Process and why accurate broadband mapping is so critical to agriculture.

Broadband is no longer a luxury. It's a necessity. Farmers and ranchers depend on broadband just as they do highways, railways, and waterways to ship food, fuel, and fiber across the country and around the world.

However, 29 percent of U.S. farms have no access to Internet according to USDA. According to the FCC, 30 percent of rural Americans lack access to adequate broadband compared to only 2 percent of urban Americans.

Specific to my home state, Mississippi has the lowest percentage of fixed broadband availability in the Nation with 2.2 million citizens or 72 percent of the Mississippi population with access to Internet at broadband speeds according to the FCC.

When looking at the data put together by Microsoft and other groups, they report that only 487,000 citizens or 16 percent of the Mississippi population use the Internet at broadband speeds. This 56 point difference in broadband availability marks a substantial gap in the perceived numbers of citizens able to participate in a growing digital economy.

From my time traveling the state talking to rural Mississippians, I feel very confident disputing the 72 percent of our population has access to the Internet at broadband speeds.

In February 2018, the FCC released a map showing areas across the United States presumed eligible to receive support for the deployment of 4G LTE service as part of the Mobility Fund Phase II Auction.

In essence, the FCC's map showed that Mississippi was 98 percent covered with mobile broadband services which we clearly dispute.

In August 2018, we decided to file a formal waiver request to be allowed to challenge the FCC on the accuracy of these maps. Our staff began to review mapping data and the technical requirements to run multiple speed tests applications by carrier and device in the census block. We quickly determined that our organization did not have the adequate resources or staff needed to execute this chal-

lenge through this process nor would the average consumer have this ability either.

We then collaborated with the Mississippi Public Service Commission and directed our membership to report mobile broadband speed tests through a program the PSC already had established.

In November 2018, the PSC submitted more than 8,400 individual consumers' speed test data points to the FCC. Ultimately, however, through the efforts of Farm Bureau and the efforts of the Mississippi Public Service Commission, not one single challenge to the map in Mississippi was successful.

The minimum level of success was largely due to the overall complexities of the challenge process itself and the complications that prevent anyone, especially the average consumer, to successfully participate in this process.

We feel that the FCC must do more to establish an accurate understanding of the mobile broadband coverage before moving forward with the Mobility Fund II Program.

Any effort to move forward with the current maps will lock Rural America into a digital divide for at least another decade and as efforts to improve access to broadband in rural areas continue, the ability of the FCC and all other relevant agencies to utilize accurate coverage maps is and should be of the highest priority.

Currently, the FCC's National Broadband Map relies on census block data to determine which areas are served, underserved, or unserved across the country. Farm Bureau recommends that more granular data be used to determine areas of coverage.

Additionally, we recommend that the inclusion of cropland and ranchland as metrics of the broadband access. With this need in mind, I commend you, Chairman Wicker and Senator Klobuchar, for your work to see that the provisions of the Precision Agriculture Connectivity Act were included in the 2018 Farm Bill.

This legislation is an important step in changing the way the FCC and other agencies think about rural broadband as we strive to build the information infrastructure that modern production agriculture increasingly needs to be successful.

On behalf of the Farm Bureau, I appreciate the opportunity to provide comments today on the needs of agricultural industry in the rural broadband conversation and highlight the importance of accurate broadband maps and how they're developed so that farmers and other rural Americans are not left out of the digital economy.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. McCormick follows:]

PREPARED STATEMENT OF MIKE MCCORMICK, PRESIDENT,  
MISSISSIPPI FARM BUREAU FEDERATION

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, my name is Mike McCormick and I am the President of the Mississippi Farm Bureau Federation. I am pleased to be here today to offer testimony on several issues of importance to farmers and ranchers across the country.

On behalf of the nearly two-hundred thousand member families of Farm Bureau in Mississippi and almost six million Farm Bureau member families across the United States, I commend you for your leadership in addressing the critical issues of rural broadband deployment and the challenges with current broadband mapping.

Mississippi Farm Bureau Federation is a statewide organization with members in all 82 counties. One of the most common themes I hear as I travel the state as

President of our organization is the lack of true, reliable, and affordable broadband access. Mississippi Farm Bureau supports the Federal Communications Commission's (FCC) minimum broadband speed of 25 Mbps downstream and 3 Mbps upstream and is neutral on the technology used to transmit broadband. Access to broadband is essential for farmers and ranchers to follow commodity markets, utilize precision agriculture technologies, communicate with their customers and, increasingly, for regulatory compliance.

We appreciate the Committee's interest in understanding how farmers and ranchers are impacted by the lack of connectivity and the importance of accurate broadband mapping as the Federal government assesses the broadband needs of Americans that live and work in rural areas.

I would like to devote my time today primarily to discussing the agricultural needs and challenges of access to broadband, our experience with the FCC Mobility Fund Phase II Challenge Process, and why accurate broadband mapping is so critical.

### **Importance of Broadband for U.S. Agriculture**

Broadband is no longer a luxury, it is a necessity. Farmers and ranchers depend on broadband just as they do highways, railways and waterways to ship food, fuel and fiber across the country and around the world. Many of the latest yield maximizing farming techniques require broadband connections for data collection and analysis performed both on the farm and in remote data centers. However, 29 percent of U.S. farms have no access to the Internet according to the USDA report, "Farm Computer Usage and Ownership, 2017."

America's farmers and ranchers embrace technology that allows their farming businesses to be more efficient, economical and environmentally friendly. Today's farmers and ranchers are using precision agricultural techniques to make decisions that impact the amount of fertilizer a farmer needs to purchase and apply to the field, the amount of water needed to sustain the crop, and the amount and type of herbicides or pesticides the farmer may need to apply. These are only a few examples of the ways farmers use broadband connectivity to achieve optimal yield, lower environmental impact and maximize profits.

Farmers and ranchers cannot take full advantage of such cutting-edge equipment if they do not have access to reliable, high capacity fixed and mobile broadband in the field or on the ranch. As technology advances, those connections will become ever more important in a world expected to add more than 2 billion people by 2050. Farmers and ranchers, who already have seen a drastic 50 percent decline in net farm income in the last four years, must have access to fixed and mobile broadband to be more efficient, economical and responsive to environmental needs.

Additionally, agriculture is the backbone of so many small rural communities that dot the landscape across America. These rural communities need access to health care, government services, and educational and business opportunities. For many rural communities, access can only be gained by using broadband services and sophisticated technologies that require high-speed connections. According to the Federal Communications Commission, 30 percent of rural Americans lack access to 25 Mbps/3 Mbps service, compared to only 2 percent of urban Americans. Current and future generations of rural Americans will be left behind their fellow citizens if they are without affordable high-speed broadband service that enables them to tap into health care and educational services, government agencies, and new business opportunities.

### **Mississippi's Access to Broadband**

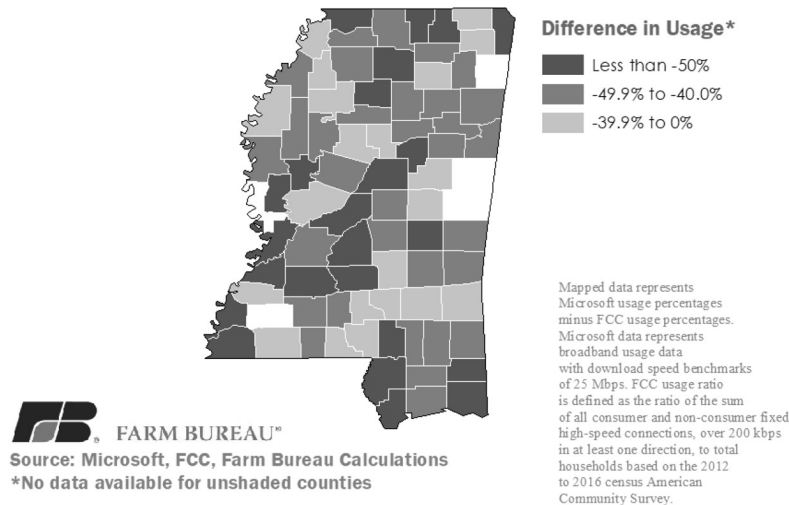
Specific to my home state, Mississippi has the lowest percentage of fixed broadband availability in the U.S., with 2.2 million citizens, or 72 percent of the Mississippi population, with access to the Internet at broadband speeds (25 Mbps/3 Mbps). This data was reported in the FCC's 2018 Broadband Deployment Report.

However, when looking at third-party private research data put together by Microsoft and other groups, they report that only 487,000 citizens, or 16 percent of the Mississippi population, use the Internet at broadband speeds. This 56-percent-age point difference in broadband availability marks a substantial gap in the perceived number of citizens able to participate in a growing digital economy.

Illustrating these discrepancies further, we created the following map that uses public data from the FCC, Microsoft and American Farm Bureau Federation to calculate the difference between FCC usage percentages compared to actual usage percentages in Mississippi. According to the FCC my home county, Jefferson County, is listed at 41 percent usage while the Microsoft data shows it at 5.6 percent, which is a different of -35 percent.

## Mississippi

### Microsoft Broadband Usage Minus FCC Usage Ratio



As I pointed out in my opening comments, the topic of rural broadband connectivity is the most common thing I hear about from our membership. With that in mind, I feel very confident disputing the FCC report which indicates that 72 percent of our state's population has access to the Internet at broadband speeds.

#### **Mississippi's Engagement in the FCC Mobility Fund Phase II Challenge Process**

In February 2018, the FCC released a map showing areas across the United States presumed eligible to receive support for the deployment of 4G LTE service as part of its Mobility Fund Phase II (MF-II) auction. MF-II is critically important to supporting mobile voice and broadband coverage, incentivizing the deployment of mobile wireless service through a reverse auction, and ensuring that 4G LTE service is preserved and advanced in those areas of the country that lack unsubsidized service. This Federal funding is vital for providing rural telecom carriers support to bring about service to rural and underserved areas. The new Mobility Fund program will succeed only if it is based on an accurate understanding of current mobile broadband coverage. What I know from my organization's in-depth review of the FCC's existing coverage maps is that they are clearly wrong. In essence, the FCC's map showed that Mississippi was 98 percent covered with mobile broadband services, which Farm Bureau clearly disputes.

After lengthy discussions with the FCC, members and staff of Farm Bureaus in other states, and our national organization; we decided to formally file a waiver request to be allowed to challenge the FCC in the accuracy of these maps. In August of 2018, Mississippi Farm Bureau® submitted and was granted a waiver by the FCC to participate in the FCC Mobility Fund Phase II challenge process. As our staff began to review mapping data and the technical requirements to run multiple speed tests applications by carrier and device in each census block, we quickly determined that our organization did not have the adequate resources or staff needed to execute a valid challenge through this process, nor would the average consumer have this ability either.

Mississippi Farm Bureau Federation later began discussions with the Mississippi Public Service Commission (PSC). The PSC has an ongoing program that allows citizens to submit mobile speed test data to the Commission in areas that lack mobile 4G service. At that point, we then collaborated with the Mississippi Public Service Commission (PSC) to direct our membership to report mobile broadband speed tests

through the PSC's program in hopes that our members could be a part of a successful effort to challenge the maps.

In November of 2018, the PSC submitted more than 8,400 individual consumer speed tests data points to the FCC. Of all these data points, only 3,000 were reviewed and assessed as valid by FCC staff to be submitted as a successful challenge.

Ultimately, through our efforts and the efforts of the Mississippi Public Service Commission, not a single challenge in any census block on the map in Mississippi was successful. This minimal level of success was largely due to the overall complexities of the challenge process itself and the complications that prevent anyone—especially the average consumer to successfully participating in this process. We firmly believe that the FCC must do more to establish an accurate understanding of mobile broadband coverage before moving forward with the Mobility Fund II program.

### **Importance of Broadband Mapping to Agriculture**

As efforts to improve access to broadband in rural areas continue, the ability of the FCC and all other relevant agencies to utilize accurate coverage maps is the highest priority. With limited funding to address an estimated \$45–65 billion issue and an overabundance of need, more granular and accurate maps are critical to successfully target and distribute Federal broadband programs. Currently, the FCC's National Broadband Map relies on census block data to determine which areas are served, underserved, and unserved across the country. Census blocks are too large in rural and remote areas to accurately target broadband investments. If even one household in a given census block is reported by a provider as being served, then the entire block is considered served and is therefore likely excluded from eligibility to receive Federal funds for rural broadband buildout. There are more than 3,200 census blocks across the country that are larger than the District of Columbia, and five that are larger than the State of Connecticut. In fact, census blocks larger than two square miles comprise more than 64 percent of the U.S. land area, which means that every rural area is impacted by this problem in some way.

Farm Bureau recommends that more granular data be used to determine areas of coverage. Gathering and, equally as important, verifying the data to accurately target and distribute the funding is critical to the success of broadband deployment for rural America. Adjustments in the data collection matrix to develop the mapping will assist in identifying areas in rural America where the digital divide is the widest.

Furthermore, we have been a long-time advocate for the inclusion of cropland and ranchland as a metric of broadband access. Precision agricultural equipment requires reliable, high capacity fixed and mobile broadband connections for data collection and analysis performed both on the farm and in remote data centers. As more precision equipment becomes available, farmers cannot take full advantage of that equipment if they do not have access to reliable, high capacity broadband in the field or on the farm.

Chairman Wicker, I want to thank you for championing this effort. You, Senator Manchin and 24 other Senators, including eight of your fellow committee members,<sup>1</sup> wrote a bipartisan letter on July 11, 2016 to then FCC Chairman Tom Wheeler supporting the concept of cropland and ranchland as a broadband metric. The letter reads:

*[c]roplands and ranch lands have lagged behind in adequate mobile coverage, even as demand for coverage has grown. To address this gap, we urge you to consider a metric of broadband access in croplands (and farm buildings), in addition to road miles, to identify these areas of greatest need. "Cropland" coverage can be assessed using USDA data for crop operations, the U.S. Geological Survey's Land Use classification, or other databases.<sup>2</sup>*

### **Precision Agriculture Connectivity Act & 2018 Farm Bill**

With this need in mind, I commend you Chairman Wicker and Senator Klobuchar for your work to see that the provisions of the Precision Agriculture Connectivity Act were included in the 2018 Farm Bill. This legislation will direct the Federal Communication Commission (FCC) and U.S. Department of Agriculture to work together to identify gaps in farm and ranchlands mobile broadband coverage. Then, policies will be recommended to fill 90-percent of those identified gaps by 2025. The

<sup>1</sup>Sens. Tammy Baldwin, D-Wis., Roy Blunt, R-Mo., Shelley Moore Capito, R-W.Va., Deb Fischer, R-Neb., Ron Johnson, R-Wis., Amy Klobuchar, D-Minn., Jerry Moran, R-Kan., Gary Peters, D-Mich.

<sup>2</sup>Letter to Chairman Tom Wheeler, FCC, from United States Senators Wicker, Manchin, et. al. July 11, 2016.

legislation is an important step in changing the way the FCC and other agencies think about rural broadband as we strive to build the information infrastructure that modern production agriculture increasingly needs to be successful. Farm Bureau looks forward to hearing how the FCC and USDA will accept nominations and will participate in the nomination process.

#### **Conclusion**

On behalf of the Mississippi Farm Bureau® Federation, I appreciate the opportunity to provide comments on the needs of the agricultural industry in the rural broadband conversation. I appreciate the Committee's continued commitment to making sure that accurate broadband maps are developed so that farmers and other rural communities are not left out of the digital economy. I look forward to continuing to work with the Committee in advancing the shared goals to which I have highlighted here today.

Senator WICKER. Thank you very much, Mr. McCormick.  
Mr. Oblizalo, welcome.

#### **STATEMENT OF MIKE OBLIZALO, VICE PRESIDENT AND GENERAL MANAGER, HOOD CANAL COMMUNICATIONS**

Mr. OBLIZALO. Thank you.

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, thank you for the chance to testify on the importance of rural broadband mapping.

I am Mike Oblizalo, Vice President and General Manager of Hood Canal Communications. I am a third generation employee of Hood Canal, a community-based family owned business.

In 33 years with the company, I have worked in all different aspects at the company. I have overseen all aspects of our grant projects, including budgets, the engineering, and the deployment of these networks.

Hood Canal Telephone Company, now known as Hood Canal Communications, was founded over 85 years ago as a traditional local exchange telephone company in Union, Washington. Union is located in Mason County, a sparsely populated rural areas.

Hood Canal has been owned and operated by the Buechel family since 1956 when there were only 123 telephone consumers in the exchange. The family's commitment to the local community led to the additional of cable TV services in 1971, dial-up Internet in the 1990s, and higher speed broadband in 2000.

Hood Canal currently employs 40 members of our community and we frequently are recognized, which awards for both our community involvement and our broadband deployment efforts.

Hood Canal has received several USDA grants and loans to deploy broadband to tribal areas, upgrade our existing networks, and expand services into the unserved and underserved.

Limited resources in a tight financial market make deployment difficult without financing available from a partner like the USDA. At the same time, predictable and sufficient support from the Federal Universal Service Fund is essential within our traditional incumbent service area to make the business case for investment and to ensure consumers can obtain services at affordable rates.

Broadband mapping is significant for companies like Hood Canal that need to leverage public-private partnerships to deploy networks and to deliver services in very rural areas. But the lack of accurate maps makes for a challenging process to determine potential areas for broadband deployment and availability of funding.

The accuracy of broadband availability maps is often in question as maps show service as available where consumers cannot get them at all and other places these maps show speeds available at levels that cannot be consistently delivered.

There are several reasons why these issues arise. First, current broadband maps are based largely on the information received by the providers. While providers certify the accuracy on their reports, the processes to verify the information can vary greatly, if they exist at all.

Second, on the report that feeds into the FCC's Broadband Map, the census block is reported as simply served if one location of that block can be served by a provider.

Third, the current standard for reporting an area as served depends on the advertised rather than actual speeds and also shows an area served if a provider believes it could deliver the service at some time soon in the future.

Finally, the current map does not capture build-out in progress pursuant to the government initiatives, like the FCC's USF or the RUS landing and grant programs. This means that there could be a potential for two governmental programs to in effect overbuild each other, allowing duplicate and competing networks to be built through two different Federal programs.

Accurate mapping data is critical to delivering and sustaining services in Rural America—and bad mapping data risks leaving rural consumers stranded without broadband for years to come.

False positive locations are locations shown as served when they are not. This could result in denial of financing or funding which ultimately hurts the consumer left unserved.

On the other hand, false negative locations are locations appearing as served when they're already served or in the process of networks being built to them. This can result in a waste of financing and funding resources on duplicate networks.

There are many interesting ideas now being considered how to improve the maps and make them more granular. A more granular map can certainly help identify more accurately where broadband is available but granularity alone is not enough.

While getting more granular is useful, a meaningful challenge process is critical to validate the data prior to any map being used by the FCC or the RUS to make final decisions on funding or financing.

Hood Canal continues to strive to provide great services to its customers of rural Mason County. Only a meaningful validation process that includes the ability to challenge data on a baseline map will ultimately provide for both the granularity and the reliability necessary to ensure these maps promote the goal of connecting every American and keeping every American connected.

Thank you.

[The prepared statement of Mr. Oblizalo follows:]

PREPARED STATEMENT OF MIKE OBLIZALO, VICE PRESIDENT AND GENERAL MANAGER,  
HOOD CANAL COMMUNICATIONS

**Introduction**

Chairman Wicker, Ranking Member Cantwell and members of the Committee, thank you for the opportunity to testify on the importance of rural broadband mapping.

I am Mike Oblizalo, Vice President and General Manager of Hood Canal Communications (HCC) in Shelton, Washington. I am a third-generation employee of HCC, a community-based, family-owned business. I have worked for the company for 33 years; and in that time, I have worked in every position throughout the company, including construction, splicing traditional cables, and identifying and engineering new buildout areas. I have overseen all aspects of HCC's grant projects, including writing applications, creating budget projections, and the engineering and deployment of networks. I attended Clover Park Technical College and Michigan State University, and I am certified in engineering and telecommunication technologies.

Hood Canal Telephone Company (now known as Hood Canal Communications) was founded over 85 years ago as a traditional local exchange telephone company in Union, Washington. Union is located in Mason County, a sparsely populated rural county. HCC has been owned and operated by the Buechel family since 1956, when there were only 123 phone customers in the exchange. The family's commitment to the local community led to the addition of cable television service in 1971, and the company started offering dial-up Internet service in the 1990s. To respond to customer demand, we migrated quickly to higher speed broadband service starting in 2000. HCC currently employs 40 members of our community, and we are frequently recognized for both our community involvement and broadband deployment efforts within Mason County. Within the last five years, HCC has won several awards from the Mason County Chamber of Commerce and North Mason Chamber of Commerce, including business of the year and volunteer of the year several times.

In 2002, HCC was awarded a U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) Community Connect broadband grant to deploy broadband service on the Squaxin Island Indian Reservation. This project was extremely successful and brought broadband, cable TV, and telephone service to the residents and businesses of the Squaxin Island Indian Tribe. In 2004, we received a RUS loan for \$1.77 million to upgrade our network for better broadband deployment. In 2010, HCC received another funding award in the amount of \$3.6 million from the USDA Broadband Initiatives Program to expand broadband, telephone, and cable TV service into unserved and underserved parts of Mason County. In 2017, HCC received another Community Connect grant for \$2.3 million with a 15 percent matching contribution. This grant allowed us to reach 551 homes and many more areas where growth is anticipated—with broadband playing a key factor in stimulating that growth. This project is currently under construction with an estimated completion time of 3rd quarter of 2019.

While HCC continues to extend its facilities into rural Mason County, limited resources and a tight financial market make deployment difficult without financing available from a partner like USDA. One of HCC's goals is to serve the unserved or underserved in our local community outside of our traditional incumbent serving area. We continue to strive to meet these goals by looking for public/private partnerships to deploy facilities.

At the same time, predictable and sufficient support from the universal service fund (USF) overseen by the Federal Communications Commission (FCC) is essential within our traditional incumbent local exchange carrier (ILEC) service area to make the business case for investment and to ensure that consumers can obtain services at affordable rates in these deeply rural areas. Today, HCC's ILEC serves nearly 1000 broadband subscribers and over 700 telephone subscribers, while our expanded operation serves nearly 5000 broadband subscribers and over 3000 telephone subscribers, plus an additional 3000 cable TV subscribers. All told, HCC's service territory contains 1.45 subscribers per route mile. HCC takes great pride in serving these rural residents of Mason County with essential broadband, telephone, and cable TV services.

**HCC's Experience With Broadband Maps**

Broadband mapping is significant for companies like HCC that need to leverage public-private partnerships to deploy networks and deliver services in very rural areas. The FCC's broadband map and the mapping tool maintained by RUS are the primary starting points in determining where services are lacking and where resources from those agencies might be leveraged to enable private network investment in rural areas. But the lack of accurate maps and the need to refer to two

different mapping tools makes for a challenging process to determine potential areas for broadband deployment and the availability of funding to enable such deployment.

In fact, we find it is not unusual for “conditions on the ground” to look very different from those depicted on national maps. As a recent example, HCC was evaluating offers of model-based USF support from the FCC for its traditional ILEC service area—a movement away from traditional cost-based support to incentive-based support under the FCC’s Alternative Connect America Model (ACAM). At the start of that process a few years ago, the original ACAM support offer based upon the FCC’s map reflected what appeared to be 39 locations in three census blocks that were alleged to be served by a competitive provider other than HCC. We expect that the ACAM offer we will see soon now reflects what we believe to be a total of 247 competitively overlapped locations in three census blocks. One might think this is simply the product of greater broadband deployment over time by that competitor but based upon reviews of the other company’s public information and substantial familiarity with the physical serving area in question, we estimate that only 62 of these locations in two census blocks are in fact served by that competitor.

These concerns are not limited to just our incumbent service area; we are seeing that imprecise data feeding into imprecise maps also affects our ability to reach and serve other unserved rural communities. For example, we have been looking at building in areas in the northern portion of Mason County outside our traditional service area. These locations are deeply rural and in very forested terrain. But, according to the FCC’s map, most of this area is currently served by two different satellite providers that purport to offer speeds of 25 Mbps downstream and 3 Mbps upstream. One of these satellite providers was just awarded USF support through the FCC’s Connect America Fund auction for this tract, which will keep anyone else from being able to obtain funding to serve that area. But given the limitations of satellite service—including lines of sight that are a significant problem in forested areas, latency, and susceptibility to poor weather conditions—the likely result is that consumers will lack meaningful broadband access even though the map will now preclude anyone else from obtaining funding or financing to deploy better networks and serve there.

Accurate mapping data is therefore critical to the ability to deliver and sustain service in rural America—and bad mapping data risks leaving rural consumers stranded without broadband for years to come at the very least. Without any validation process or the ability to challenge the “FCC Form 477” reports submitted by providers that are translated into the FCC’s maps, the result is that ACAM and other USF support is denied in areas where that support is in fact very much needed—which then translates into rural consumers not getting served. And that is perhaps the most important part of this problem. While improving the maps *on the front end* is undoubtedly important, without any ability to validate or correct *on the back end* the self-reported data that gets populated into these maps and then used by the agencies to decide where funding should go, the end user is ultimately the one who suffers.

#### **What Drives Inaccurate Broadband Maps?**

The accuracy of broadband availability maps is often in question, as maps show services as available where consumers cannot get them at all, and in other places these maps show speeds available at levels that cannot consistently be delivered. The examples above illustrate these common problems. There are several reasons that these issues arise.

First, current broadband maps are based mostly, if not entirely, on information received from providers. While providers certify the accuracy of their reports, the processes used to verify the information can vary greatly at the state level and are nonexistent at the Federal level. Therefore, the maps essentially say whatever the providers who populate them say. Moreover, the standards for reporting this data vary and make it very challenging to verify—there is, for example, no specific standard to ensure a wireless provider is reflecting reasonable propagation of its coverage.

Second, on the Form 477 form that feeds into the FCC’s broadband map, a census block is reported as served simply because one location in that block could be served by a provider. In rural census blocks that can stretch large distances, this means that the delivery of service to just *one* customer in a census block can result in the denial of funding for voice and broadband to *another* customer located miles away, yet still in the same census block, who literally has no choices for such services. This disparity results in many unserved homes and businesses looking served, especially in rural areas where census blocks can be large. This issue contributed to the

significant decline in our potential ACAM USF support, despite the fact that we know not all of the locations in those census blocks are served.

There has already been a lot of concern expressed—especially from among members of this Committee—about whether the Form 477 data accurately capture coverage in the *mobile* context. This focus is understandable given the efforts to implement the Mobility Fund and the visceral feeling of having no cell phone coverage in an area where provider maps say one should. But, as HCC’s experience indicates, these concerns are just as prevalent in the context of *fixed* voice and broadband services, too.

Third, the current standard for reporting an area as served depends upon advertised rather than actual speeds, and also allows an area to show as served if a provider believes it could deliver service there at some point soon, rather than having the actual capability to do so in the near term. In other words, there may be no service actually installed in a census block, or the speeds actually delivered in that block may not be equal to what is advertised—and, yet, that area can show as served.

Finally, the current map does not capture buildout in progress that is occurring pursuant to governmental initiatives like the FCC’s USF or RUS lending/grant programs. This means that there is the potential for two governmental programs to in effect “overbuild each other,” allowing duplicative and competing networks to be built through two different Federal programs.

#### **What is the Solution?**

My testimony above describes how the “rubber meets the road” in terms of what bad mapping data means when it affects the ability to serve specific rural areas. “False positives”—locations shown as served when they are not—can result in a denial of financing or funding needed for a small, local committed company like HCC to deploy and operate a broadband network, especially in rural areas where the business case for doing so is so difficult. On the other hand, “false negatives”—locations appearing as unserved when they are already served or are in the process of having networks built to them—can result in a waste of financing and funding resources on duplicative networks.

The reality is that any map will practically be outdated by the time it is published. It is also the case that no one is going to validate independently each piece of data and claimed coverage submitted by a service provider the moment it is submitted. We recognize too that there is a balance to be struck in terms of obtaining more accurate and granular data while trying not to impose burdens that have providers spending more time reporting coverage than advancing coverage through network deployment. However, all this does not mean we should not strive to improve this process.

Many different proposals are being presented to the FCC, and each of them holds some promise to make the maps much better than they are today. These proposals warrant significant consideration, and they may provide a much-needed path forward toward better maps. But, at the end of the day, as long as any map is based upon self-reported data from providers and as long as that data is not vetted thoroughly by an independent source, there will be a need for a challenge process prior to relying upon the map to make decisions about where funding or support should either go or be withdrawn. A more granular map can certainly help identify more accurately where broadband is available, but a meaningful and robust challenge process will remain critical to validate both fixed and mobile data prior to any map being used by the FCC or RUS (or any other governmental agency) to make final decisions on funding or financing.

For many years, agencies like the FCC and RUS have developed and used such challenge processes that treat service coverage information like Form 477 data as *informative* but not *dispositive*. When these processes are used, the maps become a “baseline” for determining where support should or should not go, but the challenge process is then used to confirm whether the maps are correct and to adjust them when they are not.

Certainly, the recent experiences with the Mobility Fund show the value and wisdom of continuing to use a challenge process. Without such a process, the concerns that have been raised about overstated mobile coverage would never have been identified. At the same time then, it has been disappointing to see the FCC moving away from challenge processes in the fixed service context. Specifically, the FCC has refused recently to permit any meaningful challenge process at all in the context of ACAM support, and it is now proposing to eliminate the existing challenge process to validate Form 477 data in the context of cost-based USF support—meaning that it would now instead default to the self-reported Form 477 data effectively as gospel.

If HCC's own experience in rural Washington and the Mobility Fund experience more broadly provide any lesson, it is that a meaningful challenge process is a necessity in determining where funding should go or where it should be denied. We therefore are hopeful that the FCC will reverse course on its suggestion to eliminate a challenge process in the context of distributing USF to support fixed networks, and that it will commit to a data-driven process that ensures rural consumers are not left on the wrong side of a digital divide due to inaccurate information. We hope that an evidence-based challenge process will be used in all contexts going forward to make sure even any improved maps are as accurate as possible prior to funding or financing decisions being made by agencies like the FCC or RUS.

#### **Conclusion**

HCC continues to strive to provide great service to its customers in rural Mason County. However, as long as the Federal broadband maps remain unreliable and riddled with erroneous, overly broad coverage claims, we will not be able to maximize our efforts to reach all unserved areas or to sustain services in areas where funding is needed to do so.

Only a meaningful validation process, including the ability to challenge data on the baseline map as inaccurate, will provide for the granularity and reliability that is necessary to ensure these maps contribute to the ultimate goal of connecting every American and keeping every American connected.

Senator WICKER. Well, we must have put the fear in these witnesses. They've all three so far come in under 5 minutes.

Mr. Spalter, we're glad to have you here today, and you are recognized.

#### **STATEMENT OF JONATHAN SPALTER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, USTELECOM**

Mr. SPALTER. I hope I can be consistent.

