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LEGISLATING TO CONNECT AMERICA: IMPROVING THE NATION'S BROADBAND MAPS

WEDNESDAY, SEPTEMBER 11, 2019

House of Representatives

Subcommittee on Communications and Technology

Committee on Energy and Commerce

Washington, D.C.

The subcommittee met, pursuant to call, at 10:30 a.m., in Room 2322 Rayburn House Office Building, Hon. Mike Doyle [chairman of the subcommittee] presiding.

Members present: Representatives Doyle, McNerney, Loebsack, Soto, O'Halleran, Eshoo, Butterfield, Matsui, Welch, Lujan, Pallone (ex officio), Latta, Olson, Kinzinger, Bilirakis, Johnson, Long, Flores, Brooks, Walberg, Gianforte, and Walden (ex officio).

Also present: Representatives Rodgers and Griffith.

Staff present: AJ Brown, Counsel; Jeff Carroll, Staff Director; Evan Gilbert, Press Assistant; Waverly Gordon, Deputy Chief Counsel; Alex Hoehn-Saric, Chief Counsel, C&T; Jerry Leverich, Counsel; Dan Miller, Policy Analyst; Phil Murphy, Policy Coordinator; Joe Orlando, Staff Assistant; Alivia Roberts, Press Assistant; Tim Robinson, Chief Counsel; Adam Buckalew, Minority Director of Coalitions and Deputy Chief Counsel, Health; Michael Engel, Minority Detailee, C&T; Margaret Tucker Fogarty, Minority Staff Assistant; Theresa Gambo, Minority Human Resources/Office Administrator; Peter Kielty, Minority General Counsel; Bijan Koohmaraie, Minority Counsel, CPAC; Tim Kurth, Minority Deputy Chief Counsel, C&T; Brannon Rains, Minority Staff Assistant; Evan Viau, Minority Professional Staff, C&T; Nate Wilkins, Minority Fellow, C&T;

Mr. Doyle. The Subcommittee on Communications and Technology will now come to order. The chair now recognizes himself for 5 minutes for an opening statement.

Before we get started, I just want to take a moment to remember the lives lost 18 years ago on September 11th. Many of us on the committee were there when this happened. I remember having breakfast in the Capitol when the first plane hit the tower, which I didn't know at the time. And when I got back to my office and saw my staff all watching the television sets is when the second plane hit, and we just knew something terrible had happened.

And it seems like it couldn't have been 18 years ago, but it was, and I just think we want to remember all the sacrifices that got made by our police and firemen, all our first responders that ran towards that building. Many of them aren't with us today from illnesses that they contracted being down there at that site.

And also remember that evening that we all stood on the steps of the Capitol, Democrats and Republicans locking arms and singing God Bless America, I remember that very vividly too. We probably could use a little bit more of that these days in this country of coming together as Americans. But I just ask that may we just take a brief couple seconds for a moment of silence just to reflect on 9/11, 18 years ago, and all the people that passed.

[Moment of silence.]

Mr. Doyle. Thank you. Well, I want to welcome everyone

to our first hearing since our August recess. Today, our hearing is focusing on Legislating to Connect America: Improving our Nation's Broadband Maps. This subcommittee will consider five pieces of legislation that I believe can help address serious problems with the way the FCC currently collects broadband deployment data.

This is an often-discussed topic here in Congress and the lack of clear data has often been a sore spot for many of here on the committee. However, the FCC in coordination with industry stakeholders has been making significant strides to improve the quality of some of these maps, and the bills before the committee today build on those efforts.

Accurate maps of who does and who doesn't have access to broadband are a critical first step in closing the digital divide. We can't hope to solve this problem if we don't know the scope of the problem and where to put our resources. First, we have H.R. 4229, the Broadband Deployment Accuracy and Technological Availability Act, introduced by Representative Loebsack and Ranking Member Latta. This bill would dramatically improve the FCC broadband maps by requiring the FCC to collect and disseminate far more granular broadband data for both fixed and mobile services. The bill would also allow the FCC to use crowdsource data to help verify and supplement carrier-provided data.

Second, we have H.R. 4128, the Map Improvement Act of 2019,

introduced by Representatives Lujan, Bilirakis, and myself. It would standardize the methodology used for collecting and verifying coverage data provided by providers. It would also establish a new office within the FCC to serve as a central coordinator for the Commission's mapping efforts.

Third, we have H.R. 4227, the Mapping Accuracy Promotion Services Act, introduced by Representatives McEachin, Long, Loebsack, and Latta. This bill would make it unlawful for a person to submit inaccurate broadband coverage data to the FCC.

Fourth, we have H.R. 2643, the Broadband Mapping After Public Scrutiny Act of 2019, which has been introduced by Ranking Member Latta and my good friend Mr. Welch. This bill would create a challenge process at the FCC for fixed and mobile broadband coverage data and allow private entities as well as state, local, and tribal government entities to verify coverage data submitted to the FCC.

And, finally, we will consider H.R. 3162, the Broadband Data Improvement Act of 2019, introduced by Representative McMorris Rodgers and Representative O'Halleran. This bill would update the FCC's mapping process, establish a public challenge process and require federal agencies to use the newly created broadband maps to determine the extent and the availability of broadband in the United States.

I look forward to the testimony of our witnesses and the discussion about this important legislation. And at this time,

I would like to yield the balance of my time to Congressman Loebsack.

Mr. Loebsack. Thank you, Chairman Doyle and Chairman Pallone, Ranking Members Walden and Latta, for holding this legislative hearing today. And thank you, Chairman Doyle, for giving me some of your time.

There is a lot of great stuff in the Broadband Development Accuracy and Technological Availability Act or Broadband DATA Act and we will be discussing that shortly. But I would first like to extend an extra special thanks to Ranking Member Latta for working with me to introduce the Broadband DATA Act. I have long been an advocate for better maps and the needs of rural America, and I don't know that I could have had a better ally, quite honestly, than my friend from Ohio. Further, I thank Ranking Member Latta for agreeing to continue working with me on this bill as we look forward to an eventual subcommittee markup. Hopefully that will happen sooner rather than later.

We have had some great conversations with stakeholders, many of whom are represented on the panel today or in the audience, and I believe there is still some potential for some improvements between now and the markup. And just quickly, some of the things that we might continue to work on: creating additional clarity that this bill will keep data publicly available; looking at the addition of an authorization of funding; studying the use of USF funds for administrative costs; exploring a GAO study or ongoing

review process for what source of information are informing the fabric; and considering how we ensure we are not burdening small businesses.

I am very proud of the bill that Representative Latta and I introduced and we will be talking about today and I think we have a bill that is ready for markup and passage on the House floor, but there might be some room for improvement and I am willing to work with Congressman Latta going forward. And with that I yield back my time.

Mr. Doyle. The gentleman yields back. The chair now recognizes my friend Mr. Latta, the ranking member of the subcommittee, for 5 minutes.

Mr. Latta. Well, thank you, Mr. Chairman. If I could offer before my time begins, I would like to thank you for your very sincere words on remembering 9/11. I think everyone in this room can remember where they were that day and the very impact it has had on this nation. And I totally agree with you that, you know, the country came together that day. I was in the Ohio legislature at the time, but I appreciate your words and we have to always remember what happened on that day. So thank you.

I would like to welcome you to today's committee legislative hearing on potential solutions to accurately map broadband availability in rural America. I thank our witnesses for joining us and providing their thoughts on this issue. Extending the reach of broadband in rural Ohio and across America is critical

to ensure everyone can participate in the digital economy.

Since passage of the 1996 Telecommunications Act, the private sector has invested roughly $1.7 trillion in their broadband networks. We should acknowledge this investment in rural deployment; ensure that government-supported solutions private capital instead of competing with it. This is becoming increasingly important with some proposals calling for as much as 150 billion government funding to publicly own and operate networks nationwide.

Today's legislative hearing features several bills introduced by committee members who deeply understand the lack of connectivity across their districts. Our constituents tell us when they don't have service and it is through their voices that I have heard and work with my colleagues on two of the bipartisan bills that will be discussed today.

The Broadband MAPS Act, which I introduced with my very good friend, the gentleman from Vermont, would help to verify reported data through a public challenge process. And the Broadband DATA Act, which I have developed with my good friend, very good friend, the gentleman from Iowa, would take a comprehensive approach to fixing our nation's maps. I believe that these bills will help build on the success of our previous partnership to deploy broadband to rural farmlands across through the Precision Agriculture Connectivity Act.

As we look to the FCC's next round of Universal Service

Funding, it is vital that we work in a bipartisan manner to ensure that there is a verified, accurate, and granular foundation upon which we make these funding decisions. Congress has an important oversight role to play in ensuring that we do not repeat the mistakes of the past. With limited federal dollars to go around, we simply cannot afford to misidentify areas that are served which are truly unserved. Only with accurate and granular data will we begin to close the last frontier of the digital divide.

It is also critical that a robust, user-friendly challenge process is in place to appropriately dispute potential inaccuracies within the coverage maps. We must and have to get the maps right, and in creating a pathway for the FCC to consider additional broadband data will help achieve that goal.

As we move toward committee markups, I anticipate continuing discussions with my friends across the aisle on several outstanding issues such as striking the right balance between protecting competitive, sensitive information while providing transparency to consumers; ensuring that we can leverage data the best we can across the federal government and addressing the cost of the fabric and ongoing review of the fabric's reach and effectiveness; and, finally, examining unintended impacts of certain requirements on small businesses.

I thank the chairman for holding this hearing and I am committed to working with my colleagues on these issues through regular order. And at this time, I would like to yield the rest

of my time to my good friend, the gentleman from Missouri.

Mr. Long. Thank you for yielding. And I would like to thank the witnesses for being here and I am happy to see that the subcommittee is prioritizing the need to develop accurate broadband maps.

For rural communities such as Missouri's 7th congressional district, access to broadband is as scarce as hen's teeth. I think we can all agree that mapping and graphically displaying where broadband is and is not available at certain speeds is a critical tool in closing the digital divide. As we move forward, I believe it is important that the broadband mapping update be paired with appropriate enforcement measures to ensure that providers' submissions are complete and accurate, which is why I am working with my colleagues on H.R. 4227 and the MAPS Act.

In closing, I would like to thank Representative Dave Loebsack of Iowa, the telecom ranking member Bob Latta, and Donald McEachin, Virginia, for their work on both the Broadband DATA Act and MAPS Act, and I am committed to working together toward the subcommittee markup and sticking the landing on this important topic. I yield back.

Mr. Latta. Mr. Chairman, I yield back the balance of my time.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Pallone, chairman of the full committee, for 5 minutes for his opening statement.

The Chairman. Thank you, Chairman Doyle.

This year our committee is focused on improving telecommunications services for consumers. In July, the House overwhelmingly passed the bipartisan Stopping Bad Robocalls Act, and earlier this year the House passed legislation that restores a free and open internet by reinstating net neutrality. And now this subcommittee continues its work on a range of pro-consumer issues including broadband deployment, spectrum policy, supply chain security, and more.

Broadband mapping is a central component in each of these discussions. Without good maps we can't correctly determine how we should target funding for broadband access and adoption in rural and urban areas. Without good maps we don't have enough detail to assess competition or review mergers. And without good maps we don't have a proper view of whether the FCC is appropriately using its authority to benefit consumers.

It is not an exaggeration, in my opinion, to say this FCC's terrible broadband data is its Achilles Heel. And the statistics show just how bad this problem is. Free Press recently discovered that one carrier alone was overstating its deployment by 2.2 million consumers, throwing off the FCC's entire estimate of unserved Americans. And CostQuest discovered as part of its state pilot program that as many as 38 percent of households in the study area might be unserved, but the FCC may count them as served.

I think it is a huge problem. Fortunately, there is bipartisan agreement on this subcommittee that the FCC's bad maps need to be fixed. Last year, Representative Loebsack's Rural Wireless Access Act was signed into law which aimed at fixing the FCC's wireless data. Unfortunately, the FCC hasn't yet taken the action required by law due to the ongoing investigation into carriers intentionally submitting bad data as part of the Mobility Fund II proceeding.

So it is clear that despite our past action more work needs to be done and I thank the many members who have worked hard to solve this problem. I have 3 minutes. I would like to yield, basically split it if I could, between Representative Lujan and Representative O'Halleran. And I yield the minute and a half now to Representative Lujan, Mr. Chair.

Mr. Lujan. Thank you to the chairman and to the ranking members. When it comes to broadband access, according to the FCC more than 21 million Americans lack access to high-speed, fixed broadband. We know that is because of no connectivity or unaffordability. And as the chairman pointed out, wireless maps are also not accurate. As a matter of fact, in my opinion, they are misleading. Because of the problems with how broadband data is collected and mapped, no one really knows what the number is. The problem most likely is significantly worse.

This is also a life and death issue. Ashlynne Mike was an 11-year-old Navajo girl who was kidnapped, raped, and murdered

in 2016. When Ashlynne went missing, the AMBER Alert systems didn't work and there was no connectivity.

Mr. Chairman, we have to act. And I thank Chairman Doyle and Congressman Bilirakis for partnering with me on the Map Improvement Act, and I thank my colleagues for their related efforts and I yield back.

The Chairman. I yield the rest of my time to Mr. O'Halleran.

Mr. O'Halleran. Thank you, Mr. Chairman. Today this committee takes an important step towards helping rural America connect to the internet. According to the FCC, only 40 percent of rural Arizona is currently connected in the home at FCC standard speeds. And even this data point likely overstates broadband coverage due to the census block reporting regime.

Working together, I know this committee can right this wrong. The legislation before us today including my and Representative Rodgers bipartisan bill, the Broadband Data Improvement Act, takes important steps to improve how the FCC and federal agencies identify where broadband coverage exists and where it does not. Just last month, the FCC adopted concepts from this bill to move away from census block reporting and instead ask the internet providers to report shapefiles of their current coverage offerings.

There is still more work to be done and I am pleased to see the bills before us today continue to move us towards making the National Broadband Map as accurate as possible. Mr. Chairman,

I am excited to work in a bipartisan manner on this important issue and, collectively, I know we can achieve our mutual goal. And I yield.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Walden, ranking member of the full committee, for 5 minutes for his opening statement.

Mr. Walden. Well, good morning, Mr. Chairman, and thank you and thanks to all our witnesses for being here. Some familiar faces back at the table. We appreciate your guidance and counsel in these matters. I want to thank my colleague from California, Ms. Eshoo. We worked a lot on these issues going back over a number of years and thank you for your leadership. And we are still not there, but we are working at it.

It is obviously an issue that I have cared about a lot over the last couple of decades. And some of my friends will remember when the stimulus bill was being voted through this committee, I pled, begged, and even had an amendment to do the mapping before the money came out and, unfortunately, we came up a few votes short on that. But maybe today we will begin this process because the money needs to go where it is needed and not overbilled and serve these markets that claim on the maps that are already served, but yet they aren't. And so, while the incentives have expanded broadband access and made communicating and participating in a 21st century economy easier than ever before, much work remains to connect all Americans to high-speed internet

broadband. I want to use an example, Weston, Oregon, which is in Eastern Oregon in my district. The mayor, Jennifer Spurgeon, describes their internet service as being dial-up, just without the modem noise, all right. And she told Chairman Pai that when he was out a year or so ago, and I thought it was a pretty good line.

They frequently experience, obviously, sub-megabit speeds. Sub-megabit. So you can imagine how surprised they were when the FCC's map said they had 100-megabit service. And so they were a little surprised because they -- yes, it is dial-up without the modem noise.

As chairman of this committee we worked in a bipartisan fashion last Congress, many of you will recall, to enact legislation to promote rural broadband and I am hopeful we can build on that same spirit of bipartisanship. We included provisions in the RAY BAUM'S Act to improve the methodology for the collection of mobile service coverage to streamline access to easements and rights-of-way and lease requests for deploying communications equipment on federal property -- just for the record, my district is over 50 percent federal land, so trying to do anything out there can be very time-consuming, costly, and burdensome -- and we wanted to improve efficiency of spectrum allocation.

So as we continue our oversight of RAY BAUM'S Act as well as our efforts to spur broadband deployment in rural America,

we must also ensure the Universal Service Program is efficiently and effectively reaching truly unserved parts of America. So I applaud Chairman Pai for his leadership on this front, proposing a Rural Digital Opportunity Fund using cost-efficient reverse auctions to better allocate limited financial support from the feds.

At the same time, we must ensure that the FCC is relying on accurate and sufficiently granular information when making these decisions. There are areas that we all know are unserved. That is pretty obvious, and then of course we know of the underserved areas.