Thank you very much, Chairman Wicker, Ranking Member Cantwell, Distinguished Members of the Committee.

I really appreciate the opportunity to be here to discuss this incredibly important issue. It's really great to be here.

I'm Jonathan Spalter. I'm the President and CEO of USTelecom. We represent broadband providers, suppliers, innovators all, who really are united by the commitment to connecting families, enterprises, and communities, urban, rural, and everywhere in between to the power and potential of broadband, and I really want to thank each and every one of the members of this committee for sharing that commitment.

American broadband companies, to remind, have invested over a trillion and a half dollars since 1996 of our own capital in upgrading and expanding U.S. digital infrastructure.

One outcome, and it's a great outcome, for our rural families, farms and ranches, hospitals, schools, and small businesses, is that rural broadband access has risen more than 70 percent in the last decade. The beating heart of this progress has really been our partnership with government through programs, like the FCC's Connect America Fund.

Our members have worked shoulder to shoulder with government to bring broadband to our Nation's hardest-to-reach communities, overcoming challenging distances, terrain, and we know economics to do so. Indeed, this collective effort has already connected 5.7 million rural Americans to the high-speed Internet under CAF II alone.

Connecting the final frontier of broadband requires substantial resources. It also requires a clear-eyed view of the challenge and that's where we really are coming up short.

Simply put, our Nation still lacks a comprehensive connectivity map that can indicate with precision where high-speed broadband is available and where it is not. You know, there's a well-known management maxim that if you can't measure it, you can't manage it. Equally true for broadband is if you can't map it, you can't deploy it.

All stakeholders, from the Administration to Congress to consumers to broadband companies to my fellow panelists this morning, agree that the current yardstick collecting data by census block is inadequate.

It means if a provider is able to serve a single location in that block, then every location is considered served. Well, combining the power of broadband and big data, we can do far better than this one served/all served approach.

U.S. Telecom's recently launched Broadband Mapping Initiative pilot is out to prove it. Quite literally, we aim to map this gap by creating one cohesive national dataset identifying all broadband serviceable locations. We can do it.

Our pilot begins in two states, Missouri and Virginia. With the help of allied associations, including WISPA and ITTA, our pilot will involve companies of different sizes and technology types, including broadband heroes across the range of our own membership, including AT&T and Consolidated, CenturyLink, Frontier, RiverStreet, Verizon, and Windstream, and also our friends at TDS.

Working together, we're going to harmonize and harness a range of new digital resources, including satellite imagery, digitized parcel, and land attribute data, a mix of open source datasets and commercial software, managed crowdsourcing, and existing broadband provider address information.

The pilot also will test different methods for reporting and continually updating this more street level view of service availability.

Our goal: it's a comprehensive database of all broadband serviceable locations in our two pilot states and a roadmap for a government-led effort to expand the system nationwide. We anticipate the pilot program will be completed by Q3 of this year and we look forward to sharing the results with the FCC, with our partners at NTIA, and others, including this committee.

If our aim is to leave no American behind, then the tools and instruments we use in both the public and the private sector must be capable of accurately pinpointing where we must focus our efforts, our investments, and our scarce public resources, and when they are, we believe now with our mapping initiative in sight that broadband providers will be able once and for all to deliver to all Americans the opportunity to fully benefit from the global digital revolution our Nation proudly leads.

Thank you very much. I really look forward to our discussion this morning.

[The prepared statement of Mr. Spalter follows:]

PREPARED STATEMENT OF JONATHAN SPALTER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, USTELECOM

Chairman Wicker, Ranking Member Cantwell, and other distinguished Members of the Committee, thank you for the opportunity to testify at this important hearing.

My name is Jonathan Spalter, and I am the President and CEO of USTelecom—The Broadband Association.

USTelecom is the Nation’s trade association representing broadband providers, suppliers, and innovators connecting our families, communities and enterprises to the future. Our diverse membership ranges from large publicly traded global communications providers, manufacturers, and technology enterprises, to small companies and cooperatives—all providing advanced communications services to markets, both urban and rural and everything in between.

Today’s hearing presents a timely opportunity to discuss why accurate broadband mapping is integral to accelerating the deployment of broadband infrastructure to all Americans. Broadband service is no longer a luxury; it is an essential component of our national infrastructure and economic success, as well as the health, well-being, safety, and prosperity of every American.

That is why American broadband companies have invested \$1.6 trillion of their own capital since 1996—\$76 billion in 2017 alone—to upgrade and expand the Nation’s digital infrastructure. As a result, over the past decade, broadband access in rural homes has risen 71 percent.

USTelecom members also have enjoyed a strong partnership with government through the FCC’s Connect America Fund (CAF) to help deploy broadband to the Nation’s hardest to reach communities. Some of our members began working on CAF II in 2015 to bring broadband to over 3.6 million rural locations—or more than 9 million Americans over six years. As of March 1, 2019, these CAF II participants are in aggregate 10 percent ahead of schedule and, as a result, over 5.7 million more rural Americans have an on-ramp to the internet.

While significant progress is being made, millions remain on the wrong side of the connectivity gap. Part of the challenge is our Nation lacks a comprehensive connectivity map indicating precisely where high-speed broadband service is available and, most importantly, where it is not.

There is a well-known management adage: “if you can’t measure it, you can’t manage it.” Today, it is equally true that when it comes to broadband, “if you can’t map it, you can’t deploy to it.” If our aim is to leave no American behind, then the tools and instruments we use—in both the public and private sector—must be capable of accurately pinpointing where we need to focus our efforts. That is why USTelecom has launched the Broadband Mapping Initiative pilot.

#### **Why a New Broadband Map?**

Currently, the FCC collects deployment data from broadband providers by census block. Unfortunately, location data on homes and businesses too often are not accurately reflected in census block or other available data.

For example, if a provider is able to serve a single location in a census block, then the FCC considers every location in that block “served.” Therein lies the challenge. In some cases, only a fraction of locations in the block can access broadband services. This issue is particularly acute in rural areas where census blocks are far larger than their urban and suburban counterparts and data sources are lacking. The “one-served-all-served” reporting is simply not a reliable tool to accurately understand broadband availability, nor is it a viable approach to identifying where scarce Federal support for broadband deployment should be allocated.

There is broad agreement between industry and government on the deficiencies of current reporting methods. When the FCC launched an open proceeding on improving the FCC’s broadband data collection process, Chairman Ajit Pai said, “Maintaining updated and accurate data about broadband deployment is critical to bridging the digital divide. It lets us target our efforts to those areas that most need it.”

And when the Administration released its American Broadband Initiative Milestones report, it referenced the need for “more comprehensive and granular data” to provide an improved foundation upon which to base broadband funding decisions. The report went on to say, “With limited funding available, getting better data to target investments to under and unserved areas remains a high priority across Federal and state agencies.” As NTIA Administrator David Redl stated, “In order to ensure that all Americans have access to broadband, we need a more precise picture of the current services and infrastructure that are available.”

#### **Broadband Mapping Initiative Pilot**

There is widespread agreement that policymakers need better and more granular information about areas without broadband before they can design efficient funding programs to address the problem, avoid overbuilding, and track progress.

The growing use of competitive reverse auctions to distribute broadband funding puts an even higher premium on having the best possible data about the areas up for bid in order to ensure a fair and cost-effective result. USTelecom members’ re-

cent experiences with CAF programs, however, have revealed the type of granular mapping data needed to efficiently fund targeted programs for broadband deployment in rural areas is neither readily available nor consistent.

After working with innovative broadband companies and associations across the country, and having discussions with key Federal and state level government stakeholders and Congress, USTelecom launched the Broadband Mapping Initiative pilot to quite literally “map this gap.”

Our mission is to create a consistent national dataset identifying all broadband serviceable locations using a single methodology to provide a harmonized reference point for broadband reporting. The Broadband Mapping Initiative pilot, using modern data analytics, will deliver a more detailed and cohesive view of where broadband is, and is not.

Here’s how USTelecom’s proof of concept pilot program will be implemented:

We will begin in two states—Missouri and Virginia—with the aim of developing a single, comprehensive next-generation broadband mapping system for the Nation. With the help of our partners at ITTA and the Wireless Internet Service Providers Association, our pilot will involve multiple companies of different sizes and technology types, including AT&T, Consolidated, CenturyLink, Frontier, RiverStreet, TDS, Verizon, and Windstream.

Working together, we will utilize new digital resources, including satellite imagery, digitized parcel and land attribute data, a mix of open source data sets and commercial software, and existing broadband provider address information. These data sets will be combined and organized by conforming addresses, removing duplicates, cross-checking information with carrier-provided address lists and using managed crowdsourcing to review records for accuracy. The pilot also will test different methods for reporting service availability. Carrier size and technology is likely to influence the method that works best for each participant, and we anticipate testing several methods including: reporting by individual address/location; submitting shape files of service area; and submitting results of propagation maps for fixed wireless service. Once this process is complete and a full set of broadband serviceable locations is identified, carriers will be able to report where they can provide broadband.

Creating a database at this level of granularity is a major endeavor and enlisting the help of consumers and state officials on the ground will help confirm, correct, and refine the data. We are attempting to map in a highly dynamic environment where service deployment, homebuilding, business development, natural disasters, and developments in GIS resources create a constantly changing landscape that must be updated and improved over time. In addition to a systematic schedule to refresh data and reporting, this pilot is designed to support a cooperative, collaborative approach to creating and maintaining an important national data source.

The hoped-for result? A comprehensive database of all broadband serviceable locations in our two pilot states—and a roadmap for a collaborative government-led effort to expand the system nationwide.

We anticipate the pilot project will be completed by Q3 of this year. At the end of that period, USTelecom and its consortium will submit the pilot results into the record in the FCC’s open Form 477 reform proceeding. We expect the pilot will provide clear evidence that this methodology is scalable and achievable in a timely and cost-effective manner and should be adopted nationwide.

USTelecom also is closely coordinating with NTIA, which recently issued a contract for a new mapping platform to update its national broadband availability map. The initial map will include available nationwide data for every state combined with additional state-level data from eight states it has identified as part of a pilot program. USTelecom looks forward to collaborating with NTIA going forward to ensure our efforts are coordinated and complementary.

The opportunities associated with accelerating rural broadband connectivity require an enduring public private partnership. USTelecom and its member companies stand ready to work with this Committee, Congress, and the Administration to improve broadband mapping, a critical step toward closing the digital divide. A sustained effort will take time and resources, along with partnership, imagination and innovation, but these are essential if all Americans are going to have the opportunity to fully benefit from our Nation’s global digital leadership.

Thank you again for this opportunity.

Senator WICKER. Thank you very much, Mr. Spalter.  
Mr. Strange, you’re welcome.

**STATEMENT OF CHIP STRANGE, VICE PRESIDENT,  
STRATEGIC INITIATIVES, OOKLA, LLC**

Mr. STRANGE. Thank you.

Chairman Wicker, Ranking Member Cantwell, and Members of the Committee, thank you for the opportunity to testify today on how we can collectively improve the vital maps used by you and other policymakers to help broadband networks reach more Americans.

My name is Chip Strange, and I'm the Vice President of Strategic Initiatives at Ookla, LLC, where I'm responsible for Global Strategic Partnerships, Industry Relations, and Government Affairs.

I've spent my entire career in the telecommunications industry with 13 years in strategic and operational roles at Alltel and later Verizon Wireless and the last 9 years working in network intelligence and mapping.

Founded and headquartered in Seattle, Washington, Ookla is a global leader in mobile and broadband network intelligence, testing applications, and technology. Our family of companies include Mosaik, a provider of network coverage, spectrum, and infrastructure data and mapping software, Dwnndetector, a real-time digital services monitoring platform; and Ekahau, a provider of industry standard Wi-Fi network planning and site survey tools.

Our clients include many of the largest telecommunications companies in the world—including small, medium, and large fixed and mobile service providers, telematics, financial services, and Internet companies in the United States.

Ookla is part of Ziff Davis, the digital media subsidiary of J2 Global, a Los Angeles, California-based Internet information and services company.

The strong support from our parent company enables us to operate like a business many times our size while staying nimble and focused.

Our flagship platform is Speedtest, which provides invaluable insights into the performance, quality, and accessibility of networks worldwide. The Speedtest platform is available as a native application on computers, mobile devices, and Apple TVs. It may be integrated into third party mobile applications, is embedded on consumer routers, and at speedtest.net.

My written testimony includes some background about our products, data collection channels, the depth and breadth of our datasets, and our geospatial expertise. But our most valuable asset is our team whose commitment to our consumers is rivaled only by the quality of our data science, our ability to visualize complex data on maps, and our enthusiasm knowing that we play a role in improving networks for consumers worldwide.

I sincerely appreciate the opportunity to share a few considerations for the committee.

The first is that improving broadband maps demands more aspirational thinking, private sector innovation, and, yes, considerably more funding. It also requires that the government focus on analyzing data provided by the private sector, and less on replicating technologies and creating datasets that already exist at scale in the marketplace.

Second, accurate broadband availability and performance data analysis and mapping should be considered national key performance indicators. The United States should approach broadband infrastructure data like other economic KPIs to be consistently measured and analyzed.

Third, we need to embrace and explore diverse perspectives from the industry, the Federal Government and states, and run pilot programs to test different data collection options unbound by regulatory lag.

We have mechanisms to harness the power of consumer crowdsourcing to increase data density across America, including data collection vehicles, like drones, commercial fleets, and other means where unique topographical or demographic challenges exist.

Federal and state government workforces can be vital resources to augment existing datasets. FEMA, first responders, and the Department of Agriculture and other officials can help build a stronger national broadband map without impacting their missions. However, we must also establish levels of methodological uniformity to ensure we don't repeat the mistakes of the past.

And finally, Internet speed, latency, and quality metrics will always be key components when assessing the reach and performance of networks. However, with edge computing, connected cars, accelerating video consumption, and other emerging use cases that require highly accessible network access, new coverage and performance metrics have been developed to ensure we look at current and future demands and not settle for yesterday's measurement options.

In conclusion, Ookla has globally respected methodologies, has developed applications to comprehensively collect massive amounts of data, has the analytical prowess and data visualization tools necessary to make sense of it all.

We operate with transparency and have a keen focus on respecting the privacy of our user communities. We are trusted by consumers, industry, and governments worldwide, and are excited to help you get the maps needed to extend broadband networks to unserved and underserved areas in the United States.

Thank you. I look forward to your questions.

[The prepared statement of Mr. Strange follows:]

PREPARED STATEMENT OF CHIP STRANGE, VICE PRESIDENT, STRATEGIC INITIATIVES,  
OOKLA, LLC

### **Introduction**

Chairman Wicker, Ranking Member Cantwell and members of the Committee, thank you for the opportunity to testify today on Broadband Mapping: Challenges and Solutions.

My name is Chip Strange, and I am the Vice President of Strategic Initiatives at Ookla, LLC, where I am responsible for global strategic partnerships, industry relations and government affairs. Headquartered in Seattle, Washington, Ookla is the global leader in mobile and broadband network intelligence, testing applications and technology. We have 195 employees with deep expertise in fixed, mobile and Wi-Fi network technologies, data science, mapping solutions, applications development and machine learning. Together, we support many of the largest telecommunications companies in the world—including large, medium and small service providers in the United States. We are a data provider to United States Federal and state governments and the exclusive global network performance data provider to the intelligence division of the mobile industry trade group GSMA.

We are part of Ziff Davis, the digital media subsidiary of J2 Global, a Los Angeles, California-based Internet information and services company.

Ookla's family of companies includes Mosaik, a provider of network coverage, spectrum and infrastructure data and mapping software; Dnswat, a real-time digital services monitoring platform; and Ekahau, a provider of industry standard Wi-Fi network planning and site survey tools.

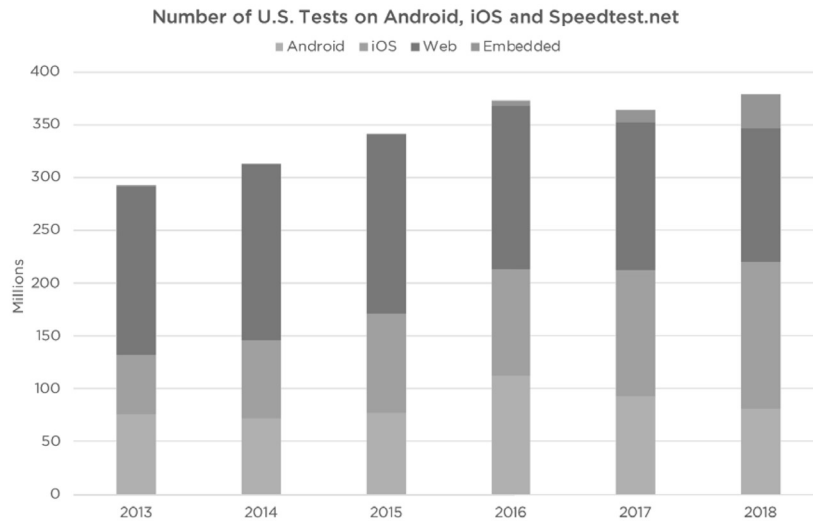
One of our core principles is providing transparency on the state of the Internet to three distinct constituencies—consumers, industry and governments.

- Ookla provides consumers with accurate information on the quality and performance of their own Internet connections. We routinely share data insights with consumers through in-depth articles analyzing the state of global networks and a monthly updated ranking of countries by mobile and fixed broadband Internet speed. We also consistently provide expert analysis and data to members of the press, academia and non-profits that are seeking substantiated information about networks.
- For the telecommunications industry, Ookla provides valuable benchmarking analytics to optimize and improve networks, assists operators by validating claims used in advertising campaigns and helps them position their networks to consumers and enterprises.
- Ookla provides governments and industry associations with accurate, unbiased and independent data about the performance and accessibility of the internet.

#### **Ookla is An Unbiased Source of Network Coverage and Performance Data**

Our flagship platform is Speedtest, which provides invaluable insights into the performance, quality and accessibility of networks worldwide. The Speedtest platform is available as a native application on computers, mobile devices, and Apple TVs, may be integrated into 3rd-party mobile applications, is embedded on consumer routers, and on Speedtest.net.

Since the launch of Speedtest in 2006, we have collected 23.4 billion consumer-initiated network performance tests. In 2018 alone, the global Speedtest community performed approximately 3.65 billion tests, of which 405 million occurred in the United States.



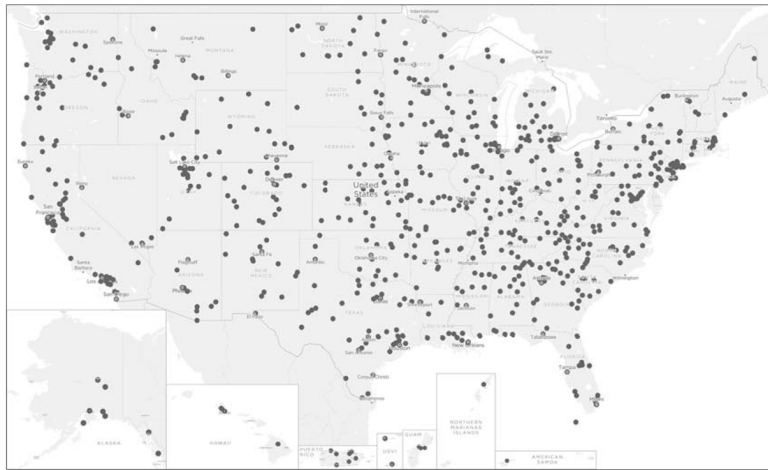
Number of Speedtest results in the United States by year from our Android, iOS, Web, and Embedded platforms.

Ookla's commercial mobile network database is updated quarterly and includes carrier-reported coverage patterns for 2,500 different networks built by more than 900 operators globally, of which 238 networks were built by 88 carriers in the United States. Our company's tower infrastructure database has approximately 451,000 vertical assets and represents the only curated database of its kind in the

United States. As part of our efforts to paint the most accurate picture of mobile network availability, in 2018 we began collecting radio frequency measurements from Speedtest applications, enabling us to create hybrid mobile coverage maps that fuse both reported and measured coverage. During March of 2019 alone, Ookla collected over 6 billion mobile coverage measurements from 13 million devices globally.

Finally, to ensure we have the most accurate network performance measurements, we have an unprecedented 8,100 Speedtest servers worldwide, including 1,200 in the United States—and I am proud to say at least one server in every state and territory. If a consumer is measuring Internet speeds in Mississippi, it's best to test to the nearest server, and our methodology dynamically selects the best server for that individual test to provide a more accurate portrayal of true Internet performance.

 **SPEEDTEST** U.S. Server Network April 2019



The culmination of all of these data points means that Ookla has a comprehensive view—both analytically and geographically—of fixed and mobile broadband networks across the United States.

#### **Opportunities in Broadband Mapping**

As we all know, highly performant broadband networks help fuel American education, innovation, productivity and economic growth. Closing the digital divide and ensuring access to state-of-the-art connectivity is vital for full participation in the 21st century's educational system and economy. Many of the amazing technologies that empower businesses—in cities, suburbs, exurbs, rural communities and on farms—rely on fixed or mobile broadband to thrive.

Here are a few thoughts for the Committee's consideration:

*Broadband data is a national key performance indicator.*

Accurate broadband availability and performance data, analyses and mapping should be considered national key performance indicators. The United States should approach broadband infrastructure data like other economic KPIs, consistently measured and analyzed. It should not overly rely on one-time data collection activities, particularly when collected based only on data mandated by the Federal Communications Commission. This data is incomplete and out-of-date from the moment it is relied upon by policymakers. That outcome must and can be fixed.

*Fixing poor maps is an economic problem, not a technological one.*

Improving broadband maps demands more aspirational thinking, private-sector innovation and yes, considerably more funding. It also requires that the government focus on analyzing data provided by the private sector, and less on replicating technologies and creating datasets that already exist at scale in the marketplace. Let's leverage taxpayer dollars to activate and radically improve data density from successful products already in the market today, instead of the government building products that compete with the private sector.

*Engage communities and embrace new approaches.*

We need to embrace and explore diverse perspectives, from the industry, the Federal government and the states, and run pilot programs to test different data collection options unbound by regulatory lag. We have mechanisms to harness the power of consumer crowd-sourcing to increase data availability across America, including data collection vehicles like drones, commercial fleets or other means where unique topographical or demographic challenges persist. Having run a pilot mobile network data collection program with a large commercial fleet, it is indeed viable and worth further exploration.

*Move beyond the focus on speed.*

Internet speed, latency and quality metrics will always be key components when assessing the reach and performance of networks. However, with edge computing, connected cars and other emerging use cases that require highly accessible mobile network access, new coverage and performance metrics such as percent time spent on LTE and/or 5G networks are also important to fully assess the quality of mobile networks. These new metrics will not only help policy makers steer investment in the right areas but may also be used to assess whether the entities receiving support are delivering on their promises. Furthermore, knowing where existing fiber and tower infrastructure exists will help reduce the costs to taxpayers when the government subsidizes networks constructed by private companies, while also accelerating their development.

*Deploy government resources the right way.*

Federal and state government workforces can be vital resources to augment existing datasets. State broadband mapping initiatives are generating pockets of really interesting data. FEMA, First Responders, USDA and other officials can help our government understand the state of networks to help build a stronger national broadband map, without impacting their missions. However, we must establish levels of methodological uniformity to ensure we don't repeat the mistakes of the past.

## **Conclusion**

Ookla has globally respected methodologies, has developed applications to comprehensively collect massive amounts of data, and has the analytical prowess and data visualization tools necessary to make sense of it all. We operate with transparency and have a keen focus on respecting the privacy of our user communities. We are trusted by consumers, industry and governments worldwide, and we are excited to help policy makers in the United States get the maps you need to help extend broadband networks to underserved and unserved areas.

Senator WICKER. Well, thank you very, very much, and let me ask all of you. Let me start with Mr. Donovan.

How much of a solution is increased coordination like between the FCC and NTIA? How much of a solution is that?

Mr. DONOVAN. Increased coordination does go a long way to informing on the maps. We should be using an all-of-government approach, to use all resources available, especially seeing as the status quo has not yet produced a reliable map.

Other sectors of the government, such as the Department of Interior, are making maps available of where they own resources that could be used to deploy broadband. If we can combine that with maps that show where the coverage gaps exist, we can start looking toward solutions.

Senator WICKER. And, Mr. McCormick, I guess we should add USDA to that list of agencies.

Mr. MCCORMICK. Yes, sir. I think it's critical for Rural America and our farmers to have the FCC, your committee, and USDA collaborating on a way that we can get connectivity to Rural America.

Senator WICKER. Anyone else want to comment on that? Mr. Strange, what do you think about Mr. Spalter's pilot program that he mentioned?

Mr. STRANGE. Well, I think it's an excellent step. I think understanding the underlying mapping considerations around where structures are, where commerce occurs, or where people live is a vital component. So I applaud the efforts of U.S. Telecom in embracing that approach.

However, I do believe that we must move with speed. There are opportunities that exist today to take advantage of understanding where the networks are today while they work out their pilot, and while they work out ultimately their plan, but, no, I applaud the effort.

Senator WICKER. And, Mr. Spalter, you want to respond to that?

Mr. SPALTER. I do appreciate that support, but it's also important to understand that, yes, we also believe that speed is important. We believe that if we actually move quickly, embrace some of these new datasets that are now finally available in the marketplace, integrate them into a foundational database that can actually scale and be available for national use in a comprehensive harmonized perspective on where locations are and where they're not, we can do it quickly, we can do it cost effectively, and we can do it in ways that are actually going to deliver more broadband to more rural Americans than ever before.

Senator WICKER. Do you think legislation is needed, Mr. Spalter? You're saying that the agencies need to do this.

Mr. SPALTER. There are pilot programs in response to a current rulemaking process that's undertaken by the FCC in its effort to modernize the 477 reporting process. It's responsive to that.

If statutory input is required to actually succeed in scaling and building a national map that is actually going to be able to create a pathway for ensuring that all rural Americans can get broadband and we can use scarce public resources effectively, then, yes, I think a statutory approach is important and could be complementary.

Senator WICKER. Does anyone want to speak up in favor of the Form 477?

[No response.]

Senator WICKER. Let me ask any one of you. How long have we known that this form is deficient and doesn't ask the right questions, therefore gets the wrong information? You know, actually, I just haven't known this myself very long and I wonder if I've just been looking in the wrong direction.

How long have any of you known about the deficiencies in Form 477? Anyone want to comment there? Yes, Mr. Donovan?

Mr. DONOVAN. Well, thank you, Mr. Chairman.

Senator WICKER. Then Mr. Spalter.

Mr. DONOVAN. So, the Form 477 in its current state, as Chairman Pai has recently noted, is showing its age after a decade of service.

I think the challenge here is that the 477 was not designed to be a snapshot that could be used for distributing resources on where service is or is not. It was initially designed to show over time how services were being deployed and while it may have some utility at that, it's not designed for this current purpose of distributing Universal Service Fund support.

Senator WICKER. Mr. Spalter.

Mr. SPALTER. The 477 reporting process was well conceived but innovation, as our companies move at lightning speed and since the inception of 477, we've recognized that it needs to be modernized and it needs to be modernized in a very quick clip.

There have been extraordinarily important new datasets, satellite imagery, land parcel attributes, road segment data, commercially available datasets now finally have come online. We need to integrate them and in so doing, which we're trying to do with our mapping initiative, we think that we can actually supersede and perfect the 477 process.

Senator WICKER. And that's going to cost some money. Is that what you're saying?

Mr. SPALTER. Nothing is free, but we think we can do so in a way that's actually going to be enormously cost effective, particularly in comparison to previous broadband mapping efforts.

Senator WICKER. Thank you very much.

Senator Cantwell.

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

Senator CANTWELL. Thank you, Mr. Chairman, and thank you for holding this hearing and I am forgoing my opening statement and apologize for being a little bit late. I'm forgoing my opening statement because I feel like too much talking has been done about mapping and we need to do more action.

So in that regard, I wish I could put, Mr. McCormick, your statement from your testimony on a billboard and just shop it around everywhere. You said, "Broadband is no longer a luxury. It's a necessity."

So when you look at farm communities, and, Mr. Oblizalo, thank you for being here, you also represent a different kind of community, rural in nature but not as big on ag but certainly on seafood and so appreciate you being here. Mr. Strange, thank you for mentioning the technology that might help us bridge the gap and make it happen faster without the same level of investment.

But back to you, Mr. McCormick, this is the overlap between one of the big juggernauts of the American economy, which also has the biggest, I think, future opportunity, given that, you know, we're trying to open world markets and ship product to new destinations.

Ag represents the largest focal point of why broadband is so necessary in rural communities. I think you mentioned 200,000 member families in your state. Is that a multiple of your farms? Is that what that is?

Mr. MCCORMICK. That's just how many members that we have in Mississippi Farm Bureau. We have about six million members in the American Farm Bureau system across the United States.

Senator CANTWELL. But 200,000, that's a lot of people in Mississippi. So is that like—

Mr. MCCORMICK. We not only represent farmers, we represent rural Mississippi, as well.

Senator CANTWELL. Oh. So you can be a member of the Farm Bureau Association?

Mr. MCCORMICK. Yes, yes,—

Senator CANTWELL. OK, OK.

Mr. MCCORMICK.—Senator.

Senator CANTWELL. So what I'm saying is that's such a big number and it represents an economic engine that is, you know, to me once a community has that economic engine, that's when broadband in my opinion should be required. We just have to work out the economics of how we're going to make that happen.

But if you have that many members living in rural parts of the state that could or could not be served, you know, we're just leaving a lot of innovation behind, a lot of economic growth behind if we're not serving it, and I just think we have to stand up for farm country and say it's time to deliver broadband and the mapping thing, we'll figure it out, but the real issue is how we're going to deliver it.

So, Mr. Oblizalo or Mr. Strange, do you have any comments on how we move to the next phase beyond mapping to deliver that broadband? Any strategy discussions that you'd like to put on the table?

Mr. OBLIZALO. Well, really, we're a provider. I don't deal a lot with, you know, how to get there. What I focus on is the communities that we try and serve and there are challenges for us to provide these services using the different data sources out there, the FCC, the USDA maps.

If those areas are opened up and funding becomes available for them, those are definitely opportunities that we would look at to provide broadband in some of those rural areas that are truly unserved.

Senator CANTWELL. Mr. Strange, do you know a multiple of what you think that new technology, you know, versus build-out, say 15 years ago, what new technology costs might be in doing some of the other technology deployments?

Mr. STRANGE. So with respect to technology deployments for the actual broadband infrastructure itself? I can't speak to that. That's what our carrier and operator clients and people that are building the networks would know better.

I can speak to the technologies required or needed to understand what's happening on the ground, however. In that as the Mobility Fund II Challenge Process has illuminated us all, which was a very thorough process to go through to try to understand how can we ensure that the maps are as accurate as possible. What that has proven, with all of the efforts and goodwill associated with that—is that it's a really, really hard problem to solve and we have to be much more creative about how we approach it.

So I think that one way that we look at it is to think about all of the money that's invested in the infrastructure for broadband and ensure that a component of that is in validating that the maps are correct and verifying that the build-out that has been promised is occurring. And there are existing technologies in place to support that effort.

Senator CANTWELL. Well, I definitely support having accurate information, but I think we've got to get to the next phase of why the gap is there to begin with.

We just have too much competitive disadvantage by not fully serving these areas and again Hood Canal, you've kept pace and thank you for doing that in innovative ways, but I think what we

need to do is really have a clear understanding of what the cost of build-out.

We just were able with CenturyLink to get them to go all the way to Neah Bay. Well, you know anything about our state, as you two gentlemen do, you know Neah Bay is a long way away even from Port Angeles, you know.

So what was the cost of CenturyLink building all the way out, you know, to Neah Bay and what are the relevant communities in their challenge and what role should the Federal Government play in that versus focusing on those providers?

So, anyway, lot to discuss. Thank you, Mr. Chairman, so much for the important hearing.

Senator WICKER. Thank you.

Senator Fischer.

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

Senator FISCHER. Thank you, Mr. Chairman.

Mr. McCormick, broadband connectivity in our homes and workplaces and schools is essential to our quality of life and in the ag states, like Nebraska, and in Mississippi, access to high-speed broadband is also critical for farmers and ranchers so that they can take advantage of connected technologies that boost agriculture production.

Mr. McCormick, do you agree that any future maps should have the capability of also showing which areas, such as cropland and ranchland, have the broadband connectivity needed to support economic activities that aren't tied to an address?

Mr. MCCORMICK. Thank you, Senator. We absolutely agree with that and think that's key of this conversation for Farm Bureau, is that we need to make sure that rural areas, farmland and ranchland, are covered under these maps so we can get the connectivity where our farmers need it to be.

The equipment now is so extremely expensive that we use on our farms, but a lot of that cost in those units are from technology and if we aren't connected with the internet, that technology is useless to that farmer. So he's paid a lot for those assets that he's not going to be able to use. It's key to changing the maps to show that we can get some connectivity in Rural America.

Senator FISCHER. You know, agriculture right now, I think, is the third largest user of the Internet of things, that cool new technology that's out there that's going to improve productivity, make farming and ranching more efficient. It's really an opportunity for better management of our resources and growth of our economy in this country. So I totally agree with you that we have to look at how that's going to be made available.

How do you think we can improve mapping so it doesn't leave farmers and ranchers on the wrong side of the divide here?

Mr. MCCORMICK. Well, I think one of the keys is going to be to move away from the census block data and go to more granular data, smaller areas of use. We're just going to have to be cognizant of the fact that the need leaves the population centers and that we've got to look at some type of area formulation to make sure that the farmland and the ranchland across the U.S. is connected

which is so critically important to the future of being able to feed not only our country but the world.

Senator FISCHER. And like in Mississippi, Nebraska Farm Bureau also got a waiver from the FCC to challenge the Mobility Fund Phase II Map. However, one of their major difficulties in challenging locations on that Nebraska map was converting the testing data to shape file format so it could be sent back to the FCC.

Did Mississippi Farm Bureau have similar difficulties with that?

Mr. MCCORMICK. We did, Senator. We found very quickly that we were not equipped to be able to handle this challenge, that we didn't even have the staffing or the capabilities of doing it. We worked with the Public Service Commission there and they asked us to continue it and we did.

We had our members work through this process. We were able to challenge about 8,400 data points and in the end we were unsuccessful on all of those, which would look like a failure but in our part, we wanted to show that this is so complicated for us that it was impossible and it was absolutely impossible for a consumer to do.

Senator FISCHER. Thank you.

Mr. Donovan, in your estimation, are there technical hurdles for smaller providers when it comes to incorporating those shape files and the GIS software?

Mr. DONOVAN. Thank you. Yes, so for all providers experiencing challenges with this, there's a reason why of the 106 entities that entered into the portal, only 21 were able to present valid challenges at the end.

So we've got about a fifth of all entities that were challenging the map that were able to provide successful challenges. We've got to do better than that.

On the Internet of things, I want to thank you for your leadership on Internet of things development. Part of why we need coverage everywhere is by their nature, things that rely on mobile networks are mobile. It's not tied to one location.

So from precision agriculture to telehealth cures and other exciting opportunities, it's important to have robust coverage everywhere.

Senator FISCHER. How can policymakers address the concerns that we saw with the mapping and the inability to be able to get that input?

Mr. DONOVAN. The biggest thing we could do to help is to start with a better foundational map, to tighten the parameters. If you have a process that's built on a foundation of sand, there's very little we can do to keep perfecting it. We need to go back and make sure that it's a solid foundation that will reduce the need to have all these challenges and will start with a better base map.

Senator FISCHER. OK. Thank you. Thank you, Mr. Chairman.

Senator WICKER. Here's where you were not a failure, Mr. McCormick. Through all the effort that you and the Public Service Commission and other civic-minded Mississippians made, we determined that the challenge process is simply unworkable and, frankly, worthless.

The map is inaccurate and it's almost impossible using that challenge process to demonstrate this. It needs to be fixed and no program should go forward, unless we are satisfied in the Congress that the process is going to actually touch areas that need it.

So maybe you'll be given a chance to respond to that later.

But now it's Senator Rosen's chance for questions and you are recognized.

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

Senator ROSEN. Thank you, Mr. Chairman, and thank you for that great lead-in because I agree with you there.

We must have reliable open source aggregate data, one that accurately reflects availability and usage while protecting individuals' privacy. If we don't have that on a platform open source that everyone can use, we're not going to get good maps and be able to point the way. If we get this good aggregate data that everyone can use, that's going to point the way for us to use multimodal technologies, whether they're broadband, wifi, air-fi, something we haven't even invented yet that's going to help us approach this problem across Rural America.

In Nevada, we are the most mountainous state in the Lower 48. So we have terrain issues and we have ranchers and farmers, as well, but we have rugged terrain. In some states, Nebraska, the Midwest, they're flat. They don't have terrain issues. They have long distances. So this reliable open source aggregate data and the accuracy of that is important.

You know, in Nevada, my state, we have a 100,000 people without access to broadband. Over a million don't use the Internet at good broadband speeds. In Elko County, only 79 percent of residents have access to broadband and a lot of them can't even take advantage of it.

So there is a lot of jarring work ahead of us and so what I'd really like to ask you. We know there's datasets everywhere. It's not a question of how much data. It's a question of how we use the data and how we can help us point there.

So is there data we're not collecting that you think that we could put there or what would you suggest to create this aggregate data platform that all, whether you're a farmer, whether you're the government, whether you're a provider, end user, whatever you are, can take this and model it for your industry? Anyone, please.

Mr. DONOVAN. Thank you, Senator, and to your point on open source, having some sort of a public feedback mechanism can certainly be a positive step in the right direction on how you fix this, but the fundamental core is when you're asking what data you're collecting, is how precise you want those answers to be, and the more precise we can get in terms of the factors that you're collecting, the tighter your base map will be.

In states like yours, one of the big problems we have in the challenge process is that to do drive testing, you need roads.

Senator ROSEN. Right.

Mr. DONOVAN. So it was impossible to challenge much of your state. Instead, some of the factors—I mentioned in my opening the

cell edge probability and that's how far you get from the cell and you're likely to receive service.

Going from a 90 percent the industry typically builds to, to the 80 percent that the FCC asks for changes the cell parameter by about 27 percent.

Senator ROSEN. Oh, I just drove 650 miles from one end of Nevada to the other to Westwind. Trust me, lots of places that we didn't have any service on our roads and highways.

Mr. DONOVAN. We should have given you drive test equipment.

Senator ROSEN. I'm telling you, I did, I would have taken it.

Mr. SPALTER. Senator, if I may, first of all, thank you for your question.

To the point about what kinds of new data do we need to actually integrate and aggregate to create this vision of a comprehensive uniform assessment of where locations are serviceable and where they're not, there is great news to report.

As Mr. Donovan said that we have now a garbage in, garbage out approach, we need to go to a data in, data in approach. Using new kinds of datasets, both commercially available but also open source, which we propose to do in our National Broadband Mapping Initiative, that would integrate, for example, platforms that Microsoft is developing in its rooftop satellite imagery that have only come online in the last couple of years, parcel data, land attribute data that has actually been digitized now and is available through states and municipalities.

Senator ROSEN. Right.

Mr. SPALTER. We need to bring road segment data to bear so that those of us who have been in the business for decades of trying to deliver very difficult circumstances broadband to rural Americans can utilize the best resources that are out there and create a foundational database upon which you—

Senator ROSEN. I'm a former software developer. So I understand that you're only as good as the data you collect. I believe that we have multi-points to bring this up together so then we can let the end users download those particular fields within that data. It will make sense for them to model for their industry.

So how do we get there? How can we help you pull this together to create this useful dataset, if you will?

Mr. SPALTER. Well, first of all, this hearing and these public discussions about the necessity and the existential necessity that we have to get this done right are very important.

When we complete our Broadband Mapping Initiative Pilot in Missouri and Virginia, we want to share with you the results of our finding for your committee's evaluation. We will also share it with our colleagues that we've been working closely with at NTIA and the FCC.

We want to be able to then utilize that as much as crowdsourcing and other types of opportunities for consumers to actually look and feel and touch this effort so that we can actually improve our confidence this will be the basis upon which we can achieve this goal of a workable scalable national map that will get broadband to where it's needed most in Rural America.

Senator ROSEN. Well, my time is just about up, but I look forward to that and any help that I can give you, I think it's really important and something we need to do.

Thank you.

Mr. SPALTER. Thank you.

Senator WICKER. And thank you, Senator Rosen.

Senator Blackburn.

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

Senator BLACKBURN. Thank you, Mr. Chairman. I sure appreciate the hearing and it's good to see some of you back talking about this issue. You would think we would have worn it out by now, right, but we've still got progress to make.

Mr. Donovan, I have to tell you when you started your testimony, I was kind of chuckling. I thought he is quoting me about these 477 maps and it's good to hear you all agree that they have outlived their usefulness and it is time to just get past this and do some things differently.

Mr. McCormick, welcome. Having grown up in Mississippi and having family there, I can tell you 80 percent of that state does not have access to high-speed Internet or broadband and so much of what we want to achieve and I will tell each of you I think that—and I appreciate the Chairman's attention to this, but as we talk about broadband and the mapping and as we talk about 5G and all the good things that are in front of us and the revolutionary nature of 5G, how it is going to be so different from the previous generations, what we have to do is make certain that the mapping and the access to broadband is going to be there when consumers say wow, this is fantastic, why didn't we know this was coming, and we know this will be a reaction because we saw this reaction when we went from analog to digital and this will be just as revolutionary.

Mr. Strange, I want to start with you. Prior to the merger with Ookla, Mozaik was headquartered primarily in Memphis. Post-merger, is Memphis going to continue to be an important part of Ookla?

Mr. STRANGE. Thank you, Senator. And, yes, it most certainly is, and interestingly enough, a great deal of Ookla's geospatial or mapping expertise exists in our Memphis office. And we're happy to say that the integration has gone very well there.

Senator BLACKBURN. Excellent. That is great. Senator Manchin and I sent a letter earlier this year talking about the need for technology-neutral platforms and that type approach to mapping.

So, Mr. Strange, talk a little bit about the crowdsourcing that you all can do with the geospatial technologies.

Mr. STRANGE. Yes, Senator. So, crowdsourcing can be a much more vital component to our national mapping initiatives than I think the Federal Government has utilized thus far.

Mr. Donovan mentioned extending drive test capabilities into rural parts of the country when lawmakers are traveling around. If you simply downloaded our publicly accessible Speed-test application, you could collect similar type of information and then all of that gets rolled up for use by a Federal agency that is licensing it.

Just to speak to the scale of our footprint, in the United States alone, consumers are performing around a little more than one million consumer-initiated speed tests every day. So that is a user actually hitting go on the Speed-test application.

If we were to more fully activate that capability and extend those technologies and those options out into Rural America, into the farmlands, attach these capabilities on to more heavy machinery, more vehicles, more consumers, you're going to be able to activate a much larger dataset, unlike—

Senator BLACKBURN. We'll have a more accurate mapping and the scalability of it is possible—

Mr. STRANGE. Absolutely.

Senator BLACKBURN.—because it is app-based and you're able to—an individual can download and participate—

Mr. STRANGE. That's correct.

Senator BLACKBURN.—and send it right back to you.

Mr. Donovan, I want to come to you. When I handled Ray Baum's Act in the House and we pushed that forward, of course, getting money out and then with the Ag Bill, the 600 million in RUS, I'd like to hear from you quickly about how you think that money is being used in that pilot program, what kind of expansion are you seeing, and what we can do to further utilization of those funds.

Mr. DONOVAN. Thank you, Senator. So briefly, that window for that funding is about to open. One of the best ways that we can make sure that it goes the right places is to use more targeted maps, you know.

Speaking with your colleagues on the Agriculture Committee earlier this year, Secretary Perdue said the FCC maps are fake news and not reliable for using for distributing funds. So we can work together with coordination across industries, across different organizations of the government to make sure that those funds are well targeted.

Senator BLACKBURN. I yield back.

Senator WICKER. Thank you, Senator Blackburn.

So, Mr. Donovan, that Act is really just now ready to be implemented.

Senator Tester.

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

Senator TESTER. Thank you, Mr. Chairman, and I want to thank all the witnesses for being here.

Look, in my early parents' time on the farm, rural electrification was being done and done pretty successfully, although, you know, it had some problems. There was the same old stuff. The investor-owned utilities didn't want co-ops to come in and it's interesting that nonetheless they got the job done and rural electrification happened and, quite frankly, Rural America was allowed to grow and expand and I think the same kind of parallels could be drawn with broadband.

I think you would all agree that the maps are inaccurate. Are they inaccurate just because some of the companies overstate their coverage to keep subsidized companies out or is there another

agenda there? Go ahead, Mr. Donovan, or anybody else that wants to.

Mr. DONOVAN. So a primary flaw is that the parameters that the FCC asks carriers to report data are overstated, so that carriers can report data that is both correct in terms of what the FCC asks for, as well as not useful for what you or I would consider to be reliable.

Senator TESTER. OK. But why would they report data that's inaccurate? Why would the carriers do that? You can be honest. This stays in this room.

Mr. DONOVAN. So smaller carriers, you know, serving these rural areas, it's their neighbors that they're serving. If you overstate your coverage, you're going to hear about it and that's why small carriers have pushed to have more accurate and tighter parameters included in the process.

Senator TESTER. Well, I would just say this. I mean, I guess my thought is it probably has something to do with the competition and people see an area and they don't want somebody else moving into it, whether it's got service or not. They might move into it someday. I may be oversimplifying it, but in the end, in rural areas, if we're going to move into the 21st Century, this is pretty basic stuff as electricity was in the 1940s. So this is pretty basic 21st Century economy.

And so, I mean, whose responsibility should it be for verifying the accuracy of the data? Is it the regulator, the consumer, the competitors, third parties? Who's primarily responsible for verifying the accuracy because we're going to have them in here next week and just tear them apart?

Mr. DONOVAN. So the FCC does have an enforcement investigation going on right now.

Senator TESTER. So would you say that they're the primary people?

Mr. DONOVAN. Right now, yes, the regulator is in charge of the verification and the carriers verify that it's correct.

Senator TESTER. So it's—yep.

Mr. DONOVAN. I think the bigger question that's been raised for the hearing today is whether they're asking the right questions.

Senator TESTER. Yes. Well, you know, I'm a farmer. I'm not part of the FCC. It would seem to me that there's job to ask the right questions. Wouldn't it seem to you that? I mean, we're not talking about putting a man on the moon here, right?

Mr. SPALTER. If I could, Senator, it is true that the FCC reposes authority to verify the data that it is required and asks for—

Senator TESTER. Yes.

Mr. SPALTER.—carriers through its 477 process, but again there have been advancements that we are integrating into our broadband mapping initiative that allow for broader verification beyond the FCC but through crowdsourcing mechanisms, through allowing once a map is actually finally scaled for consumers who actually go in and verify—

Senator TESTER. Yes.

Mr. SPALTER.—adequacy of the data,—

Senator TESTER. Right.

Mr. SPALTER.—the migration of the data to new circumstances, and create feedback loops so that consumers through crowd-sourcing and through direct access to the database actually can become part of the solution.

Senator TESTER. So they could give feedback back to the FCC to make sure that the decisions that are being made are accurate?

Mr. SPALTER. And the accuracy of the underlying map itself.

Senator TESTER. OK. All right. Sounds good. Mr. Donovan, I just got about 50 seconds left, but a couple months ago, your boss sat before this committee. I asked him what we need to do, what your members need to do to address the Huawei issue. He said that they need direction from authorities. Two months later it's been.

Have you received any direction from authorities?

Mr. DONOVAN. We are in the process of having continued discussions with some of your colleagues as well as some of the intelligence community to make sure that carriers have the information that they need.

Senator TESTER. So where are you at in that process without giving away any classified information or are you at the point where the decision's going to be made as to what's happening there or what?

Look, I'm not on Intel. I'm not on Armed Services. I'm not on Foreign Affairs. But this doesn't smell quite right to me and so if there's a problem, we need to get folks in the room who know what the problem is and we need to make a decision to either get this equipment out or not worry about it anymore. Are we close to that?

Mr. DONOVAN. I think we are, sir. One of the challenges that we still have is identifying, you know, exactly what needs to come out and making sure that carriers in these rural areas have the resources necessary to do so.

Senator TESTER. All right. Well, we look forward to your input on that and then we'll get it moving forward.

Thank you, Mr. Chairman. Thank you, guys.

Senator WICKER. Senator Tester, you're right. We're in the 21st Century. We're one-fifth of the way through the 21st Century and here we are with so many unserved Americans.

I think you were also suggesting that it might be for someone to come in to this committee room in the future and suggest that these maps were anywhere near worthy of even looking at and being guided by would be just utterly ridiculous.

Senator TESTER. I think you read that suggestion correctly.

Senator WICKER. I thought I got the impression there.

Senator TESTER. Yes, you did.

Senator WICKER. We may not quite have the solution, but we know what isn't the solution.

Senator Blunt.

**STATEMENT OF HON. ROY BLUNT,  
U.S. SENATOR FROM MISSOURI**

Senator BLUNT. Thank you, Chairman.

I assume this question might have been asked already, but does anyone here think the maps are worth relying on?

[Witnesses shake heads no.]

Senator BLUNT. So, you know, in our state,—

Senator WICKER. Negative response of all five.

Senator BLUNT. I saw that. Nobody thinks—nobody on this panel thinks the maps are worth relying on. I don't think anybody on this committee thinks the maps are worth relying on. We have some specific underserved areas, unserved areas that could have been served with a better map even in the last round of the distribution of money.

Fifty-one percent of rural Missourians don't have access to high-speed broadband, which is above the national average and very concerning, going to be a critically important part of the ability to compete in the future, and I think is important in the next 10 years as the telephone was 70 years ago, and we need to make the same kind of commitment.

So the Missouri General Assembly is trying to make money available. They're actually—they have so little faith in the maps that they're thinking about coming up with their own maps.

I know, Mr. Spalter, we're one of the states you're looking at. Could you talk about your process a little bit and maybe why Missouri and states like Missouri were selected to be part of that, and then are there other mapping proposals or other projects out there that link up with this in a way that we're going to come up with some better information based on what you're doing?

Mr. SPALTER. Thank you for that question, Senator Blunt, and we're very proud and glad to actually launch our pilot, including in Missouri.

The inception here was very clear. We need to do better to, if we are going to actually have a broadband map that works, we actually have to be able to map to serviceable locations where they are but also where they're not and so what we are doing is aggregating new data sources, both public and private open sourcing commercial, contributed by our companies, contributed by third party companies, to actually create a foundational database that will allow for a very clear delineation of where serviceable locations currently exist.

We're going to de-duplicate and improve the confidence score of that data through crowdsourcing. We're going to layer on geo-coding, specific geo-location attributes to the locations that we find. Then we're going to invite our broadest range of technology providers to overlay on top of this foundational database their shape files and other types of data that will ultimately be able to then be provided to our government partners, the FCC, which is we're doing this work in response to their rulemaking on 477 modernization, and our hope is that this will become the foundation for a single harmonized comprehensive national broadband map that shows where America's broadband serviceable locations are and where they're not.

When that happens, this will become a tool that will be able to be complementary to any government initiative in developing maps, be it at the FCC, at the NTIA, where we've been closely coordinating with their project that they're elaborating in eight states, or even beyond, but we all know, as we've discussed here in this hearing, that we have to start with a new view of creating a foundational database with these new data assets that have come online just in the last couple of—

Senator BLUNT. So you'll be able to use geo-positioning and other things to show that maybe one small section of a census track may have been barely served but that doesn't mean you can check the track off as an area that has had broadband service?

Mr. SPALTER. Absolutely. But the other innovation is that we can go beyond address level reporting to actually reporting where locations are, be they residences or schools or hospitals or barns or granaries or ranch facilities.

This is the new frontier. We can go from broadband to the mailbox to broadband to actually where it's needed most which are not only the locations that are served but where they're currently unserved.

Senator BLUNT. Mr. Donovan, do you have any idea of why there—would there have been any advantage—what would be the advantage of exaggerating your coverage area if—let's assume you didn't just make up the coverage but you, benefit of the doubt, you sort of exaggerated your coverage, is this just to keep competitors out or why is that a problem with these maps?

Mr. DONOVAN. Well, part of it is a reflection of how people are using their mobile devices today. It's no longer just a cell phone that you want enough service to make a voice call. Instead, now you need to have the data connectivity to access all of these incredible innovations, machine-to-machine technologies, Internet of things.

The reliance on having access to robust data services is ever-more important and having that access is drilling down to a more granular level of service to be able to have the service levels that you'd expect to be able to run those applications.

Senator BLUNT. OK. Thank you, Chairman.

Senator WICKER. But aren't you being a little kind, Mr. Donovan? Senator Blunt's question was what possible motivation might there be for such an exaggeration?

Mr. DONOVAN. If you don't have reliable maps, then small carriers serving rural areas will not be able to access programs, like the Universal Service Fund, to be able to preserve and expand their services. So it will control how many resources are going into your states to expand coverage.

Senator WICKER. What about larger carriers exaggerating?

Mr. DONOVAN. So larger carriers are operating on a nationwide scale and so they have maps that oftentimes look at a higher resolution level. So it's a challenge that needs to direct the nationwide carriers to also provide the same standardized info that some of the smaller carriers would provide.

Senator WICKER. I'm not making any conclusion there. I just thought it was an interesting line of questioning that we might ought to give more attention to Senator Blunt.

Senator Baldwin.

**STATEMENT OF HON. TAMMY BALDWIN,  
U.S. SENATOR FROM WISCONSIN**

Senator BALDWIN. Thank you, Mr. Chairman.

So we've heard today about the burdensome nature of the Mobility Fund II's Challenge Process and I've heard the same thing firsthand from wireless companies in Wisconsin who want to invest in

rural and unserved areas but instead have expended a lot of time and resources on challenging the accuracy of the FCC's map.

At a hearing last August, Commissioner Rosenworcel and I discussed our over-reliance on industry alone to tell us service exists, whether that data is submitted by incumbents or through those costly efforts undertaken by other companies as part of the challenge process, and we've heard today from several witnesses about crowdsourcing from consumers as a way to get better data.

But I'd also like to get some perspectives on an idea that Commissioner Rosenworcel and I discussed that Federal agencies that are already operating in rural areas should do more to bear the burden of having accurate maps.

There are Federal resources and personnel on the ground, like, for example, the Postal Service vehicles that deliver mail and Forest Service personnel working in our national forests, and I think we should be able to leverage their presence to contribute to our knowledge of what's truly available to consumers in those places, particularly with regard to wireless coverage.

Mr. Donovan, given your members' experience on the ground testing as part of the Mobility Fund Challenge Process, do you agree that it makes sense to leverage those kind of Federal resources to collect more accurate data on broadband service?

Mr. DONOVAN. Thank you, Senator. Yes, it does. So any model propagation of where service will exist is just that, a model, and you still need to have some verification of real-world testing.

We do need to start with a better starting point. Otherwise, regardless of who you assign to verify that, the task is too large. One of my members spent over \$2 million testing their service area, including your state, and even with that resource load, only got to about 5 percent of their rural service footprint.

So the challenge is too immense with the current map that we have. There is a role for verification and the FCC can certainly play a role in that, but we need to start off in a better place.

Senator BALDWIN. Thank you.

Mr. McCormick, you also testified about the Farm Bureau's engagement in this challenge process. Do you agree that these additional resources, such as using Federal employees and equipment that's on the ground across the United States, would be helpful?

Mr. MCCORMICK. Thank you, Senator. We would suggest using any tools in the toolbox that we could possibly use to help this mapping situation, especially those in rural areas, and getting away from just using access to addresses and to focus on ranchland and farmland as a critical need in this process. I think those two entities could definitely help.

Senator BALDWIN. Mr. Strange, your company has a tremendous amount of experience with consumer-driven testing of broadband speed and quality. There's been a lot of discussion today about the value of crowdsourcing and improving the accuracy of broadband maps.

Part of the reason for our conversation today is that our reliance largely on industry-provided data has not given us the quality of maps that we really need, but I don't want us to simply trade one type of data for another unless we're absolutely sure that it provides better information.

So, Mr. Strange, if we depend more heavily on information provided by consumers through testing apps, like your own, how can we ensure that that is reliable quality data that can be—I'm particularly interested in the comparisons across geography and technology.

MR. STRANGE. Thank you for the question, Senator, and I would say that, first of all, I don't believe as high-quality datasets that we produce at Ookla that we will be able to ever replace information provided by the service providers themselves as part of a comprehensive national broadband map.

I do think that there are options about where that information sits and how it's being used. I certainly won't speak for operators' intentions, as Chairman Wicker pointed out, but in my time at an operator and this has long since passed there was always concern about giving information to the regulator for fear of downstream consequences, right, and so that's why you wind up with carriers following very prescriptively what they're instructed to do by the FCC when mandated to give them data.

With respect to crowdsourcing, I think that regardless of how we cut the data up, we have to get measurements in the field and crowdsourcing can be a huge activator for that.

Speaking of Federal agencies and those resources that are deployed nationally, we certainly should use them as resources. But we also need to do so without impacting their mission, which is how it's much easier for us to be able to support that because we can have an application running on an existing device that they don't necessarily have to interact with that can help us collect information very broadly. This is as simple as our downloading our Speedtest application from the Play Stores or sitting down and talking about what precisely we want to collect from the geographies that are different and ensuring that we collect the right data in the right place—and we have the technologies to do so.

Senator WICKER. Thank you, Senator Baldwin.

Senator Capito.

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

Senator CAPITO. Thank you, Mr. Chairman. Thank all of you for being here. I'm sorry I was not here for the rest of the testimony, lots of meetings going on at the same time.

You know, I find this whole hearing just so frustrating. I represent West Virginia. We have some of the lowest deployed broadband in the country. I feel like we've been talking about this over and over and over again to try to figure out why we can't get service to other places. We hear different reasons and then the inaccuracy of the maps and all this.

So I think you'll find in a bipartisan way we're really interested in helping you and everybody else solve this issue.

So I guess my first question, West Virginia is going to be a part of the new NTIA Updating the Eight State Partners because we have a Broadband Council that's been very aggressive with this because we've decided that the FCC and others can't meet this challenge. We're going to have to do it ourselves.

I guess the one thing I would ask is, do you find that with—and I'll just throw it open to whoever—with the inaccuracy of the data that we have right now that we know is inaccurate, has this been part of a move that has snuffed out competition in the more rural areas and the more diverse areas because we don't have competition. We're getting more and more, but we don't have competition. Nobody's competing for these last mile kinds of deployment of broadband.

Does anybody have a comment on what the effect of poor mapping has done for the competitive environment in the areas that are still left under-and unserved? Yes, Mr. Donovan.

Mr. DONOVAN. Well, Senator, so we have a bit of a Catch-22 here. In these rural areas, you are only eligible for resources in places where there is no unsubsidized competitor, but if we have the map saying that there's an unsubsidized competitor, then you're not eligible for the money. So it brings it straight to the core of today's hearing that there are resources and programs available to help states like yours have expanded service, but we need to make sure that the right areas are eligible so that competitors can go into those markets, bid for support, and build out service.

Senator CAPITO. So the way it's structured and with the poor mapping has led to a non-competitive environment in a lot of places, which is what's slowing it up.

So I'm on a bill with Senator Klobuchar because we're concerned, we're on the Rural Broadband Council, that the deployment in urban areas is not apples to apples as it is in the rural areas. I mean that's pretty obvious. So we want to get the standards that we're expecting in the urban areas, we want to get our standards in the rural areas to be at least comparable and so far we haven't seen that.

Does anybody have a comment on that initiative?

Mr. DONOVAN. Well, it's not anything new. Congress has directed the creation of Universal Service Fund Program to have reasonably comparable services in urban and rural areas. The challenge now is to make sure that we look at what is considered to be reasonably comparable and that's the services that the program is delivering.

As we're now a fifth of the way into the 21st Century, that needs to include having access to the latest wireless technologies.

Senator CAPITO. The other excuse why West Virginia in particular doesn't have as good deployment of broadband is our terrain. We are the Mountain State. I hope you've visited there. It's very nice. And I have a hard time believing that because I believe for decades we've been talking about—we've been able to communicate with people on the moon and we can't figure out a way to deploy broadband in a mountainous state.

So I think it's just an excuse again as to why we haven't had deployment into maybe the less profitable areas than more populated areas.

Does anybody have a comment on the challenges of deploying broadband in terrain and what that would do toward the availability of broadband?

Mr. DONOVAN. So, Senator, the funds are generally distributed now on a reverse option basis. So the carrier that can bid the least to provide coverage over the most square miles wins the support.

One thing that should help for states like West Virginia in Mobility Fund Phase II is the now inclusion of a terrain factor.

Senator CAPITO. Right. We got that in there.

Mr. DONOVAN. So as long as we make sure those areas are eligible, that terrain factor will help.

Senator CAPITO. Mr. Spalter, did you have a comment?

Mr. SPALTER. I do, very briefly. First of all, thank you for introducing your legislation with Senator Klobuchar and advancing our future for mapping.

It is true that terrain, distance, and other factors do impede and make more expensive different kinds of broadband——

Senator CAPITO. Right.

Mr. SPALTER.—deployment to pull fiber to various terrains, particularly in mountainous areas where the underlying topographies can be challenging.

We know that, you know, for pulling a mile of fiber, a linear mile of fiber can range anywhere from \$20,000 linear mile to over a \$100,000 linear mile, depending on where you actually—what kind of terrain you're traversing.