But what we really need are really good maps that show us for sure. The Senate has already moved a consensus bill through their committee to address this issue which I believe represents an interesting path. The legislation before us today rightly underscores the importance of this issue and the attention it has earned among members of the committee. There are a number of issues with which Republicans are committed to working on with our counterparts such as how we are going to provide funding, how to balance publicly available information, and how to improve data sources and how we can best leverage the data to the greatest extent possible across the federal government. Other members have also put forward bills to address rural broadband challenges, and these proposals deserve consideration as well and I expect we will hear about some of those other bills today. So

again, Mr. Chairman, thanks for your leadership on this. Thanks for holding this hearing today and we look forward to working in a good bipartisan spirit to connect America and to have maps that show the truth. So we are all about facts and truth here, so let's get 'er done. Thank you. I yield back.

Mr. Doyle. I thank the gentleman and he yields back.

The chair would like remind members that pursuant to committee rules, all members' written opening statements will be made part of the record.

I would now like to introduce our witnesses for today's hearing. Ms. Shirley Bloomfield, Chief Executive Officer, NTCA-The Rural Broadband Association; Mr. James Assey, Executive Vice President, NCTA-The Internet and Television Association; Mr. Grant Spellmeyer, Vice President, Federal Affairs and Public Policy, U.S. Cellular; Ms. Dana Floberg, Policy Manager, Free Press & Free Press Action; Mr. Jonathan Spalter, President and CEO of the USTelecom Association; and Mr. James Stegeman, President and CEO of CostQuest Associates.

We want to thank all of our witnesses for joining us today. We look forward to your testimony. At this time, the chair will now recognize each witness for 5 minutes to provide their opening statement. But before we begin, I would like to explain our lighting system. The light in front of you will initially be green at the start of your opening statement. It will turn yellow when you have 1 minute remaining, and please begin to wrap your

testimony at that point. The light will turn red when your time expires. And with that, Ms. Bloomfield, you are now recognized for 5 minutes.

STATEMENTS OF SHIRLEY BLOOMFIELD, CHIEF EXECUTIVE OFFICER, NTCA-THE RURAL BROADBAND ASSOCIATION; JAMES ASSEY, EXECUTIVE VICE PRESIDENT, NCTA-THE INTERNET & TELEVISION ASSOCIATION; GRANT SPELLMEYER, VICE PRESIDENT, FEDERAL AFFAIRS & PUBLIC POLICY, U.S. CELLULAR; DANA FLOBERG, POLICY MANAGER, FREE PRESS & FREE PRESS ACTION; JONATHAN SPALTER, PRESIDENT AND CEO, USTELECOM ASSOCIATION; AND, JAMES STEGEMAN, PRESIDENT AND CEO, COSTQUEST ASSOCIATES

STATEMENT OF SHIRLEY BLOOMFIELD

Ms. Bloomfield. Thank you very much, Chairman Doyle, Ranking Member Latta, Mr. Walden, and members of the subcommittee. It is so terrific that you all are gathered here today coming back from recess to talk about something so important like broadband mapping and the legislation you have that is being considered by the subcommittee. I am Shirley Bloomfield, CEO of NTCA-The Rural Broadband Association. I have 850 community-based providers across the country in 46 states that really serve the most sparsely populated parts of our nation.

A major challenge associated with making informed policy and investment decisions regarding the deployment of broadband in these rural sparse areas is whether there is or is not service already, which is why the hearing is so important today. But as it stands today as you have noted, the FCC maintains the most accurate maps available for most areas, but these mapping efforts

are still frustratingly inconsistent and unreliable.

We find it is not unusual the conditions that are actually on the ground look very different from what appears on a national map. And we know that the current FCC maps miss the mark because they show an entire census area served when even if it is just one location in the block that is served, meaning that the entire census block becomes ineligible for support funding.

This false positive can mean a single customer can result in unserved customers miles away looking served on a map. In other words, perhaps the most important significant problem we have is granularity. Just last month the FCC did adopt an order that will move away from the overly broad use of census blocks for reporting broadband coverage and instead is now going to require providers to submit shapefiles. And that will actually be a good step forward.

At the same time, the FCC agrees with NTCA that we should not stop at shapefiles alone, but we should continue to move forward towards a uniform national dataset on top of which carriers can report broadband availability to ensure that this data can ultimately translate to which locations in our country are served or are not. This movement offers great promise in getting more granular maps, but it is really essential to remember that granularity and accuracy are not the same thing.

In fact, there are a few key steps that must be taken to promote accuracy separate and apart from granularity. First,

we have got to standardize reporting. We have got to make sure that everybody reports on an apples-to-apples basis. That is really critical. Specific technical standards should be established and we must ensure that providers are not making unreasonable or unrealistic assumptions about the capacities that they actually have. We simply cannot rely on people reporting advertised speeds across a wide swath of rural America to be considered sufficient.

In addition to tracking speeds, NTCA submits that the FCC should require reports specifically on the latency and the usage limits applicable to broadband services. Latency and usage limits can play a really critical role in the consumer experience, particularly when you are doing something really important like telemedicine or distance learning. And it would be useful and not an incrementally difficult database to gather.

But even if you do standardization up front to improve the mapping inputs, all of that data in question still becomes self-reported. It is self-reported data, so therefore you are going to have to have a back-end validation process as well to ensure that the process actually has integrity. So one of these validation processes could be crowdsourcing, which allows users to actually report what they are experiencing on the ground. The crowdsource data must be implemented thoughtfully so that it provides value and detects noteworthy trends rather than creating confusion or burdens. Think of a heat map and what that

data tells you.

Another and perhaps more critical validation that the Commission could utilize would be a robust challenge process anytime that it is preparing to make significant funding or other policy decisions. A challenge process would enable providers and policymakers to do one last sanity check on the accuracy of the map before decisions are actually reached.

A lot of broadband deployment since the most current map which is out there, which is in 2017, and we want to make sure that we are not doing overbuilding using federal support because that is not the best use of limited resources. Improve the maps on the front end, validate on the back end. American consumers deserve the integrity of that process. Turning specifically to the role that Congress and this committee can play, the legislation that you have under consideration, we applaud the careful attention that Representative Loebsack and Latta have placed in looking at a couple of things. First, making immediate granularity improvements in the form of shapefiles, very critical. Second, moving towards a more granular location fabric in the future, so we can really get a clearer picture. And third, calling explicitly for standard development and challenge processes to improve the data collection on both the front end and the back end.

So due in large part to the leadership of this committee and the subcommittee, small broadband providers like those in

NTCA's membership have really made great strides in reducing the digital divide. But the job is far from done and you know that. We have got to make sure that we can use these maps to really figure out where broadband is lacking and sustain broadband where it actually exists today.

So on behalf of NTCA and all the members that we represent, we thank you sincerely for this hearing.

[The prepared statement of Ms. Bloomfield follows:]

**********INSERT 1**********

Mr. Doyle. Thank you very much.

The chair now recognizes Mr. Assey for 5 minutes.

STATEMENT OF JAMES ASSEY

Mr. Assey. Thank you. Good morning, Mr. Doyle, Ranking Member Latta, members of the subcommittee. My name is James Assey and I am the executive vice president of NCTA-The Internet and Television Association. NCTA's members include the nation's largest providers of high-speed internet access as well as small ISPs serving some of the most rural parts of the country. We welcome today's hearing focused on several bills to improve broadband mapping and look forward to working with you on these issues.

Over the last 2 decades, our broadband maps have helped chart the rapid growth and expansion of internet technology. Indeed, following hundreds of billions of dollars invested by the cable industry and other ISPs, high-speed internet service has rapidly expanded to reach over 90 percent of American households. Yet, despite such success there are still many places today where broadband service is not available and likely may not be without some form of government support.

Ideally, data from our broadband maps would help us identify these coverage gaps. But, regrettably, while the tools currently used offer some assistance in highlighting unserved areas, our

system at present is too crude to fully perform this role with desired precision. This is because the FCC's map today relies on information submitted on Form 477 that requires providers to report deployment data at a census block level.

While such an approach helps us identify census blocks that are wholly unserved, it also leads to some admitted mistakes as the methodology counts an entire census block as served even if just a single household in the block has access. Thankfully, we can improve this process.

Indeed, the FCC has recently taken significant steps in this direction adopting a proposal suggested by NCTA that will require providers to submit polygon shapefiles or coverage maps that more precisely reflect the areas where service can be offered in the normal course of business. Importantly, these rules will also permit further refinement through public, crowdsourced feedback that will promote a more accurate picture of broadband availability.

As the committee considers mapping legislation, we encourage it to build on what the FCC has done and refrain from actions that might delay the swift implementation of these improvements. Consistent with this belief, we commend Congressman Loebsack, Ranking Member Latta, as well as Congresswoman McMorris Rodgers and O'Halleran for their respective efforts on the Broadband DATA Act and the Broadband Data Improvement Act. Each of these bills would ratify the FCC's reliance on more granular shapefile

submissions, secure a more robust validation and challenge process, and improve coordination among federal agencies to track broadband funding awards.

Beyond the clear benefits of shapefile reporting, we note that some providers have suggested that the FCC create other tools to complement an improved map of served and unserved areas. Unlike shapefiles, the location fabric tool suggested by USTelecom focuses not on the more granular identification of unserved areas, but rather determining the precise location of serviceable buildings within unserved areas.

Admittedly, such data could be helpful to bidding parties in sizing the potential cost of serving unserved areas. But it also raises a number of thorny implementation questions that deserve to be fully explored on the public record. Indeed, the FCC's pending further rulemaking tees up many of these issues for consideration and offers a perfect venue for parties to test private claims and consider the marginal costs and benefits of creating a new location tool. Finally, as we work to improve the accuracy of maps identifying unserved areas, a process that has already taken 2 years at the FCC, we should avoid getting sidetracked by attempts to insert extraneous data points into the consideration of whether broadband service is or is not available in a particular area.

The FCC already collects a wealth of data from broadband providers and each type of data has value, but attempts to graft

new data requests onto mechanisms designed to address broadband availability would only muddy the waters, increase costs, and could delay funding to unserved areas. Instead, we encourage you to appreciate the relevance of specific data to its specific context so as to help identify the signal from the noise and keep improvements moving forward as cleanly and efficiently as possible.

At the end of the day we know that no map will be perfect and that every map is only a snapshot of a world where conditions constantly change. But with common purpose and humility we can work together to meaningfully improve the accuracy of our current maps in ways that are practical and advance our national interest in bringing the benefits of broadband to all.

Thank you for this opportunity and look forward to your questions.

[The prepared statement of Mr. Assey follows:]

**********INSERT 2**********

Mr. Doyle. Thank you.

Mr. Spellmeyer, you are now recognized for 5 minutes.

STATEMENT OF GRANT SPELLMEYER

Mr. Spellmeyer. Thank you. Chairman Doyle, Ranking Member Latta, members of the subcommittee, thank you for the opportunity to testify today on broadband mapping. Just for the benefit of the members assembled here today, I am the wireless witness. I am going to talk about the wireless side of the mapping. Most of my colleagues here at the table are going to be speaking, you know, exclusively to the wireline side and I want to try to avoid a little bit of confusion over some of the nomenclature that you will hear.

With that said, U.S. Cellular fully supports legislative efforts to improve broadband mapping including all of the bills before this committee today. As you well know, this is not the first congressional hearing on the topic of broadband mapping. Thanks to this committee's continuing oversight efforts, it is now universally accepted that the FCC's maps overstated coverage in rural areas, sometimes significantly. U.S. Cellular operates in 21 states across America including many of those represented on this committee. Much of our business involves finding ways to provide service in small towns and on rural roads, areas where population density, economic investment, and income

levels are often well below urban areas. We are constantly thinking about ways to address the economics of providing vital broadband services to those areas.

Accurately mapping mobile broadband coverage is difficult because there are many factors such as terrain, foliage, spectrum, and equipment deployed that affect how far a radio signal travels and the signal quality a consumer actually experiences on the ground. We believe the primary issue with the FCC's one-time data collection for wireless is that some of the key standards adopted were inconsistent with how carriers actually design and operate their networks.

For U.S. Cellular, the Mobility Fund II challenge process was an all but impossible task. Our challenges are documented in a YouTube video that is referenced in my written testimony. I have also attached to my written testimony example maps demonstrating the abysmal results we found during drive testing across this country.

My company invested over $2 million to bring those challenges. We exhausted that budget. We ran out of time. We succeeded in testing only a small fraction of the areas that we believed to be inaccurate. To its credit, the FCC heard the widespread complaints and late last year they thankfully suspended that challenge process to review carrier submissions and to consider next steps.

We are at a critical moment in time. Everyone agrees that

the maps are not good enough to conduct an auction. The Broadband DATA Act will significantly improve broadband mapping for mobile services by mandating standards that reflect how wireless carriers actually engineer their networks today in rural America. For example, the FCC's one-time data collection used a cell edge probability of 80 percent and a cell loading factor of 30 percent. Consistent with how we actually engineer our networks today, this legislation would properly direct the use of stronger factors. Ninety percent at the cell edge probability and a 50 percent cell loading factor, reflective of how busy the network actually is in a rural area.

By passing this legislation, Congress will also significantly improve the challenge process. For a challenge process to be effective, the areas of controversy should be small so that the task of bringing challenges is actually manageable for carriers and for the American public and so that people believe that actually taking the time to participate is worthwhile.

In closing, we must get this right because 10 years' worth of federal Universal Service funding is riding on this map. In the fixed broadband world that is over $20 billion. In the mobile broadband world, it is another $4-1/2 billion. Every study indicates that it is going to take significantly more than $25 billion to achieve high-quality fixed and mobile broadband throughout our nation and that doesn't even begin to account for the costs of rolling out 5G. We can't afford to waste even a

single dollar.

This committee should adopt the Broadband DATA Act and the related legislation before it today so that we can get on with the task at hand. Step one is fixing the maps and we begin that process here today. Step two is even more significant; that is actually filling in those maps. That is a broader challenge and we look forward to working with the committee on that next. Thank you.

[The prepared statement of Mr. Spellmeyer follows:]

**********INSERT 3**********

Mr. Doyle. Thank you.

Ms. Floberg, you have 5 minutes.

STATEMENT OF DANA FLOBERG

Ms. Floberg. Chairman Doyle, Ranking Members Latta and Walden, and subcommittee members, thank you for inviting me to testify. I am here today representing Free Press Action, a nonpartisan nonprofit with 1.4 million members.

Every community deserves the benefits of a robust, affordable broadband connection and better broadband maps are part of getting there, yet they aren't all we need to close the digital divide. We support H.R. 4229, the Broadband DATA Act, and H.R. 4227, the MAPS Act, which improve the FCC's National Broadband Map and the underlying Form 477 data by making it more granular.

There are indeed opportunities to improve that data, though the existing errors on wired broadband may be significantly smaller than some stakeholders fear. In Virginia and Missouri, CostQuest pilot found that a few hundred thousand additional households might be unserved at what the FCC defines as broadband speed. If we extrapolate that nationwide that could mean potentially eight to nineteen million additional unserved people. That is certainly an issue worth fixing, but the number is far lower than some have speculated. Still there are some key areas

where wired deployment data could be improved.

Mobile maps on the other hand seem to deserve all the criticism they get. Accurately assessing how a signal will propagate presents unique challenges that can lead to widely overstated wireless maps. We are optimistic about this legislation's proposals to improve the granularity and accuracy of both mobile and wired deployment data.

As we improve our broadband maps, however, we must not sacrifice transparency. Both Congress and the Commission have long recognized the value of ensuring public availability of not just our broadband maps but also the underlying data. Free Press and others have made extensive use of this data recently shining a light on massive overreporting by a single small ISP. This illustrates the value of keeping deployment information publicly available. And for a new challenge process to have any true corrective power, outside parties must have access to this data. The Broadband DATA Act goes a long way towards this goal, though we would welcome amendments to clarify that deployment data should not be considered confidential.

But improving the accuracy of broadband deployment maps should not be the sole preoccupation of this subcommittee. At their best, maps are useful because they help us get where we are going. The National Broadband Map is meant to chart a course for policymakers to close the digital divide. Federal policy here has centered around people who can't subscribe to broadband

because it is not available where they live. But the divide actually extends far beyond these completely unserved communities.