So these are real economic impediments that have to be thought through in a public-private way and why we actually need to continue to focus on our goal of extending the opportunities for direct grant support through mechanisms like the FCC's Universal Service Funds and Connect America Funds added by and accelerated by national comprehensive and harmonized maps of where broadband serviceable locations are and where they're not and if we can do both, we're going to be able to, I think and I hope, still competition, potentially——

Senator CAPITO. Right.

Mr. SPALTER.—make the costs of broadband deployment less, and actually most importantly serve our ultimate goal of getting rural broadband to more rural Americans.

Senator CAPITO. And at the root of it is the accuracy of the data that we have in hand. Thank you.

Mr. SPALTER. Absolutely.

Senator WICKER. Thank you, Senator Capito.

Senator Thune.

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

Senator THUNE. Thank you, Mr. Chairman.

Mr. Oblizalo, can you elaborate on your company's experience with the different Federal maps and how they've guided or affected your business decisions and then perhaps provide any specific examples where you think errors in the maps have led to your inability to deploy broadband in particular service areas and harmed consumers?

Mr. OBLIZALO. Yes. Definitely. We serve very rural portions of Mason County. We're always looking for funding available, whether it's through the reverse auction and the USDA grants to expand out.

Just recently, we're building a community connect grant right now. There's a census block that is served, the census being served, but it's clearly not. So these customers are going to be left

unserved. It is a wireless product that we need to provide but that's an example.

Another example is a section, as Ranking Member Cantwell talked about, on the Olympic Peninsula, that again is being served by two satellite providers, two facility-based providers and neither of them provide services in these areas. So, again, these customers are left unserved also in this area.

So we really look at use of maps, FCC and the USDA's, to try and figure out how to get funding to serve these communities that are truly left behind.

Senator THUNE. This is for anybody that wants to answer it, but if agencies, like the Rural Utilities Service and USDA and the FCC, collect broadband information in the same format, could that help them coordinate where to target funding to avoid overbuilding?

Mr. SPALTER. Harmonization coordination between government agencies that are in the business of developing broadband maps is absolutely critical to support it. We've had consultations with our colleagues in all of the agencies that are trying to stoke the broadband engine in America. We think that that is absolutely critical. The more coordination the better.

Senator THUNE. Yes. Everybody, I assume, agrees with that. Yes. Well, it would be nice if that would happen.

Mr. Donovan, you mentioned in your testimony that the challenge process for Mobility Fund Phase II was overly burdensome. What mechanisms and procedures should be in place to make this process more efficient and reliable?

Mr. DONOVAN. Thank you, Senator. So in states, like South Dakota, one of the large problems we found with the challenge process was that the requirement to have multiple data points within one kilometer square grids meant that large portions of your state were unable to be checked via drive testing. There just aren't the roads to be able to collect sufficient data points.

So to fix that, you know, the single biggest thing we could do is to start with a map that requires less verification, to start with a more granular map, but beyond that, a challenge process that includes a larger buffer zone to make sure that if you have data proof that there's no service along different portions of a highway and then the highway turns, you can assume that there's no service if there are no towers in between that, and that should be a valid challenge. You shouldn't have to have one kilometer square grid road patterns in order to be able to verify whether or not there's service.

Senator THUNE. If the maps are inaccurate, what would you—and to any of you—say are the most harmful implications specifically in rural areas from a Federal funding perspective?

Mr. SPALTER. Overbuilding, duplication, poor stewardship of Federal public resources, delay and slowing down of the actual delivery of broadband to communities and enterprises and families that need it most.

Senator THUNE. Anybody else have anything to add to that? Covered the gamut.

Mr. OBLIZALO. I agree that it ends up in over-reporting and underreporting of these areas and those are like the false positives I talked about in my testimony.

Some areas can be said as being served but they're truly not and these customers are going to be left unserved or even if the broadband maps don't show programs that I am currently building out and I could have a competitor come in and build into my area that I'm currently looking at using USF funds for to build out.

So definitely issues and I think there definitely needs to be a challenge process and process.

Senator THUNE. OK. All right.

Mr. DONOVAN. Senator, so I think my colleague mentioned that the customer experience, you know, that's the ultimate concern at the end of the day is consumers in Rural America who are getting left behind. You know, consumers on the street don't care about what the radio frequency link budget is to establish a map. They know if they have service or if they don't, and so we need to get closer to having something that makes sure that these consumers are able to take advantage of the services brought by Internet today, but also all the innovations that are coming with the wave of 5G that's on the horizon.

Senator THUNE. All right. Thank you all very much. Thank you, Mr. Chairman.

Senator WICKER. Senator Blunt for a follow-up question.

Senator BLUNT. Well, on the 5G topic, and I may have missed this discussion earlier and I can look at the record for that, but really two questions would be, one, is 5G going to be an even bigger challenge for Rural America than where we have been with the previous versions and, two, are there any unique rural solutions, like satellite deployment or something that makes this work in ways that it wouldn't work otherwise?

I have a feeling that it would be easy based on at least the urban installation of 5G. If that's the only model, it's going to be real easy for Rural America to get further behind instead of catch up faster. So is that right, and what do we do to—are there discussions that you all believe have benefit as to how to find unique solutions to Rural America on 5G that wouldn't need to be the same solution in a more urban environment?

Mr. DONOVAN. Senator, you're exactly right. So 5G will be built upon today's 4G services and if you're in rural areas, if you start to fall behind on your Gs, you may never catch up.

So how do you get there? One of the differences in urban and rural deployments, some of it's going to be the spectrum frequencies that you use in rural areas, you're more likely to use low band or mid band spectrum. There's currently several proceedings on some of that mid band spectrum that balances both some of the speed and capacity capabilities as well as propagation characteristics to make sure it travels far enough in rural areas. So we need to make sure that that spectrum is available in rural areas.

It does contribute back to one of the issues we found with the current data collection for the map, that as you do use low band spectrum, that tends to get loaded faster, meaning that because while it does travel further distance, it doesn't have some of the same capacity. So you need to make sure that the FCC is asking

for a significantly higher loading factor to account for the way that people in rural areas are actually using their wireless services.

Senator BLUNT. Can we just go down the line here? Mr. McCormick.

Mr. MCCORMICK. One of the issues that was spoken about just a little while ago was the difficulty of terrain and the ability to get broadband access because of that terrain.

One of the things that I found talking to some of the ISPs in our area is that pine needles on pine trees are some of the bigger defectors of broadband signal because the width of the pine needles are exactly the same size as the band width. They're tremendously—it's like a wall of trying to get that through that.

So I hope when we're talking about getting this to rural areas that we understand all of the complexities of the terrain, not just mountains or whatever. It's going to be things like pine trees and other things that may not have been thought about at this point that's going to be an impediment to get it to rural areas.

Senator BLUNT. OK. Mr. Oblizalo.

Mr. OBLIZALO. Yes. We struggle in Washington, too, like the terrain, the deployment, weather conditions, the dense forest, the foliage that we have up there. There's a lot of issues with wireless or if it's a cellular device.

Senator BLUNT. But with 5G, you're obviously not going to be able to put—you're unlikely to put a new booster every—the equivalent of the city block or two blocks. So what are we going to be able to do?

Mr. OBLIZALO. With wireless? I am not a wireless expert by any means. I am a landline facility-based. We usually build fiber to the home in our area.

Senator BLUNT. Mr. Spalter.

Mr. SPALTER. Sure. Thank you. Our 5G future as a nation is going to be built and based on our ability to pull fiber as ubiquitously and as extensively and as quickly everywhere, not just in our urban environments but in our suburban, ex-urban and, most importantly, our rural areas.

We've come to talk about our 5G future as wired wireless and so we need the policies, we need the resources, and we need the facilities to be able to dig the trenches, pull the fiber, climb the poles, and privilege that activity if we're going to succeed in the global race in 5G.

Senator BLUNT. Do you think that's going to happen with 5G in Baltimore?

Mr. SPALTER. I hope so. I hope it's going to happen not only in Baltimore but—

Senator BLUNT. Do you think it will be pulled wire? Do you think it will be pulled wire?

Mr. SPALTER. The final last mile of any 5G wireless network is built and based on the fiber-based backhaul opportunities that actually exist through the wire-line businesses, like Mr. Oblizalo's and many of our members that are trying to develop these dense, secure, scalable fiber networks that are indispensable and on which 5G wireless networks ultimately rely.

You mentioned also, Senator, about satellite. Yes, satellite technologies can help deliver the benefits of broadband. We know that.

Some of our members, like CenturyLink, are working in places like Whitmore, Colorado, to partner with companies like HughesNet to deliver last mile broadband to most rural hardest-to-reach farming communities and that kind of community.

But we know that satellite companies have to be able to deliver the same quality of service under the same terms on a level playing field as any other competitor in the broadband ecosystem. Some did extremely well in the CAF II auction process and have come back and have asked for variances in quality standards for voice telephony, which is so important to rural Americans.

We say yes, let a thousand flowers bloom and technologies deliver broadband but make sure it's all done on a level regulatory playing field where we all can fairly compete not only for customers but for Federal resources.

Senator BLUNT. Mr. Strange, I'm beyond my time but not to leave you out, anything you want to add to that?

Mr. STRANGE. I will just add that with respect to 5G specifically in Rural America, there are certainly some on the mobile side or on the wireless side, there are fixed wireless opportunities utilizing 5G technologies.

Tim referenced the mid band spectrum that can be supportive of that. Some of your millimeter wave and very, very high frequency spectrum that's available in the marketplace today is not going to be as useful in an extremely rural area, but I do believe that there are opportunities for 5G in Rural America. We just have to make sure that they have access to the spectrum and access to ultimately the fiber networks to help them deliver them.

Senator BLUNT. Thank you.

Senator WICKER. OK. Mr. Spalter, we didn't get rural electrification till we actually ran the power out to the end of the dirt road.

Mr. SPALTER. Yes.

Senator WICKER. Are you saying satellite can help, but as a general rule, we're going to have to big time run fiber out to the end of the dirt road?

Mr. SPALTER. AS quickly and as best as we can in public-private partnerships working with facilities, like the FCC's Connect America Fund, and with our smart modern regulatory frameworks that will incentivize more investment, more innovation from the part of our companies to be able to do so.

Senator WICKER. Well, you know, this isn't a 5G hearing, but I think Senator Blunt has touched on a very, very important subject that we'll need a lot more discussion about. So thank you, Senator Blunt, and thank you.

Senator Blumenthal.

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

Senator BLUMENTHAL. Thank you, Mr. Chairman, and thank you to Senator Wicker for having this very, very important hearing, and to you for giving us the benefit of your insights and expertise in this area.

I know a lot of ground has been covered. I'd like to come back to the issue of pricing data. As you know, there's really very little transparency on the costs of broadband across the country. The

Form 477 data tells us where broadband might be accessible but not whether it's affordable, and I think it's important for Congress and Federal agencies to understand how pricing differs across the United States and whether broadband is affordable, really affordable to individual consumers and to communities that regard it as important and all do.

A consumer might have the option of high-speed broadband but if that service is priced out of reach then it might as well not be available. So the Pew Research Center has published several excellent studies that demonstrate that cost remains a key obstacle to broadband adoption. If we don't understand how price factors into the Digital Divide, we won't address the obstacles facing fixed-income Americans or ordinary working people.

So let me ask all of the witnesses in the limited time, and I apologize, limited time that I have. Advocates, researchers, journalists have been asking for transparency on broadband pricing for more than a decade.

Would you support requiring the disclosure of price information in the Form 477 data? Maybe we can just begin and go down the table.

Mr. DONOVAN. So, we do not survey our members for what price offerings they have, but I'm happy to talk with our members and get back to you with additional information.

Senator BLUMENTHAL. Well, I appreciate that, if you're unable to give me a position today.

Mr. MCCORMICK. Senator, the same with Mississippi Farm Bureau Federation. We wouldn't have a policy on that exact question, but we would certainly be willing to get back with you on that.

Mr. OBLIZALO. Senator, we use the National Exchange Carrier Association's tariff for our set rates. All of our information, all of our rates and speeds are listed on our website. So we would not have a problem sharing that information on the 477.

Senator BLUMENTHAL. So you'd have no problem with it. The two prior comments were in effect they'll have to get back to us, is that correct?

Mr. OBLIZALO. Yes, like I said, we're public and we sell to the end user.

Senator BLUMENTHAL. Great.

Mr. SPALTER. We would have to evaluate that very carefully on a company by company basis, Senator Blumenthal. There are existing requirements, statutorily and otherwise, truth-in-billing and beyond, that would require accuracy in pricing data.

Our mapping exercise initiative is not focused on pricing. It's about finding serviceable and non-service locations. Ultimately, however, the 477 process, if it were to ingest any such pricing data on a required basis, it is our sincere hope that that data would not be used to get into the business of rate regulation.

Mr. STRANGE. Senator, I work for Ookla and we are a data company that keeps up with network performance globally on both mobile and fixed broadband networks. So it's not an area that I have the expertise to even comment on.

Senator BLUMENTHAL. I take your answers for what they are and I would welcome any supplemental views you can provide.

Let me ask another question. Would you support including an assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report? Let's go down the table again.

Mr. DONOVAN. Sure, we are open to discussing how you could include some of those factors in the broadband report.

Mr. MCCORMICK. Certainly out of my area of expertise, but I think we would support that.

Mr. OBLIZALO. Yes, we would support that, too.

Mr. SPALTER. Additional datasets that can provide a more comprehensive and holistic view of availability in the United States are important. We would love to evaluate that question.

Mr. STRANGE. Again, it's an area that's outside of my expertise. I wouldn't even want to comment.

Senator BLUMENTHAL. My time has expired, but I would welcome that you do explore these issues and that you come back to us with any views that you have because, I'm stating the obvious, economic barriers are as important as physical barriers to broadband access. If you can't afford it, you won't have it, even if it's theoretically available.

So thank you, Mr. Chairman.

Senator WICKER. Thank you, Senator Blumenthal.

Senator Sinema.

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

Senator SINEMA. Thank you, Mr. Chairman, and thank you to our witnesses for being here today.

Arizonans in rural and tribal areas need access to fast high-quality broadband. As we know, broadband is no longer a luxury, it's a necessity, and it's crucial for rural Arizonans because broadband is an essential tool for developing our economy, educating our families, and providing quality health care.

But reports show that as many as a 162 million Americans do not have access to the Internet at broadband speeds, which prevents our communities from implementing new advancements.

Next week, for instance, I'll be attending a roundtable in Show Low with the VA and community partners. We'll be discussing the problems they're having with telehealth because of the lack of fast mobile broadband in the region.

And one of our tribes, the Havasupai Tribe in Northern Arizona, cannot access their online charter high school because they don't have sufficient broadband access. So obviously we need to do better.

And as we heard from you all today, the first step to addressing this problem is fixing the massively flawed broadband maps. Inaccurate maps delay the spending of Federal broadband funds and misdirect those dollars to the wrong places.

It's vitally important that we make these maps as accurate as possible as soon as possible and we need to get these billions of Federal dollars working to improve the broadband access for Arizonans in our rural and tribal areas.

So I appreciate your thoughts on how to improve the accuracy and specificity of the maps and I remain committed to working in a bipartisan way to improve broadband access for all Arizonans.

My question is for Mr. Oblizalo.

Mr. OBLIZALO. Oblizalo.

Senator SINEMA. Oblizalo. Almost as difficult as my name, but I welcome the thoughts of all of our witnesses today.

So we know that these inaccurate maps are preventing funds from flowing to some of our rural and tribal areas, like Show Low and Havasupai, the areas that need the investment most. So before we commit to another round of investment, we want to make sure we're spending our money in the proper locations.

Of all the proposals that have been discussed today, which do you believe provides the best combination of accuracy and granularity and can be implemented quickly in rural places, such as Show Low, Arizona?

Mr. OBLIZALO. Well, that's a good question. I know there's a lot of different mapping ideas out there being observed and looked at and how do you make that more granular map to provide those services to those rural areas.

I have not evaluated each map. I don't know exactly how they do it, but the granularity is very important and also I believe there's a challenge process. So if there is a tribal land or an area that is underserved that funds can be applied for to bring broadband services to them.

Senator SINEMA. Thank you. My next question—did any of the others want to respond? Yes?

Mr. STRANGE. Yes, thank you, Senator. So I think one of the solutions is to ensure that we have—we're measuring before we're funding, as you certainly alluded to. And the fastest way to do that is to get the lightest-weight tools available to both consumers as well as anyone who has the capability—Federal or state employee—performing some of these tasks.

And to the point of granularity, our capabilities are getting down to a level where we can understand at a 10 meter level of granularity what the service quality is for the wireless networks, and that's just with our Speedtest applications that are publicly available.

We can continue to refine and collect different types of information with targeted applications also, but that's just with our consumer capabilities. So a fast way to get to market is to quickly assess these datasets or quickly assess the networks in these rural areas and the quickest way to do that is to activate the existing base of consumers and users of applications that are already in the market.

Mr. SPALTER. Let me just, if I could,—

Senator SINEMA. Yes.

Mr. SPALTER.—Senator Sinema, we have initiated a proof of concept on our National Broadband Mapping Initiative not so that we alone will be able to develop and scale a national comprehensive harmonized map but we can create the foundational database upon which we can actually get there.

So I would suggest that we don't have yet the apples to apples comparisons of which map might be the right one or the wrong one. We all know, what we all agree is that we still need to aggregate existing new data sources that we're seeking to do. Our companies are putting skin in the game to be able to crack the code to this

problem so that we can finally and comprehensively determine and have a clear line of sight of where there are serviceable locations and as importantly where there are not, mapping that negative space, and with that foundational data base, then the government agencies, like the FCC, can build and scale that map and then we can do an evaluation and further verification of its refinement.

Senator SINEMA. Thank you. Mr. Chairman, my time has nearly expired. Can I ask one follow up question to Mr. Spalter?

Senator WICKER. Yes, ma'am.

Senator SINEMA. Thank you. As we know, U.S. Telecom launched the Broadband Mapping Initiative Pilot Program.

My question is, how does your pilot program manage areas in Arizona where we don't have street addresses, which would include many of our rural areas and almost all of our tribal communities, and how long will it take to complete the database in every state, considering this complication, so we can actually utilize the dollars?

Mr. SPALTER. That's a great question, Senator, and it's precisely because there are so many locations that are not connected with addresses in Arizona, in your tribal lands, and across the country.

We're really trying to put our shoulder to solving this problem. The way that we're doing that is we're going to be aggregating with our proof of concept the new data sources, the new data bases, the new digitized datasets that are provided not only by commercial enterprises, public enterprises, at the Federal, state, and municipal level, aggregating into one unique platform, conform it for accuracy, in other words clean it out, geo-code it, and then be able to scale it.

We think with our pilot, we're expecting to get the pilot done by the end of Q3 of this year, we can have a full—once we actually then return it back to our colleagues at the FCC and NTIA and this committee for analysis, we can actually have a fully formed national scaled comprehensive map of broadband serviceable locations, we call it a fabric, within 2 years.

Senator SINEMA. Thank you. Thank you so much, Mr. Chairman.

Senator WICKER. Thank you, Senator Sinema.

I want to thank our talented and knowledgeable witnesses.

The hearing record will remain open for two weeks. During this time, Senators are asked to submit any questions for the record. Upon receipt, the witnesses are requested to submit their written answers to the Committee as soon as possible but by no later than Wednesday, April 24, 2019. If witnesses do not comply, they'll be sentenced to 1 month of dial-up.

[Laughter.]

Senator WICKER. At this point, I conclude the hearing and thank the witnesses, the staff, and the members.

[Whereupon, at 12:01 p.m., the hearing was adjourned.]

## A P P E N D I X

RURAL WIRELESS ASSOCIATION  
April 8, 2019

Hon. ROGER WICKER,  
Chairman,  
Senate Committee on Commerce,  
Science, and Transportation,  
Washington, DC.

Hon. MARIA CANTWELL,  
Ranking Member,  
Senate Committee on Commerce,  
Science, and Transportation,  
Washington, DC.

Dear Chairman Wicker and Ranking Member Cantwell:

The Rural Wireless Association (“RWA”)<sup>1</sup> applauds the Senate Committee on Commerce, Science, and Transportation (the “Committee”) for convening the upcoming hearing regarding the current state of the Nation’s broadband maps and for its ongoing efforts to ensure accurate broadband coverage data is reported so that Federal broadband subsidies are targeted at and awarded to those carriers who continue to serve America’s underserved and unserved populations.

RWA and its members have been active participants in various proceedings before the Federal Communications Commission (“FCC” or “Commission”) in which broadband coverage data has been at issue. Recently, RWA and its members have been involved in the FCC’s ongoing Mobility Fund Phase II (“MFII”) proceeding, through which approximately \$4.5 billion in support will be made available over a 10-year period to primarily rural areas that lack unsubsidized 4G LTE service.

RWA has provided insight and offered solutions related to the MFII proceeding, particularly focusing on the wireless broadband coverage data submitted by the Nation’s largest carriers, which, in conjunction with universal service fund (“USF”) subsidy data, is being used by the FCC to establish the map of areas presumptively eligible for MFII support. On multiple occasions RWA has expressed grave concerns about the coverage data that has been submitted by certain major carriers, including Verizon and T-Mobile, and has pointed out that, despite what the submitted data says, some underlying carrier coverage is in fact nonexistent. Additionally, RWA has pushed to bring to the attention of the FCC valid coverage data that can and should be utilized over that which has been provided by certain major carriers.

On August 6, 2018, RWA filed an Informal Request for Commission Action asking the FCC to investigate the 4G LTE coverage claimed by Verizon in the MFII proceeding.<sup>2</sup> Specifically, RWA argued that Verizon should re-file data in order to correct its overstated coverage. RWA was able to identify and verify the non-existent Verizon coverage in part due to over 37,440 miles of drive-testing performed by its member, Panhandle Telecommunication Systems, Inc. (“Panhandle”), a wireless carrier providing service in rural Oklahoma.

Then, on December 26, 2018, RWA filed yet another Informal Request for Commission Action, this time asking the FCC to investigate the 4G LTE coverage claimed by T-Mobile.<sup>3</sup> RWA was able to demonstrate that well over 90 percent of the 2.2 million test points tested by its members, Panhandle, Pine Belt Communications, Inc. (“Pine Belt”), and Sagebrush Cellular, Inc. (“Sagebrush”), in disparate

<sup>1</sup> RWA is a 501(c)(6) trade association dedicated to promoting wireless opportunities for rural telecommunications companies who serve rural consumers and those consumers traveling to rural America. RWA’s members are small businesses serving or seeking to serve secondary, tertiary, and rural markets. RWA’s members are comprised of both independent wireless carriers and wireless carriers that are affiliated with rural telephone companies. Each of RWA’s member companies serves fewer than 100,000 subscribers.

<sup>2</sup> See *Universal Service Reform—Mobility Fund*, WC Docket No. 10–90, WT Docket No. 10–208, *Informal Request of the Rural Wireless Associations, Inc. for Commission Action* (Aug. 6, 2018), attached hereto as Appendix A.

<sup>3</sup> See *Universal Service Reform—Mobility Fund*, WC Docket No. 10–90, WT Docket No. 10–208, *Informal Request of the Rural Wireless Association, Inc. for Commission Action* (Dec. 26, 2018), attached hereto as Appendix B.

parts of the country failed to achieve the 5 Mbps download speed threshold that T-Mobile claimed to be present. Indeed, in many locations, there was simply no T-Mobile coverage at all, despite the carrier claiming that such coverage existed.

RWA and its members are not the only ones to have discovered these major coverage misstatements. According to a recent story aired by National Public Radio,<sup>4</sup> the State of Vermont's Department of Public Service ("Vermont DPS") has conducted its own exhaustive drive-testing—covering over 6,000 miles of highways and country roads in the Green Mountain state—to gauge the actual coverage of six service providers, including Verizon and T-Mobile. Just as RWA found based on its members' drive-tests, Vermont DPS noted a stark contrast between claimed 4G LTE coverage and actual 4G LTE coverage amongst the country's nationwide carriers. Recently, Vermont DPS published an extensive report<sup>5</sup> and created individual static maps displaying purported carrier coverage overlaid with actual drive-test results.<sup>6</sup> Vermont DPS even developed an interactive coverage map<sup>7</sup> to showcase these findings. The drive-test study conducted by Vermont DPS, which shows clear evidence of T-Mobile over-stating its rural coverage, has been submitted as part of the record in a hearing conducted by the House of Representatives Subcommittee on Communications and Technology in its review of the proposed merger between T-Mobile and Sprint Corporation.<sup>8</sup>

These time-consuming and expensive carrier-and agency-initiated coverage tests conducted over the last year constitute important evidence that at least two nationwide carriers are misstating coverage in the FCC's MFII proceeding, thereby creating an artificial coverage map that, if accepted without further investigation, will fail to target MFII support where it is needed the most. RWA and its members have expressed these same concerns to the FCC on multiple occasions; however, to date the agency has failed to investigate the coverage data submitted by Verizon or T-Mobile. Accordingly, by filing this letter and the attached appendices in the hearing record, RWA calls the Committee's attention to the coverage tests conducted by RWA members and the Vermont DPS and to the problems Verizon's and T-Mobile's coverage misstatements are causing for small, rural carriers that are trying to connect those parts of America that need assistance the most.

Respectfully submitted,

CARESSA D. BENNET,  
General Counsel.

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APPENDIX A

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, DC. 20554

|                                        |   |                      |
|----------------------------------------|---|----------------------|
| In the Matter of                       | ) |                      |
|                                        | ) |                      |
| Connect America Fund                   | ) | WC Docket No. 10–90  |
|                                        | ) |                      |
| Universal Service Reform—Mobility Fund | ) | WT Docket No. 10–208 |

INFORMAL REQUEST OF THE RURAL WIRELESS ASSOCIATION, INC. FOR  
COMMISSION ACTION

Pursuant to Section 1.41 of the Federal Communications Commission's ("FCC" or "Commission") rules,<sup>1</sup> the Rural Wireless Association, Inc. ("RWA")<sup>2</sup> files this Infor-

<sup>4</sup>See "One Man's Quest to Prove Vermont Has Terrible Cell Service," *All Things Considered*, National Public Radio (aired Feb. 1, 2019).

<sup>5</sup>See "Mobile Wireless in Vermont," Vermont Department of Public Service (rel. Jan. 14, 2019), attached hereto as Appendix C.

<sup>6</sup>See *Static Maps*, Vermont Department of Public Service.

<sup>7</sup>See *Interactive Wireless Coverage Map*, Vermont Department of Public Service.

<sup>8</sup>See *Protecting Consumers and Competition: An Examination of the T-Mobile and Sprint Merger*, Hearing Before the House of Representatives Subcommittee on Communications and Technology (Feb. 13, 2019).

<sup>1</sup>47 C.F.R. § 1.41.

<sup>2</sup>RWA is a 501(c)(6) trade association dedicated to promoting wireless opportunities for rural telecommunications companies who serve rural consumers and those consumers traveling to rural America. RWA's members are small businesses serving or seeking to serve secondary, tertiary, and rural markets. RWA's members are comprised of both independent wireless carriers

mal Request for Commission Action (“Informal Request”) regarding the Mobility Fund Phase II (“MF–II”) Challenge Process. RWA’s members are in the middle of the Challenge Process but are expending enormous time and financial resources in their efforts due to inaccurate data submitted by Verizon. RWA requests that the Commission investigate the 4G LTE coverage claimed by Verizon and require re-filing of Verizon’s data to correct its overstated coverage.

## I. Background

In August 2017, the Commission decided to implement a new, one-time data collection with specified data parameters tailored to MF–II.<sup>3</sup> The Commission required mobile wireless broadband providers to file propagation maps and model details with the Commission indicating their current 4G LTE coverage, as defined by download speeds of 5 Mbps at the cell edge with 80 percent probability and a 30 percent cell loading factor.<sup>4</sup>

The FCC used the 4G LTE coverage information, in conjunction with universal service fund (“USF”) subsidy data, to establish the map of areas presumptively eligible for MF–II support.<sup>5</sup> The FCC released the initial eligible areas map on February 27, 2018.<sup>6</sup> On the same date, the FCC released a Public Notice establishing the procedures to be used in the MF–II challenge process.<sup>7</sup> In that item, the FCC determined that speed test measurements submitted to support and/or respond to a challenge to an area that is initially deemed ineligible for MFII support must be no more than 500 meters apart from one another. The FCC decided to assess challenges using a uniform grid with cells of one square kilometer and a “buffer” with a radius equal to one-half of the maximum distance parameter, *i.e.*, 250 meters. After reviewing detailed data<sup>8</sup> regarding the burden a challenger would experience as a result of these parameters, the FCC reconsidered its procedures and extended the buffer radius from 250 to 400 meters.<sup>9</sup>

The Challenge Process started on March 29, 2018, and was originally scheduled to conclude on August 27, 2018. However, Chairman Pai has directed the FCC to extend the challenge process deadline by 90 days.<sup>10</sup> RWA members are anxiously awaiting the release of a Public Notice that will officially extend that deadline for an additional 90 day period to allow completion of the challenges. Challengers are currently submitting the results of their speed tests (showing that qualifying 4G LTE service with download speeds of 5 Mbps is not available at a given location) to the Universal Service Administrative Company (“USAC”) challenge process portal. After challengers submit their speed test data, the USAC system will draw a circular “buffer” around each speed test point. If the total buffered area in a grid cell exceeds 75 percent of the cell’s challengeable area, then the system will deem the challenge to be presumptively successful with respect to that square kilometer cell. Challenged carriers will then have the opportunity to submit data rebutting the challenge. RWA continues to receive reports from its members that the cost of participating in the Challenge Process is requiring hundreds of hours of time and hundreds of thousands of dollars to disprove Verizon’s overstated coverage—time and money that would have been better spent investing in their networks to further deploy LTE in rural America.

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and wireless carriers that are affiliated with rural telephone companies. Each of RWA’s member companies serves fewer than 100,000 subscribers.

<sup>3</sup> *Universal Service Reform—Mobility Fund, Order on Reconsideration and Second Report and Order*, WT Docket No. 10–208, at ¶ 7 (rel. Aug. 4, 2017) (“*Second R&O*”).

<sup>4</sup> *Second R&O* at ¶ 34.

<sup>5</sup> *Second R&O* at ¶¶ 10–11, 34.

<sup>6</sup> *Mobility Fund Phase II Initial Eligible Areas Map Available; Challenge Window Will Open March 29, 2018, Public Notice*, DA 18–187, WT Docket No. 10–208 (rel. Feb. 27, 2018). The FCC made minor changes to the map in late May 2018 to reflect corrected coverage by a single mobile provider and adjustments to underlying coverage and subsidy data. See *Updated Version of Map of Areas Presumptively Eligible for Mobility Fund Phase II Now Available, Public Notice*, DA 18–540, WT Docket No. 10–208 (rel. May 22, 2018).

<sup>7</sup> *Connect America Fund, Universal Service Reform—Mobility Fund, Public Notice*, WC Docket No. 10–90, WT Docket No. 10–208, DA 18–186 (rel. Feb. 27, 2018) (“*Challenge Process PN*”).

<sup>8</sup> See generally *Letter from Caressa D. Bennet, General Counsel, RWA, and Erin P. Fitzgerald, Regulatory Counsel, RWA, to Marlene H. Dortch, Secretary, FCC*, WT Docket No. 10–208 *et al.* (Mar. 21, 2018) (“*RWA Mar. 21, 2018 Ex Parte*”) (focusing on challenges to certain ineligible areas in Alabama, Kansas, Montana, North Dakota, Oklahoma, and Wyoming).

<sup>9</sup> *Challenge Procedures Reconsideration Order* at ¶ 4.

<sup>10</sup> *Letter from Ajit Pai, Chairman, FCC to Senator Roger Wicker* (May 30, 2018) committing to extend the Challenge Process by 90 days.

## II. Verizon's Claimed 4G LTE Coverage Is Grossly Overstated

RWA and others have expressed serious concerns regarding overstated unsubsidized 4G LTE coverage as it relates to eligibility for MF–II funding.<sup>11</sup> In particular, RWA, Panhandle Telecommunications Systems, Inc. (“PTCI”), and a coalition of radio frequency engineering firms (“RF Engineer Coalition”) have expressed serious concerns regarding Verizon’s claimed unsubsidized 4G LTE coverage.<sup>12</sup> The Oklahoma Panhandle has a total area of 14,778.47 square kilometers—almost all of which Verizon claims to cover with 4G LTE coverage.<sup>13</sup>

Concerns regarding Verizon’s overstated 4G LTE coverage are borne out in filings by the RF Engineer Coalition and PTCI. PTCI has stated that, as discussions surrounding MF–II and the accompanying challenge process began in earnest, the company hired a professional engineering firm (Monte R. Lee and Company or “MRL”) to estimate Verizon coverage using data inputs reflecting specific cell site locations, observational estimates of radio height and antenna placement on towers, 700 MHz spectrum, and service that reflects the customer experience.<sup>14</sup> MRL, a member of the RF Engineer Coalition, stated that it used publicly-available information and the FCC-adopted 5 Mbps downlink standard to produce a map that estimated that Verizon’s coverage area should be approximately 6806.49 square kilometers in the Oklahoma Panhandle—not even half of the LTE coverage area Verizon publicly claims to serve.<sup>15</sup>

Since this estimated propagation map was compiled, PTCI has driven more than 37,000 miles in order to compile data for the MF–II challenge process.<sup>16</sup> PTCI’s speed test data collection included a total of 402,573 test points—drive tests taken using Verizon-specified devices that are on plans not subject to network prioritization or throttling.<sup>17</sup> Of the total test points collected, 357,374 (88.8 percent) tested below 5 Mbps download speed or did not register 4G LTE service at all on Verizon-designated handsets.<sup>18</sup> The results of the speed tests taken by PTCI largely bear out MRL’s initial Verizon propagation projections.<sup>19</sup>

<sup>11</sup> See Letter from Caressa D. Bennet, General Counsel, RWA, and Erin P. Fitzgerald, Regulatory Counsel, RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.*, at p. 2 (Mar. 21, 2018) (expressing concern that “the challenge process . . . will impose significant and unnecessary costs on prospective challengers, and allow overstated mobile wireless coverage to stand unchallenged in most places”) (“*RWA Mar. 21, 2018 Ex Parte*”); Application for Review of the Rural Wireless Association, Inc., WC Docket No. 10–90, WT Docket No. 10–208, at p. 3 (Mar. 29, 2018) (noting that an “inaccurate picture of mobile wireless coverage” will likely stand unchallenged in most places); see also Kendra Chamberlain, FierceWireless, *FCC’s Mobility Fund II Will Primarily Benefit Western Half of U.S.*, (Feb. 28, 2018) (quoting CCA President and CEO Steven Berry: “CCA has been a fervent supporter of Congress’s goal and the Commission’s efforts to use reliable data to determine eligible areas for support in Mobility Fund II based on an efficient challenge process that is robust, targeted, and strikes a reasonable balance without overly burdening small carriers . . . Unfortunately, that is not possible based on the initial eligible areas map that the FCC released today. It is now clear that the parameters the FCC directed carriers to use in its one-time data collection have failed to produce a credible map of eligible areas, and it is most disappointing that absent significant changes, the Commission will fall short of Congress’s mandate for Universal Service”); see also Reply of United States Cellular Corporation, WC docket No. 10–90, WT Docket No. 10–208, at p. 4 (May 7, 2018) (stating “[i]f this Commission is serious about accelerating broadband investment to areas that need it most, then it is critically important that areas needing investment are not blocked out due to maps that overstate coverage”); see also *Opposition of Smith Bagley, Inc. to Verizon Application for Review*, WT Docket No. 10–208, WC docket No. 10–90 (July 13, 2018) (recognizing that “if the [challenge process] testing parameters are too rigorous, less challenges will be undertaken” and that “this result must be avoided because it would increase the likelihood that inaccuracies in unsubsidized coverage claims made by incumbent carriers will go undetected”).

<sup>12</sup> See Letter from Caressa D. Bennet, General Counsel, RWA, and Erin P. Fitzgerald, Regulatory Counsel, RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.*, at p. 2 and Attachment C (Apr. 20, 2018) (“*RWA Apr. 20, 2018 Ex Parte*”); see also Letter from RF Engineer Coalition to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.* (July 5, 2018) (“*RF Engineer Coalition Ex Parte*”); see also Letter from Caressa D. Bennet, Counsel to Panhandle Telecommunication Systems, Inc., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.*, at pp. 1–2 and Attachment (July 13, 2018) (“*PTCI Ex Parte*”).

<sup>13</sup> *Verizon Wireless Interactive Map* (last visited June 28, 2018) (showing 4G LTE coverage throughout nearly all of the Oklahoma Panhandle); see also *RF Engineer Coalition Ex Parte* at p. 2 (stating that Verizon’s map is not far removed from the coverage depicted in the portal).

<sup>14</sup> *PTCI Ex Parte* at p. 1.

<sup>15</sup> *RF Engineer Coalition Ex Parte* at p. 2; see also *Verizon Wireless Interactive Map* (last visited June 28, 2018) (showing 4G LTE coverage throughout nearly all of the Oklahoma Panhandle).

<sup>16</sup> *PTCI Ex Parte* at p. 2.

<sup>17</sup> *RF Engineer Coalition Ex Parte* at pp. 2–3.

<sup>18</sup> *PTCI Ex Parte* at p. 2; see also *RF Engineer Coalition Ex Parte* at p. 3.

<sup>19</sup> *PTCI Ex Parte* at p. 2.

RWA echoes the concerns and questions raised by the RF Engineer Coalition relating to Verizon's claimed 4G LTE coverage, and its conformance with standard RF engineering practices and the Commission's filing requirements. In particular, RWA urges attention to LTE RSRP level, propagation model, and clutter factors and how Verizon's inputs could have impacted the accuracy of its coverage data.<sup>20</sup>

### III. The Commission Should Require Verizon to Refile Accurate 4G LTE Coverage Maps to Ensure That MF-II Support Is Targeted Appropriately

Verizon's overstated coverage has yielded a coverage map that will result in a challenge process that fails to target MF-II support where it is needed. RWA, PTCI, United States Cellular, Smith Bagley, and others have expressed concerns regarding the tremendous costs of MF-II Challenge Process participation. Overstated 4G LTE coverage by a nationwide provider like Verizon has increased those costs significantly, to the detriment of the challengers with whom Verizon competes.

Data submitted to the Commission indicates that Verizon has overstated its coverage by more than 50 percent in the Oklahoma Panhandle. As a result of Verizon claiming this coverage, PTCI has been forced to undertake significant drive-testing of the area—an undertaking that the company estimates will cost close to \$1 million—more than half of which could have been avoided, but for overstated Verizon coverage.<sup>21</sup> \$1 million is a hefty price tag to test an area comprised of only three counties.<sup>22</sup> Other RWA members are seeing similar Challenge Process costs. Pioneer Cellular, also based in Oklahoma, estimates that it will take 20 drivers 75 days to complete testing in the 24,010 drive-testable, challengeable square kilometers of its licensed service territory. Like PTCI, Pioneer expects to spend nearly \$1 million to complete the challenge process. This includes \$600,000 in labor costs, \$247,000 in mileage, \$48,000 for handsets, and \$96,000 for data usage. Sagebrush Cellular, based in Montana, expects to spend more than \$1.5 million to participate in the challenge process. This figure includes \$275,000 for project management and other labor, \$62,000 for mapping and \$1,178,000 for drive testing expenses.

A Commission investigation into the 4G LTE coverage claimed by Verizon, and a determination that Verizon must re-file where coverage data is inaccurate could save prospective challengers *millions* of dollars apiece.<sup>23</sup> More importantly, it will open up the challenge process to numerous additional challengers who are currently deterred from participating in the process by the enormous cost involved. Based on the experience of RWA members, even where carriers choose to participate, many such carriers are forced to pick and choose where to challenge due to the cost of participating. This is not the robust challenge process envisioned by the Commission.

Requiring Verizon to correct its coverage so that it is in conformance with standard RF engineering practices will yield an accurate picture of where qualifying coverage exists and allow funding to be targeted to those areas. In addition, Verizon should not be allowed to abuse the FCC challenge process by filing a sham coverage map as a means of interfering with the ability of rural carriers to continue to receive universal service support in rural areas. Failure by the Commission to enforce its coverage map requirements against Verizon will undermine the Challenge Process which, in turn, will harm rural carriers, and the customers they serve, who are reliant on receiving support in areas where unsubsidized carriers like Verizon do not serve.<sup>24</sup>

<sup>20</sup> Verizon responded to the *RF Engineer Coalition Ex Parte* on July 27, 2018. See Letter from Alan Buzacott, Executive Director, Federal Regulatory Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.* (July 27, 2018). The *RF Engineer Coalition* has submitted a reply, noting its continued concerns. See Letter from RF Engineer Coalition to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.* (Aug. 3, 2018).

<sup>21</sup> *PTCI Ex Parte* at p. 5.

<sup>22</sup> The Oklahoma Panhandle consists of Cimarron County, Texas County and Beaver County.

<sup>23</sup> It could also reduce risks faced by those doing the testing. See *PTCI Ex Parte* at p. 5 (noting that drive testers must protect themselves from rattlesnakes, feral hogs, bobcats, and other dangers).

<sup>24</sup> See House of Representatives Energy & Commerce Committee Hearing, *Oversight of the Federal Communications Commission 2018*, Opening Statement of Mike Doyle (D–PA) (stating “Chairman [Pai] has claimed that he cares about rural broadband deployment, but the Commission in its zeal not to burden major wireless carriers with reporting where they have wireless service deployed imposed as part of Mobility Fund II a bizarre and onerous challenge process that requires rural providers to hire people to walk through cornfields and backyards trying to prove that communities don’t have wireless service. And if those companies can’t afford to send people up, the Commission will assume these communities are connected. Now tell me, how does that help the 24 million Americans without access to high-speed broadband?”).

**IV. Conclusion**

For the reasons discussed above, RWA urges the Commission to investigate the 4G LTE coverage claimed by Verizon and require re-filing of Verizon's data to correct its claimed coverage. In particular, RWA encourages the Commission to consider issues raised by the RF Engineer Coalition relating to LTE RSRP level, propagation model, and clutter factors. RWA looks forward to its continued work with the Chairman, Commissioners, and Commission staff in this proceeding.

Respectfully submitted,

RURAL WIRELESS ASSOCIATION, INC.

BY: CARESSA D. BENNET,  
*General Counsel,*

ERIN P. FITZGERALD,  
Regulatory Counsel.

August 6, 2018

**DECLARATION OF JANA WALLACE**

I, Jana Wallace, do hereby declare under penalty of perjury the following:

1. I am the Chief Operations Officer of Panhandle Telecommunication Systems, Inc.
2. I have personal knowledge of the facts set forth in the foregoing Informal Request of the Rural Wireless Association, Inc. for Commission Action and believe them to be true and correct.



Jana Wallace

8/3/18

Date

\_\_\_\_\_

**DECLARATION OF Jerry Kadavy**

I, Jerry Kadavy, do hereby declare under penalty of perjury the following:

1. I am the Vice President of Network Operations of Cellular Network Partnership d/b/a Pioneer Cellular.
2. I have personal knowledge of the facts set forth in the foregoing Informal Request of the Rural Wireless Association, Inc. for Commission Action and believe them to be true and correct.



Jerry Kadavy

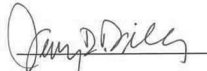
7/30/18

Date

**DECLARATION OF JERRY D. TILLEY**

I, Jerry D. Tilley, do hereby declare under penalty of perjury the following:

1. I am the Chief Operating Officer of Nemont Telephone Cooperative, Inc. ("Nemont"). Sagebrush Cellular, Inc. ("Sagebrush") is a wholly owned subsidiary of Nemont.
2. I have personal knowledge of the facts set forth in the foregoing Informal Request of the Rural Wireless Association, Inc. for Commission Action and believe them to be true and correct.

  
Jerry D. Tilley

8/6/2018

Date

**APPENDIX B**

**BEFORE THE**

**FEDERAL COMMUNICATIONS COMMISSION**

WASHINGTON, D.C. 20554

|                                        |   |                      |
|----------------------------------------|---|----------------------|
| In the Matter of                       | ) |                      |
|                                        | ) |                      |
| Connect America Fund                   | ) | WC Docket No. 10-90  |
|                                        | ) |                      |
| Universal Service Reform—Mobility Fund | ) | WT Docket No. 10-208 |

**INFORMAL REQUEST FOR COMMISSION ACTION**

**RURAL WIRELESS ASSOCIATION, INC.**

CARESSA D. BENNET,  
*General Counsel.*

Date: December 26, 2018

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**IV. T-MOBILE FILED PROJECTED COVERAGE DATA**

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**SUMMARY**

RWA requests that the Commission investigate the 4G LTE coverage claimed by T-Mobile USA, Inc. as part of the one-time data collection for the Mobility Fund Phase II reverse auction process. After RWA members conducted their own drive testing of T-Mobile's coverage in their respective service areas, RWA determined that T-Mobile's data submitted to the FCC regarding its claimed coverage of these

areas at 5 Mbps or greater download speeds was not accurate or supported. Based on evidence available to RWA members it became evident that T-Mobile did not have the requisite backhaul facilities to support 5 Mbps download speeds at the time it submitted its data to the FCC. It further appears that T-Mobile continued to build out areas that it counted as covered even though this build out occurred after T-Mobile's January 4, 2018 deadline for submitting actual coverage.

RWA encourages the Commission in its investigation to obtain and analyze the following information related to the timing of T-Mobile's cell sites built in rural areas in the past three years: (1) date power installed at cell site; (2) date 4G LTE RAN installed at cell site; (3) date backhaul installed at cell sites; (4) type of backhaul installed at cell sites and the capability of the backhaul facilities in place at the time to support 5 Mbps download speeds; (4) date cell sites were provisioned; and (5) date commercial service was launched at each of the cell sites.

To the extent the Commission determines that data submitted by T-Mobile has been fabricated or has been based on projected future coverage, RWA requests that the Commission consider taking appropriate action including, but not limited to, (1) barring T-Mobile from participating in the Mobility Fund Phase II reverse auction; (2) requiring T-Mobile to reimburse challengers for their costs associated with the challenge process; and/or (3) issuing appropriate sanctions for misrepresentation of information submitted by T-Mobile under penalty of perjury.

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BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

|                                        |   |                      |
|----------------------------------------|---|----------------------|
| In the Matter of                       | ) |                      |
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| Connect America Fund                   | ) | WC Docket No. 10–90  |
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INFORMAL REQUEST FOR COMMISSION ACTION

Pursuant to Section 1.41 of the Federal Communications Commission's ("FCC" or "Commission") rules,<sup>1</sup> the Rural Wireless Association, Inc. ("RWA")<sup>2</sup> files this Informal Request for Commission Action ("Informal Request") regarding the Mobility Fund Phase II ("MF–II") Challenge Process. For the reasons discussed below, RWA requests that the Commission investigate the 4G LTE coverage claimed by T-Mobile USA, Inc. ("T-Mobile") and require T-Mobile to resubmit its MF II coverage data using the actual coverage that it had in place during the August 4, 2017–January 4, 2018 time frame as required by the Commission's rules,<sup>3</sup> rather than projected coverage data that appears to have been used. To the extent the data submitted by T-Mobile has been fabricated or has been based on projected future coverage, RWA requests that the Commission consider taking appropriate action including, but not limited to, (1) barring T-Mobile from participating in the Mobility Fund Phase II reverse auction; (2) requiring T-Mobile to reimburse challengers for their costs associated with the challenge process; and/or (3) issuing appropriate sanctions for misrepresentation of information submitted by T-Mobile under penalty of perjury.<sup>4</sup>

<sup>1</sup> 47 C.F.R. § 1.41.

<sup>2</sup> RWA is a 501(c)(6) trade association dedicated to promoting wireless opportunities for rural telecommunications companies who serve rural consumers and those consumers traveling to rural America. RWA's members are small businesses serving or seeking to serve secondary, tertiary, and rural markets. RWA's members are comprised of both independent wireless carriers and wireless carriers that are affiliated with rural telephone companies. Each of RWA's member companies serves fewer than 100,000 subscribers.

<sup>3</sup> See FCC, *Mobility Fund II 4G LTE Data Collection Instructions* ("Mobile wireless broadband providers must submit polygons in a shapefile format representing geographic coverage nationwide (excluding Alaska, but including U.S. territories) for 4G LTE deployed in each frequency band and bandwidth as of August 4, 2017, or later.") (last visited Dec. 26, 2018).

<sup>4</sup> Pursuant to Commission requirements, carriers submitting 4G LTE coverage data were required to do so under penalty of perjury. See *Universal Service Reform—Mobility Fund*, Order on Reconsideration and Second Report and Order, WC Docket No. 10–90, WT Docket No. 10–208, FCC 17–102, at ¶39 (Aug. 4, 2017) (stating that "providers shall submit. . . a certification, under penalty of perjury, by a qualified engineer that the propagation maps and model details reflect the filer's coverage as of the generation date of the map. . ."). To the extent T-Mobile misrepresented the information, it should be sanctioned. See, e.g., *California Public Broadcasting Forum v. FCC*, 947 F.2d 505 (D.C. Cir. 1991) (upholding FCC denial of a broadcast license re-

## I. BACKGROUND

In August 2017, the Commission decided to implement a new, one-time data collection with specified data parameters tailored to MF–II.<sup>5</sup> The Commission required mobile wireless broadband providers to file propagation maps and model details with the Commission indicating their current 4G LTE coverage, as defined by download speeds of 5 Mbps at the cell edge with 80 percent probability and a 30 percent cell loading factor.<sup>6</sup>

The FCC used the 4G LTE coverage information, in conjunction with Universal Service Fund (“USF”) subsidy data, to establish a map of areas presumptively eligible for MF–II support.<sup>7</sup> The FCC released the initial eligible areas map on February 27, 2018.<sup>8</sup> On the same date, the FCC released a Public Notice establishing the procedures to be used in the MF–II challenge process.<sup>9</sup> In that item, the FCC determined that speed test measurements submitted to support and/or respond to a challenge to an area that is initially deemed ineligible for MF–II support must be no more than 500 meters apart from one another.<sup>10</sup> The FCC decided to assess challenges using a uniform grid with cells of one square kilometer and a “buffer” with a radius equal to one-half of the maximum distance parameter, *i.e.*, 250 meters.<sup>11</sup> After reviewing detailed data<sup>12</sup> regarding the burden a challenger would experience as a result of these parameters, the FCC reconsidered its procedures and extended the buffer radius from 250 to 400 meters.<sup>13</sup>

The Challenge Process started on March 29, 2018, and was originally scheduled to conclude on August 27, 2018.<sup>14</sup> However, the FCC extended the challenge process deadline by 90 days to November 26, 2018 in light of data submitted by RWA regarding the significant burdens of the challenge process, including specific estimates of the amount of time required to conduct speed tests in certain areas.<sup>15</sup>

Twenty-one Challengers submitted the results of their speed tests (showing that qualifying 4G LTE service with download speeds of 5 Mbps is not available at a given location) to the Universal Service Administrative Company (“USAC”) challenge process portal.<sup>16</sup> On December 7, 2018, Federal Communications Commission Chairman Ajit Pai announced that the agency had “launched an investigation into whether one or more major carriers violated the Mobility Fund Phase II. . . reverse

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new application where licensee misrepresented its reasons for darkening station); *WADECO, Inc. v. FCC*, 628 F.2d 122 (D.C. Cir. 1980) (upholding FCC disqualification of applicant for a broadcast construction permit based on applicant’s misrepresentation of its financial qualifications); *Brandywine-Main Line Radio, Inc. v. FCC*, 473 F.2d 16 (D.C. Cir. 1972) (upholding FCC denial of a broadcast license renewal application where licensee misrepresented its program plans).

<sup>5</sup>*Universal Service Reform—Mobility Fund, Order on Reconsideration and Second Report and Order*, WT Docket No. 10–208, at ¶7 (rel. Aug. 4, 2017) (“*Second R&O*”).

<sup>6</sup>*Second R&O* at ¶34.

<sup>7</sup>*Second R&O* at ¶¶10–11, 34.

<sup>8</sup>*Mobility Fund Phase II Initial Eligible Areas Map Available; Challenge Window Will Open March 29, 2018, Public Notice*, DA 18–187, WT Docket No. 10–208 (rel. Feb. 27, 2018). The FCC made minor changes to the map in late May 2018 to reflect corrected coverage by a single mobile provider and adjustments to underlying coverage and subsidy data. See *Updated Version of Map of Areas Presumptively Eligible for Mobility Fund Phase II Now Available, Public Notice*, DA 18–540, WT Docket No. 10–208 (rel. May 22, 2018).

<sup>9</sup>*Connect America Fund, Universal Service Reform—Mobility Fund, Public Notice*, WC Docket No. 10–90, WT Docket No. 10–208, DA 18–186 (rel. Feb. 27, 2018) (“*Challenge Process PN*”).

<sup>10</sup>*Challenge Process PN* at ¶24.

<sup>11</sup>*Challenge Process PN* at ¶24.

<sup>12</sup>See generally *Letter* from Caressa D. Bennet, General Counsel, RWA, and Erin P. Fitzgerald, Regulatory Counsel, RWA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10–208 *et al.* (Mar. 21, 2018) (“*RWA Mar. 21, 2018 Ex Parte*”) (focusing on challenges to certain ineligible areas in Alabama, Kansas, Montana, North Dakota, Oklahoma, and Wyoming).

<sup>13</sup>*Challenge Procedures Reconsideration Order* at ¶4.

<sup>14</sup>The initial MF–II map of presumptively eligible areas was published on February 27, 2018, and the challenge window opened on March 29, 2018. Because the 150th day from the opening of the challenge window would fall on August 26, 2018, which is a Sunday, the challenge window was scheduled to remain open through August 27, 2018, the following business day. See 47 CFR §1.4(d), (j); *Universal Service Reform—Mobility Fund, Public Notice*, Mobility Fund Phase II Initial Eligible Areas Map Available; Challenge Window Will Open March 29, 2018, WC Docket No. 10–90, WT Docket No. 10–208, DA 18–187, Feb. 27, 2018.

<sup>15</sup>*Universal Service Reform—Mobility Fund, Order, Notice of Proposed Rulemaking and Memorandum Opinion and Order*, WC Docket No. 10–90, WT Docket No. 10–208, FCC 18–124, at ¶¶5, 8 (rel. Aug. 21, 2018).

<sup>16</sup>*Universal Service Reform—Mobility Fund, Public Notice*, WC Docket No. 10–90, WT Docket No. 10–208, DA 18–1225 (rel. Dec. 3, 2018).

auction's mapping rules and submitted incorrect coverage maps."<sup>17</sup> Further, the Commission "has suspended the next step of the challenge process—the opening of a response window—pending the conclusion of this investigation."<sup>18</sup>

RWA has received reports from its members that the *vast* majority of tests by RWA members of T-Mobile test points resulted in download speeds below 5 Mbps or did not register 4G LTE service at all on T-Mobile-designated handsets.<sup>19</sup> These same members spent hundreds of hours and hundreds of thousands of dollars to disprove T-Mobile's overstated coverage—time and money that would have been better spent investing in their networks to further deploy LTE in rural America.

## II. T-MOBILE'S CLAIMED 4G LTE COVERAGE IS GROSSLY OVERSTATED

The record is replete with filings by RWA and others detailing concerns about overstated coverage by Verizon.<sup>20</sup> However, only recently did RWA become concerned about overstated coverage by T-Mobile because such overstated coverage did not become apparent until after the challenge process data had been submitted by challengers and more closely analyzed.<sup>21</sup> RWA members Sagebrush Cellular, Inc. ("Sagebrush"), Panhandle Telecommunication Systems, Inc. ("Panhandle"), and Pine Belt Cellular, Inc. ("Pine Belt") challenged T-Mobile coverage in their service areas.<sup>22</sup> Concerns about overstated coverage by T-Mobile are borne out by RWA members' respective challenge results submitted in the FCC portal.<sup>23</sup> In *ex parte* meetings with the FCC on December 6, 2018, RWA members, *inter alia*, discussed their findings and their conclusion that the near total inability of T-Mobile to document 5 Mbps download speeds in the rural areas tested by RWA members and claimed by T-Mobile to have qualifying coverage calls into question the veracity of the original data submitted by T-Mobile prior to the January 4, 2018 deadline.<sup>24</sup>

<sup>17</sup> *Press Release, FCC Launches Investigation Into Potential Violations of Mobility Fund Phase II Mapping Rules* (Dec. 7, 2018).

<sup>18</sup> *Id.*; see also Lynn Stanton, *Pai Foresees 'Very Busy' Agenda for FCC in 2019*, TRDaily (Dec. 14, 2018) (stating "As to whether he was frustrated at having to suspend action in the Mobility Fund Phase II process pending an investigation of whether major carriers violated FCC rules by submitting inaccurate data on areas they already serve with 4G LTE, Chairman Pai said, 'Look, to me, it's not just professional, it's personal. When I fly home to Kansas City and I drive about three and a half hours south to my hometown, I can tell you once you get to the outer Kansas City suburbs, you see the bars on your phone start to drop and soon thereafter there's no service at all for long stretches. And I understand personally the costs to many of these communities for not having wireless coverage. During one of my trips to Mission, S.D., for example, I heard about a woman on the Indian reservation near there. She was found dead in her home, and she was clutching her cellphone. She dialed 911 38 times, but the call never went through, because she didn't have wireless coverage. This is really a matter of life and death in some circumstances.' Asked what the consequences should be for carriers that submitted inaccurate data, he said, 'That's a question that's inextricably intertwined with the enforcement investigation that I announced last week and so I can't comment on what the remedies or penalties might be as a result of that might be.' In response to a question about what other ways the FCC could obtain data on coverage, Mr. Pai said, 'Some steps have already been taken... . Going forward we want to know that we have accurate data.' Asked whether the Commission would delay a decision in its review of the proposed merger of T-Mobile US, Inc., and Sprint Corp. pending the outcomes of the MF-II data investigation, Chairman Pai said, 'Oh, boy, that's a double hypothetical! I mean, not just the merger, the merits of which I can't talk about, but also the impact that a concurrent enforcement investigation might have on any merger. Again, I haven't announced the identities of any carriers that we might be investigating, so I can't obviously opine about what impact that may or may not have on the transaction that's pending.'")

<sup>19</sup> See Declaration of Mike Kilgore at ¶8; Declaration of Jana Wallace at ¶5; and Declaration of John Nettles at ¶6.

<sup>20</sup> See, e.g., *Universal Service Reform—Mobility Fund*; WC Docket No. 10–90, WT Docket No. 10–208, *Ex Parte Letter from Radio Frequency Engineering Firm Coalition* to Ms. Marlene H. Dortch, Secretary, FCC (July 5, 2018); *Universal Service Reform—Mobility Fund*; WC Docket No. 10–90, WT Docket No. 10–208, *Ex Parte Letter from Radio Frequency Engineering Firm Coalition* to Ms. Marlene H. Dortch, Secretary, FCC (Aug. 3, 2018); *Universal Service Reform—Mobility Fund*; WC Docket No. 10–90, WT Docket No. 10–208, *Ex Parte Letter* from Shawn Hanson, CEO, Panhandle Telecommunication Systems, Inc. to Ajit Pai, Chairman, FCC (Sept. 7, 2018); *Universal Service Reform—Mobility Fund*; WC Docket No. 10–90, WT Docket No. 10–208, *Informal Request of Smith Bagley, Inc. for Commission Action* (Oct. 18, 2018).

<sup>21</sup> *Ex Parte Letter* from Caressa D. Bennet, General Counsel, Rural Wireless Association, Inc. to Marlene H. Dortch, Secretary, FCC (Dec. 10, 2018) *Universal Service Reform—Mobility Fund*, WT Docket No. 10–208, WC Docket No. 10–90, ("RWA *Ex Parte*").

<sup>22</sup> See Declaration of Mike Kilgore at ¶8; Declaration of Jana Wallace at ¶5; and Declaration of John Nettles at ¶6.

<sup>23</sup> See Declaration of Lynn Merrill at ¶5 and Attachments A, B, and C.

<sup>24</sup> See Declaration of Mike Kilgore at ¶8; Declaration of Remi Sun at ¶¶5–7; Declaration of Jana Wallace at ¶5; Declaration of Lynn Merrill at ¶6, and Declaration of John Nettles at ¶6.

RWA member Sagebrush, a wholly owned subsidiary of Nemont Telephone Cooperative, Inc. (“Nemont”), is a commercial mobile radio service (“CMRS”) provider offering service in northeast and south central Montana, as well as portions of North Dakota and Wyoming. Sagebrush covers over 17,000 square miles, the vast majority of which is rural and remote in nature, including the Crow and Fort Peck Indian Reservations.<sup>25</sup> Sagebrush’s T-Mobile speed test data collection covered a total of 443,055 test points. Of the total test points for which data was collected, 434,501 (98.07 percent) tested below 5 Mbps download speed or did not register 4G LTE service at all on T-Mobile-designated handsets.<sup>26</sup>

RWA member Panhandle, a wholly owned subsidiary of Panhandle Telephone Cooperative Inc. (“PTCI”), is a CMRS provider offering service in the Oklahoma Panhandle in Cimarron, Beaver, and Texas counties. Panhandle’s T-Mobile speed test data collection covered a total of 1,246,009 test points. Of the total test points collected, 1,222,385 (98.10 percent) tested below 5 Mbps download speed or did not register 4G LTE service at all on T-Mobile-designated handsets.<sup>27</sup>

RWA member Pine Belt, a wholly-owned subsidiary of Pine Belt Communications, Inc. (“PBC”), provides mobile telephone, SMS, and wireless broadband services in five Alabama counties (Choctaw, Dallas, Marengo, Perry and Wilcox). Pine Belt’s T-Mobile speed test data collection covered a total of 657,524 test points. Of the total test points collected, 591,908 (90.02 percent) tested below 5 Mbps download speed or did not register 4G LTE service at all on T-Mobile-designated handsets.<sup>28</sup>

Three challengers collected data for 2,346,588 total T-Mobile test points.<sup>29</sup> When 2,248,794 (95.8 percent) of 2,346,588 test points tested by only three challengers fail, it calls into question all of the data submitted by T-Mobile.