Millions more people live in an area where broadband at the FCC speed threshold is already deployed, yet they can't afford to subscribe. In fact, only 42 percent of households making less than $20,000 a year subscribe to wired home internet compared to 82 percent of households with incomes above $100,000. So even if these bills resulted in completely error-free maps and even if those maps enabled complete national broadband deployment, the digital divide would persist.

When it comes to broadband dreams, if you build it, they will come, just isn't true. It is more like if you build it, they will come, but only if they can afford to pay the price. When families are forced to forego necessities like diapers and food so they can afford to keep paying their internet bill, when students are forced to research and write essays on mobile phones because their parents can't afford a fixed connection, when the unemployed are forced to hunt for jobs without the aid of broadband because the price is just too high, we have an affordability problem.

Discrimination also plays a key role. At every income level, people of color are less likely to adopt broadband than their white counterparts. Taken together, there is strong evidence that lack of affordability, lack of competition, and

racial discrimination are keeping people offline. Better maps will help target public investments to improve broadband deployment and that is good. But your unserved constituents can't use on-ramps to a digital superhighway they can't afford to ride.

That is why while we support the bills in today's hearing, we urge this subcommittee to see them as a stepping stone. Improving the National Broadband Map is valuable so long as policymakers stay true to the principle of ensuring publicly available deployment data and remember that the digital divide is much broader than maps or deployment alone. Thank you.

[The prepared statement of Ms. Floberg follows:]

**********INSERT 4**********

Mr. Doyle. Thank you.

Mr. Spalter, you have 5 minutes.

STATEMENT OF JONATHAN SPALTER

Mr. Spalter. Well, thank you, Chairman Doyle and Ranking Member Latta and other distinguished members of this committee. Thank you for the opportunity to appear before you on behalf of the members of USTelecom, large and small, who collectively invest -- who have invested far more and for far longer than any other sector to connect rural America. Today's hearing is appropriately focused on one of the most critical questions before our country. Will every person in this nation have access to the foundation of the 21st century American dream? Bridging the digital divide is not a partisan issue, this is an American opportunity. And we are at a pivotal moment where we have the tools ready and the bipartisan will to ensure that we can identify and connect the unconnected quickly, efficiently, and accurately.

We convene today to focus on one of the biggest barriers to achieving our goal, the fact that our nation still lacks a single map that can accurately identify every home and business that is currently unserved. If we can't see it, we can't fix it. And that is why USTelecom launched the Broadband Mapping Initiative and its proof of concept pilot program to show its costs and benefits. We all understand the severe limitations

of the "one served, all served" census block approach that still guides federal investments in achieving universal broadband service. In the past it did serve an important purpose helping public-private efforts increase rural connectivity by more than 70 percent in the last decade.

But we have reached a plateau. The good news is that with the advent of new data sources and processing capabilities and the bipartisan support here in Congress and at the FCC, we can now quickly and affordably account for every single served and unserved location in the nation and deliver near 20/20 vision on the challenge before us.

Our mapping initiative brought together a diverse group of partners who stepped up to the plate to forge a lasting solution. We launched the pilot program in April. Our goal was focused to identify the precise number and location of every broadband serviceable location in the pilot states and demonstrate the ability to scale the approach nationally using modern data sources and with that foundation demonstrate how providers can report broadband availability on top of that foundational dataset, shapefile or otherwise. It is now complete and the findings are crystal clear. Yes, we can quickly and affordably map the gap and with a degree of accuracy that makes the census block or shapefile only approaches look like Pin the Tail on the Donkey. Equally important, we can take this step concurrent with any new broadband support programs such as the FCC's potentially

game-changing $20 billion Rural Digital Opportunity Fund, in a manner that need not delay; indeed, would likely accelerate our ability to finally and truly connect every part of our nation.

This is a once-in-a-generation leap forward in identifying the availability of broadband. We conducted the pilot in Virginia and Missouri. We are now happy to be working with the FCC and you to scale our approach nationwide, producing a visibility into our country that no regulator or provider has ever seen before. And our findings underscore the urgency of this work, identifying a margin of error as high as 38 percent under today's approaches. That is up to 445,000 homes marked served that could in fact be unserved in our two pilot states alone.

To argue that we need to choose between speed and allocating scarce federal dollars based only on existing reporting approaches and accuracy in the form of better maps later is a false choice. Our pilot proves we can do both, be quick and be accurate. That is one of the reasons why USTelecom strongly supports the bipartisan Broadband DATA Act and the MAPS Act that mandates the proper ready-aim-fire sequencing of mapping the gap and then targeting finite federal resources with a precision that has not been possible to date. Critically, the legislation wisely pairs more granular reporting on the one hand with more precise location identification to close the digital divide once and for all. Today should be a galvanizing moment. A unifying

and bipartisan sense of determination combined with innovative new data capabilities put victory at long last within reach. But as we approach the finish line, we cannot back down a single step on how we define the win. Creating a complete database of all broadband serviceable locations will provide policymakers a necessary picture of where scarce taxpayer dollars should be targeted and allow providers the best opportunity to invest those resources officially and with greatest impact increasing speed and minimizing waste. Most importantly, this new mapping approach directed in the legislation before us today will render visible and thus reachable the unseen and the unserved.

So thank you again for calling on us to raise our sights and raise the bar when it comes to connecting all Americans. I am really happy to take your questions.

[The prepared statement of Mr. Spalter follows:]

**********INSERT 5**********

Mr. Doyle. Thank you very much.

Mr. Stegeman, you are now recognized for 5 minutes.

STATEMENT OF JAMES STEGEMAN

Mr. Stegeman. Thank you. Good morning, Chairman Doyle, Ranking Member Latta, and members of the subcommittee. My name is James Stegeman. I am president of CostQuest Associates and it is an honor to be here again to discuss the status of broadband in this country.

For the last 20 years, CostQuest has taken pride in empowering the public and private sector with the ability to make data-driven decisions with their most critical resources and we seek to do the same for broadband mapping. While CostQuest is known for its cost expertise, the integration of geospatial design and data forms the underpinning of all our studies, analysis, and models. As for my own experience, I am a statistician by trade. And as Hal Varian, chief economist at Google said in 2009, the sexy job in 10 years will be statisticians. As you listen to my testimony today, 2019, I will let you decide if Hal was right. Now let me jump to the heart of my testimony. A coalition of leading broadband innovators launched the Broadband Mapping Initiative in April of 2019 to demonstrate the feasibility of identifying the precise number and locations of structures that require broadband access in Missouri and Virginia. The

resulting dataset known as the Broadband Serviceable Location Fabric makes it possible to precisely map and understand where broadband is available and more importantly where it isn't.

Let me first walk through what the fabric represents. The fabric is based upon parcel data, tax assessor data, building polygons, addresses, and roads. Combined through our unique geospatial process, we were able to identify the broadband serviceable location on the vast majority of parcels. Where the data were inconclusive, we sent records, 140,000 in total, out to our partner firm at CrowdReason who managed a visual review using a crowd labor pool.

Now, let me share some of our key findings. First, the pilot was a success. Developing the fabric for two states showed it can be done for the entire country.

Second, we can identify the unserved. For rural census blocks in Missouri and Virginia that are considered served by the current 477 guidelines, we found that 38 percent of those locations were not reported as served by the carriers in the study. This amounts to 445,000 homes and businesses.

Third, we found that location counts differ. The fabric revealed that 48 percent of the location counts in rural census blocks are different from current estimates used by the FCC. This is meaningful when assessing the scope of the unserved problem, determining build-out requirements, and ultimately how much budget is needed to remedy.

Fourth, we found that the current datasets conflict with the fabric. In our pilot, census blocks identified for an address were different 28 percent of the time when comparing the provider submitted location versus the fabric location. Under today's 477, this could impact which census blocks are reported. And, finally, reporting is enhanced. Regardless of how the new FCC coverage reporting format is set up, the quality and validity of the reporting will be improved using location-specific data.

Now let me show you some slides of what the fabric reveals.

In image 1, shown on the screen, I highlight what are current 477-based understanding of broadband coverage would look like in ten populated census blocks in rural Missouri. Using the pilot's providers data, all the census blocks shaded in blue would be reported as served. This is the extent of our knowledge today. Nothing more, nothing less. We do not know if all customers in the census blocks are served or if it is only one.

In image 2, I demonstrate what polygons might look like under the FCC's proposed coverage efforts where carriers will file polygons that represent where they provide service. In this image, my team created hypothetical polygons, the light-blue bounded areas, based on carrier-provided latitude and longitude coordinates. This is one approach to polygon creation. There are others, some of which can be found in Appendix D of my testimony.

In image 3, using the fabric I am now able to reveal within

these ten census blocks the extent of served locations, the green dots and, more importantly, the unserved locations, the red dots. Of all the benefits of the fabric, to me this most clearly demonstrates why the fabric is needed. Specifically, polygon reported, as I showed in the previous image, will only improve our knowledge of what the served areas look like. The fabric is needed to then provide knowledge of the unserved locations.

In regard to next steps, can this fabric be generated nationally? Unequivocally, yes. How much time will it take? We estimate that starting from where the pilot left off it should take no more than 5 to 8 months to stand up an initial national fabric for testing and 12 to 15 months to fully complete. And what will it cost? I estimate the initial cost to be between eight and a half and eleven million dollars for a restricted use dataset.

That concludes my testimony. Thank you for your time. And I would encourage you to see more in my written testimony for additional details.

[The prepared statement of Mr. Stegeman follows:]

**********INSERT 6**********

Mr. Doyle. Thank you very much. That concluded our openings. We are now going to move to member questions. Each member will have 5 minutes to ask questions of our witnesses and I will start by recognizing myself for 5 minutes.

So, Ms. Floberg, tell me why is it so important that broadband coverage data be accessible to the public and be challengeable by third parties such as your organization?

Ms. Floberg. Thank you, Mr. Chairman.

I think that we have seen and we have heard today a lot about the importance of ensuring that there is a check on whatever mapping system we implement, some ability for the public, for researchers to be able to look at the underlying data and say this reflects reality or this does not reflect reality. This is something that Free Press has done even very recently.

We found an error in the FCC's Form 477 data where small ISP called BarrierFree had mistakenly reported serving 20 percent of the U.S. population with fiber to the home speeds in less than 6 months' time. In reality, they served a much, much smaller percentage of the population and that error actually threw off the FCC's entire analysis of how much broadband had been deployed, how much fiber had been deployed in that past 6 months.

So making sure that that data is available for organizations such as Free Press, but also for members of the public to say the map says I am served by this many providers; that I am served by these speed tiers and I am not, is really, really important.

Mr. Doyle. Thank you.

Mr. Stegeman, it is very interesting testimony. We know the FCC currently has about $20 billion for Universal Service programs that has not been awarded and then it is going to be used to fund a broadband buildout over the next 10 years. So let me -- I don't know if it is possible, but you were able to do pilots on two states, Virginia and Missouri. And it may be a reach, but if you extrapolated your findings in those two states to the rest of the country, who across the country would be left behind if the FCC didn't look before it leaped over the next 10 years of broadband deployment?

Mr. Stegeman. Thank you for that question. In our study in Missouri and Virginia, we were able to unveil or reveal that there are unserved locations in what people considered served census blocks before. We were also able to identify that if carriers use address tools to identify which census blocks the report has served, those census blocks may be incorrect that they identify.

So what we found in the study is that there is an underreporting of the unserved issue in the country, and there are many studies out there. I think Dr. George Ford put out a study that I think he estimated the unserved at potentially four million. We have seen estimates as high as in the ten millions. It is hard for me to project forward for the nation, but I know it is in the millions. I just don't know the exact count at this

time.

Mr. Doyle. Thank you very much. You know, there has been a lot of discussion about how overstated and unreliable coverage maps hurt rural areas, but I don't have to drive very far outside of Pittsburgh before I experience dead zones and despite the map saying that I am covered.

Mr. Spellmeyer, how does this issue affect consumers in urban and suburban areas as well as rural areas?

Mr. Spellmeyer. Well, Mr. Chairman, it is certainly an issue, I think, for all Americans. You know, you can get in your car right here and drive five miles to the Potomac River and there is some areas along there that you don't want to end up in trouble because there is no cell phone coverage and you can't stop to figure out, oh gee, which carrier's phone do I need to take along on my trip to Rock Creek Park.

So we have got to fix it. I traveled down Highway 1 in California this year. I was shocked to see the expansive stretches where there is no coverage. The same thing is true -- I have been to Weston, Oregon -- that Chairman Walden mentioned earlier. We have got to fix it both for the people in the rural areas and the people that get in their car and drive ten miles.

Mr. Doyle. Yes, thank you very much. Boy, I will tell you we have been talking about this issue for as long as I can remember. Ms. Eshoo told me we have been talking about this since they made the very first maps when the Earth was flat. And it seems

to me that we have got to get moving on this. I want to thank you all for your questions, your testimony.

So the chair is now going to recognize Mr. Latta, the subcommittee ranking member for 5 minutes to ask questions.

Mr. Latta. Well, thank you, Mr. Chairman. And thank you very much to our witnesses. And that is a long time for those maps, but that is why we are here today and, really, we thank you all for your testimony.

Mr. Spalter, if I could start with you. USTelecom's fabric building pilot appears to have been a productive start to identify which locations in rural areas need broadband and show gaps in the current data collection process. Building on that experience, I want to focus on where the rubber meets the road.

Would you walk us through the expected timeline under your proposal from updating the collection of data for the broadband map to actually using the data to more accurately guide the Universal Service funding?

Mr. Spalter. Thanks for that great question. As Mr. Stegeman pointed out, it is possible to have a fully nationally-realized, scalable, universal, harmonized, de-duplicated map in 12 to 15 months. His estimates, and I think they are accurate in his project management capacity, that we can actually even deploy maps sooner than that, that will be scalable and usable.

The important point, Congressman, is that once we actually

can put pen down on this map and we can do it quickly, that can become the basis for guiding any new dollars going out the door for any broadband support program, including the Rural Digital Opportunity Fund, to ensure that every taxpayer dollar is being used to its best and highest purpose as accurately as possible to reach the truly unserved in this country. This is attainable and we can do it.

Mr. Latta. Thank you.

If I could follow up, Mr. Assey, if I could ask you, when it comes to the actual data used to create the map, how helpful are the quality of service metrics in shaping our picture of broadband availability driving the funding decisions these maps are designed to determine?

Mr. Assey. Congressman, thank you for the question. The broadband map is a map that reflects coverage, so it is really aimed at focusing where networks are and where they are not. The quality of service, really, I think only relates to the speed tiers and the data requests that the FCC makes, so it is really kind of a separate issue. And one of the reasons we are so focused on the shapefile portion of improving the map is because we believe that will offer the quickest improvement on a national scale in the quickest amount of time.

Mr. Latta. Thank you.

Mr. Spellmeyer, how can Congress ensure that there is a meaningful challenge process to validate data while also

protecting the proprietary data that providers and third-party vendors and consumers may supply through a commission-developed process to inform on the map?

Mr. Spellmeyer. Congressman, your legislation and much of the legislation in front of us today outlines some stronger parameters for how the FCC would run a challenge process at least on the wireless side. We think that is needed.

In terms of confidentiality of data, there are certain inputs to a wireless map that may be confidential, but beyond that I believe it is actually important that the public see the map and understand what the maps look like. One of the biggest mistakes the FCC made last time was not to allow the American public to participate in the challenge process. This legislation gets that right, but it is really hard for a consumer to go out and participate in the challenge process if they don't understand who is claiming coverage where.

So I think it is essential that we make sure that that information gets out to the public while protecting -- there is certain proprietary inputs like the, you know, the height on a tower where someone has got a particular antenna that you might want to keep confidential, but beyond that the rest of it should come forward.

Mr. Latta. Okay, thank you.

Mr. Assey, how do shapefiles from different providers factor into this endeavor and what is the benefit?

Mr. Assey. Well, the benefit is, you know, we are currently living with a system that is not based upon how providers actually build their networks. We are essentially retrofitting data into a census block map. Shapefiles will allow providers to actually draw the shape and the contours of where they offer service.

And whether or not you are a cable provider or a fixed wireless provider or a telco, you will be able to provide that data and essentially layer it on top of the national map so that we can actually identify in a more granular way those places that are being served with broadband today and we can, more importantly, identify those places that are yet to get service.

Mr. Latta. Well, thank you very much.

Mr. Chairman, thanks very much for today's hearing, thanks to our witnesses, and I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. McNerney for 5 minutes.