### III. THE COMMISSION SHOULD INVESTIGATE BACKHAUL CAPACITY ISSUES IN THE AREAS IN WHICH T-MOBILE CLAIMED TO PROVIDE QUALIFYING 4G LTE COVERAGE AND WHETHER T-MOBILE USED PROJECTED COVERAGE FOR ITS DATA SUBMISSION

Drive testing data coupled with a professional engineering analysis and “boots on the ground” observations obtained before and during the challenge process demonstrate that T-Mobile’s backhaul facilities in place by January 4, 2018 were insufficient to support the qualifying 5 Mbps download speeds claimed by T-Mobile.<sup>30</sup> During the MF–II challenge window, Sagebrush took speed tests in the area surrounding T-Mobile towers in both Glasgow, MT and Scobey, MT.<sup>31</sup> Upon reviewing the speed test data and noting the high number of points that tested below 5 Mbps download speed or did not register 4G LTE service at all, Sagebrush questioned whether T-Mobile had sufficient backhaul to support the 5 Mbps download speeds it reported to the FCC in its January 4, 2018 MF II coverage filing.<sup>32</sup> Sagebrush management, who also serve as management of Sagebrush’s affiliated telephone companies, reviewed each telephone company’s circuit installation records to determine if circuits had been installed to support backhaul for T-Mobile’s cell sites in northeastern Montana and Williston, North Dakota.<sup>33</sup> Sagebrush also conducted a review of the FCC’s Universal Licensing System (“ULS”) to determine if T-Mobile had sufficient backhaul capacity to support the claimed qualifying coverage as of January 4, 2018.<sup>34</sup>

T-Mobile did not have sufficient backhaul capability, as of January 4, 2018, to support 5 Mbps download speeds in the Glasgow, Montana vicinity. Currently, T-Mobile is using a backhaul circuit at its Glasgow, Montana cell site capable of supporting 5 Mbps download speeds, but this circuit wasn’t installed by the January 4, 2018 4G LTE coverage reporting deadline.<sup>35</sup> T-Mobile has two microwave paths licensed in Glasgow, Montana, but these licenses were not granted by the FCC until February 13, 2018<sup>36</sup>—again, after the January 4, 2018 deadline. More relevant,

<sup>25</sup> See Declaration of Mike Kilgore at ¶4; Declaration of Jerry Tilley at ¶4; and Declaration of Remi Sun at ¶4.

<sup>26</sup> See Declaration of Lynn Merrill at ¶5 and Attachment A.

<sup>27</sup> See Declaration of Lynn Merrill at ¶5 and Attachment B.

<sup>28</sup> See Declaration of Lynn Merrill at ¶5 and Attachment C.

<sup>29</sup> See Declaration of Lynn Merrill at ¶5 and Attachments A, B, and C.

<sup>30</sup> See Declaration of Lynn Merrill, P.E. at ¶¶6–7.

<sup>31</sup> See Declaration of Michael Kilgore at ¶9.

<sup>32</sup> See Declaration of Michael Kilgore at ¶10.

<sup>33</sup> See Declaration of Michael Kilgore at ¶13.

<sup>34</sup> See Declaration of Mike Kilgore at ¶12.

<sup>35</sup> See Declaration of Remi Sun at ¶7.

<sup>36</sup> Call signs WRAS250 and WRAS266, granted February 13, 2018.

however, is the fact that, according to photographic evidence, no microwave facilities were installed or placed into operation by the January 4, 2018 deadline.<sup>37</sup> While photographs taken in December 2018 show a microwave dish on the site,<sup>38</sup> photographic evidence shows that T-Mobile was using *satellite* backhaul at the Glasgow site as of February 13, 2018. However, satellite backhaul cannot typically support download speeds of 5 Mbps.<sup>39</sup>

Throughout the challenge window period, T-Mobile also relied solely on satellite backhaul at its Scobey, Montana site.<sup>40</sup> Sagebrush's affiliate, Nemont Telephone Cooperative, Inc., ("Nemont"), is the only wireline telephone company capable of providing a backhaul circuit to T-Mobile's Scobey site sufficient to support 5 Mbps download speeds and it has not done so.<sup>41</sup> T-Mobile obtained a microwave license for the Scobey site on September 13, 2018, long after the January 4, 2018 4G LTE coverage reporting deadline, yet it never installed the microwave backhaul facilities as is evidenced by the photographs attached to the Declaration of Jerry Tilley taken on December 19, 2018.<sup>42</sup>

RWA requests that the Commission investigate the timing associated with T-Mobile's construction and operation of the Scobey cell site. When did the cell site receive power? When were satellite backhaul facilities installed? When was the Radio Access Network ("RAN") equipment installed and provisioned? It is one thing to construct a cell site and another to place it in operation and yet another to provision it for LTE service that supports 5 Mbps download speeds. Claiming 4G LTE qualifying coverage before it became available violates the challenge process rules and would mean that T-Mobile made material misrepresentations when it certified its coverage data.

The majority of T-Mobile's satellite backhaul facilities deployed in northeast Montana do not appear to support download speeds of 5 Mbps.<sup>43</sup> For context and as a way of explaining T-Mobile's motivation to attempt to quickly build out cell sites in northeastern Montana, RWA reminds the FCC that on December 21, 2016, the Wireless Telecommunications Bureau granted T-Mobile License LLC a conditional waiver of Section 27.14(g)(1) of the Commission's rules, which would otherwise accelerate—by two years, to June 13, 2017—the end of license term and related construction requirements for three 700 MHz licenses.<sup>44</sup> The Bureau required T-Mobile to file a 40 percent coverage benchmark filing by January 21, 2018, showing that it provided signal coverage and offered service to at least 40 percent of the geographic area of each License area.<sup>45</sup> T-Mobile claims to have done so as is evidenced by its report filed with the Commission on January 11, 2018.<sup>46</sup> In its efforts to meet its buildout requirement expeditiously, T-Mobile relied on satellite backhaul.<sup>47</sup>

It is apparent from Commission records that T-Mobile had been working on parallel tracks to meet its 700 MHz 40 percent buildout deadline by January 21, 2018. In doing so, it primarily used satellite backhaul, but also separately pursued the installation of microwave and/or circuit backhaul for its Montana sites. However, few—if any—of these microwave backhaul facilities or circuits appear to have been installed prior to the January 4, 2018 4G LTE coverage reporting deadline. Yet, it appears as if T-Mobile went ahead and included these sites as if it had sufficient backhaul capacity to support 4G LTE qualifying coverage. While T-Mobile states

<sup>37</sup> See Declaration of Jerry Tilley at ¶¶ 7–8, evidencing the fact that no microwave facilities are installed at the Glasgow site as of February 13, 2018.

<sup>38</sup> See Declaration of Jerry Tilley at ¶ 8 and Attachment B—Glasgow.

<sup>39</sup> See Declaration of Lynn Merrill at ¶ 7.

<sup>40</sup> See Declaration of Jerry Tilley at ¶ 6.

<sup>41</sup> See Declaration of Jerry Tilley at ¶ 6.

<sup>42</sup> See Declaration of Jerry Tilley at ¶ 6 and Attachment A—Scobey.

<sup>43</sup> See Declaration of Lynn Merrill at ¶ 7 and Attachment A.

<sup>44</sup> *Request for Waiver of Section 27.14(g)(1)*, WT Docket No. 16–319, *Letter* to Steve B. Sharkey, T-Mobile License LLC, from Roger S. Noel, Chief, Mobility Division, Wireless Telecommunications Bureau, FCC (Dec. 21, 2016).

<sup>45</sup> *Id.* at p. 6.

<sup>46</sup> See File No. 0008059621, Call Sign WQJQ805 (Jan. 11, 2018); See also e.g., Exhibit 1, depicting T-Mobile buildout map for license call sign WQJQ805 in BEA144 at a -118 dBm. RWA notes that the coverage in this report may be overstated. The coverage and number of cell sites depicted on the map do not appear to match up. Coverage is shown on the map with no corresponding cell site to support the coverage. Is this coverage representative of projected coverage? Or did T-Mobile in its haste leave off the cell sites that would support the -118 dbm coverage? While filed in a different proceeding, this January 11, 2018 Report is also suspect and should be investigated as a separate matter.

<sup>47</sup> See Declaration of Jerry Tilley at ¶¶ 6, 9–11 and Attachments A, C, D, and E depicting satellite equipment installed on T-Mobile sites.

that it uses satellite backhaul in a “tiny fraction” of its sites,<sup>48</sup> photographs show that satellite backhaul is (or was recently) used throughout a significant portion of Sagebrush’s service area—at T-Mobile sites near Scobey,<sup>49</sup> Tampico,<sup>50</sup> Frazer,<sup>51</sup> and West Lustre.<sup>52</sup> T-Mobile’s claims that its sites with satellite backhaul “are fully capable of delivering download speeds of 5 Mbps”<sup>53</sup> are not supported by challenge evidence gathered near Scobey and Glasgow, which show that more than 98 percent of the test points tested by Sagebrush in northeast Montana failed to meet a 5 Mbps speed threshold.<sup>54</sup> Given T-Mobile’s substantial reliance on satellite backhaul, the inability of satellite backhaul to deliver download speeds of 5 Mbps, and the testing results seen in Sagebrush’s service area, it is more than conceivable that T-Mobile submitted projected coverage as of January 4, 2018, believing that it could fill in the gaps with backhaul improvements and buildout of its 600 MHz licenses before the time came to refute any submitted challenges. (The Commission has now extended the time period between January 4, 2018 and when challenged carriers are able to respond to challenges by calling for an investigation and further delaying when challenged parties have the opportunity to refute challenges.)

Based on Sagebrush’s drive test results, photographic evidence demonstrating the lack of microwave or circuit backhaul capabilities besides satellite backhaul, and the records of the timing of the installation of wireline circuits in northeastern Montana, RWA submits that it is appropriate for the Commission to investigate T-Mobile to determine if T-Mobile based its reported 4G LTE coverage on what it projected it would have in place after January 4, 2018. In conducting its investigation, the FCC should obtain records from T-Mobile related to when it installed radio access network equipment, power, and backhaul facilities at its Glasgow and Scobey sites, as well as the type of facilities installed at its Glasgow, Montana cell site. RWA believes that this site did not support qualifying coverage on or before January 4, 2018 and that, to the extent any qualifying coverage became available, it only became available after the deadline.

#### IV. T-MOBILE FILED PROJECTED COVERAGE DATA

In addition to demonstrating that T-Mobile overstated coverage where it did not have backhaul facilities capable of supporting its claims, the challenge data demonstrates that T-Mobile has built sites after the January 4, 2018 filing date to cover areas claimed by T-Mobile within the challenge area. Initial drive test results revealed that T-Mobile did not have qualifying coverage in many areas where T-Mobile claimed to have qualifying coverage.<sup>55</sup> Over the course of the testing period (and well past the January 4, 2018 deadline for submitting coverage data) qualifying coverage would suddenly appear weeks or months after the initial drive testing took place.<sup>56</sup> As discussed below, this strongly suggests that T-Mobile relied on projected coverage when submitting its initial coverage data by the January 4, 2018 deadline. One example of this projected coverage is the OK 01919A (Balko) site pictured below.

<sup>48</sup> *Universal Service Reform—Mobility Fund*, WT Docket No. 10–208, WC Docket No. 10–90, *Ex Parte Letter* from Kathleen O’Brien Ham, Senior Vice President, Government Affairs, T-Mobile, to Marlene H. Dortch, Secretary, FCC, at p. 2, n. 4 (Dec. 14, 2018) (“*T-Mobile Ex Parte*”).

<sup>49</sup> See Declaration of Jerry Tilley at Attachment A—Scobey. The photos in this attachment are from December 2018 and do not show microwave facilities installed.

<sup>50</sup> See Declaration of Jerry Tilley at Attachment C—Tampico. This photo was taken after the January 4, 2018 4G LTE coverage submission deadline, sometime between January 15 and February 15, 2018 and does not show microwave facilities installed.

<sup>51</sup> See Declaration of Jerry Tilley at Attachment D—Frazer. This photo was taken after the January 4, 2018 4G LTE coverage submission deadline, sometime between January 15 and February 15, 2018 and does not show microwave facilities installed.

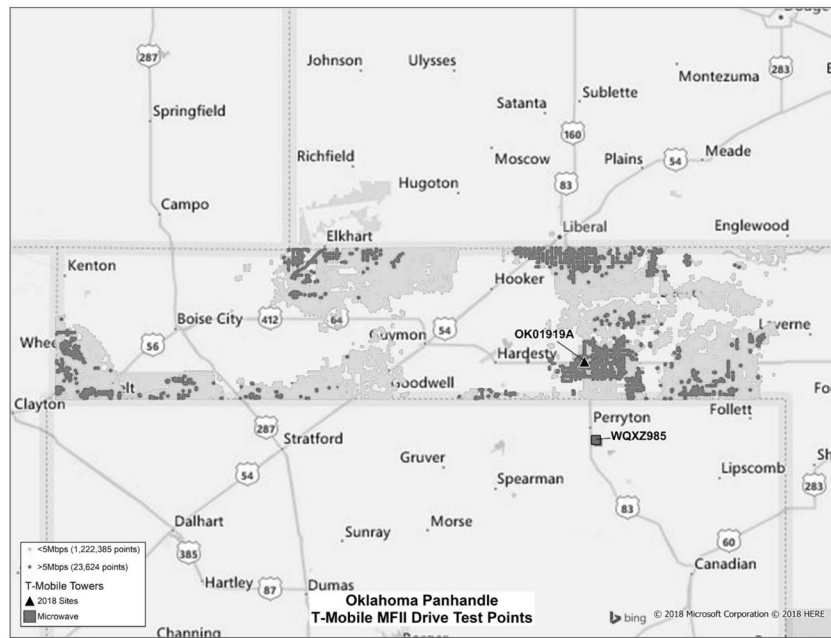
<sup>52</sup> See Declaration of Jerry Tilley at Attachment E—West Lustre. This photo was taken after the January 4, 2018 4G LTE coverage submission deadline, sometime between January 15 and February 15, 2018 and does not show microwave facilities installed.

<sup>53</sup> *T-Mobile Ex Parte* at p. 2, n. 4.

<sup>54</sup> See Declaration of Lynn Merrill at Attachment A.

<sup>55</sup> See Declaration of Jana Wallace at ¶ 6.

<sup>56</sup> See Declaration of Jana Wallace at ¶ 6.



In the January 2018 filings, T-Mobile claimed to cover the Balko, OK area.<sup>57</sup> When the MF-II maps were made available for challenge, Panhandle was unable to locate any cell sites in the Balko, OK area.<sup>58</sup> Based on this information, the absence of any cell sites in Balko and the absence of any T-Mobile facilities in this area other than a microwave cell site shown just south of Perryton, TX on the map above, one would expect the claimed coverage in Balko, if correct, could only have been provided by backhaul facilities utilizing the microwave cell site shown just south of Perryton, TX on the map above.<sup>59</sup> If this were the case, one would expect the T-Mobile service to become worse the farther north and away from Perryton a test was conducted.<sup>60</sup> However, this mapped data illustrates the opposite.<sup>61</sup> With green representing download speeds below 5 Mbps, the coverage is shown to improve around Balko, OK.<sup>62</sup> The test data collected from challenges show download speeds above the 5 Mbps threshold around the OK 01919A (Balko) site location that was installed in March of 2018, but poor download speeds to the south, closer to the Perryton cell site.<sup>63</sup> Because the test points show that service greatly improves the farther away from the Perryton cell site a test is conducted, the only logical reason for this area to be covered at or above 5 Mbps during the challenge process is that the OK 01919A (Balko) site was turned on to fill in the areas that were not sufficiently covered by the January 4, 2018 deadline yet were claimed as covered.<sup>64</sup> During the period Panhandle drove test this area, coverage appeared after the area had been initially tested, sometimes weeks or months after initial testing occurred.<sup>65</sup>

Why would there be no coverage in the first half of the Challenge Process and then coverage suddenly appear later? Did T-Mobile project its future coverage in hope that it would have the coverage in place by the time the Challenge Process ended? Was the data submitted by January 4, 2018 based on projected network roll out dates? Certainly, the vast gulf between T-Mobile's claimed coverage and the

<sup>57</sup> For a further discussion of the included map, see Declaration of Lynn Merrill at ¶ 8.

<sup>58</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>59</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>60</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>61</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>62</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>63</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>64</sup> See Declaration of Lynn Merrill at ¶ 8.

<sup>65</sup> See Declaration of Jana Wallace at ¶ 6.

drive test data showing minimal qualifying coverage necessitates asking these questions.<sup>66</sup> In trying to find answers, challengers with landline telephone company affiliates reviewed records related to the installation of backhaul circuits at the T-Mobile sites. These records demonstrate that, in most cases, the installation of the circuits occurred *after* the January 4, 2018 deadline, meaning that the coverage claimed by T-Mobile could not have been in place prior to the January 4, 2018 deadline. These records are subject to the FCC's Customer Proprietary Network Information ("CPNI") rules and are not being provided at this time.

RWA urges the Commission to prohibit carriers that filed overstated coverage, projected coverage, or false coverage from participating in the MF-II reverse auction, and to order those carriers to pay the costs incurred by entities that participated in the Challenge Process. Nationwide carriers should also not be allowed to abuse the FCC challenge process by filing sham coverage maps as a means of interfering with the ability of rural carriers to continue to receive universal service support in rural areas. Failure by the Commission to enforce its coverage map requirements against T-Mobile will undermine the Challenge Process which, in turn, will harm rural carriers, and the customers they serve.<sup>67</sup> RWA also notes for the record that, according to consumers weighing in on Reddit, a vast portion of rural areas lack T-Mobile LTE coverage and these rural consumers are not happy with the level of service being provided by T-Mobile.<sup>68</sup> In addition to RWA members determining through expensive drive testing that qualifying coverage does not exist in its areas, the public is speaking loud and clear across the United States that T-Mobile coverage maps do not support its claims.

## V. CONCLUSION

For the reasons discussed above, RWA urges the Commission to investigate the 4G LTE coverage claimed by T-Mobile to determine if T-Mobile claimed qualifying coverage before it was available. To the extent T-Mobile claimed qualifying coverage before it was available, the Commission should require re-filing of T-Mobile's data as of January 4, 2018 to correct its overstated coverage. In particular, RWA encourages the Commission to obtain and analyze the following information related to the timing of T-Mobile's cell sites built in rural areas in the past three years: (1) date power installed at cell site; (2) date 4G LTE RAN installed at cell site; (3) date backhaul installed at cell sites; (4) type of backhaul installed at cell sites and the capability of the backhaul facilities in place at the time to support 5 Mbps download speeds; (4) date cell sites were provisioned; and (5) date commercial service was launched at each of the cell sites. This information should be provided to the Commission under penalty of perjury and made available for public scrutiny. RWA further requests that the Commission consider taking additional action as appropriate, including, but not limited to, (1) barring T-Mobile from participating in the Mobility Fund Phase II reverse auction; (2) requiring T-Mobile to reimburse challengers for their costs associated with the challenge process; and/or (3) issuing appropriate sanctions for misrepresentation of information submitted by T-Mobile under penalty of perjury.

RWA looks forward to its continued work with the Chairman, Commissioners, and Commission staff in this proceeding.

Respectfully submitted,

RURAL WIRELESS ASSOCIATION, INC.

BY: CARESSA D. BENNET,  
General Counsel.

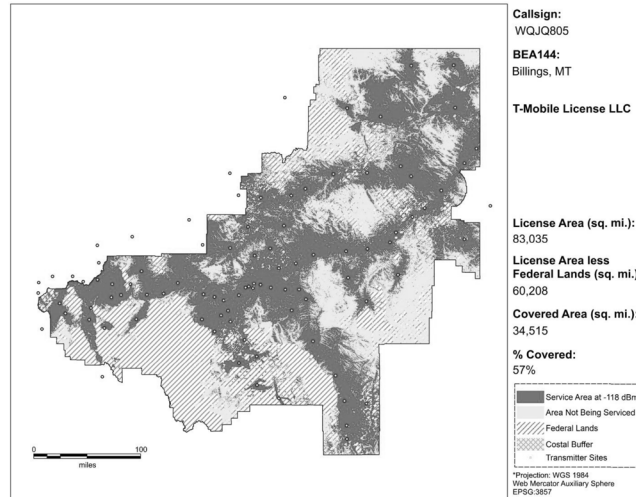
December 26, 2018

<sup>66</sup>See Declaration of Lynn Merrill at Attachments A, B, and C (depicting Sagebrush, Panhandle, and Pine Belt T-Mobile test data).

<sup>67</sup>See House of Representatives Energy & Commerce Committee Hearing, *Oversight of the Federal Communications Commission 2018*, Opening Statement of Mike Doyle (D-PA) (stating "Chairman [Pai] has claimed that he cares about rural broadband deployment, but the Commission in its zeal not to burden major wireless carriers with reporting where they have wireless service deployed imposed as part of Mobility Fund II a bizarre and onerous challenge process that requires rural providers to hire people to walk through cornfields and backyards trying to prove that communities don't have wireless service. And if those companies can't afford to send people up, the Commission will assume these communities are connected. Now tell me, how does that help the 24 million Americans without access to high-speed broadband?").

<sup>68</sup>See e.g., Reddit Blog "T-Mobile says it did not overstate 4G LTE coverage to FCC" [https://www.reddit.com/r/tmobile/comments/a7lzx6/tmobile\\_says\\_it\\_did\\_not\\_overstate\\_4g\\_lte\\_coverage/](https://www.reddit.com/r/tmobile/comments/a7lzx6/tmobile_says_it_did_not_overstate_4g_lte_coverage/) (last checked Dec. 26, 2018).

Exhibit 1 – T-MOBILE WQJQ805 COVERAGE FILING



Call Sign: WQJQ805 – BEA: 144 - Billings, MT -- T-Mobile License LLC

|                                            |        |
|--------------------------------------------|--------|
| License Area (sq. mi):                     | 83,035 |
| License Area less Federal Lands (sq. mi.): | 60,208 |
| Covered Area (sq. mi):                     | 34,515 |
| % Covered:                                 | 57     |

## APPENDIX C

Vermont Department of Public Service

### MOBILE WIRELESS IN VERMONT

January 15, 2019

#### Mobile Wireless Coverage in Vermont

In October and November of 2018 The Department of Public Service (PSD) conducted a drive test of the state of mobile wireless coverage in Vermont. The initiative was undertaken primarily to demonstrate that good cause exists to expand the territory in the state that is deemed eligible for forthcoming Federal grants. When the test results were completed and submitted to the Federal Communications Commission (FCC), the PSD analyzed the results to derive insights about mobile wireless service in the state. This report describes the drive test process, provides a summary of the results, and explains how the information was assessed by the FCC for the grant process.

#### FCC Mobility Phase II program

The FCC, through the Mobility Phase II program, intends to direct up to \$4.53 billion in support through reverse auctions to bidders that commit to offer mobile wireless service in eligible areas throughout the Nation. When the program was announced only a small amount of territory in Vermont was eligible for this funding. Under the FCC rules for the program, areas without access to wireless service providing 5 Mbps will be eligible for the grants. To identify these areas, the FCC di-

rected service providers to submit information, on a confidential basis, depicting the area where they believe consumers have access to service with at least 5 Mbps. The FCC identified the eligible areas as those areas where no company asserted that it offers service at 5 Mbps or better. This process resulted in only 1,310 square kilometers of eligible areas in Vermont, out of a total territory of approximately 25,000 square kilometers.

The FCC also authorized a process by which states could challenge asserted wireless coverage in ineligible areas. After reviewing confidential maps submitted by providers that purport to show the extent of coverage it was clear that many of the areas purportedly served in fact very likely lacked service. The PSD undertook a test of all major roads in the state to determine where mobile wireless service is actually available from a consumer perspective. The data gathered by the Department through its participation in the challenge could render significantly more territory in Vermont eligible for this grant process.

### **Drive Test Methodology**

Because the primary purpose for the Department's drive test effort was to participate in the FCC challenge process, the PSD developed a methodology to generate data that would meet the rigorous specifications laid out by the FCC for a challenge. The FCC developed a map that divides each state into thousands of one-kilometer square blocks. In order to successfully challenge coverage in a block, a challenger was required to submit results of download speed tests conducted within that block which demonstrate speeds below 5 Mbps. Separate results had to be submitted for each provider that allegedly serves that block, within the part of the block they purportedly serve. Moreover, the FCC specified that to successfully challenge service in a block, a challenge must encompass 75 percent of the test area, where each test point was afforded a radius of 400 meters.

Some states prepared challenges by reviewing the confidential maps submitted by the providers and targeting testing in small areas. Other participants chose to challenge service for only individual providers in select areas. Analysis of initial proof-of-concept tests showed that a drive test sticking to main roads would not be very efficient at meeting the FCC requirement to test 75 percent of the territory of a block. Meeting the 75 percent threshold would require several tests at least 400 meters apart within each block. This could be met if the route went directly through the middle of a block. In most cases however, the main roads transect the blocks obliquely, that is, along a side or a corner. In these blocks, a drive test would not meet the 75 percent requirement. The PSD lacked time or budget to conduct a test thoroughly enough to meet the 75 percent threshold on a wide basis. The PSD considered testing only small targeted areas with a goal of testing on side roads to meet the 75 percent threshold in those areas. Ultimately, the PSD decided that the results of a drive test throughout the state could provide insight beyond the challenge process. Therefore, the PSD determined that it would conduct a drive test of all major roads (roads that receive Federal aid) even though only a portion of the transected blocks would reach the 75 percent threshold.

The PSD identified an Android smartphone application, G-NetTrack, that recorded the results specified by the FCC. An initial review demonstrated that while the app recorded results for the three required parameters (latency, signal level, and download speed) each was recorded with a different timestamp and location. It would be difficult to put this information in the format required by the FCC for the submission. PSD staff contacted the app developer who agreed to update the app to include all three parameters in a data sequence with a single timestamp and location in the results log file. Deployment of the app required the assistance of the Vermont Agency of Digital Services (ADS). ADS configured an Internet server to host a file containing thousands of pictures. The app on the smartphones was configured to attempt to download this file and record the results at set intervals.

The PSD configured the application to conduct a test sequence lasting 20 seconds, consisting of a 10 second download test, 5 second ping test, and a 5 second pause. The PSD acquired handsets and service for each of the six facilities-based providers that asserted service in the state: AT&T, Sprint, T-Mobile, U.S. Cellular, Verizon Wireless, and VTel Wireless. The PSD configured the app to continually repeat the test sequence on each handset while the drive tests were underway. With an average speed of 40 Miles per hour (18 meters per second), the test every 20 seconds produced data with about 360 meters between result locations. The product of this effort is a set of 187,506 download speed test results at locations along all of the major roads in the state.

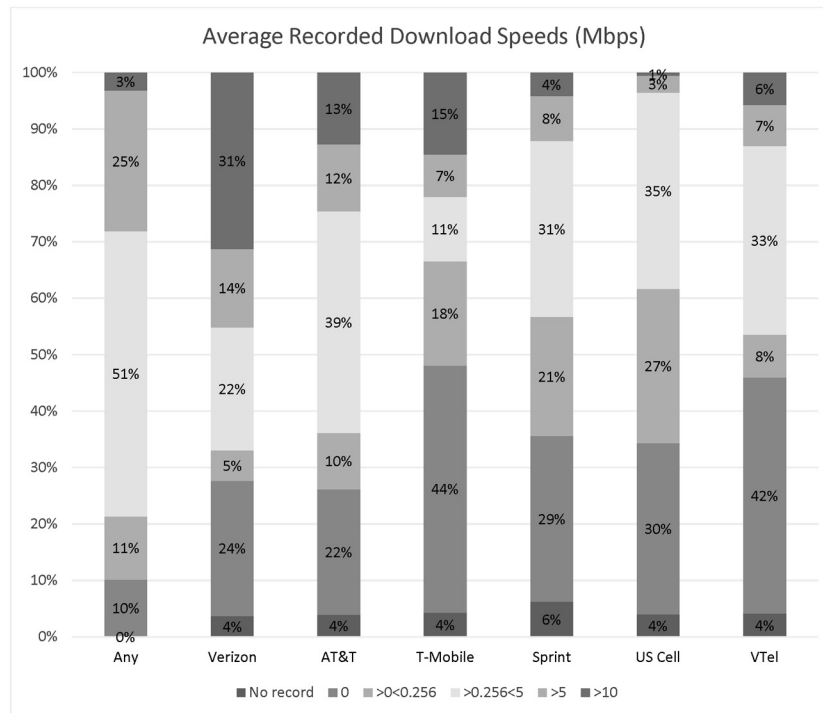
### Statewide Results

The Department employed the one-kilometer square blocks developed by the FCC to generalize the results. This generalization is helpful for analysis and to view the information in maps at large scales, such as for a statewide view. For each carrier, the PSD determined the average download speed recorded in each block using the following five-tier classification system:

- No service, text, voice, and data not available
- Spotty service, under 256 kbps, text may be possible, voice not likely
- OK service, up to 5 Mbps, voice, text and email likely, web browsing may be possible
- Good service, 5 Mbps to 10 Mbps, voice, text and web browsing likely, streaming may be possible
- Great service, more than 10 Mbps, voice, text and video streaming likely

It is important to keep in mind that while this generalization is indicative of the coverage, it is not meant to assert the availability of such coverage throughout each block. In fact, there can be significant variation in coverage within any block. Users should refer to the individual download speed tests visible on the interactive maps for more precise information.

The chart below compares the average download speeds obtained by each carrier in the tests. For each carrier, the chart lists the percentage of blocks where the average recorded download speed falls into five different speed tiers.



Analysis of this data shows these key findings:

- The two largest carriers, AT&T and Verizon, have a similar number of blocks where they have at least some service: 72 percent for Verizon and 74 percent for AT&T;
- 65 percent of the tested blocks have service from both AT&T and Verizon;

- 54 percent of the tested blocks are served by both AT&T and Verizon at speeds better than 0.256 kbps;
- 15 percent of the tested blocks have no service from either AT&T or Verizon;
- Verizon has the largest number of blocks with the highest speeds, 31 percent for Verizon vs. 13 percent for AT&T and 15 percent for T-Mobile;
- There are 106 blocks served only by VTel Wireless, including 47 where the download speed was less than 0.256 kbps.

Blocks where there is no recorded speed test for that carrier are the result of the nature of the drive test. While the drive test recorded data for all carriers along the same routes, the tests were not exactly synchronized, so not all carriers have results in all blocks.

#### **Vermont FCC Challenge Submittal**

The FCC employed an automated process to review the results of the drive test submitted by the PSD. In order to challenge service in a given one-kilometer block, challengers were required to submit download speed tests within the asserted coverage area in that block for each carrier that asserted coverage. The process identified 4,186 blocks where the challenge was successful. Of these, 789 blocks met the requirement to test 75 percent of the block. In another 3,397 blocks, the challenge was only provisionally accepted because the tests submitted covered less than 75 percent of the block. The process rejected the challenge in 1,879 one-kilometer blocks. Of these rejected blocks, 1,607 were apparently rejected because all of the tests for all carriers that asserted service in that block exceeded 5 Mbps. Another 272 blocks had tests that demonstrated less than 5 Mbps, (including 194 blocks showing no service at all) but were rejected because the specific location of the tests fell outside of the company's asserted coverage area. Many of these rejected blocks are adjacent to the identified Eligible Area.

The table below depicts the quantity of blocks and the quantity of E-911 Business and residential buildings within these blocks for different categories of blocks.

| Category                            | Blocks | PCT | Buildings | PCT |
|-------------------------------------|--------|-----|-----------|-----|
| Challenge accepted (75% tested)     | 789    | 3%  | 23,087    | 8%  |
| Challenge provisional (<75% tested) | 3,397  | 13% | 102,770   | 34% |
| Challenge rejected                  | 1,879  | 7%  | 68,993    | 23% |
| Not tested                          | 19,373 | 76% | 108,985   | 36% |
| Total                               | 25,438 |     | 303,835   |     |

Analysis of this information shows these key findings:

- The drive test transected only 23 percent of the blocks in the state, but these blocks contain 65 percent of the buildings in the state;
- The challenge in 30 percent of the transected blocks were rejected, largely because the service recorded exceeded 5 Mbps;
- Only 13 percent of the transected blocks met the 75 percent threshold;
- Testing the 70 percent of the blocks that the drive test did not transect would require a significant effort, and only a small portion would meet the 75 percent threshold.

#### **Interactive Map**

The Department prepared an interactive map service depicts mobile wireless coverage for each of the six facilities based providers operating in Vermont: AT&T, Sprint, T-Mobile, U.S. Cellular, Verizon Wireless, and VTel Wireless. The map is accessible on the Department website.

Use the two buttons in the upper right to navigate the site:

-  Layer button, to select between providers
-  Legend button, an explanation of the colors

The layer for each provider includes two maps: a coverage map with information prepared by the service provider, and the results of a drive test conducted by the Vermont Department of Public Service in October and November, 2018.

**COVERAGE MAP:** The coverage maps, shown in pink, were submitted by the provider to the Federal Communications Commission and indicate where the provider believes consumers should expect to receive data service with at least 200 kbps, as of December 31, 2017. This publicly available information was downloaded from the FCC website; it was produced by the individual providers and the PSD makes no claim about its accuracy. For VTel Wireless, users may optionally enable the VTel Wireless ARRA service territory map by clicking Layer button, then the right arrow next to VTel.

**DRIVE TEST MAP:** PSD staff employed the android smartphone application G-NetTrack to conduct download speed tests at approximately 300 meter intervals along all federal-aid highways. The results of the drive tests are show with five colors, as follows:

-  No service, text, voice, and data not available
-  Spotty service, under 256 kbps, text may be possible, voice not likely
-  OK service, up to 5 Mbps, voice, text and email likely, web browsing may be possible
-  Good service, 5 Mbps to 10 Mbps, voice, text and web browsing likely, streaming may be possible
-  Great service, more than 10 Mbps, voice, text and video streaming likely

The drive test data is presented in two formats, depending on the scale of the map (how far the user zooms in or out):

- **DATA TEST POINTS:** When zoomed-in to a neighborhood scale, the service depicts the results of the 187,000 individual data tests. Clicking on an individual point will provide the information from that test, including the timestamp, the download speed (in Mbps), the latency (the round-trip time for a request to a website, in milliseconds), and the signal strength (RSRP in dBm).
- **AVERAGE SPEED BLOCKS:** When zoomed-out beyond the neighborhood scale, the map depicts blocks, one kilometer square, that show the average of the download speeds recorded within that block. This generalization of information provides users an indication of coverage in a neighborhood when viewed at different scales. **THIS DOES NOT INDICATE SERVICE THROUGHOUT A BLOCK.** Users should zoom-in to view the individual download speed test points and judge accordingly.

In addition to the data for each individual provider, the Layer button allows users to select two additional views:



The *COMPOSITE* layer depicts the blocks that contain download tests, color coded by the average of all of the tests, for all carriers, conducted in that block. This includes data for all carriers, and thus masks variation in coverage between individual providers. Clicking on an individual block will show the average results for each provider in that block. Results listing “999.000” indicate no test was conducted for that carrier in that block.

The *CHALLENGE* layer depicts the status of each block in the submission of the PSD in the FCC Mobility Fund Phase II Challenge process. Blocks are depicted in one of three colors. Blue blocks are where the challenge was rejected, either because a.) the block is already largely eligible, or b.) because no tests below 5 Mbps were submitted. Blocks that are red and pink were accepted because tests with results less than 5 Mbps for each carrier that asserted coverage were submitted. Blocks in red met the requirement for testing 75 percent of the block. The challenge for the blocks in pink may be considered but did not meet the 75 percent territory requirement. This layer also includes the original “eligible area” in purple, areas where no carrier asserted that it provides service.

#### **Difficulty meeting the 75 percent threshold:**

Of the 4,186 tested blocks, 3,397 did not meet the 75 percent threshold. Here are some examples that demonstrate the difficulty of meeting this requirement.

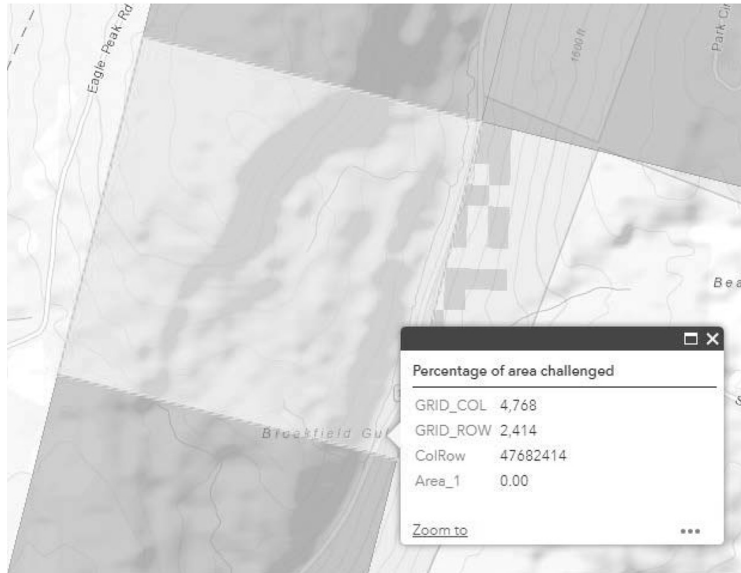
For instance, see Grid Col 4,768/Grid Row 2,413. The PSD challenge for this block was accepted and the challenged area was calculated to be 57.65 percent. The PSD tests were all along the main road, Route 12. There are no other roads in this block, and the steep terrain would make additional testing in this cell by hiking treacherous. Moreover, the buildings in the area would be along the roads, so testing the area of the block lacking roads is highly inefficient.



#### **Blocks rejected because the tests were “Outside Challengeable areas of a block”**

Of the 1,879 blocks where the tests were deemed invalid, 194 were blocks where the tests demonstrate no service from any carrier, and 78 show service less than 5 Mbps from any carrier. These were likely rejected because the tests were not conducted within the “challengeable” area of a block. That is, the tests need to be conducted not only within the block, but for each carrier, the test must be conducted within the portion of the block that the carrier claimed it served. This is problematic if the carrier asserts that it serves a part of a block with no roads.

For example see Grid Col 4768/Grid Row 2414. Most of the cell is allegedly served, and is thus ineligible, with just a few pixels that lack asserted coverage. By chance the PSD tests in this cell fell within these few pixels.



As an another example, see the four blocks around Grid Col 4753, Grid Row 2408. The tests were all along the roads in Eligible areas, while the area with asserted coverage lies in the roadless areas on the hills above.



WESTERN GOVERNORS' ASSOCIATION  
*April 10, 2019*

Hon. ROGER WICKER,  
 Chairman,  
 Committee on Commerce, Science, and  
 Transportation,  
 United States Senate,  
 Washington, DC.

Hon. MARIA CANTWELL,  
 Ranking Member,  
 Committee on Commerce, Science, and  
 Transportation,  
 United States Senate,  
 Washington, DC.

Dear Chairman Wicker and Ranking Member Cantwell:

Western Governors appreciate the Committee's attention to the important matter of broadband mapping accuracy as you convene your April 10, 2019 hearing on Broadband Mapping: Challenges and Solutions. Attached please find three Western Governors' Association (WGA) policy resolutions that address broadband deployment:

- WGA Policy Resolution 2019-04, Health Care in Western States;
- WGA Policy Resolution 2018-13, Workforce Development in the Western United States; and
- WGA Policy Resolution 2017-09, Western Agriculture.

Also attached is a July 16, 2018 *letter* to National Telecommunications and Information Administration Assistant Secretary David J. Redl expressing concern about the use of census block-level reporting in the Federal Communication Commission's Form 477 reporting process.

I request that these documents be included in the permanent record of the hearing, as they articulate Western Governors' policy positions and concern on this important issue.

Please contact me if you have any questions or require further information. In the meantime, with warm regards and best wishes, I am

Respectfully,

JAMES D. OGSBURY,  
*Executive Director.*

Attachments

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WESTERN GOVERNORS' ASSOCIATION

POLICY RESOLUTION 2019-04

HEALTH CARE IN WESTERN STATES

#### **A. Background**

1. Ensuring access to high-quality, affordable health care services is an important element of maintaining and enhancing the quality of life in western states for our growing populations. It is the basis for healthy communities and healthy economies.
2. Western states face unique challenges in health care, including growing rates of substance use disorder, provider shortages in underserved and rural areas, and limited access to broadband. Low population densities and the vast distances between population centers also make it difficult for providers to establish economically-sustainable health care systems in rural areas.
3. Distance and density also inhibit construction of the technology infrastructure that would provide or improve broadband connectivity in underserved and rural areas. Expanding broadband access provides numerous quality-of-life benefits for rural Americans, including economic development, social connectivity, education, public safety, and access to telehealth and telemedicine.
4. The health care sector faces severe personnel shortages in western states, despite efforts of Western Governors, such as the foundation of Western Governors University and other medical training programs in western states, to ensure adequate numbers of qualified medical personnel. This challenge is particularly acute in the West's underserved and rural areas. Ensuring access to health care services requires an adequate number and distribution of physicians, nurses and other trained health care professionals. Population growth, aging residents, and challenges involving Tribal health care and services for veterans require a renewed focus on developing our Nation's health care workforce.

5. Western states struggle with access to behavioral health services and higher-than average suicide rates. The ten states with the highest suicide rates in the Nation are all located in the West.
6. Substance use disorder (SUD), including alcohol and drug misuse, is a major public health and safety crisis affecting nearly 21 million Americans. It is particularly prevalent in western states where individuals are more likely to have SUD during their lifetime. SUD crosses all social and economic lines and tragically takes the lives of tens of thousands of Americans every year. While state and Federal progress has been made to fight this epidemic, additional efforts are necessary to help bridge prevention and treatment gaps in western states.
7. In many cases, health disparities and barriers to accessing health care are particularly acute for certain populations in the West. A better understanding of the role that social determinants play in health outcomes can inform the development of effective health policy to increase access for these populations.
8. Western states have a unique body of experience, knowledge and perspective with respect to health care. The Western Governors' Association (WGA) is ideally situated to collect and disseminate information, including best practices, case studies and policy options, that states can use to improve the foundation for health care services and advocate for shared policy priorities on behalf of their citizens.

#### **B. Governors' Policy Statement**

1. Federal efforts to address health care workforce and access needs should reflect early, meaningful and substantive input from Governors, who are best positioned to assess the needs of their states and help develop solutions to meet these needs. State-federal collaboration and coordination are integral to addressing these health care challenges. Wherever possible, and where appropriate, the Federal government should respect state authority and maximize flexibility granted to states and Governors.
2. The Federal government should work with states to facilitate the deployment of broadband to underserved and rural areas, recognizing that adequate broadband access has a direct correlation on rural populations' ability to access telehealth and telemedicine.
3. Despite efforts by Western Governors to address the shortage of qualified health care workers, significant challenges remain. Governors urge the Federal government to examine and implement programs to ensure states have an adequate health care workforce—including in primary care and other in-demand specialties—that is prepared to serve diverse populations in urban, suburban, and rural communities. Governors also support efforts to increase the diversity of the health care workforce to improve health outcomes for all.
4. Western Governors support efforts to improve the quality and quantity of behavioral health services available to our residents, as these services are essential to reducing suicide rates and treating a range of behavioral health conditions, including substance use disorder.
5. The Federal government should work toward treating addiction as a chronic illness and work with Western Governors to develop strategies for addressing substance use disorder that work in concert with state efforts and recognize regional variations in substance use disorder patterns.

#### **C. Governors' Management Directive**

1. The Governors direct WGA staff to work with Congressional committees of jurisdiction, the Executive Branch, and other entities, where appropriate, to achieve the objectives of this resolution.
2. Furthermore, the Governors direct WGA staff to consult with the Staff Advisory Council regarding its efforts to realize the objectives of this resolution and to keep the Governors apprised of its progress in this regard.

Western Governors enact new policy resolutions and amend existing resolutions on a bi-annual basis. Please consult [westgov.org/resolutions](http://westgov.org/resolutions) for the most current copy of a resolution and a list of all current WGA policy resolutions.

## WESTERN GOVERNORS' ASSOCIATION

## POLICY RESOLUTION 2018–13

## WORKFORCE DEVELOPMENT IN THE WESTERN UNITED STATES

**A. Background**

1. Workforce development efforts contribute to the economic well-being of western states by enabling people to find fulfilling, well-paying jobs, fostering economic mobility, and ensuring that businesses have access to the skilled employees they need to thrive.
2. Western states had an average unemployment rate of just under 4.0 percent in March 2018.<sup>1</sup> Many businesses report that they cannot find qualified candidates for open positions. At the same time, many jobseekers are unable to find good jobs for which they are qualified.
3. Workforce development challenges are particularly acute in rural communities, which are commonly characterized by higher rates of unemployment, a lack of economic diversity, geographic isolation, and limited infrastructure, including access to broadband.
4. Economic equity continues to be a problem across states, with people of color and people with disabilities, regardless of career preparation and credential levels, seeing poorer rates of employment and earnings than majority populations.
5. There are 6.6 million unfilled jobs in the United States due in part to a shortage of workers with the skills and qualifications to fill those positions.<sup>2</sup> The largest gap is in middle skills jobs, which require more than a high school diploma but less than a four-year degree.
6. Postsecondary education and training is critical in today's economy. Almost 80 percent of jobs in the United States require a postsecondary credential, including certificates, associate degrees, four-year degrees, and licenses.<sup>3</sup>
7. On average, those holding a bachelor's degree earn more than those who have not attained that degree, but those who do not reach that level of education can still find good employment. There are 30 million jobs that don't require a four-year degree and pay at least \$35,000 per year with a median salary of \$55,000.<sup>4</sup>
8. Education systems have not kept pace with economic realities. Student success is traditionally perceived, and measured, as moving directly from high school to a four-year degree program. Today, only 20 percent of students successfully complete that traditional pathway to their career.<sup>5</sup> The rest are finding their own pathways to success, which may include entering the world of work or pursuing other types of credentials. Many, however, encounter obstacles.
9. On average, only about one-third of high schoolers are engaged in school, meaning that two-thirds are not actively involved in or enthusiastic about school.<sup>6</sup> Three million young adults ages 16–24 are not participating in either work or education.<sup>7</sup>
10. Additionally, many Americans start a college degree but do not complete it, leaving them with the burdensome costs of higher education but no wage benefit—35 million people over 25 have some college credits but no degree.<sup>8</sup>
11. As students increasingly pursue indirect routes to higher education, over 70 percent of students enrolled in postsecondary education are now “nontraditional students” who may be older, working full or part time, or caring for children.

<sup>1</sup> Bureau of Labor Statistics, Local Area Unemployment Statistics, May 18, 2018.

<sup>2</sup> Bureau of Labor Statistics, Job Openings and Labor Turnover Summary, May 8, 2018.

<sup>3</sup> National Skills Coalition, *United States Middle-Skill Fact Sheet*, February 2017.

<sup>4</sup> Carnevale, A.P., Strohl, J., and Ridley, N., *Good Jobs that Pay Without a BA: A State-by-State Analysis*. Georgetown University Center of Education and the Workforce, 2017.

<sup>5</sup> U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2017*, May 2018.

<sup>6</sup> 2016 Gallup Student Poll Snapshot Report

<sup>7</sup> Brookings, *Employment and disconnection among teens and young adults: The role of place, race, and education*, May 2016.

<sup>8</sup> U.S. Census Bureau, Educational Attainment in the United States: 2017, December 14, 2017.

12. Technology will continue to be a disruptive force in the labor market, driving potentially drastic changes in the labor demands of certain industries. It is expected that many jobs that will be in demand in 2030 do not yet exist. Workers will need to be able to acquire new skills over their careers to adapt to change. Up to one-third of U.S. workers in 2030 may need to learn new skills or move into a new occupation due to the impacts of automation.<sup>9</sup>
13. To address these issues, Western Governors have prioritized a variety of workforce development efforts, from better aligning education with labor market demands to expanding workforce services and training opportunities for the unemployed and underemployed to attracting more skilled workers.
14. Western states are also leading the way on expanding work-based learning opportunities for both students and adults. Work-based learning programs, including registered apprenticeships, allow people to acquire in-demand skills while earning a salary.
15. Employer leadership is critical to ensure that workforce development efforts are satisfying the needs of an ever-changing economy. Businesses in the West have taken an active role in working with educational institutions and workforce agencies but increasing industry participation will remain critical.

#### **B. Governors' Policy Statement**

1. Western Governors recognize that there are many pathways students can take to a successful career, including short-term education and skills training or work-based learning programs such as registered apprenticeships. Students and jobseekers should have access to understand their options and the potential outcomes of these programs.
2. Facilitating lifelong learning is essential to prepare for the impacts of technology on the labor market. Western Governors encourage Congress to increase student access to short-term education and skills training programs in reauthorization of the Higher Education Act, including through expanding the Pell Grant program to include high-quality short-term training programs leading to industry-recognized credentials. These flexible work-force oriented funds should be coupled with plans to adopt and report outcomes metrics tied to employment and earnings to maximize the success of this policy in equipping workers for high-opportunity jobs and careers.
3. Western Governors also support the expansion of work-based learning programs, including registered apprenticeships. Western Governors encourage Congress and Federal agencies to support and incentivize state-, local-, and industry-led partnerships to create and scale work-based learning and apprenticeship programs. New Federal investments in apprenticeships should align with existing efforts to foster a coherent system with minimal duplication at the federal, state, and local level.
4. Career and technical education (CTE) helps expose students to their career options and develop skills they will need in the workforce. Western Governors call on Congress to reauthorize and fully fund the Carl D. Perkins Career and Technical Education Act. Reauthorization of the act should take into consideration the following principles:
  - Governors and states are in the best position to determine how to use Federal CTE funding to meet the unique needs of their economies.
  - High-quality CTE programs should lead to in-demand, high wage careers; include career and academic advising; include pathways to four-year degrees, for example through articulation agreements or stackable credentials; and develop employability skills through integrated education and training, work-based learning or leadership opportunities.
5. Western Governors note that Federal funding for workforce development through the Workforce Innovation and Opportunity Act supports economic growth and job creation in the states. Western Governors request that the 15 percent reserve for statewide activities be maintained. This funding allows Governors to be flexible in addressing state needs and supports innovation.
6. Western Governors encourage the Federal agencies, including the U.S. Department of Labor and U.S. Department of Education, to coordinate their efforts to better align Federal workforce development, career and technical education, and higher education programs.

<sup>9</sup>McKinsey Global Institute, *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation*, December 2017.

7. Western Governors recognize the benefits of measuring and reporting outcomes by institution and program. Reporting completion rates, employment and earnings will provide useful information for students and their families and help promote the success of these programs to prepare students for in-demand jobs and careers in their regions. Western Governors encourage Congress to include the College Transparency Act in reauthorization of the Higher Education Act, to adopt and report on earnings, employment, and credential attainment metrics by education provider and individual program in a manner that protects student privacy and ensures data security.
8. Employers play an important role in state workforce development efforts. Western Governors support efforts to incentivize employers to play a more active role in talent development, through partnership with state workforce development agencies and educational institutions or investments in the skills and training of their employees.
9. Rural communities are at risk of falling further behind in skills necessary for the economy of the future due to a lack of broadband access. Western Governors encourage Federal agencies and Congress to continue to deploy resources to solve this urgent need.
10. Professional licensing requirements vary by state and can create a barrier to mobility for professionals in western states. Where possible, Western Governors should work together to minimize this barrier.

#### **C. Governors' Management Directive**

1. The Governors direct WGA staff to work with Congressional committees of jurisdiction, the Executive Branch, and other entities, where appropriate, to achieve the objectives of this resolution.
2. Furthermore, the Governors direct WGA staff to consult with the Staff Advisory Council regarding its efforts to realize the objectives of this resolution and to keep the Governors apprised of its progress in this regard.

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WESTERN GOVERNORS' ASSOCIATION

POLICY RESOLUTION 2017-09

WESTERN AGRICULTURE

#### **A. Background**

1. Agriculture and forestry in the western states and territories are significantly different than in other regions of the country. We have greater variations in soil, climate, terrain, commodities and production practices, and water availability.
2. Farms, forests, and rangelands are important contributors to the economies and quality of life of western states. Among other important values, western agricultural and forest lands are primary sources of open space, wildlife habitat, water supplies, and diverse rural economic opportunities in the recreation, food, fiber, energy and bio-based product industries.
3. Trade promotion plays an important role in ensuring that western agricultural products and food have an opportunity to compete with products produced and subsidized internationally.
4. Western states have seen some of the most significant increases in per-capita veteran populations since 2000, including surges in returning veterans under the age of 25. It is estimated that nearly 25 percent of all veterans live in rural areas. These veterans have slightly lower rates of employment compared to veterans living in urban areas and to their non-veteran rural colleagues.
5. Responsible management of Federal lands is a significant concern for Western Governors. Western states include more than 75 percent of our national forest and rangeland ecosystems. These public lands serve as critical economic drivers, and they provide numerous conservation benefits, water supply, and recreational opportunities for Western communities and the Nation.
6. The West's network of land-grant universities and colleges, including Cooperative Extension Service programs, continue to provide national leadership in

research to develop more resilient seeds and crops, manage soil health, advance technology deployment in the bio-based economy and conduct on-farm research experiments that help farmers and ranchers be more effective and efficient.

7. Western Governors recognize that nutrition assistance programs can meet the needs of children and the most vulnerable, while creating economic opportunity across the agriculture supply-chain from the store where food is purchased, all the way back to the farm. Western Governors acknowledge recent efforts to reduce rates of nutrition program fraud and abuse, deliver programs under budget, and improve program effectiveness.
8. Many agricultural producers in the West rely on irrigation water delivery systems that are shared among multiple producers and operated by an irrigation district, canal company, or mutual ditch company.

#### **B. Governors' Policy Statement**

1. Western Governors support funding for the U.S. Department of Agriculture (USDA) Market Access and Foreign Market Development Programs to promote opportunities for western producers to increase export revenues and encourage trade agreements that maximize benefits for the West's farmers, ranchers and forest landowners.
2. Western Governors support adequate funding for the USDA Specialty Crop Block Grant Program (SCBGP) that provides critical research, education, and promotion tools to the fruit and vegetable producers.
3. Western States have experienced sharp declines in farm income and farm prices since 2013. Western Governors support a farm safety net that recognizes past deficit reduction contributions of the agricultural sector and maintains funding for other key commodity, conservation, crop insurance, research, energy, and export promotion programs. In particular, Western Governors note that the Conservation title of the 2014 Farm Bill contributed to deficit reduction, saving taxpayers \$6 billion by consolidating 23 programs into 13, streamlining and targeting delivery to farmers, ranchers, and foresters. Western Governors support farm bill funding levels based on need rather than baseline budget targets.
4. Western Governors encourage the expansion of programs that can meet the unique educational, training, technical and financial needs of new, beginning and veteran farmers and ranchers and other USDA programming that can help returning veterans develop and expand business opportunities in rural communities.
5. Western Governors continue to support collaborative, targeted and voluntary conservation to address locally identified natural resource issues for farm, range, and forest resource concerns on private and public lands, such as soil health, air and water quality, drought and wildfire resilience, wildlife habitat conservation and invasive species. Western Governors support the role of conservation title programs in providing voluntary solutions to threatened and endangered species, water quality impairments, groundwater recharge, and other regulatory concerns potentially facing producers.
6. Western Governors support an increase in the role that state and local governments have in managing public lands for multiple uses, including agriculture.
7. Western Governors continue to urge Congress to provide a comprehensive solution for the current approach to budgeting for wildland fire for the Departments of Interior and Agriculture. Any fire budget solution must address the chronic problem of the rising costs of wildfire and the complicating problem of mid-season budget transfers when appropriated funding becomes insufficient. A comprehensive fix is needed to address capacity constraints and allow for a predictable program of work for agencies to fulfill their management responsibilities.
8. Western Governors acknowledge significant progress toward achieving forest restoration goals by using authorities granted in the 2014 Farm Bill. Western Governors support permanent authorization of the Insect and Disease designation provisions of section 602 of the 2014 Farm Bill and the elimination of project constraints from section 603 for condition class or fire regimes outside of the Wildland Urban Interface (WUI). Western Governors also support creating additional flexibility to Good Neighbor Authority to address conflicting language on road construction and reconstruction and the uses of pro-

gram income. The lack of flexibility restricts opportunities for states to partner in shared stewardship work across boundaries.

9. Within the context of comprehensive wildland fire budget reform, existing law and forest plans, Western Governors support the use of new tools to streamline environmental analysis to increase the pace and scale of restoration activities. Specifically, Western Governors support creation of a new pilot program to prioritize landscape-scale environmental analysis for restoration projects envisioned over geographies greater than 100,000 acres. This pilot program should allow for predictable project-scale implementation and adaptive management. Western Governors believe Federal agencies should develop guidance to build consistency in environmental analysis and bring agency practice in conducting environmental assessments (EAs) more in line with the administrative policy intent of streamlined, summary documents. Western Governors affirm that Congress should resolve outstanding issues with potential requirements to reinstate endangered species consultations following the adoption, amendment or revision of an appropriate management plan.
10. Western Governors support Congress establishing a restoration categorical exclusion (CE) based on a record of analysis from the past five years of projects where agency analysis and a decision recognized a finding of no significant environmental impact. Western Governors support allowing Federal agencies to analyze only the action and no-action alternatives when a project is collaboratively developed, unless a third alternative is proposed during scoping and meets the purpose and need of the project. Western Governors also support rewarding successful implementation of collaborative projects through funding, retained-receipt authority, or other capacity to pursue subsequent projects.
11. Western Governors support efforts to expand research funding to address drought, a changing climate and extreme weather risks facing western producers.
12. Western Governors encourage the effective use of extension and other partnerships to deliver practical tools, technologies and information to farmers, ranchers and forest landowners.
13. Nutrition assistance programs should continue to allow flexibility for states to respond to unique economic conditions, serve all eligible participants without drastically reducing benefits, and encourage continued pursuit of transparency and accountability in program administration.
14. Western Governors support changes to Conservation Title programs that remove existing contracting barriers for western producers, and make the Farm Bill's conservation title programs more accessible and relevant to western producers and their associations.
15. Western Governors support coordinated state and Federal action to expand markets for wood products that can achieve forest and rangeland restoration objectives and foster rural employment and income opportunities. Western Governors support coordinated financing and grant support from USDA Rural Development programs and the USDA Forest Service to advance wood product business development, infrastructure, and demonstration products in the areas of mass timber construction and biomass energy.
16. Western Governors support the USDA, Animal and Plant Health Inspection Service (APHIS) and Agriculture Research Service (ARS). APHIS works in partnership with state departments of agriculture to monitor, prevent and control infestations of invasive pests and diseases and curtail or minimize wildlife conflicts, which can cause widespread environmental and economic damage and safety hazards. APHIS works in cooperation with other Federal agencies, states, territories, counties and private entities to implement management programs. ARS conducts research to develop and transfer solutions to agricultural problems of high national priority, and shares information to ensure high quality, safe food and other agricultural products. ARS research helps sustain a competitive economy; enhance the natural resource base and the environment; provide economic opportunities for rural communities and society as a whole, and; provide the necessary infrastructure to create and maintain a diverse workplace.
17. Western Governors support the continued efforts of the Rural Utilities Service to provide financial assistance for drinking water, wastewater facilities and broadband connectivity in rural and remote areas, particularly in communities that have minimal or no such infrastructure. Expanding broadband ac-

cess to rural America will allow citizens to compete in a global market and have access to IT health care, education and public safety resources.

18. Western Governors support the recommendations identified over the course of the WGA National Forest and Rangeland Management Initiative, and incorporate those recommendations related to the reauthorization of the Agricultural Act into this resolution by reference.

### C. Governors' Management Directive

1. The Governors direct WGA staff to work with Congressional committees of jurisdiction, the Executive Branch, and other entities, where appropriate, to achieve the objectives of this resolution.
2. Furthermore, the Governors direct WGA staff to consult with the Staff Advisory Council regarding its efforts to realize the objectives of this resolution and to keep the Governors apprised of its progress in this regard.

Western Governors enact new policy resolutions and amend existing resolutions on a bi-annual basis. Please consult [www.westgov.org/resolutions](http://www.westgov.org/resolutions) for the most current copy of a resolution and a list of all current WGA policy resolutions.

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WESTERN GOVERNORS' ASSOCIATION  
July 16, 2018

DAVID J. REDL,  
Assistant Secretary for Communications and Information,  
National Telecommunications and Information Administration,  
U.S. Department of Commerce,  
Washington, DC.

Dear Assistant Secretary Redl:

As Executive Director of the Western Governors' Association (WGA), I am pleased to have the opportunity to provide comments on the importance of improving the quality and accuracy of broadband availability data, particularly in rural areas. High-quality data is necessary to ensure that public broadband deployment efforts are cost effective and prioritize areas that either wholly or significantly lack access.

WGA is an independent organization representing the Governors of 19 western states and three U.S. territories in the Pacific. The Association is an instrument of the Governors for bipartisan policy development, information-sharing and collective action on issues of critical importance to the western United States.