Mr. McNerney. Well, I thank the chairman and I thank the witnesses. Very informative, kind of exciting testimony this morning, so I am looking forward to seeing progress on this issue. In my district I know there is wide areas that are -- we just don't have enough data to know if people are being served and in fact I know people that aren't served, so this is an important issue.

Ms. Bloomfield, in your testimony you discussed the importance of the challenge process and crowdsourcing, I am kind

of following up on Mr. Latta. Could you tell us more about how these methods will help obtain reliable results? Just explain the process a little bit.

Ms. Bloomfield. Sure, absolutely, and I appreciate the question. So, you know, with the better mapping, you know, if you start with the shapefiles that the FCC has talked about, you will start to get more granular data so we will be able to start to see a better picture. But remembering it is still self-reported, you know, so how do you make sure that you are validating what people are reporting?

So if a carrier is reporting something, what we want to know is on the ground that is what is really happening. So that is the advantage of things like crowdsourcing where you can basically allow consumers on the ground to get some feedback and say yes, we are seeing this or we are not seeing this. The one thing I could caution again is, you know, if you asked me today what speed I am getting at my house, I am not sure I could give you the answer.

So I think it is the ability to whoever is handling that information to see what trends, where are you seeing spaces really bright up that there clearly are problems, there clearly are issues. So again, it is that ability to take that accuracy and make sure that we can also be granular at the same time.

Mr. McNerney. Thank you.

Ms. Floberg, in your testimony you raise the issue of compatibility with historical 477 data. Can you elaborate on

that and its importance? Do you have any recommendations that would follow?

Ms. Floberg. Sure. Thank you so much for that question. We do believe that it is really important to make sure that even as we make the maps more granular and more accurate that we preserve the ability to compare new deployment data to the old deployment data so that we can see trends where they are happening. This also gives us the opportunity to compare deployment data with granular data from the Census Bureau about demographics to figure out who is being served and who isn't being served.

So maintaining some ability to not just have this granular data about who is unserved, but to still be able to aggregate that to the census block level will preserve an abundance of rich analysis that we can move forward with. I think the Broadband DATA Act does have some great language about that about ensuring backwards compatibility, so really it just comes down to making sure that that data is available to the public and available in a way that it is easy to make those comparisons and do that analysis.

Mr. McNerney. Is there also a thing about how trends, what the trends are, or is that like too far in the future for now what the trends in terms of coverage is?

Ms. Floberg. I think that definitely maintaining that compatibility is how we would be able to see trends. It would also be a way to see how these new more granular sets of data

have potentially improved, how we keep track of who is unserved and who isn't. It would give us, I think, the ability to see much better trends in deployment as we move forward with better maps.

Mr. McNerney. Thank you.

Mr. Stegeman, we have heard about the importance of making broadband mapping data publicly available. I want to make sure that the data being collected will also be accessible and usable by households, small businesses, and local governments across my district in particular. Do you foresee any challenges in making that possible?

Mr. Stegeman. There are challenges in creating the fabric dataset. If we go a proprietary route we can get to the answer, but quicker with less money because the data quality is better. The proprietary route doesn't mean it is not viewable by the public. What the proprietary data means is it is restricted in use that someone cannot download the entire country of all the data. They can't download full states, but it is usable by companies, by the public to do that.

The alternative route is to use kind of an open dataset, open source datasets that are out there that we can initiate the process. We actually did that in Missouri to see how well it would work. It will work, but it will require additional visual verification because the records will not match in sync as well as the proprietary data. That public, open dataset can be

released and used by the public the same as the proprietary but it would have less restrictions on use.

Mr. McNerney. Well, I just -- I am going to have to close here or I am going to be gaveled out.

But, Mr. Stegeman and Mr. Spalter, you made it sound like creating these maps as accurate, granular, and with low latency is something that we can actually achieve in a fairly short time, so I hope you are right.

Mr. Spalter. I am confident that we are.

Mr. Doyle. The gentleman yields back. The chair now recognizes my friend, Mr. Olson, for 5 minutes.

Mr. Olson. I thank the chair and welcome our six witnesses. I would like to start out with a point of personal privilege. Everybody here that September 11th is not just a day to remember what happened 18 years ago in New York, in D.C., and Pennsylvania; 7 years ago in Benghazi four Americans were killed, Ambassador Smith and three others, they were overrun by terrorists. So, please, later today, pray for their lives as well as lives that were lost here in New York and Pennsylvania on 9/11.

Now I got to open by saying Texas-22 is a big suburb. We have a lot of broadband access; that is not our problem. But my state is huge and Texas has some real issues that you guys have brought up. For example, Mr. Hurd is not here, Will Hurd, but he has one county called Loving County, has one small town, population of 134 people. I guarantee you if one person on that

map has access or reports access, the whole city has access and that is just not true.

So my questions come from my role as the co-chair of the House Artificial Intelligence Caucus, the AI Caucus. I am a co-chair with Dr. McNerney over there. And Form 477, the primary source the FCC uses to assess access for broadband, et cetera, et cetera, has some real problems that you all brought up today. I mean there is false positives, coverage when there is not coverage, the maps, et cetera, et cetera. I would like to ask you all to put on your thinking caps and put on that AI cap. How can AI help resolve these problems you have going forward?

Ms. Bloomfield, you are up first, ma'am. Any ideas?

Ms. Bloomfield. I knew that was going to be the downside of sitting here, right?

So I think, you know, when you think about AI and you think about applications, for example, I have a company down on the border of Mexico that is in Texas that actually uses a lot of AI and drone technology to do border security. So thinking about, you know, first of all, you have to have the access and then you have got to think about what are the applications that you can enable particularly in an area where you have got a wide swath of land.

So I think there is -- I think we are just starting to explore. Thankfully, this isn't a privacy hearing, but I think there is a lot of different applications. But first, you have to have

the connectivity to be enable the cool things that you want to be able to do.

Mr. Olson. Thank you.

Mr. Assey?

Mr. Assey. Yes, Congressman. I think technology, whether it is AI or other technology, certainly plays a large role in helping us fill the gaps and provide service to unserved America whether that is through the technology that cable companies offer or the technology that other broadband providers offer. But first thing we have to do is really get that accurate picture of what we are up against and what the challenges of geography and low density are providing.

Mr. Olson. I think AI can help with that.

And, Mr. Spellmeyer, for the mobile phones, how about AI?

Mr. Spellmeyer. Well, Congressman, I am no artificial intelligence expert, but -- and I don't know that we need to get to artificial intelligence. But as I sit here reflecting on the wireless side, I think there is already several players out there in the ecosystem that have an awful lot of data, actually, about coverage and those companies that come to mind are Apple and Google. They track a significant amount that goes on up and down on every handset, every day. They know that I am sitting here on the third floor of the Rayburn Building right now. And we should try to find ways to leverage that down the road to improve coverage data.

Mr. Olson. Thank you.

Ms. Floberg?

Ms. Floberg. I don't think we can suggest any particular AI applications, but I do think that making sure that the underlying deployment data is publicly available will make sure that others can think of what those innovative ideas might be.

Mr. Olson. Perfect. Thank you.

Mr. Spalter?

Mr. Spalter. One of the critical issues about the deployment of AI in the future is that it will be enabled and enhanced and turbocharged when we actually can deploy nationally 5G technologies. And for too long, 5G technologies have been considered to be the province only of our urban and suburban residents and enterprises.

If we can map broadband accurately, granularly, with the process and methodology we are suggesting, pinpointing where there is, in fact, unserved locations and couple that with other reporting technologies and provide that to programs like the Rural Digital Opportunity Fund, that will mean we will be able to pull fiber to places like your communities in Mr. Hurd's district and your district that then can use fiber-enabled resources to empower rural communities from benefiting from 5G, and with 5G use the cloud scale algorithms, machine learning, and other data processes that are enabled and will enable artificial intelligence applications for health care, for education, from

advanced manufacturing, for all kinds of things.

But we have to start with accurate mapping and that is why we have stood up our pilot program and wanted to be integrated into the Rural Digital Opportunity Fund.

Mr. Olson. Thank you.

Mr. Stegeman?

Mr. Stegeman. Yes, I am excited to say that we actually use machine learning and artificial intelligence on the fabric. If you think about it, we will have over a terabyte worth of data, 170 million building locations, 150 million parcels and trying to weed through that information intelligently it will be a struggle. And we have incorporated machine learning and other efforts to actually be able to do that successfully.

Mr. Olson. And that is why I saved you for last.

Mr. Chairman, I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes the chairman of the full committee, Mr. Pallone, for 5 minutes.

The Chairman. Thank you, Chairman Doyle.

Since Superstorm Sandy ravaged my district, I have been very focused on network resiliency. And I know there are so many uses for granular broadband data, but building a national location fabric could be quite helpful in disaster response.

Mr. Floberg, what do you think about that if I could ask you? Ms. Floberg, I am sorry.

Ms. Floberg. That is quite all right. I think that there is definitely potential here. The kind of fabric that we have heard CostQuest and others describe could potentially be very useful for making sure that we have the best and most accurate data about when there are these outages in response to natural disasters; where people are experiencing those outages; where folks are who might need help; who might need resources directed by our disaster response.

How we do that and how we ensure that we get the appropriate data from carriers about where those outages are and where there are problems with network resiliency that need to be resolved, I think, is an open question, but we can certainly see the potential in having that kind of granular data about where folks are who are going to need assistance.

The Chairman. Thank you.

And, Mr. Spellmeyer, do you think better wireless maps will be useful for public safety in the wake of disasters?

Mr. Spellmeyer. I do, Mr. Chairman. Without that information you are flying blind. The wireless industry works pretty hard in advance of and during disasters to try to stay on top of outages and to communicate with public safety. And we have made that as an industry an even greater priority since Hurricane Sandy, thanks to your leadership. You know, we know instantly because of remote monitoring when a cell tower goes down. And if we are in a hurricane situation, we have an

obligation to report that to the FCC that same day. And we do that and we try to regularly communicate with public safety to leverage that information, but certainly continuing to improve these maps and to make sure that everybody understands who claims to have coverage where will help.

The Chairman. Well, thanks.

I think the committee should be very proud of the bills before us today. And in particular I believe that including metrics for quality of service is a valuable addition. And once this legislation passes, I hope we can build on the progress we have made to give consumers more insight into the quality of the service that broadband providers offer.

But if I could just ask the entire panel, just a yes or no, would each of you commit to working with the committee to build on the concept of quality of service with the aim of helping to better inform consumers? And again, a simple yes or no, if I could start with Ms. Bloomfield.

Ms. Bloomfield. Absolutely.

The Chairman. Mr. Assey?

Mr. Assey. Yes.

Mr. Spellmeyer. Yes.

Ms. Floberg. Absolutely.

Mr. Spalter. One hundred percent.

Mr. Stegeman. We would love to.

The Chairman. All right, thank you.

Now let me go back to Ms. Floberg. Significantly, in your written testimony you note that the data that goes into the FCC's broadband maps needs to be publicly available and I agree. In my opinion, this data must be available for researchers who can double check the FCC's analysis, local governments who can check the accuracy of the data, and for consumers who can use it to understand better what is available.

So, Ms. Floberg, from your perspective, considering all Free Press's analysis of broadband deployment data, what would happen if the FCC kept this information to itself?

Ms. Floberg. Well, I think, first and foremost, it would absolutely throw a wrench in the works for having any sort of functional challenge process to get a sense of whether or not the data that is being reported from carriers is accurate, but I think it would also have tremendous other impacts. Free Press has used the deployment data to assess where there is racial disparities in broadband deployment. That would be much more difficult without that kind of deployment information. We have also used it to assess the accuracy of claims about investments stalling out in the wake of the 2015 Open Internet Order.

So there is all sorts of different kinds of analysis related to broadband deployment that would become much, much more difficult for researchers as well as for members of the public simply to gauge whether or not the maps are correct that they have service or that they don't have service.

The Chairman. Thank you.

And then my last question is, Mr. Spalter, I also know quickly fixing the FCC's maps is important. Do you think H.R. 4229 strikes the right balance in that regard?

Mr. Spalter. We do. And we commend this body and this legislation in particular for advancing three principles. One is that we actually need to prioritize mapping as part of any effort to move forward in accurately determining where unserved American residences and enterprises are. Second, that there is a need for speed in doing so. And third, that it provides bidders, providers, ultimately, who will be seeking these resources to deliver these services the ability to do so with pinpoint accuracy, limiting the risk that we are wasting taxpayer dollars, and speeding up our efforts to actually deploy broadband to unserved Americans so that we can close the digital divide once and for all.

The Chairman. I thank you. Thank you, Mr. Chairman.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Kinzinger for 5 minutes.

Mr. Kinzinger. Thank you, Mr. Chairman. Thanks to you all for being here.

Accurate broadband mapping is incredibly important so that industry and government can work to provide internet service to un- and underserved areas. It has been one of the bigger goals of this committee and it is the only goal of the Rural Broadband

Caucus in which I am proud to serve as a co-chair. Billions of dollars have been invested by the government and industry alike and substantial improvements have been made, but there are too many Americans without adequate broadband service, and the fact that there are Americans here in 2019 with no service at all is just beyond me.

There is near-universal agreement that the current mapping methodology is outdated, to put it nicely. We have heard arguments today about not only the maps and the data, but the need for government to quickly disburse funds to continue the buildout. I just want to state that the speed at which funding goes out should be a goal, but it can't be the only goal. For what seems like forever now, government, industry, and Main Street have been complaining about the inaccuracy of broadband maps. Should we move quickly here? Yes, absolutely.

But given the complexities of the issue and the difficulties striking the right balance, we may not have a similar opportunity to do this again for some time. So I would like to move quickly, but it is vital that we get it right so we aren't spending billions of dollars with no effective metrics or meaningful oversight. The most important goal must be to get service to those Americans that have never had it at their homes, their business, or their schools. There is a balance to be struck here and I am optimistic that we can find it.

So, first question, for Mr. Spalter. It is encouraging the

USTelecom received input from several wireline providers during its pilot program. It is clear, however, that more partnerships are needed from all fixed and wireless providers. How does USTelecom propose that industry could partner and coordinate in developing this data and would regularly help private industry working groups in coordination with policymakers factor into building that database?

Mr. Spalter. We were very privileged and lucky that a number of innovative wireline providers stood up and stood tall to work with us in advancing this idea that we can deliver more accurate data not only of served broadband locations but unserved locations so that we could present to you and to the FCC and to any government agency the clarity that is required to guide our future broadband support programs.

I am disappointed that not all wireline providers decided to join with us in our effort, particularly the cable industry; however, we know that there are some very utilizable datasets that we have available that are immediately available once we complete the map to deploy not only, finally, a National Broadband Map, but broadband support programs like the Rural Digital Opportunity Fund that will be effective.

In terms of continued partnership, we want to work not only with all parts of government in a harmonized way, but we commend the legislation that is before this body to ensure that there is actually coordination amongst and between government agencies

in utilizing maps, and we as an industry are very eager and ready to work with all parts of government from the FCC to the Commerce Department, the Agriculture Department, and beyond to advance these maps, including at the state and local level as well. This is all achievable. And we need to understand that if we are going to design and deploy effective broadband support programs, they need to have an undergirding, foundational dataset upon which all kinds of different reporting mechanisms, including shapefiles, can be added in order for us to get the job done of closing the digital divide.

Mr. Kinzinger. Thank you.

Mr. Assey, how do cable providers propose to combine efforts with the wireline and wireless industries to build on the recent pilot program?

Mr. Assey. Well, I think, first and foremost, as I mentioned in my testimony, we are focused on delivering the shapefiles that are going to accurately show the places that are already served. The important thing when we are talking about serving unserved America relative to the fabric and the buildings that may exist in unserved America, that to me goes to how much it is going to cost to the would-be bidders to extend service there.

So we believe that actually making progress and getting the shapefiles done, out there, and located on the map will give us a better sense of the area as we need to focus on and allow us to come up with new strategies to actually devote the scarce

resources that we do have where they are most needed.

Mr. Kinzinger. So from your perspective, does the fabric tell us which locations have access to broadband?

Mr. Assey. The fabric doesn't. The shapefiles will tell us and the process that we are going to create to have providers actually demonstrate this is where we believe we can serve. And we have a verification process and a public crowdsourcing process to make sure that we get that right and then we can focus our energies on making sure we spend the dollars to hook up more people to broadband in unserved America.

Mr. Kinzinger. Well, I have more questions. But time flies when you are having fun, so I yield back, Mr. Chairman. Thank you all.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Loebsack for 5 minutes.