Western states contain many rural areas that lack sufficient access to broadband, as evidenced by the Connect America Funding Phase II *eligible areas* and the Federal Communication Commission's (FCC) recently updated *broadband map*. This widespread lack of connectivity limits communities' access to health care and public safety resources; prevents businesses from competing in the digital economy and diminishes students' access to education and training opportunities. WGA Policy Resolution 2018-13, *Workforce Development in the Western United States*, expresses the support of western Governors for congressional and Federal efforts to deploy broadband to rural communities to promote workforce development efforts.

Federal efforts, such as the Rural Utilities Service's new broadband pilot program, are critical to closing the digital divide. WGA is concerned, however, that the FCC's updated broadband map is not sufficiently accurate nor granular enough to support efficient and effective broadband deployment in the West.

Through the Form 477 reporting process, the FCC considers a census block "served" if a single residence in the block has access to broadband. This reporting protocol overstates broadband availability in larger, rural census blocks common in western states. WGA is also concerned that the use of "maximum advertised," not "actual," speeds when mapping broadband coverage does not accurately portray the service that customers receive.

On behalf of Western Governors, I encourage you to pursue meaningful partnerships with states to help address these concerns. Please let WGA know how we may meaningfully contribute to your efforts to improve the quality of broadband data and ensure the efficient and effective use of Federal funds to promote broadband deployment.

Sincerely,

JAMES D. OGSBURY,  
Executive Director.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. ROGER F. WICKER TO  
TIM DONOVAN

*Question.* Mr. Donovan, in your testimony you state that policymakers should apply a specific set of factors to standardize data collection for broadband maps. Please explain why the inclusion of standardized data relating to Signal Strength, Cell Edge Probability, Cell Loading, and Clutter Factors would help produce better broadband maps? Would legislation be helpful in ensuring that those factors are included in the FCC's data collection and broadband mapping processes?

*Answer.* Signal strength, cell edge probability, cell loading and clutter factors are parts of a technological link budget that determine the transmission to a receiver, which is ultimately the experience of the wireless user. Standardizing, and in the case of clutter factors disclosing, these aspects at the levels included in my testimony will help produce a mobile coverage map that more closely reflects the on-the-ground experience. With regard to using the resulting map to determine areas initially eligible for support through programs like the Mobility Fund II, more reliable maps will allow policymakers to better target support to appropriate areas and reduce the chances of overbuilding. Further, starting the process with maps based on more reliable data will reduce the need for an excessively burdensome challenge process, such as the experience in the challenge process last year, which we now know was fatally flawed.

Legislation is helpful to ensure that the above-mentioned RF factors are included in the FCC's data collection and broadband mapping process, and will produce more accurate coverage maps that are based on your constituents' experience. Together, these modifications will help policymakers to more accurately target future support, and CCA encourages the advancement of legislation to accomplish this important policy goal.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN THUNE TO  
TIM DONOVAN

*Question.* I convened a subcommittee hearing last month on rural broadband deployment. During that hearing, we heard testimony from Justin Forde of Midco, a company that uses a fixed wireless broadband connection into parts of South Dakota. Fixed wireless covers areas like farmland, and knowing that these areas are covered by broadband is critical for precision agriculture. Can you explain the benefits of mapping broadband coverage as "shapes" and whether or not this would be valuable to show broadband availability in a more practically useful way?

*Answer.* Shapefiles demonstrate coverage over a particular geographic area. Wireless broadband coverage shapefiles have the benefit of showing all areas where one can reasonably anticipate coverage meeting the characteristics that the shapefile data is based upon. This is valuable to identify wireless broadband availability to the extent that the shapefile data is created using reliable data; if data is not based on engineering principles, a shapefile could indicate significant areas where coverage is expected but not available at the predicted levels, which limits the utility of the shapefile data overall.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JERRY MORAN TO  
TIM DONOVAN

*Question 1.* My office has heard from constituents in Kansas, including your member company Nex-Tech Wireless, about their concerns with the FCC's one-time collection of 4G LTE coverage data from carriers that produced the critically flawed initial eligibility map published in February 2018. Your testimony identified a number of weaker standards for data submissions that contributed to the initial eligibility map not adequately reflecting on-the-ground mobile broadband coverage in Kansas. Are there any other factors besides those that you listed in your testimony that you believe contributed to the flawed map?

*Answer.* In addition to the RF factors included in my testimony, on-the-ground mobile broadband coverage may be weaker than coverage estimates because modeled propagation is often based on individual cell sites. This does not adequately reflect an environment with multiple base stations. In the real world, sites often include several antennas operating using various frequencies, as well as radiating coverage that can overlap with other sites, particularly near the cell edge. When this overlap takes place, intersite or intercell interference can have the effect of reducing coverage compared to modeled coverage, as the device must operate with increased interference. In rural areas in particular, this can lead to significant areas where

models predict coverage at the 5 Mbps download level suggested in the Mobility Fund II Initial Eligible Areas Map that when tested will fail to have this level of service available.

*Question 2.* The fact that the Mobility Fund eligibility map is reliant upon private citizens and carriers to contest the accuracy of mobile broadband data collected by the FCC based on standards that the agency set remains concerning to me. Acknowledging that initial data collection processes need to be improved upon, do you think that there will continue to be a role for public challenge processes to improve the Mobility Fund eligibility map that determine the allocation of Federal resources?

*Answer.* The FCC's Mobility Fund II challenge process placed an enormous burden on challengers, which proved unworkable to sufficiently improve the current coverage map. However, beyond government actors or carriers, the public, including groups like the Kansas Farm Bureau, could only participate in the Mobility Fund II challenge process through successfully obtaining a waiver.

Because any modeled coverage is just that—a model—there will remain a role for a challenge process to ensure the appropriate allocation of Federal resources to support preserving and expanding broadband service. With sufficient improvements to the data collection process, the baseline for determining challenged areas will have fewer false positives and dramatically reduce the burden on challengers.

In addition to improving the underlying data, CCA also supports improvements to the challenge process itself to further reduce the burden on government, industry, and public participation.

*Question 3.* As the Chairman of the Appropriations Subcommittee with jurisdiction over the National Telecommunications and Information Administration (NTIA), I have interest in seeing how NTIA could build upon the data collection of the FCC in its Form 477 process. More specifically, we have appropriated substantial resources in recent years to NTIA to broaden and update the National Broadband Map using their developed state partnerships. While NTIA has already announced its partnership with eight states to contribute data and other inputs into the map, would you agree that adding more state partnerships to contribute to the map would likely improve the overall accuracy of the map?

*Answer.* States, tribes, municipalities, organizations and consumers often know where they receive wireless service and where coverage gaps exist. Further partnerships can contribute to improving the overall accuracy of the map by relying on their expertise, which the FCC acknowledged by including state and local governments in the challenge process. However, improving the reliability of the data collected by the FCC, including through the Form 477 process, will help all of these entities in improving the map by beginning the process with more reliable data.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. AMY KLOBUCHAR TO  
TIM DONOVAN

*Question.* Last Congress, my bipartisan bill with Senator Capito, the Measuring the Economic Impact of Broadband Act, passed the Senate without opposition, and we will be reintroducing our bill in the coming weeks. Our bill would require the Department of Commerce to conduct an analysis of the effects of broadband deployment and adoption on the U.S. economy. Do you believe that more accurate data on the economic benefits of broadband deployment could help us target investments to rural areas where they are needed most?

*Answer.* Congratulations on your work to pass S. 1289, the Measuring the Economic Impact of Broadband Act, through the Senate by unanimous consent earlier this year. Additional and more accurate data regarding the economic benefits of broadband deployment supports enhanced policies to preserve and expand wireless service ubiquitously throughout the United States. With additional data, policymakers can clearly understand how increased access yields significant economic benefits particularly in rural areas. Last year, a CCA-commissioned study, available at <https://ccamobile.org/wp-content/uploads/2018/10/CCA-Airwaves-report-v.-final.pdf>, found benefits in the healthcare, transportation, and agriculture sectors specifically from increased broadband deployment.

As carriers work to deploy the latest wireless technologies, rural areas stand to benefit the most from enhanced connectivity. CCA supports efforts to demonstrate these benefits to foster continued investment in wireless deployment in rural America.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. RICHARD BLUMENTHAL TO  
TIM DONOVAN

*Pricing Data.* The Form 477 data provides information on where broadband may be accessible but not whether it is affordable. While companies could take initiative and publicly disclose their pricing practices, very few choose to do so. Companies should not inhibit pricing disclosure because they fear competition, they should encourage standards that increase access and provide more affordable plans to consumers.

*Question 1.* At the hearing, I asked you if you would support including an assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report. Everyone expressed a willingness to consider this request and provide feedback. Would you support inclusion of assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report?

Answer. CCA members connect customers in some of the hardest to serve areas in the country, where economic barriers can be significant. The barriers to high capacity broadband expansion are primarily economic, especially in areas with sparse population density, not technological. A deeper understanding of these barriers can help provide information needed to close the digital divide, and accordingly CCA does not oppose efforts to include this information in the FCC's Broadband Deployment Report.

*Question 2.* When asked if you would support more transparent broadband pricing, you stated that you do not survey your members on the price offerings they currently have. After consulting with your member companies about their practices, will you commit to supporting the disclosure of price information in Form 477 data? If not, why not?

Answer. CCA member carriers' plans and pricing are publicly available, and carriers offer a variety of pre-and post-paid service plans to provide all consumers with options that meet their needs. CCA members have also historically led the industry and advancing new offerings that offer consumers increased services and transparency. Because this information is publicly available and changes frequently through service updates, various promotions, and competitive pressures, inclusion on the biannual Form 477 filings would not provide consumers with current information or information that is not already available.

*Question 3.* Do your members maintain records of how much they charge for service? If so, please describe the parameters of this recordkeeping. Is it broken down by geography, speed tier, or promotional offerings? How frequently is this data collected and how long is it stored? Is the data stored in a machine readable format? If none of your members maintain records on pricing, please explain why this is the case and how your members are able to maintain accurate billing practices without this information.

Answer. There is not an industry standard storage or billing methodology, and CCA members maintain their records through a variety of in-house and contracted services. Accordingly, break downs by geography, speed tiers, promotional offerings, frequency, and storage will vary across different carriers.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JERRY MORAN TO  
MIKE MCCORMICK

*Question 1.* One of the few reassuring takeaways from the developments around the Mobility Fund eligibility map was the leadership demonstrated by the Kansas Farm Bureau in the challenge process. It is my understanding that the Kansas Farm Bureau was one of the first entities to petition for a waiver to participate in the MFII challenge process, and they coordinated heavily with many of their counterparts from other states, including the Mississippi Farm Bureau. How important was it for entities like the Kansas and Mississippi Farm Bureaus to coordinate with each other to identify best practices in their efforts to fix these maps?

Answer. We feel that it is vital for organizations with similar constituencies to collaborate and coordinate together to fix the maps. We worked closely with the Kansas Farm Bureau as we began our challenge process. Our friends in Kansas were vital in advising us along the way as we developed a strategy to work in Mississippi on this issue. Moving forward, if FCC is able to better correct the maps, groups like Farm Bureau with large state memberships could serve as a key player to help validate the accuracy of the maps.

*Question 2.* Your testimony indicated that the Mississippi Farm Bureau collaborated with the state's public service commission to submit mobile speed test data. On the other hand, the Kansas Farm Bureau took a "crowdsourced" approach in

which their members submitted challenge tests directly to the FCC's portal. Would you please describe the benefits and drawbacks of each approach?

Answer. The Kansas Farm Bureau truly led the way for most of the other state Farm Bureaus in their efforts to challenge the accuracy of the FCC maps. The "crowdsourced" approach in Kansas was a very effective way to surface major areas of concern and then formally execute a valid challenge with all technical requirements. Due to a lack of adequate staffing, technical expertise, and time to crowdsourcing this data and then go out and execute the formal testing, we could not participate effectively in the process. The public service commission also had the same challenges with staffing and technical expertise. If we have a second opportunity to participate in another challenge process, "crowdsourcing" raw data will be something that we look at very closely.

*Question 3.* As the Chairman of the Appropriations Subcommittee with jurisdiction over the National Telecommunications and Information Administration (NTIA), I have interest in seeing how NTIA could build upon the data collection of the FCC in its Form 477 process. More specifically, we have appropriated substantial resources in recent years to NTIA to broaden and update the National Broadband Map using their developed state partnerships. While NTIA has already announced its partnership with eight states to contribute data and other inputs into the map, would you agree that adding more state partnerships to contribute to the map would likely improve the overall accuracy of the map?

Answer. Yes, we agree that more state partnerships to contribute to a new mapping effort would be very helpful in working with NTIA to aid in the development of more accurate broadband maps.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. RICHARD BLUMENTHAL TO  
MIKE MCCORMICK

*Pricing Data.* The Form 477 data provides information on where broadband may be accessible but not whether it is affordable. While companies could take initiative and publicly disclose their pricing practices, very few choose to do so. Companies should not inhibit pricing disclosure because they fear competition, they should encourage standards that increase access and provide more affordable plans to consumers.

*Question.* At the hearing, I asked you if you would support including an assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report. Everyone expressed a willingness to consider this request and provide feedback. Would you support inclusion of assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report?

Answer. Although Farm Bureau is an organization that has limited technical capabilities to adequately respond to these types of questions, we are comfortable indicating that we would support inclusion of assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JERRY MORAN TO  
MIKE OBLIZALO

*Question.* As the Chairman of the Appropriations Subcommittee with jurisdiction over the National Telecommunications and Information Administration (NTIA), I have interest in seeing how NTIA could build upon the data collection of the FCC in its Form 477 process. More specifically, we have appropriated substantial resources in recent years to NTIA to broaden and update the National Broadband Map using their developed state partnerships. While NTIA has already announced its partnership with eight states to contribute data and other inputs into the map, would you agree that adding more state partnerships to contribute to the map would likely improve the overall accuracy of the map?

Answer. While I do believe that more data could help to improve the overall accuracy of the National Broadband Map, and data from all 50 states would be needed for the map to truly be considered a "National" map, ultimately we will need more granular data and verification of submitted data in order to have more accurate maps. This is especially true given Federal agencies' reliance on the map when making funding or financing decisions. An inaccurate map can mean all the difference between a location receiving or not receiving broadband service. Therefore, whether it's through new state partnerships to complement NTIA's existing state partnerships, or through efforts by the FCC and USDA to improve their maps, we must strive for both more granularity and a robust challenge process of the collected data.

As I stated in my testimony before the Committee, “A more granular map can certainly help identify more accurately where broadband is available, but a meaningful and robust challenge process will remain critical to validate both fixed and mobile data prior to any map being used by the FCC or RUS (or any other governmental agency) to make final decisions on funding or financing.. . . Only a meaningful validation process, including the ability to challenge data on the baseline map as inaccurate, will provide for the granularity and reliability that is necessary to ensure these maps contribute to the ultimate goal of connecting every American and keeping every American connected.”

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. AMY KLOBUCHAR TO  
MIKE OBLIZALO

*Question.* Last month, I introduced the Improving Broadband Mapping Act with Senators Capito, Manchin, and Hoeven to direct the Federal Communications Commission (FCC) to initiate a rulemaking to consider using consumer-reported data, as well as state and local data, to improve the accuracy of its broadband maps. Do you believe that using consumer-reported data, as well as state and local data, could help improve the accuracy of FCC maps?

*Answer.* There are several ways to improve the accuracy of broadband maps. First, greater granularity is an important goal to help minimize the “false positives,” which are the census blocks that are considered served simply because a single location in that block is served. Shapefiles are a tool that would increase the accuracy of reported data and improve upon the current reporting system. Consumer-reported data, as well as state and local data, could be other tools used to help improve the granularity and accuracy. However, there are a few issues that could affect the consumer speeds at the home, older WIFI standards, consumer hardware issues, malware ect. It is important to note that no single tool will be a “silver bullet” that would lead to perfect results. No matter what tools are used to improve granularity and accuracy, there must be validation and challenge processes implemented prior to the use of any mapping data. Therefore, the key elements of any sound mapping strategy must include: more granular data, standardized reporting procedures, and the adoption of validation and challenge processes.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. RICHARD BLUMENTHAL TO  
MIKE OBLIZALO

*Pricing Data.* The Form 477 data provides information on where broadband may be accessible but not whether it is affordable. While companies could take initiative and publicly disclose their pricing practices, very few choose to do so. Companies should not inhibit pricing disclosure because they fear competition, they should encourage standards that increase access and provide more affordable plans to consumers.

*Question 1.* At the hearing, I asked you if you would support including an assessment of economic barriers to broadband access in the FCC’s Broadband Deployment Report. Everyone expressed a willingness to consider this request and provide feedback. Would you support inclusion of assessment of economic barriers to broadband access in the FCC’s Broadband Deployment Report?

*Answer.* Barriers to both availability and adoption must be better understood and addressed to achieve the ultimate goal of universal broadband. Although neither availability nor adoption can be achieved overnight, and while clearly no one can be “forced” to adopt broadband even when it is available, it is important to assess and then design strategies that promote both availability and adoption. All this being said, I am not a lawyer and I therefore cannot speak specifically to what the Broadband Deployment Report can or must measure or contain as a matter of law. But taking account of both availability and adoption would seem to be an important part of making good policy.

*Question 2.* During the hearing, you indicated support for disclosing pricing data through Form 477. Can you explain your company’s existing recordkeeping practices as it relates to pricing? Do you maintain records on how much you charge for service? If so, please describe the parameters of this recordkeeping. Is it broken down by geography, speed tier, or promotional offerings? How frequently is this data collected and how long is it stored? Is the data stored in a machine readable format?

*Answer.* Hood Canal Communications’ billing system tracks the pricing by a customer’s specific broadband tier of service or bundle. Based on the customer’s needs, our staff recommends the tiered service that they feel will have the most benefit

to the customer. The pricing and tier of service is collected on a monthly basis through our billing vendor and by advice of counsel we store the data for six years. The data can be exported from the billing software into a machine-readable format.

*Question 3.* In 2016, the Federal Communications Commission adopted a ‘Nutrition Label’ that provided an easily readable, standardized disclosure form that ISPs could use to communicate pricing information to consumers. The FCC adopted this label as a safe harbor for compliance with the 2015 Open Internet Order’s transparency rule. Would you support reinstating the label so consumers can easily understand and compare ISP services?

*Answer.* As the manager of a small business living in the community I serve, I support giving our customers—my neighbors—sufficient and clear data for them to understand how our services are priced and to make informed judgments about service options. Any number of options should be available to providers, including potential “nutrition labels,” to achieve this goal of appropriate disclosures. There is likely no “one-size-fits-all” disclosure that will work in all cases, and such disclosures may need to be tailored to reflect conditions on the ground such as the various kinds of offerings made available by providers.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JERRY MORAN TO  
JONATHAN SPALTER

*Question.* As the Chairman of the Appropriations Subcommittee with jurisdiction over the National Telecommunications and Information Administration (NTIA), I have interest in seeing how NTIA could build upon the data collection of the FCC in its Form 477 process. More specifically, we have appropriated substantial resources in recent years to NTIA to broaden and update the National Broadband Map using their developed state partnerships. While NTIA has already announced its partnership with eight states to contribute data and other inputs into the map, would you agree that adding more state partnerships to contribute to the map would likely improve the overall accuracy of the map?

*Answer.* The accuracy of any broadband mapping effort will benefit from the inclusion of multiple inputs and from the review by multiple parties, including state broadband mapping programs. Ideally, there will be a consistent national map based on consistently reported data, which states can supplement and review for accuracy. One of the key challenges that currently exists with mapping of broadband in the United States is the ability to get not just accurate, but also consistent geo reference (latitude and longitude) points of the locations that need broadband service. USTelecom is encouraged by state broadband deployment and mapping efforts. At the same time, our members whose service includes multiple states have observed that the inconsistencies in broadband availability data collection is an issue that needs to be solved. We support NTIA’s efforts to build a platform to collect and display broadband availability data. Ideally, the data that populates NTIA’s platform will be consistent and harmonized at the national level, with active input and review from all states. USTelecom will continue to coordinate closely with NTIA in order to rapidly develop a sustainable, cost-effective, comprehensive and scalable national broadband map so we can accomplish our shared goal of closing the digital divide once and for all.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. RICHARD BLUMENTHAL TO  
JONATHAN SPALTER

*Pricing Data.* The Form 477 data provides information on where broadband may be accessible but not whether it is affordable. While companies could take initiative and publicly disclose their pricing practices, very few choose to do so. Companies should not inhibit pricing disclosure because they fear competition, they should encourage standards that increase access and provide more affordable plans to consumers.

*Question 1.* At the hearing, I asked you if you would support including an assessment of economic barriers to broadband access in the FCC’s Broadband Deployment Report. Everyone expressed a willingness to consider this request and provide feedback. Would you support inclusion of assessment of economic barriers to broadband access in the FCC’s Broadband Deployment Report?

*Answer.* Ensuring that all Americans can take advantage of the opportunities created by broadband access requires a clear focus on ensuring that all consumers have access to broadband networks where they live and work. In addition to efforts to facilitate broadband deployment, it is equally important that consumers who wish

to purchase broadband are able to afford such access. Thus, understanding the barriers to increased broadband adoption, including economic barriers to access, is an important topic. Should the Commission determine that the Broadband Deployment Report is the best way to provide an assessment of economic barriers to access broadband, then we support that effort. As its name implies, the FCC's Broadband Deployment Report has historically focused on physical deployment—whether a consumer has access to a network or not. Thus, there may be other vehicles to explore this challenge as well.

*Question 2.* When asked whether you would support the disclosure of price information, you stated that you would have to evaluate very carefully on a company-by-company basis. After consulting with your member companies about their practices, will you commit to supporting the disclosure of price information in Form 477 data? If not, why not?

Answer. The purpose of the FCC Form 477 and the Commission's newly instituted Digital Opportunity Data Collection effort is to determine how many households have access, and lack access to broadband, and to determine with as much granularity as possible the location of those who lack access. This information is critical to many FCC broadband policymaking decisions, including its essential universal service fund (USF) programs that provide support for high-cost rural areas that would otherwise be uneconomic to serve. The Form 477 data has always been used for this purpose and should continue to be. Pricing data varies from company to company, can vary based on the type of plan or package a customer chooses, regularly changes and is often highly variant due to promotional packages for customers in the same area, and would be extremely challenging to keep up to date via a reporting process that is semi-annual. Simply put, as compared to reporting on whether a location does or does not have broadband (yes or no at different speeds), the ability to accurately capture pricing information is very challenging and would potentially be misleading at any point in time for the reasons discussed above. Such information is also not relevant to broadband deployment by carriers, the purpose of the Broadband Deployment Report.

*Question 3.* Do your members maintain records of how much they charge for service? If so, please describe the parameters of this recordkeeping. Is it broken down by geography, speed tier, or promotional offerings? How frequently is this data collected and how long is it stored? Is the data stored in a machine readable format? If none of your members maintain records on pricing, please explain why this is the case and how your members are able to maintain accurate billing practices without this information.

Answer. The pricing plans of companies and how they maintain records of individual customer payment plans varies by company.

*Question 4.* Does USTelecom collect any information about pricing from its members? If so, please describe this information. Is it broken down by geography, speed tier, or promotional offerings? How frequently is this data collected and how long is it stored? Is the data stored in a machine readable format?

Answer. USTelecom does not collect pricing data from its members.

*Question 5.* During the hearing, you mentioned that your members comply with many "truth in billing" rules. Please list these rules and any statutes where those rules are codified.

Answer. 47 C.F.R. §64.2401 of the Commission's rules require that a telephone company's bill must: (1) provide a brief, clear, non-misleading, plain language description of the service or services rendered to accompany each charge; (2) identify the service provider associated with each charge; (3) clearly and conspicuously identify any change in service provider; (4) contain full and non-misleading descriptions of charges; (5) identify those charges for which failure to pay will not result in disconnection of the customer's basic local service; (6) provide a toll-free number for customers to call in order to lodge a complaint or obtain information; (7) place charges from third parties that are not telephone companies in a distinct section of the bill, separate from telephone company charges; and (8) provide a separate subtotal for third-party charges in the separate bill section and on the payment page. Telephone companies also must notify consumers, on their websites and at the point of sale, of any options they offer to block charges from third parties that are not telephone companies.

*Question 6.* During the hearing, you mentioned that using Form 477 to collect pricing data could lead the FCC to invoke its rate regulation authority. Given that this authority has been rarely, if ever, used in the broadband context, why are you concerned about this? How would pricing transparency lead to rate regulation?

Answer. As an information service, the FCC presently lacks the authority to regulate the rates of broadband Internet access service. That could change if a future

FCC reverses the FCC's *Restoring Internet Freedom* decision and declares broadband to be a telecommunications service. As a matter of law and policy, USTelecom would oppose such a decision, but it is a regulatory possibility. The point that the FCC's authority has rarely, if ever, been used to directly regulate broadband rates is a good one (although the 2015 Open Internet Order did subject broadband service to Title II of the Act and opened the door for rate regulation). Congress could remove the FCC's authority to rate regulate broadband which members of both parties have historically opposed given the competitive nature of the broadband market. Absent such action, there is always the overhang of potential rate regulation. FCC mandates to collect pricing data could potentially be misused to subject telecom carriers—and only telecom carriers—to rate regulation which would negatively impact investment and innovation.

*Question 7.* In 2016, the Federal Communications Commission adopted a 'Nutrition Label' that provided an easily readable, standardized disclosure form that ISPs could use to communicate pricing information to consumers. The FCC adopted this label as a safe harbor for compliance with the 2015 Open Internet Order's transparency rule. Did USTelecom support this nutrition label and would you support reinstating the label so consumers can easily understand and compare ISP services?

*Answer.* USTelecom was not a member of the FCC's Consumer Advisory Committee which adopted the broadband "Nutrition Label" and did not take a position on the process. USTelecom is a strong supporter of the FCC's existing open Internet transparency rule, 47 CFR §8.1, which requires Internet service providers to publicly disclose information about their network management practices, performance characteristics, and commercial terms of broadband Internet access service offerings. Failure to comply with the rule can lead to FCC enforcement penalties and providing misleading information to consumers inconsistent with the disclosures required by the FCC's transparency rule could lead to FTC enforcement as a violation of Section 5 of the FTC Act. There is no evidence to suggest the current rules are not working as intended or insufficient to protect consumers. Moreover, the highly competitive broadband market results in significant consumer outreach about broadband service offerings, including price, all of which is made publicly available on company websites and through other advertising mechanisms. In short, the combination of the FCC's transparency rule and market forces appears to be working.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JON TESTER TO  
JONATHAN SPALTER

*Question 1.* Previously before this committee, I asked a small carrier about improving access to exchanges that are owned by price-capped carriers but are not being served. Mr. Spalter, what is the biggest barrier your companies' face that keep them from selling exchanges to smaller rate-of-return carriers?

*Question 2.* If there were a Federal mechanism designed to incentivize the transfer of rural exchanges away from large price-cap-carriers to small rate-of-return carriers, is that something your companies would support?

*Answer.* There are a number of interlocking bureaucratic, logistical and financial challenges that can deter the sale of network exchanges. The legal and transaction costs of each property sale or swap is substantial, such that large carriers prefer selling larger portions of their network in a single transaction. The network management costs required to become a regional carrier of scale also can be inhibiting for smaller carriers. The acquiring small carriers may also lack the necessary collateral to complete such a transaction. However, a number of government resources could enable more transactions. Government secured loans, tax credits for buyers and sellers, waiving capital gains taxes, and providing for recovery of legal and administrative fees might remove some of the financial obstacles. Additionally, carriers build their networks on different platforms, using operating systems that are not interchangeable. The physical architecture of even adjacent networks can require significant investments in hardware and software to ensure compatibility. Additional government resources to help defray these costs would be helpful. While these are ways to ease the financial burdens associated with the sale of properties, they do not address the overall goal of upgrading the service in these areas.

We support allowing the free market to work in whatever manner makes sense for both types of carriers unencumbered by artificial limiters. That said, it is important to remember that the sale of these properties to a small carrier does not increase the level of government support available for that area Congress should emphasize, and indeed prioritize, sufficient and predictable high cost support to spur broadband deployment and enable continued operations in these areas regardless of whether it is served by a price cap or rate of return carrier.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JERRY MORAN TO  
CHIP STRANGE

*Question.* As the Chairman of the Appropriations Subcommittee with jurisdiction over the National Telecommunications and Information Administration (NTIA), I have interest in seeing how NTIA could build upon the data collection of the FCC in its Form 477 process. More specifically, we have appropriated substantial resources in recent years to NTIA to broaden and update the National Broadband Map using their developed state partnerships. While NTIA has already announced its partnership with eight states to contribute data and other inputs into the map, would you agree that adding more state partnerships to contribute to the map would likely improve the overall accuracy of the map?

*Answer.* Thank you, Senator Moran, for the question. Engaged stakeholders with broadband datasets and intimate knowledge of the unique demographic and topographic characteristics of their states can improve broadband mapping efforts. However, we should initially focus on states that have broadband data expertise, and not slow down NTIA's progress. More importantly, while adding more state data is a net positive, we must have methodological uniformity to ensure that the quality of the data, and ultimately the quality of the maps, is consistent across all states and territories. We do not want to repeat the mistakes of the State Broadband Initiative, which had widely varying approaches to determining if an area was served by broadband networks.

Fortunately, crowdsourced data collection and analytical capabilities, like those provided by Ookla, can fill in where granular information is lacking, while also serving as a data verification layer. I firmly believe that a multifaceted approach—which includes data from many parties with large datasets backed by strong data science and methodologies—will help ensure that you and other policymakers have the best information needed to efficiently and comprehensively expand broadband networks where needed.

The funding provided by Congress to NTIA to stand up a more accurate national broadband map is a good start and I appreciate your leadership in this area. We need to ensure that the agencies tasked with collecting and managing data are resourced appropriately. High quality broadband availability and performance datasets, and more importantly the downstream networks built using them, are vital to the economic and social prosperity of our Nation.

Dedicated, annual recurring funding instruments are needed to ensure we consistently measure the state of broadband networks over time. One option is to stipulate that a percent of every taxpayer dollar used for broadband expansion will be dedicated to accurately measuring before we fund. This will help ensure we are better stewards of taxpayer money by building the right networks in the right places, while also not funding broadband expansion where privately funded networks already exist.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. RICHARD BLUMENTHAL TO  
CHIP STRANGE

*Pricing Data.* The Form 477 data provides information on where broadband may be accessible but not whether it is affordable. While companies could take initiative and publicly disclose their pricing practices, very few choose to do so. Companies should not inhibit pricing disclosure because they fear competition, they should encourage standards that increase access and provide more affordable plans to consumers.

*Question.* At the hearing, I asked you if you would support including an assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report. Everyone expressed a willingness to consider this request and provide feedback. Would you support inclusion of assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report?

*Answer.* Yes, I would support the inclusion of an assessment of economic barriers to broadband access in the FCC's Broadband Deployment Report.