Mr. Loebsack. Thank you, Mr. Chair. And I do want to say again, thank you to Mr. Latta for helping on the bill that we are offering today. We have worked together really well. And I want to thank the members who have been here longer than I have been. Some of the folks' names were mentioned already, too many for me to repeat. But I have only been on this committee now for 5 years. I am in my fifth year; I am still kind of a newbie.

And I won't be here after this term any longer in the Congress, so there is a little urgency on my part to get this done before I get out of here so that the people in my district,

people of Iowa, the people of the country can benefit from better maps. I have often said garbage in is garbage out and that is the way it has been in the past, unfortunately, the way these maps have been constructed and then the potential uses of those maps too.

A couple of other quick points, Ms. Floberg, I want to thank you for talking about the affordability issue. That is really, really critical and I really appreciate that. And, you know, affordability is, we talk about a rural-urban divide and most of us are talking about rural access today. But affordability is not just a rural or urban issue, it is a national issue, and so thank you.

And, Mr. Spalter, I hope you don't ever come to my state to run against any of my friends because you are awfully damn inspirational and thank you very much for your remarks today. Not to take away from anybody else, but this has really been a great panel, I have to say.

I do want to just ask, first of all, Mr. Assey, a quick question about crowdsourcing, but before I do that, I have to repeat the experience that we have had in my district with Chariton Valley Electric Cooperative. They have missed out on getting funding for building out. They are an electric cooperative, but they wanted to build out broadband and the data indicated that there really wasn't any need for it and it was based on census data and what have you. Absolutely horrendous decision on the

part of the FCC to deny them funding.

If you would, Mr. Assey, I know that you have an interest in crowdsource data.

Mr. Assey. Sure.

Mr. Loebsack. Could you speak to that issue?

Mr. Assey. Yes. I think crowdsourcing is a very interesting and innovative idea for us to improve the accuracy of the data that we are going to get it. Under the current mechanism for reporting it is basically a very binary choice, you are either providing service somewhere in the census block or you are not. But we are now going to move to a regime in which providers themselves are going to have to draw shapes that are going to outline where they can provide service and every point along that line, along the edge of that shape is potentially a contestable question.

So we are going to do our dead level best and work in good faith to provide data that is accurate and complete, but obviously people who live there who have boots on the ground, they often know some things that we don't know here. So we really are going to have to work collaboratively to get this right.

Mr. Loebsack. All right. Thank you so much. I appreciate that.

Ms. Floberg, can you explain why knowing quality of service of available broadband is important for consumers? Can you talk about that a little bit?

Ms. Floberg. Absolutely. I mean some of the quality of service metrics are necessary simply for making the maps in determining whether or not service in a particular area counts as broadband according to the FCC's speed threshold, which currently defines that as 25 megabits per second downstream and 3 megabits per second upstream.

Mr. Loebsack. Right.

Ms. Floberg. We are encouraged to see that that is preserved in the Broadband DATA Act as well as the inclusion of latency which is useful especially for particular applications that consumers may want to use. And we think that there is a lot of benefit to additional quality of service metrics, usage limits, additionally possible pricing data, and we definitely appreciate that the language of this bill does not in any way prohibit the FCC from expanding on the definition and collecting data that it decides that it needs in the future.

Mr. Loebsack. Thank you so much.

Ms. Bloomfield, I have a related follow-up question for you. When mapping broadband why is it important to consider latency and not only speed?

Ms. Bloomfield. Absolutely. So you think about the consumer experience, when we go online and the things we anticipate doing and the uses that we have. So when you think about latency, again, you know, you are in a rural community, you are using telehealth, you certainly don't want latency if

somebody is actually doing any kind of procedure on you.

So you think about or distance learning, you know, children actually using the technology in the classroom and what that jitter and that buffering does to that experience for those kids in the classroom. So again, they are all part of the consumer experience and they are not that difficult to gather that data as well, so it should absolutely be included.

Mr. Loebsack. Thank you so much. And I do have a follow-up question I will submit for the record, if I may, Mr. Chairman, to Mr. Spellmeyer. Thank you.

Mr. Doyle. Thank you. The gentleman's time is expired. The chair now recognizes Mr. Johnson for 5 minutes.

Mr. Johnson. Thank you, Mr. Chairman.

Mr. Assey, the bills before us today all focus on solving the mapping challenge at the FCC, but for the last several appropriation cycles Congress has given NTIA money to fund a modernization of the National Broadband Map. So do you see an ongoing role for NTIA in the mapping context?

Mr. Assey. Thank you for the question. I think all government agencies have a piece of this pie, whether it is NTIA, the FCC, or even the Department of Agriculture. And one of the things that is considered in this legislation that I think is extremely helpful is Congress' imprimatur and direction to the federal agencies to really coordinate and work together. And the creation of a better map through the use of shapefiles will

give us the background that we need to ensure that all of the agencies, no matter which corner of the federal government they are operating in, are operating off the same playbook.

Mr. Johnson. Well, I am sure many of my colleagues are experiencing the same thing, especially those that live in rural areas when we go back home. You know, when I was first elected in 2010, one of the first things we started talking about in early 2011 was the need for an accurate broadband map. Here we are in 2019 and we are still talking about the need for an accurate broadband map. The American people are getting frustrated with the lack of progress on this. We have spent a lot of money to try and solve this problem.

I agree with you that it is going to take all of us working together, but at the end of the day I am a mule farming plowboy, you know, and I think we need to go back to the basics and be simple. It ain't that tough to figure out who has got broadband and who doesn't have broadband. I can't believe it is this dadburn complicated, but we need to figure it out.

Ms. Floberg, just as coverage data may overstate the availability of service in some areas, consumers can experience a difference between the speed of the service they are advertised and the speed of the service they actually receive. Would it be helpful for consumers if the FCC collected data on actual speeds instead of or in addition to advertised speeds?

Ms. Floberg. Thank you for the question, Congressman. I

think that, absolutely, actual speeds are very valuable information for consumers to know, for policymakers to know, and could certainly be a part of this data collection. There currently is a project measuring broadband for America that does collect some of this data and this is part of why one of our main concerns is making sure that the data collected through Form 477 is publicly available and is compatible with other datasets.

As long as we can take the data that we get from Form 477 about deployment and compare it and use it in conjunction with the data that the FCC does already collect about actual speeds that also we think would serve to bring that important data point to the conversation.

Mr. Johnson. Okay.

Mr. Spellmeyer, do you have any thoughts on how we can identify and correct this problem so that rural users on the wrong side of the digital divide can have the same experience as urban users do?

Mr. Spellmeyer. And is your question in relation to the mapping or actually getting the service out to them?

Mr. Johnson. No, it is the advertised versus the --

Mr. Spellmeyer. Versus the actual.

Mr. Johnson. What you actually get.

Mr. Spellmeyer. All right. Well, I wasn't going to wade into this, but, you know, on the wireless maps advertising plays no role. The one-time data collection that the FCC did was not

based on advertised speeds, it was supposed to be an exercise to map areas where actual speed was above 5 megabits per second. That is what would happen under the legislation that is before the committee today on the wireless side. That is what is in the bill that has already passed the Senate Commerce Committee and we hope to get signed into law.

Mr. Johnson. Okay, all right.

Ms. Bloomfield, when a network is built with support from either the Universal Service Fund or the Rural Utility Service, what sort of validation processes should be used to ensure that the network is actually delivering consistent, high-speed service as intended?

Ms. Bloomfield. That is a really excellent point, because when you are a steward of federal support whether it is USF or the ReConnect, you really want to make sure that the consumer is getting what you say they are going to get from that support. One of the things that the FCC did that I think is really interesting when they designed Universal Service support, they basically required providers to actually provide some of the information like latency and speed and things like that.

So there are some requirements. It is part of the truce that you have when you work with the government. And I think ReConnect, one of the things that I think has been very interesting watching RUS is they are actually doing trials out in the field as they are looking at this new grant and grant/loan program to

actually see what is there, what is not there, what are the speeds that are there, so it is that extra step of doing that, you know, whether it is a challenge process or whether it is verification.

Mr. Johnson. Thank you for your indulgence, Mr. Chairman. I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Soto for 5 minutes.

Mr. Soto. Thank you, Chairman.

When you look at the different sizes of the census block and the current rules as far as what counts and what doesn't, the gamesmanship that is happening right now becomes really obvious. The largest census tract is 8,500 square miles in Alaska, and they are as small as half a block that could be, or one-tenth of a square mile in an urban area. So when the rule is "if the providers determine they could offer service to at least one household," you could see how terrible a map we could get. Providing one household to the Alaska tract that is 8,500 square miles, you would get the whole thing on the map. We can do obviously a lot better than that. In my district in South Osceola County and Polk County, we have large census tracts, very rural areas.

So my first question, Ms. Bloomfield, does this series of bills take care of all the loopholes that are preventing us from having an accurate broadband map in rural areas or is there other things we are not addressing here?

Ms. Bloomfield. What your legislation does is a really important start. It really starts to get more granular and that is what we absolutely need to have. You know, my carriers provide service to folks on every seven people per mile of wire. Here in D.C. we have 10,000. So you are right, you have those huge swaths.

But one of the things that we need to be thinking about, one of the things that is interesting and hasn't really come up is RDOF, the Rural Digital Opportunity Fund that the FCC is going to be rolling out is really going to start with the unserved areas. So the beauty is we have the opportunity to move to the shapefile, start getting more granular, get better maps, and then as time goes on move to some of the things like the work that USTelecom has done I really commend, but I think we don't want to hold back.

I think it is that balance between you have unserved people there. You know it every time you go back to a town hall meeting, I am sure it is the first thing you hear. So how do we keep the process moving, and I think your legislation actually very nicely tees up that sequence.

Mr. Soto. So there is a synergy between this new funding and getting more, a more accurate map.

Mr. Stegeman, are we covering all the loopholes that we need to for right now to get a more accurate, rural map?

Mr. Stegeman. I think it hits most of the key topics which are how shapefiles should be formed or that shapefiles should

be provided. But the fabric is needed. I think the fabric is a key part of this. There could be efforts to help explain what a shapefile represents. I am sure if I asked anybody here, you are not quite sure what a shapefile is and I am sure many providers don't know what a shapefile is and they are going to have to come up with it. So there may be some clarification of what those things represent and what can be in and what can be out.

Mr. Soto. That is helpful. I am also concerned about how our broadband efforts are working nationally vis-a-vis some of our competitors in the world stage, whether what they are doing in China, Japan, or Europe.

Mr. Spalter, how are our broadband efforts stacking up to places like China and Europe?

Mr. Spalter. I think the record is very clear in a hotly competitive national market that the size and the scale that the United States is, our broadband service is unparalleled. We are investing as an industry close to $80 billion of CapEx in our national broadband infrastructure. On a per capita basis that is an extraordinary step.

One of the wonderful challenges that this body, Congress, the FCC, and others have posed is can we extend broadband service not just to our urban and suburban and even exurban areas, but also to our rural areas that are some of the hardest to reach places on the planet, and which is why we believe that if we can actually accelerate our efforts to have a granular and accurate

National Broadband Map guiding some of our future investment coupled with shapefiles and other types of reporting methodologies, we will actually not only get the unserved served, but improve national broadband performance overall.

Mr. Soto. And, Ms. Floberg, how are we stacking up to China and Europe and others right now as far as our efforts to provide a better broadband coverage throughout the United States?

Ms. Floberg. I can't speak as much to the international comparisons, but I think we can hear already from folks in this country where we are falling short. I think that a huge part of this conversation that needs to be talked about more, really, is the affordability portion. We have even in the areas where we have made efforts and successful efforts to deploy broadband at the fastest available speeds, we are often leaving behind people who can't afford a $70 a month bill to get on to Charter's entry-level tier of 200 megabits per second.

So I think we can see some of those issues and those problems even when we just focus on looking inside the United States.

Mr. Soto. Thanks. And I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Long for 5 minutes.

Mr. Long. Thank you, Mr. Chairman.

And, Mr. Assey, as I said in my opening remarks this morning, I believe it is important for any broadband mapping to be paired with appropriate enforcement measures that ensure providers'

submissions are complete and accurate. While enforcement is important, it is important to be mindful that unintentional mistakes can happen from time to time.

My question is this. Do you think it makes sense to clarify that the standard set forth in the MAPS Act including the word "recklessly" is not intended to apply to providers who submit information or data under this act that contains minor mistakes, small omissions, or overstatements or other unintentional errors?

Mr. Assey. Yes, I do. I think, you know, as you point out, it is one thing to intentionally ignore or violate a rule, but we are really embarking upon a new regime here with the drawing of shapefiles. And we have some familiarity with them because they are used whether it is at the RUS, there have been pilots in Kansas, but this is going to involve a lot of different data points and innocent mistakes can be made. I think the issue is going to be are they material and intentional that would be of concern.

Mr. Long. Yes. Well, that is different if they are intentional, you know, but I am talking about just the minor mistakes as we said.

Mr. Stegeman, I was very excited to see that my home state of Missouri was included in one of the two states used in the Broadband Mapping Initiative program. How much will it cost to produce a nationwide map based on the pilot program that you just completed and are there some existing data points that could be

used that would reduce those costs?

Mr. Stegeman. Thank you for that question, and we were happy to do Missouri. It was a good state to look at. It presented a lot of unique characteristics that we could test out. As we looked at that map we expect a national fabric to cost around $10 million if we are able to use some proprietary data. We think we can turn that up within a year so that it is usable. That it can help inform --

Mr. Long. Cost how much again? What did you say?

Mr. Stegeman. Ten million.

Mr. Long. Okay.

Mr. Stegeman. Ten million just for the fabric. We think that fabric will then be useful for the creation of the polygons or the shapefiles to help inform them. It will be useful for the consumer to actually be able to look at their point on their surface; understand what those shapefiles mean.

What would help improve the program is for states to step forward with databases. In Missouri, Missouri does not have a statewide 9-1-1 database. That would have been informative to the effort had that occurred and that we could pull that in, but counties do have that. So going nationally, I think we would expect or ask that states contribute information to us of known locations. Many states have good address datasets, good locational datasets that would just help improve the process and potentially bring down the cost.

A big portion of the cost is actually the visual verification that CrowdReason did for us. Each record is actually reviewed by a person who is looking at satellite imagery, clicking on the map of where the location is. If we can reduce that it will reduce total cost.

Mr. Long. Okay, thank you. And I had one more question for you. One of your primary conclusions was that up to 38 percent of unserved households in the two states, that being Missouri and Virginia, you collected data for would have been missed or deemed served by previous FCC Form 477 efforts. Could you break down that percentage a bit by explaining, if possible, how that figure could be different based upon additional data from cable and wireless broadband providers?

Mr. Stegeman. Yes, we did. So when we put together the study for Missouri and Virginia we only have a limited number of providers in the study. We did not have the cable providers participating and providing us data of what they served. So when we published the 38 percent we did note that that is at the high end of our estimate of what the total unserved is and that it could potentially come down as we get more providers reporting information.

We attempted to estimate that by removing blocks that the cable providers serve in the current 477 effort and when we did it, it cut it in about half. So it is still the significant issue even if we brought in all the cable companies and assumed the

cable companies served every household in the blocks that they serve today.

Mr. Long. Okay, thank you.

And, Mr. Chairman, I yield back.

Mr. Doyle. I thank the gentleman. The chair now recognizes Mr. O'Halleran for 5 minutes.

Mr. O'Halleran. Thank you, Chairman Doyle.

With scarce federal resources being spent every year for broadband development, we can all agree that the need to produce accurate broadband coverage maps has never been greater. I believe mapping legislation passed out of this committee should be quickly scalable, produce detailed coverage data swiftly, and not place extra reporting burdens on small internet providers.

We know too well that the census block reporting structure is outdated and hurting rural and tribal communities. Simply ask small town businesses across America, economic development groups, our teachers educating children, our public safety officials and first responders, our citizens nationwide in rural areas whose quality of life is being impacted daily without affordable connectivity. They will all say that our coverage maps are failing them and we must act quickly to fix them, if they knew what a coverage map was.

This is going to require partnerships for coordination and investment. America needs these families where they are at. They need to have a good quality of life. Urban America really

needs these families where they are at. Whether it is for food or water or transportation or energy, you name it, urban society, urban America doesn't exist without them where they are at. And so, we need to find an answer to this.

Mr. Assey, you stated that the goal of broadband mapping should be to focus on where broadband is and isn't and that trying to layer other types of data into this particular effort, while laudable, could cause unintended delays. What exactly is the type of data that the FCC should focus on collecting for broadband mapping and how quickly could this type of data be replicated nationwide?

Mr. Assey. Thank you for the question. I think, first and foremost, we should follow the direction that the FCC set down in the order it recently adopted in August and push forward with the adoption of shapefiles. I think that gives us a granular picture of where broadband is and where broadband isn't. I think the idea of the location tool and really getting atomistically into the longitude and latitude of individual buildings in unserved America could certainly be of interest.

And there is a proceeding teed up at the FCC to answer a number of the questions that the pilot project turned up. So I think it is certainly of something that we should continue to look at and pursue, but I would not want that to slow the progress that we are about to make in moving to a shapefile-based reporting.

Mr. O'Halleran. And what about timing? How quickly could

that data be replicated nationwide?

Mr. Assey. Well, that really is up to, I think right now we are waiting on some direction from USAC. The order has been adopted by the Commission, but we have folks who are, you know, making the plans now to be able to comply as quickly as possible.

Mr. O'Halleran. Oh, God help us.

Ms. Bloomfield, NTCA's membership knows all too well the struggles that small internet service providers often face in providing broadband in difficult to reach rural communities. I was just out in my district and I traveled about 4,500 miles and I had cell reception at least half the time, so I can just imagine what the rest of it is like. As Congress and the FCC work towards reforming the reporting requirements that produce our maps, could you outline the importance of mapping legislation offering technical and financial assistance to small providers under a new reporting structure?

Ms. Bloomfield. I appreciate your thinking that way, because again as you look at carriers particularly small ones taking on additional burdens, the question is, you know, if you have a staff of 15 what can you actually accomplish. I think from a shapefile perspective, I think that folks already file so much data now because most of my companies are Universal Service recipients so they are very used to collecting data, sharing data; that is part of their kind of process.

Going to a more complex system, greatly appreciate the

thought process that you may be leading down, which is that it may take more resources as we get even more granular to help some of these smaller providers actually track where exactly those locations that are served or are not exist.

Mr. O'Halleran. I am not leading down it, that is where I am going. And thank you for your comments. I just want to say we need to invest more as a government in this process. It is about our citizens and their safety also. Thank you, Mr. Chairman. I yield.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Flores for 5 minutes.

Mr. Flores. Thank you, Chairman Doyle and Republican Leader Latta, for holding this important hearing, and I want to thank the panel for joining us today.

Each time the subject of rural broadband and rural mobile service comes up, people invariably complain about the maps, so it is important that we get this right. Also, no one in this committee wants to have a repeat of the BTOP program, earlier in this decade, where $4 billion was pushed out the door and we got virtually no effect on expanding coverage. As a matter of fact, there is only two projects that have received funding since 2010 and the rest of it was essentially wasted.

Mr. Assey, my question for you is this. In your testimony you highlighted a need for any mapping track data to show areas where providers have been awarded federal funds to deploy

broadband. In doing so we could properly designate the National Broadband Map to reflect, first of all, which areas are using, or second, which areas will require federal assistance to provide service.

I couldn't agree more that we need to make sure that finite resources go to the truly unserved and that private stakeholders involved in building out the next generation of technology know that they are not going to be competing with the federal government when they make their investment.

So my first question is this. To what extent would it be helpful for the National Broadband Map to require additional reporting information for the areas that are covered using federal funds?

Mr. Assey. I think it would be very helpful. You know, we, I totally agree with the points you made about duplication and really sending funds to places that broadband already exists. That to me is not the best stewardship of public funds. But I also think it is important not only to make sure that our money is spent wisely, but also to ensure that there is accountability when we do actually fund projects to make sure that we know exactly where broadband was delivered and that the map is updated appropriately.

Mr. Flores. Okay. And continuing along the question of duplication, to your knowledge how much interagency coordination occurs to avoid cross-subsidizing in the same area with different

federal programs such as the High Cost Program and the Rural Utility Service program?

Mr. Assey. I don't know that I would hazard a guess on how much coordination there is. I know that they obviously do talk from time to time, but I think they are all dealing with imperfect tools presently, and our hope is by getting a better broadband map that will assist their coordination and certainly your pushing the right direction will help as well.

Mr. Flores. That is certainly something we in Congress need to work on is making sure we are not having duplication of efforts and when it comes to the subsidization programs.

Mr. Spellmeyer, I agree with your testimony in which you voice your support for H.R. 4229, the Broadband DATA Act, and specifically for the inclusion and standardization of definitions for radio frequency engineering terms used to measure signal strength and propagation. Further, you note that this bill would require the FCC to continue revising the rules in the future to reflect changes in mapping related technologies.

Can you expand on why common standards are so important for mapping needs and to what extent standardization will be helpful as the next generation of mapping technologies is developed?

Mr. Spellmeyer. Well, certainly getting a common set of standards is important when you are trying to take the claimed coverage by, you know, a number of providers, two, three, four, five in a given area and overlay them on top of each other. That

is where the FCC kind of veered off course a number of years ago. Chairman Pai made some efforts to try to standardize it with the last one-time data collection. Unfortunately, we are going to be headed back, I think, after this legislation passes to do another one-time data collection. It is really important that we fix some of the things like the cell edge probability, because if that number is too low you are building in an error factor that once you lay one map on top of the other it begins to multiply itself. Now, it is also important to the second half of your question to focus on evolving technologies over time. We are on the precipice of 5G. My company wants to bring 5G to lots of places in rural America and the legislation gives the FCC the tools to update that over time as that continues to deploy.

Mr. Flores. Okay, thank you. I yield back the balance of my time.

Mr. Doyle. The gentleman yields back. The chair now recognizes Ms. Eshoo for 5 minutes.

Ms. Eshoo. Thank you, Mr. Chairman. My number one wish is that under your leadership and that of Mr. Latta that we get this done. It has been a long time. It is too long.

To all the witnesses, you have given terrific testimony and we are always better for it. We really do pay attention to what you say. This is about mapping our future, the future of America, and sometimes I think we get bogged down in -- well, in many ways, by necessity, in a lot of the details. But I think the overarching

call to action needs to be based on what I just said, that this a map for America's future.

And my first question is, and if each one of you can say yes or no, I -- well, let's see what you will say. Based on the legislation that is at hand and I think will succeed -- it is bipartisan, it is sensible, it has strength in it, all of those factors -- if technologies change and they always do, given all the collective expertise at the table, does this legislation, can it stretch itself so that it meets future challenges?

In other words, if it is just for now and what we have now, then you know what, you are going to be back here testifying and I don't know how much longer I am going to be able to show up for meetings on mapping. But do you think that this legislation speaks to the future, future technologies? And, you know, for example, moving to satellites. There are so many areas that I don't want to have to keep revisiting new types of fixed or mobile broadband technologies, small cell sites, satellites, I could go on and on. You know what I am talking about. So yes, no?

Ms. Bloomfield. So I would say the framework of the bill will live on. I think the standards could change, but that is up to the FCC to work on that. So absolutely, yes. This is a framework for the future.

Mr. Assey. Yes, I agree. And as you said, we are creating a map, but it is also a living map so it will be flexible to accommodate new technology.

Ms. Eshoo. Good. Encouraging.

Mr. Spellmeyer. My answer would be absolutely. And the good news is the Senate is tired of dealing with this issue. They have moved a bill out of committee and I think they are going to send it over here soon and hopefully you guys can adopt it.

Ms. Eshoo. Wonderful.

Ms. Floberg. We are also optimistic that this bill would be applicable and useful for future technologies.

Ms. Eshoo. Great. Good.

Mr. Spalter. It is a strong, durable, and sustainable framework. It is based on, and this is the genius that it insists that we at a granular level can map both served locations but also unserved locations and then be able to update it as a living document with crowdsourcing and other types of --

Ms. Eshoo. Good.

Mr. Spalter. -- more effective, challenging mechanisms.

Mr. Stegeman. I would agree it does. It is a flexible bill and it does provide flexibility into the future for new technologies as they come out.

Ms. Eshoo. Yes. I think that Mr. Stegeman is the only statistician on the panel today. Thank you very much.

And I think the most often used word, because I have been here for a long time this morning, is granular. So whomever, I don't know, maybe there is a prize for that.

Let me -- I think each one of you have talked about the

challenge process so that consumers and government officials can speak up when the FCC data doesn't reflect reality. My question is this data is available today in CVS files, which is easily accessed in Microsoft Excel or Google Docs and also easily accessed by researchers using R and Stata and other statistical software.

Do you think that shapefiles can be turned into a format that is easily accessible for people to understand -- this is real operative phrase in my question -- easily accessible for people to understand so they know whether or not to challenge the FCC data?

Mr. Stegeman. If I can take a first shot at that.

Ms. Eshoo. Yes, sure.

Mr. Stegeman. So shapefiles will be a challenge only from the aspect of, one, normalization of what the shapefiles mean; two, is they are potentially --

Ms. Eshoo. I don't know what that means.

Mr. Stegeman. It is what are the shapefiles based on. Are they based on points, are they based on roads, what does it represent?

Ms. Eshoo. I see.

Mr. Stegeman. And if my address falls in it, does that mean I am served, and those types of issues. But there will be 4,000 of these potential shapefiles filed by all the providers. If you look at all of them out there each one will have to provide

shapefiles by speed, so it may overwhelm researchers.

The point level data, the fabric, actually may be easier to analyze just because it is point-specific data and I don't have to analyze all these shapefile layers that will be stacked upon each other, which makes it difficult for research. It can be done, but point level data just makes it a bit easier to work with the data.

Ms. Eshoo. Easier.

Mr. Stegeman. Easier.

Ms. Eshoo. I think my time is expired. I don't know if I get all of that or if my next-door neighbor will know how to access this, but I am going to trust what you said. Thank you, Mr. Chairman.

Mr. Doyle. The gentlelady yields back. The chair now recognizes Mrs. Brooks for 5 minutes.

Mrs. Brooks. Thank you, Mr. Chairman.

Thanks for all of your testimony. I love what my colleague from California just said. Not only has she and others been working on this for a long time, but she is thinking about the future as she always does and is thinking about let's not pass something that is going to be stuck in time, and that is always the challenge with all of our legislation around technology. So thank you on the flexibility and the forward-leaning.

I have to admit, like Congresswoman Eshoo there were terms that, you know, are just foreign to all of us. Shapefiles, fabric

issues, I mean these are just not commonly understood terms, and I applaud you, Ms. Bloomfield, acknowledging that you might not know the speed of your internet. Most of us don't, really. And so to the extent that you all can just continue to educate the American people, because this is really the issue for the future and for everyone in our country.

Indiana, I am really proud, has made a commitment to broadband buildout on a state program called Next Level Broadband and we are going to be investing a hundred million dollars for broadband in our nonserved and underserved areas. Officials involved with those buildouts though have told me that we have ongoing problems. We heard this from Scott Rudd, the director of our broadband opportunities for Lieutenant Governor Crouch, that we are having ongoing problems with households paying for internet service but then having such restricted access due to network outages. And we haven't really talked about that with the fault, you know, resting on the ISPs, so essentially, they don't have internet access.

Has there been any discussion in all of this about whether or not to include network outages as part of any criteria for whether a location is served or not in the new proposed mapping regime being pursued? We hear about latency, but what about outages? Has that been discussed at all and why or why not? Anyone have any answers for that?

Mr. Spellmeyer. Congresswoman, I have not heard any

discussion on that in relation to the wireless side of the equation. We certainly have outage reporting obligations to the FCC that we engage in on a regular basis when they are triggered, but I haven't heard. You know, I think as an industry we try to deliver a service that is relatively reliable, you know, 99.9 percent of the time, and I don't see that as a big issue on the wireless side.

Mrs. Brooks. Anyone else?

Ms. Bloomfield. Again, I would also say that wireline carriers also have obligations and reporting requirements. As we talk about different things that could be plugged in, you know, adding that as a factor might make sense. Honestly, they have such strict obligations, I am actually surprised to hear that that is such a big issue in Indiana.

Mrs. Brooks. Well, I would be really interested.

Mr. Spalter, did you --

Mr. Spalter. I am sorry. If you needed to complete --

Mrs. Brooks. No, no, no. Did you have anything?

Mr. Spalter. Well, thank you, Congresswoman. Well, the really important aspect of the legislation before this committee is that it insists that we move forward, before we actually spend federal resources to achieve greater broadband support for unserved communities, that we have a map that is sufficiently granular that shows where served and unserved locations are. That is the location fabric. Once we have that you can then layer

on all kinds of other reporting methodologies. Shapefiles, highly complementary to it, potentially even reporting of network blockage or network outage moments, as Mr. Stegeman just advised me.

But what we need to start with precedentially, if we are going to be good stewards of federal dollars and really close the digital divide, is first do our fundamental work of developing and scaling that location fabric which shows where the locations that are currently served and takes that next important, holy-grail step of identifying by the rooftop level where there are unserved locations still in America.

Mrs. Brooks. Okay. Well, thank you. And if anyone wants to call Scott Rudd, feel free to find out what he is concerned with. I want to thank Mr. Stegeman in my remaining time, because in case you are contemplating doing more pilots Indiana would welcome the opportunity for you to conduct more pilots. But given the issues you said were present in address data, do you have any thoughts on whether addresses should be considered served if ISPs don't actually know whether or not they serve a specific household or not?

Mr. Stegeman. It is a good question. The address level data that we have seen there is difficulties in tying that address to a point on the Earth surface and actually identifying your house, sometimes, in rural areas. It just doesn't link up. When you get it in Google or elsewhere it doesn't line up. So the

fabric provides that additional knowledge of where the location is, so that you understand if you will have access to service or not when you have the maps available.

Mrs. Brooks. Okay, thank you and thank you for your work. I yield back.

Mr. Doyle. The gentlelady yields back. The chair now recognizes Mr. Butterfield for 5 minutes.

Mr. Butterfield. Thank you very much, Mr. Chairman. And to the ranking member, thank you for your continued efforts to improve the accuracy of our National Broadband Maps. I wish Ms. Eshoo was still here. I would publicly associate myself with her remarks. And then Mrs. Brooks came along from Indiana and she aligned herself with Ms. Eshoo. And I just want to say that what both of these members have said is critically important.

I came on this committee January 3rd of 2007. I guess that has been 12 years now, and every year that I have been on this committee we have been talking about mapping. And so, as Ms. Eshoo said, let's just get it done. The data is crucial to understanding which parts of our country still lack adequate broadband infrastructure and sufficient speeds to use the internet effectively.

There are still parts of my district as my other colleagues have mentioned in their districts, there are still parts of my district in eastern North Carolina that do not have consistent access to reliable broadband, a resource critical to competing

in today's economy. The problem is exacerbated by the fact that our maps purporting to identify underserved and unserved areas remain absolutely inaccurate. That is why I was delighted to join Mr. O'Halleran and Mrs. Rodgers as original co-sponsor of H.R. 3162. Our bill will ensure, Mr. Chairman, that national service data is accurate and will hold providers accountable for the mapping data, shapefiles if you will, that they submit. It is my hope and belief that this bill and others that we will consider will aid us in bringing the promise of the internet age to all Americans.

Let me go to my far left, since I am most comfortable with that.

[Laughter.]

Mr. Butterfield. I have friends on the right too.

But, Ms. Bloomfield, I agree with you that it is important to engage in a challenge process before an agency gives out broadband funding, but how do we strike the right balance, if you will, so that providers and the FCC aren't so overwhelmed by challenges that vital funding gets delayed?

Ms. Bloomfield. That is an excellent question. It is a balance and you are always seeking that balance. And I think in part as you move to more granular maps you are going to have better maps so the gap is going to narrow, so you are going to have better information so you are going to start from that; that if this bill is enacted, FCC moves forward, the maps will become

more granular by definition, so the areas that you are looking to actually do these challenges process in will be more limited.

I think, you know, you don't want people to do this on a whim, but I think that again the story of what is on the ground is really the sanity check because you are dealing with self-reporting data so you need to have that reality check of what is actually taking place. I think there is a way to strike that balance and I think it is going to be an important one. I don't think we are going to see what we saw with the Mobility Fund, I think, again because better mapping will lead to better data.

Mr. Butterfield. All right.

Mr. Assey, if I can go to you next, please, I think it is important for the public to be able to provide input on the broadband maps so that we get a better sense of really what is happening on the ground. I understand you support both crowdsourcing and a challenge process as a means of getting this done. Could you please talk about how those public input opportunities will create a more accurate broadband map?

Mr. Assey. Sure. And I would agree with Ms. Bloomfield, we do have to have standards and make sure that we come up with a mechanism that is administratively workable and provides public input that can lead to more accurate maps. But the fact of the matter is that sometimes the people with the best information are the people with boots on the ground.

And certainly there is a capability to challenge representations that are made and this is a process that we can create to hopefully improve the accuracy of the maps we have. We have some experience at least with respect to grants that have been made for broadband previously in developing a challenge process and hopefully we can learn from that in developing a process that the general public can participate in as well.

Mr. Butterfield. If I may continue with you very briefly, I think it is important for the public -- excuse me. I am an original co-sponsor of the mapping bill introduced by Mr. O'Halleran and I would like to go back to your testimony where you talked about the benefits of using shapefiles to map broadband service. As you know, much of my district in North Carolina is rural so getting the best broadband data in the quickest way possible is important to me and to my constituents. Could you explain how shapefiles can achieve more granular data?

Mr. Assey. Sure. I think shapefiles will allow network providers to draw boundaries around their service areas based on what they know, based on the places they are, the places their lines run, the places they offer service or can offer service. Right now, we have a reporting mechanism that essentially requires us to report on the basis of presence or absence in a census block.

So I think being able to rely on the provider at least as a matter of first instance to draw the boundaries of where it

can serve will lead to more accurate results and we will be able to refine that over time.

Mr. Butterfield. Thank you. Is this similar to tax mapping? All of our tax departments have this GIS system. Is it in the same, yeah?

Mr. Assey. I am sorry, I couldn't tell you.

Mr. Butterfield. All right, thank you. I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Walberg for 5 minutes.

Mr. Walberg. Thank you, Mr. Chairman. And thanks to the committee for having this hearing and for the witnesses to be here. All I know is that for too long my constituents in southern rural Michigan have been missing out on the 21st century digital economy due to flawed broadband availability maps. But, more importantly, I don't care whether I look at it through a shapefile in the fabric or how granular I get, I can't find broadband at my property and so I am left out as well.

So it is personal to me and so I commend the members of committee here today for offering this legislation and for us debating it. I am just hoping it works as we move forward with what ought to be. When I first heard about shapefiles, I remember my singing quartet experience of shape notes. I know all about that, but shapefiles I am going to learn more about through practical experience.

Mr. Spalter, in your testimony you spoke of how the Broadband

Serviceable Location Fabric could be the underpinning of a, as you said, a contemporary, tailored and updatable broadband map to serve as the foundation for all future spending decisions. I believe we must ensure efforts to improve our maps are not just for the short term, so I think I agree with you on that.

How important is it for the fabric to reflect changes in mapping capabilities in the future and do you have recommendations on how we can improve mapping sources so the fabric can be constantly improving?

Mr. Spalter. The foundational element of any improvement for future broadband mapping methodologies has to be again that location fabric that will be a national dataset that shows where locations are served, but also importantly where they are unserved.

And once we are able to establish that location dataset, and we know that we can do it timely and affordably within a year, then you can dynamically add on all kinds of reporting and complementary reporting methodologies like shapefiles, other types of datasets that will be coming online that will be made available openly, in an open source way through state, local, and even municipal data sources in new, innovative, proprietary data sources, additional company-led efforts to initiate open source methodologies, for example, like Microsoft's rooftop imagery datasets which already are incorporated into our location fabric.

But it all starts with the need to have a baseline understanding of where our broadband-served locations currently are and where they are not. And upon that then we can couple all kinds of other reporting methodologies. And we must do so particularly as we are looking about the opportunity of spending $20 billion in a Rural Digital Opportunity Fund, three-quarters of which according to the current design will be out the door without the benefit of this foundational dataset.

We need to have a proper sequencing, which is why we support your efforts in this committee echoing what has gone in the Senate with similar legislation to move forward to establish this foundational dataset.

Mr. Walberg. Thank you. I appreciate that.

Mr. Assey, it is vital that we obtain more detailed information about where service is and where service is not so that we can better identify the truly unserved populations. Do you believe incorporating shapefiles will help achieve this goal and if so, how?

Mr. Assey. Shapefiles will definitely help us achieve the goal of more accurately identifying households that are unserved. And to the extent we can do that we can better marshal our resources to fill those gaps.

Mr. Walberg. Well, we hope that is the case, very much so.

Ms. Bloomfield, can you talk about how important an ongoing and periodic challenge process is to improving our nation's

mapping capabilities?

Ms. Bloomfield. Absolutely. So as everybody was talking about whether you go shapefiles, fabric, you know, what sequence you are looking at, again it is still self-reported data. So at the end of the day the challenge process is going to be really important because it is your sanity check. It is the one chance to be able to say what is really happening.

Mr. Walberg. That is good nomenclature.

Ms. Bloomfield. So I think it is really critical. And, you know, we have seen it work in programs. RUS has a challenge process with some of their awards that they are doing under the ReConnect. It is an important part to make sure that if you have federal resources that are pretty limited, how do we direct them particularly to the unserved, then start working to the underserved, and then continuing to build and sustain that work.

So if we are really going to tackle this as a country and we are really going to be serious about it we have got to use the resources wisely and the challenge process will help us do that.

Mr. Walberg. Thank you. I yield back.

Mr. Doyle. The gentleman yields. The chair now recognizes Mr. Welch for 5 minutes.

Mr. Welch. Thank you very much, Mr. Chairman. I am glad the committee is finally acting to fix this widely inaccurate broadband map situation. We have been at it for a number of years

and finally we have a chairman who has got the gavel that is going to make something happen. Thank you, Mr. Doyle.

You know, one of the things that actually is very troubling is in the zeal of the FCC to get out feel-good information there was no critical assessment of what the reality was for people in rural Vermont or in rural South Dakota or in rural Iowa, and it is pretty outrageous. I just want to say that because there was all this happy talk for years that we have coverage in all these areas when we didn't and that was our government really neglecting rural America. And I just want to register my outrage at that because so much of the people we represent need that coverage and don't want to be second-class citizens. So when this Congress says the rural America is going to get that equal service, more or less, but then the FCC doesn't stand up to make that happen, it really is not acceptable.

Now having said that, I am very happy with this panel and with the progress we now are making, but we have got to follow through on this because it has to be at the end of the day that rural America has the tools it needs in order to survive and compete. And that is real common thread amongst all of us who represent rural America.

But let me ask a few questions. I will start with you, Mr. Spellmeyer. We have been talking about the mapping challenges for years now, so it is nice to have a concrete discussion about progress in the committee. Can you share with the committee what

your company found when it went around the country and challenged the maps during the Mobility Fund II process and where do we go from here?

Mr. Spellmeyer. Yes, Congressman. The short answer is we found a mess. As I said in my testimony, we spent two million dollars. That was a significant investment on our part to hire drive test companies to drive around. I think we covered 16 states. We found more places to challenge than we didn't find and we submitted a huge number of challenges to the FCC.

I think you are right. I have been talking about this issue for a decade and I actually think it is a good-news story of Congress actually working. For a long time I couldn't get bureaucrats in Washington to pay any attention to this issue and eventually it was conversations with members of the Senate and members of the House who all looked at me and said, "Yeah, you are right, I don't have coverage in my district," that allowed us to raise the profile of this issue and get to where we are at today. And I am actually really excited that we can pass this bill.

Mr. Welch. Well, let's keep going.

Ms. Bloomfield, do we have to have a challenge process in place?

Ms. Bloomfield. I would not go down this road without a challenge process. I think it is very important you need a verification. If you are going to really take this seriously

--

Mr. Welch. Right.

Ms. Bloomfield. -- there is only so much -- first of all, I think it is impressive that you have a panel that includes a lot of provider representatives who are all saying we want to report, we will report, but you have got to be able to verify.

Mr. Welch. Thank you.

Mr. Spalter, when you are mapping broadband do you feel it is important to consider latency and usage limits or is tracking speed enough?

Mr. Spalter. I think that latency is an important, critical insight that will inform not only, you know, the quality of service that ultimately consumers need, but also will help direct our federal broadband support programs to the kinds of technologies that actually can toe the line when it comes to maintaining those standards.

We know, particularly, if we want to have a 5G world, we are going to have to have a wireline infrastructure to provide the backhaul especially in rural America to make that promise available to those citizens that live in our rural communities.

Mr. Welch. Thanks.

Mr. Spalter. And the latency requirements need to be eventually part of any assessment of where our broadband dollars are going to be most effectively used.

Mr. Welch. Thank you.

Ms. Floberg, do you want to comment on that as well?

Ms. Floberg. Yes. I think that when we are looking at, first of all, the broader digital divide, not just questions of deployment but questions of competition, questions of affordability, the more information we can get about what this market actually looks like for consumers is going to be immensely valuable for policymakers. Usage limits, for example, can have a huge impact on how a customer uses services, whether or not they have to pay more for that service than they initially signed up for; whether or not they can use that service consistently.

So I think especially as we try to use this legislation as a stepping stone and move into talking about the broader digital divide and these competitive issues and affordability issues, these kinds of quality of service metrics should be part of the conversation.

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

Mr. Doyle. Thank you. The chair now recognizes Mr. Gianforte for 5 minutes.

Mr. Gianforte. Thank you, Mr. Chairman. And thank you to the panel for this important discussion today.

During our hearing with the FCC commissioners, many members on this committee raised concerns about the accuracy of Form 477 and the FCC coverage maps. The inaccuracy of these maps show cell phone and broadband coverage in areas of Montana where we

have no coverage. This failure reduces USF investment in our most hard-to-reach places and it could lead to overbuilding in some areas while underbuilding in others. The lack of high-speed broadband coverage and investment has real impacts on hardworking Montana families. I have heard from small business owners who because they don't have access to reliable cell coverage just can't conduct business while they travel around the state. Recent FCC reports on broadband deployment claim that 86 percent of Montanans had access to high-speed internet service. This is simply not true. Many of the providers I have met with believe that the number is greatly inflated and that access is probably closer to 50 percent. The FCC even acknowledged its figures aren't correct and has issued fines to companies that have overstated coverage.

Recently we had Commissioner Brendan Carr to Montana. I commend him. He has now traveled to over 30 states to observe locally to get on the ground. He stated when he was in Montana, Montana has the worst cell phone coverage of any state he has been to so far. I know I can also attest that every Montanan can tell you exactly where on the interstate you are going to lose coverage and how long it is going to take to get it back so you can continue a conversation.

That is why I signed on to the Broadband Data Improvement Act. Rather than using large and inaccurate census blocks, Representative Rodgers' bill encourages the FCC to use shapefiles

in order to give a better idea of where broadband coverage is and, more importantly, where it isn't so we can invest. I think we should also focus on the challenge process -- we have had a lot of discussion on that here today -- to help smaller co-ops and rural broadband providers challenge coverage maps before funding is disbursed.

There is a conversation about using crowdsource data which could be informative, but not a deciding factor in this accuracy of the maps. It is time to get these maps right so we can invest in those areas that need it most to close this digital divide so that Montanans can have better access and more reliable access to broadband and cell coverage.

So, Ms. Bloomfield, it is good to see you again. Thank you for traveling to Montana. It was good to have you there at the Montana Telecom Association event in Big Sky just a couple of weeks ago. We spent a lot of time there talking about mapping and the other challenges Montanans face.

I want to drill into this challenge process a little bit. You have talked about it today, the importance, so that our small guys who have actually been, in my mind, better stewards of the USF dollars than some of the larger legacy out-of-state providers who have not invested the way the local people have. Could you just reiterate briefly the importance of the challenge process?

Ms. Bloomfield. Absolutely. So particularly as we are looking at the Rural Digital Opportunity Fund coming out,

Congressman, and again, you know, I knew exactly where, even in Big Sky, and we joke because it is a resort, you just go a mile down the road and you lose service. You lose actually internet access everywhere.

So it is, these programs like Universal Service are going to be really important. And choosing to put those dollars in the areas, and we look at RDOF, it is the opportunity for carriers who are not going to be providing service in those territories to basically say so and allow other providers to come in. To best direct those fundings we really need to know where those resources can be directed so you can start filling in the gaps in a state like Montana which has gaps.

Mr. Gianforte. Now we just had some discussion from the prior questioner. Mr. Spalter spoke about the need to consider latency and usage limits in addition to just tracking speed. Could you comment on that further, Ms. Bloomfield?

Ms. Bloomfield. Absolutely. You know, I think when we start looking at standards and we start looking at what service really entails and obviously people think about speed and they think about their experience, but part of the experience really is truly the latency and it is the ability to be able to do some of the things like Ms. Floberg had talked about where, you know, when if your access might be tied to usage and you have a kid doing homework and you have, you know, data limits, at some point you are really kind of tying the hands of some of your consumers.

So making sure that folks actually submit and report that information, it is not onerous to do so and if we are really going to take this seriously and gather data we should gather all the data we can.

Mr. Gianforte. Great. Well, I just want to re-emphasize the need for accurate maps. We do not have accurate maps in Montana. And as a result, the USF dollars, taxpayer money, is just not being invested properly. So thank you for testimony. With that I yield back.

Mr. Doyle. The chair now recognizes Ms. Clarke for 5 minutes.

Ms. Clarke. Thank you very much, Mr. Chairman. And I thank our ranking member, Mr. Latta, for convening this subcommittee hearing today on improving our nation's broadband maps.

Broadband has proved to be an equitable instrument to level the playing field for millions of Americans and a necessary step to ensuring the success of our national infrastructure. The use of this technology has the potential to decrease the digital divide so consumers can have access to educational and employment opportunities, and this is no longer a luxury for my constituents.

However, fraudulent broadband mapping reporting on broadband access is a barrier to consumers whether they are from rural America or urban America. These harmful reporting practices skew the data that determines where and how federal dollars is spent. Thus, in a GAO report it was found that the

FCC data overstated broadband deployment by allowing providers to report availability in blocks where they do not have any infrastructure connecting homes to their networks if the providers determined that they could offer service to at least one household. We have heard that.

It is incumbent on each member here to ensure that these gaps and broadband coverage are addressed in a manner that will protect the American people and help to close the digital divide across our country. Like our highway system, if you don't make sure that every road is connected at some point, we are going to have catastrophic circumstances and parts of our nation will be left behind.

So my first question is actually to Ms. Floberg. Ms. Floberg, can you describe the effect that high prices have on closing the digital divide and is that a good reason for the FCC to collect pricing data?

Ms. Floberg. I would say it is an excellent reason for the FCC to collect pricing data. What we have seen is that right now according to the current FCC Form 477 collection, 141 million people in this country don't subscribe to broadband at the FCC's 25/3 speed threshold.

Now there is, this conversation is a lot about trying to figure out how big of a proportion that don't have access, can't subscribe to that service because it is not available and that is an important problem. But we still have, conservatively, a

hundred million people who do have access to 25/3 and they can't subscribe, or they subscribe to a slower tier because that is the only option they have. They can't afford to get the fast kind of internet that they need or again, millions and millions more people who do subscribe but are constantly having to make sacrifices and to choose what they pay for this month.

Can they afford the internet this month or can they afford food this month? And those kinds of choices are not choices we should be asking people to make. They are not choices that indicate a closed digital divide.

Ms. Clarke. Absolutely, thank you.

The FCC's mapping data is utilized for various policy matters including federal subsidies. Additionally, the data is used to better understand telecom marketing competition, specifically to review mergers. Mr. Spalter, how is mapping data utilized to justify potential telecom mergers and how will update flawed collection methods like Form 477 and broadband maps help improve this process?

Mr. Spalter. I can't speak specifically to how broadband mapping, per se, can actually improve or accelerate the ability to effectively and incisively evaluate mergers. I am not an antitrust expert. However, what I do know is that the ability to deliver to policymakers at the FCC, at other agencies of government across the country, a mechanism to more accurately and with specificity pinpoint where our current locations are

served and unserved is a start of an extraordinary range of diverse and innovative reporting and/or analytic opportunities that we could layer on to that foundational dataset such as merger reviews that will actually be able to accelerate good public policy and allow us to maintain really good stewardship of the kinds of dollars that we are committing through public programs.

Ms. Clarke. Very well. I have like 22 seconds left. Would you like -- okay. Let me ask a final question in that quickly.

Ms. Bloomfield, it is important to improve broadband mapping so that we can identify more precisely where broadband is available, but also to examine the quality. Do you agree that information on quality of service is valuable too? If so, can you expand on this statement?

Ms. Bloomfield. Absolutely. I think it is a good idea to actually capture performance. But I think, again, when I hear this committee talk about how long it is taking to get mapping done, I would say right now the discussion on the table is also about like how do we get the location, how do we get the accuracy in that? I think teeing up for another day, absolutely, discussions about, you know, we welcome better visibility into the performance process, so those are also key discussions.

Ms. Clarke. Thank you very much. I yield back, Mr. Chairman.

Mr. Doyle. I thank the gentlelady. The chair now recognizes Mr. Bilirakis for 5 minutes.

Mr. Bilirakis. Thank you. Thank you, Mr. Chairman. I appreciate it and I appreciate the testimony of the panel.

Representative Lujan and the chairman and myself have introduced legislation that would provide some accountability to the mapping process. The Map Improvement Act directs the FCC to engage in standardized information collection and incorporate it into a single map. This seems like common sense to me. The bill also allows for consumers to provide feedback on map accuracy. That makes sense too, since the individual themselves is the ultimate decider of whether coverage exists at their property or not.

Mr. Spalter, do you think that including the intended end user in the coverage map is an important check on map accuracy, and then also and how would you envision the review process taking shape from the company perspective?

Mr. Spalter. It is not only important, but it is entirely appropriate, Congressman Bilirakis, to facilitate that not only for federal government's, but for all levels of governments, tribal entities, to be able to actually have that kind of accountability and verifiability that comes with both challenge and verifiability processes.

One of the benefits, actually, of advancing in the proper sequence at the front end, a location fabric, is that it will actually allow us, as Ms. Bloomfield pointed out, to minimize the number of challenges we ultimately are going to have because

we all have a reference point, a national reference point of where locations are and where they are not, against which it will be a lot harder and there will be more disincentives to report inaccurately.

So we think that crowdsourcing, keeping this as a living document that can be iterated with the best kinds of products that are out there in the marketplace, every year, is an important step and we support it.

Mr. Bilirakis. Very good, thank you.

Mr. Assey, the FCC is questioning whether it should require more granular data. One complaint from providers for very granular address level service data is that such information could be used as a target for their competitors. Is this a reasonable fear, in your opinion and, if so, what can be done to ensure that the FCC has accurate and reliable data but also protect sensitive information for their industry regardless of how granular it is? If you could answer that I would appreciate it.

Mr. Assey. Sure. Thank you for the question. I mean obviously there is competitively sensitive data that all companies have about their plans to serve their customers. I do think one of the things that we have achieved through the shapefile process is a real balance. You know, we have talked a lot about a granularity, but there is another side, which is you can get so granular that you can create systems that are so complex that they are difficult to execute and update on a regular

basis.

So one of the reasons we focused on moving from census blocks to shapefiles is because we believe that protects competitively sensitive data, that it is achievable, and that it is extendable across the United States in a very rapid fashion and that we will get the most bang for our buck if we focus on that.

Mr. Bilirakis. Very good. I appreciate that.

Anybody want my time? All right, I will yield back.

Oh, yes, please.

Mr. Loebsack. Thank you, Mr. Bilirakis. Very quickly, if I may. As you know, Mr. Spellmeyer, our bill, the Latta-Loebsack bill, Loebsack-Latta, however we want to say it, has some specific parameters to change how mobile broadband internet access is documented. And can you explain how and why these prescribed parameters will improve the maps that we have now?

Mr. Spellmeyer. Yes, Congressman. I do believe they will significantly improve the map. There is a number of additions specified by the legislation. The two most important ones relate to when we model these networks and how the signal propagates you have to make a choice about something called cell edge probability. What is the probability that that signal is actually going to get out to the cell edge? The FCC used 80 percent. We don't think that is a commercially reasonable number. Taking it up to 90 is consistent with how we engineer our networks.

The other big one was cell loading. The FCC said model network loaded at 30 percent. We don't think that is accurate and this one bumps it up to 50, much more balanced picture.

Mr. Loebsack. All right, thank you.

And thank you again, Mr. Bilirakis, for yielding. Thank you. I yield back.

Mr. Doyle. The gentleman yields back. The chair now recognizes Mr. Veasey for 5 minutes.

Mr. Veasey. Thank you, Mr. Chair. You know, in urban America, which I represent, we have sort of two, you know, different issues. You know, you have like myself for instance, right, where I have one MVPD provider and then I have a different ISP because I don't necessarily get the highest speed in my area. So I have to have two different services so I can have the highest speed. And then, but there are still some services in urban America where there is no coverage.

And so I want to maybe ask Ms. Floberg, you know, when they were, you know, looking into this issue, do you think that the shapefiles that have been proposed would also be able to accurately show where there are underserved areas in urban America that may still need coverage especially when you take into consideration that the $20.4 billion that was used for existing universal payout to ISPs to be able to provide coverage to rural areas were really, I think, specified just for rural America? And so do you have any thoughts on that at all?

Ms. Floberg. Thank you for the question, Congressman. Yes, I think that the promise of greater granularity here is most relevant when we are talking about these larger rural census blocks, but is absolutely valuable and I think has the potential to help highlight where there might be particular neighborhoods in urban areas that are being overlooked when it comes to deploying faster and faster speeds. I think that that definitely can, the level of granularity promised could hopefully highlight some of those areas and help us figure out if there are cases where we have examples of digital redlining occurring.

Mr. Veasey. Yes. And with the FCC's different proposals -- and I will be happy for anybody to answer this. With some of the other proposals that have been out there like, you know, digital opportunity data collection, crowdsourcing, sunsetting Form 477, is there something that should have also been included that wasn't a part of that initial FCC proposal that could really help people in underserved areas?

Ms. Floberg. I can jump in on that again. I mean, I think that part of this again that we think is really important and this may not be for this bill and this day, but expanding our understanding of the digital divide and trying to expand that to understanding prices, trying to understand what kinds of prices consumers are actually being charged. Right now, this is something where the FCC currently collects virtually zero useful data in trying to gauge what those prices are nationwide, which

makes it very hard to say where broadband might be affordable, where it is not, or even for policymakers to assess what kinds of interventions might be necessary.

Mr. Veasey. Yes.

Ms. Bloomfield. I would just add that I do think that we are in a really interesting sweet spot where with what you all are doing in the legislation that you have bipartisanly written through this committee and have discussed, aligned with what the FCC's current action is, is really all moving on the right track at the same time.

So I think there is some really interesting momentum that we don't always see here in Washington, D.C. to actually take care of the mapping issue, so I just applaud all of you for that and again the coordination with the FCC.

Mr. Spalter. Congressman, we are literally on the precipice of being able to stick the landing on national bipartisan legislation coupled with the important work that our colleagues at the FCC are doing to advance the idea that we can have a National Broadband Map. And once we accomplish that goal, there will be innumerable ways to catalyze additional insight, analytics, reporting, and other elements that will speak to exactly the issue that you are driving, which is how can we better support all Americans in rural communities, exurban, suburban, and urban communities as well to realize the power and potential of broadband and make it more affordable.

Mr. Veasey. And if I could just ask with the remainder of my time just one very, if very hypothetical question, so if a company were able to deploy low Earth orbit satellite to provide coverage in these gaps that we have talked about today, would current providers, would there still be the need on the ground from people represented here today and others to still sort of fill in these gaps?

Mr. Spellmeyer. I would offer on behalf of the wireless industry that I am not certain that those lower orbit satellites are going to deliver a mobile product that will be sustainable, you know, inside an automobile at 70 miles an hour.

Mr. Veasey. Interesting. Okay.

Mr. Spalter. Many of our companies at USTelecom are advancing creative ways of partnering with certain satellite communities to reach last-mile geographies to ensure that there could be potential service. But we actually have to be very, very careful that we are prioritizing spending federal resources for broadband deployment that can actually be sustainable and can help rural communities achieve benefits of things like 5G and other next generation technologies through wireline technology access that is just not going to be available through platforms like satellite.

Mr. Veasey. Okay, thank you.

Mr. Doyle. The gentleman's time has expired. The chair recognizes Mr. Cardenas for 5 minutes.

Mr. Cardenas. Thank you very much, Mr. Chair. I appreciate the opportunity to have this discussion before the public on this very important issue. And it is something that, unfortunately, the American public doesn't understand how important it is and how directly affected they are because everybody is somehow, someway, connected to one of these.

And so I have a question. Ms. Bloomfield, why do you think a challenge process is necessary even if the maps are more granular?

Ms. Bloomfield. So I think the granular maps is a really good start and I think the challenge process really allows us to make sure we have integrity in the program, again particularly when you are talking about either federal support of someway, whether it is Universal Service or it is ReConnect through USDA or community connect programs, any of these programs, or when you are thinking about a policy change.

So I think again it is that opportunity, and I don't want to repeat myself, but to do the sanity check, to be the validation process at the back end. So you have the process in the front end with the mapping and the standards and all of those pieces; it is the ability to do the validation on the back end to make sure that the information you have is what you were told you had.

Mr. Cardenas. Okay. Also, Ms. Bloomfield, when mapping broadband why is it important to consider latency and usage limits? Isn't tracking speed enough?

Ms. Bloomfield. So I think again we go back to what is the consumer, you know, what are they going through. We know, you know, I represent small community-based telecommunication providers. You know, the number of folks that have actually have poor service a lot of times is because they bought the router on eBay.

So there is a lot of different things that we need to be looking at, but, really, when you are thinking about particularly as we move forward and particularly as the Internet of Things becomes a more, a bigger part of our life and our economy, we need to make sure that folks are getting service that is in real time and that they are not stymied by usage caps that might impact the affordability of the product that they are receiving.

Mr. Cardenas. Okay, thank you.

And then also to Mr. Assey, we agree we want to create these maps as soon as possible. How do you imagine the agencies will coordinate to get this done?

Mr. Assey. Well, we have taken a giant step in August with the adoption of the order directing providers to move to shapefile reporting. I think we are working with USAC and waiting on guidance for some of the standards that are going to be required for that. But I think we are well on our way.

Mr. Cardenas. Okay, and the coordination, is that healthy?

Mr. Assey. It is absolutely essential and it is one of the things that we are very gratified that the committee is

considering putting its mark in and encouraging that type of coordination. I do think that the best thing that will encourage that coordination is actually the success of getting a better map, because then agencies will be incented to want to use that map and for everyone to be singing off the same sheet of music.

Mr. Cardenas. Okay, better map. Who wins if we don't have better mapping?

Mr. Spalter. Certainly not rural America, certainly not the many, many hundreds of thousands enterprises and individuals and families and communities that still are in unserved communities that are considered to be served. Certainly not the public treasury, our fiduciary duty to use funds that are available through our taxpayers to their best and highest purpose.

If we are not doing the right work on getting our maps right at the front end, I will assure you, through the Rural Digital Opportunity Fund or any other future broadband support program, if we do not have this granular location fabric to start we will be misapplying public funds and that would be a shame.

Mr. Cardenas. Does this have a positive effect when it comes to public safety, health care, things of that nature, because now this is being integrated in every walk of life. It is not just out of convenience, you know, for convenience tools, you know, talking on the phone with your friend or what have you. We are talking about this is, you know, directly affecting people's ability to respond in emergency situations, et cetera,

correct?

Mr. Spalter. The growth of one of the most epidemic medical chronic conditions in America is diabetes and, unfortunately, many of those who are suffering from that condition live in remote, rural communities. If we are denying the ability to make sure we are pinpointing accurately, the resources that we need to get to those communities through, inspired by the legislation that is before us, we will be not serving not only broadband but not serving the health of Americans.

Mr. Cardenas. Mr. Chairman, if I can just have a few seconds to take a point of personal privilege to thank my colleagues who are continuing to focus on these issues and introducing these bills. And for us to have this dialogue and debate about what the proper paths going forward, even though that on many occasions many of our talented staff are stolen to the private industry, we are still capable and we are still getting the job done. Thank you very much, Mr. Chairman.

Mr. Doyle. I thank the gentleman. The chair now recognizes Ms. Rodgers for 5 minutes.

Mrs. McMorris Rodgers. Thank you, Mr. Chairman, and I appreciate you allowing me to waive on to the committee today and join you all in this important discussion.

As technology becomes increasingly integrated into every aspect of our lives, our economy, our society, it is more important than ever to ensure that all Americans, especially those in the

rural areas, have access to high-speed and an internet connection. Coming from Eastern Washington, living in Eastern Washington, now representing Eastern Washington in Congress, in too many of the areas that I drive when getting around the district and visiting the various communities, coverages remain static. I was reminded of it earlier this year. I was in a couple of communities just south of Spokane. Spokane is the second-largest city in Washington State and I was just 15, 20 miles south of Spokane in Rockford and Fairfield and they had nothing.

So there is a growing and growing drumbeat that, you know, we -- this needs to be a priority and I join in that. Because whether it is economic development, whether it is health care, telehealth, so much of the future of health care is around telehealth, education, our kids are doing more and more homework online and personalized education, you know, or health care, it is our future.

So I, in August I hosted a couple of roundtable discussions in Eastern Washington, one in Colville, which is more north of Spokane, 70 miles north, and then one in Pomeroy that is even further south, and it was good. It was good to bring the community together, the elected officials, the ISPs, others, business owners, healthcare providers that are involved in trying to solve this issue in Eastern Washington. One of the main barriers that seems to be common right now is ensuring that we have the accurate maps and that this is so important as we have this discussion

about how are we going to ensure that every area is covered.

Earlier this year, I joined with Mr. O'Halleran in introducing the Broadband Data Improvement Act and it is one of several bipartisan bills that we are considering here today. And this bill tackles the inaccurate mapping on several fronts. One, by increasing the granularity of provider-reported data using shapefiles; two, by utilizing a three-pronged validation process including the use of third-party data and an on-the-ground accuracy verification; and third, ensuring a robust challenge process. Those are the three main areas. It also provides assistance to smaller providers to minimize the burden of the reporting requirements.

And I just want to thank all of the witnesses today for being here today and for your work to improve broadband access for all Americans. I am encouraged by the variety and the priority that this committee is making to move forward in a bipartisan way so that we can ensure that the limited federal funds that we do have, but that we have been prioritizing for this effort, reach the areas where the need is the most.

I wanted to ask if you could talk just a little bit more about the importance of having a robust validation and challenge process to ensure the accuracy of our broadband maps in addition to increasing granularity. And, specifically, what role should third-party data play in this process?

And, Ms. Bloomfield, I wanted to ask you that and then open

it up.

Ms. Bloomfield. So, first of all, thank you so much for your leadership. It has been very key. And as you listed the key points in your legislation, they are all things that we absolutely endorse and support and think are important.

So when you talk about validation, you know, there is a lot of different ways to do it. You know, one of the things we have all talked about as a panel is how do you incorporate things like crowdsourcing, how do you actually gather that information from people served on the ground. I think that is a really interesting and intriguing idea. I would just say though that again, what you don't want to do is create a process that becomes really a burden where somebody has to chase down every complaint and respond.

And, you know, how do we actually capture trends so that we don't get bogged down in that process and we can continue to move forward to make sure that the maps are accurate and people can continue to spend more of their time and energy actually building the broadband then reporting back through that process. So I think it is important, but I think it has to be done very thoughtfully.

But again, I think that along with the challenge process so at the back end you can actually really do that verification and it is going to be very significant.

Mrs. McMorris Rodgers. Anyone else?

Mr. Spellmeyer. I would add, so I think a challenge process is vital. You know, the FCC did a one-time data collection and if we hadn't had a challenge process there, those maps that show all of Eastern Washington as covered would have been locked into place and used by the FCC. You know, on the wireless side we used shapefiles to build that last map, but without a challenge process to go out and test it we would have been stuck in a real mess.

So the good news is that, you know, all of the legislation in front of us puts us in the right direction to fix it once and for all.

Mrs. McMorris Rodgers. Great. Thank you all. I yield back.

Mr. Doyle. Okay, our time has expired. I thank the gentlelady. The chair requests unanimous consent to enter the following documents into the record: A letter from the Western Governors Association; a letter from the National Rural Electric Cooperative Association; and NTCA-The Rural Broadband Association. Without objection, so ordered.

[The information follows:]

**********COMMITTEE INSERT**********

Mr. Doyle. Let me thank all the witnesses for their participation in today's hearing. You have been a most excellent panel and we have enjoyed hearing from you.

I want to remind all members that pursuant to the committee rules they have 10 business days to submit additional questions for the record to be answered by the witnesses who have appeared, and I ask each witness to respond promptly to any such questions that you may receive. At this time the subcommittee is adjourned.

[Whereupon, at 1:27 p.m., the subcommittee was adjourned.]